CHAPTER 4

CITY ANIMALS

Before the Dutch settled New Amsterdam, the New York City area was surrounded by marshes and covered with thick forests that were filled with native animals, including beaver, deer, wolves, black bears, and timber rattlesnakes. Although these larger animals couldn’t make it in the Big Apple, several smaller animals stuck it out. Squirrels, ducks, snapping turtles, and bluefish have all managed to survive—sometimes with surprising success—and alongside these native New Yorkers are many newcomers. Pigeons, sparrows, rats, and cockroaches are just a few of the nonnative creatures that piggybacked into the city with the Old World settlers.

Today, an estimated 330 different species of birds, 30 mammals, 32 reptiles and amphibians, and more than 200 kinds of fish inhabit the city’s skies, trees, buildings, parks, and waterways. Yet this only accounts for animals with backbones. If invertebrates—insects, arachnids, mollusks, crustaceans, and other spineless creatures—are added to the list, human beings may be sharing New York City with as many as 10,000 different members of the animal kingdom.

PEREGRINE FALCONS

New York City is not exactly famous for its rare birds. Golden eagles don’t stop by too often, and the northern spotted owl never does. However, one bird that is prominent on the federal list of endangered species is more successful here than almost anywhere else. Since 1983, peregrine falcons (Falco pere-
grinu)—powerful birds of prey that are adapted to living on mountain crags—have made their nests in places like the George Washington Bridge and the Bank of New York—seemingly oblivious to the deafening accompaniment of passing traffic or the crowds of office workers below.

What are these birds doing here? Originally, peregrine falcons ranged across all of North America, from Alaska to Georgia. But in the 1950s and '60s, they were wiped off the map by the pesticide DDT. Because the adults are small birds that had fed on DDT-doused insects, the peregrines' eggshells became so thin and fragile that the eggs broke before they had a chance to hatch. By the time DDT was banned in 1972, no peregrine falcons were left east of the Mississippi River.

After the Endangered Species Act was passed in 1973, wildlife biologists undertook an intensive effort to bring the falcons back from the brink. Hundreds of peregrines were bred in captivity and about 150 hand-raised birds were released throughout New York State during the 1970s and '80s. The hope was that the young falcons would reestablish their historic nesting sites along the Hudson River Palisades and in the Adirondack Mountains. No one was sure if the young falcons would make it on their own, and no one expected that the first places they would choose to set up house would be in Brooklyn and the Bronx—on the Verrazano-Narrows and Throgs Neck bridges.

Today, peregrine falcons nest on at least 11 sites within the five boroughs, including the Manhattan tower of the Brooklyn Bridge and an old gun turret on the Marine Parkway Bridge at the end of Flatbush Avenue. They have even moved into the heart of Manhattan. One Park Avenue pair lives on a window ledge at the Metropolitan Life Building at East 45th Street, while an Upper West Side couple nests in the bell tower of Riverside Church.

Just as the bridges, buildings, and churches that the peregrines have chosen as nest sites are considered triumphs of modern architecture and engineering, the falcons that inhabit them are themselves miracles of natural design. About 1½ feet tall, with blue gray wings, these falcons have sharp, curved beaks and yellow, razor-sharp talons. With narrow, tapered wings, they are one of the fastest birds in the world and have been clocked at speeds exceeding 60 miles per hour during level flight. Fierce and effective predators, they execute aerial hits on other birds, dive-bombing them at 150 miles per hour and killing their prey instantly in midair.
Although the urban aeries that the birds have chosen might seem less ideal than a windswept cliff, these human-made structures almost exactly duplicate the peregrines’ idea of good real estate. They are remote, exclusive, have great views, are best approached by air—and are near lots of fast food.

In wilderness areas, each pair of peregrine falcons requires a territory with a 5- to 10-mile radius between nests. In the city, they sometimes set up house less than a mile apart. Scientists believe that the high density of pigeons on the city’s streets and bridges is what enables so many of these highly territorial falcons to live so close together. In Manhattan, the peregrines have even adapted their hunting strategies to accommodate the skyscraper-dominated topography. Instead of dive-bombing their prey, the falcons curve and weave between buildings to catch pigeons on the wing.

Although peregrine falcons tried to nest in the city before their DDT-induced decline, they were usually chased away. This time around, however, the city is giving the birds the royal treatment. When a peregrine pair starts a nest, wildlife biologists from the city’s Department of Environmental Protection place a wooden nesting box filled with rounded gravel on the site, thereby preventing the avian parents from laying their eggs on the surface of a ledge, where they would be liable to roll off. The eggs are laid in early spring and are incubated by both parents for 32 to 33 days; during this period the falcons are left completely to themselves. After the falcon chicks are born, biologists return to weigh the chicks, inspect them for parasites, and place numbered bands around their legs so that they can be tracked. While all this attention is being paid to the chicks, the overprotective peregrine parents dive-bomb the biologists repeatedly, often drawing blood with their outstretched talons.
Like any youngsters, peregrine chicks face a wide assortment of hazards in the big city. Growing up on bridges and the tops of office buildings, their perilous first flights often land them on heavily trafficked roadways or send them crashing into skyscraper windows. In one case, a falcon chick plummeted into Eastchester Bay below its nest on the Throgs Neck Bridge, and tried to do the butterfly stroke back to shore. Its life was saved by a bird lover who jumped in the water and towed it to dry land. Similarly, at New York Hospital, where a pair of falcons has a nest, a young bird fell 30 stories down a smokestack; it survived after being dusted off by the hospital’s maintenance crew.

Despite the trials and tribulations of life in the big city, New York now has one of the largest concentrations of peregrine falcons in the world—and some of the most successful and productive families. Since 1983, 145 falcon chicks have successfully fledged from New York City nests, and chicks banded by biologists here have been spotted all over the country. One former New York bird has set up house in Baltimore. Another falcon, born on Wall Street, is now raising a family in Sheboygan, Wisconsin.
EGRETS
WE HAVE A FEW

THE HARBOR HERONS

Something strange is happening on the city's tiniest islands. Every spring, hundreds of long-legged wading birds congregate in the East River, underneath the Verrazano-Narrows Bridge, and alongside Fresh Kills Landfill on Staten Island. If it weren't for the smokestacks, high-tension power lines, and passing oil tankers, the scene would look like something out of the Florida Everglades.

Are these birds confused? Apparently not. Since these flyers first began
FAHION VICTIMS

The fact that elegant wading birds have taken over abandoned islands in New York Harbor is hard to believe, but what makes the birds' appearance even more impressive is that they were once on the brink of extinction.

During the mid- to late 1800s, it became the rage for fashionable women to wear hats decorated with the feathers of herons, egrets, gulls, and other beautifully plumed birds. The foot-long, pure white feathers of the great egret were among the most prized. Although hatmakers claimed they obtained the decorative feathers without hurting the birds, they actually bought them from plume hunters who shot the birds en masse in their rookeries. With about 5 million birds killed a year, the result of this bizarre fashion trend was that by 1900, wading birds were close to extinction all along the Atlantic seaboard.

To stop the slaughter, an unusual coalition of ornithologists, sportsmen, and society women organized the first Audubon societies. Members gave lectures about the cruelty of the hatmaking trade, lobbied Congress to pass laws prohibiting plume hunting, and hired their own game wardens to protect the surviving rookeries. As a result of these conservation efforts, herons and egrets year by year have slowly regained their nesting grounds, and their triumphant arrival in New York Harbor is heralded as one of the greatest comebacks in the history of the environmental movement.

nesting on Shooter's Island in the Kill Van Kull shipping channel in 1974, more and more herons and egrets have been coming every year, and an increasing number of the Big Apple's forgotten islands have become avian sanctuaries. In all, eight species of wading birds—including great egrets, glossy ibises, and green-backed herons—now nest in New York Harbor, and thousands of chicks are raised here every year.

When the herons first came house hunting in the 1970s, most of the city's small islands—including Liberty, Ellis, Governors, and Rikers—were already claimed. But several lesser-known outposts had been left to grow wild, and where people saw floating vacant lots, the birds saw real estate.

On 51-acre Shooter's Island off Staten Island, hundreds of great egrets and snowy egrets now arrive each spring to build platter-sized nests on the island's low-growing cherry trees. The males and females share the task of sitting on the eggs and feeding the chicks, and both make flying forays into nearby salt marshes to bring back tasty killifish and fiddler crabs. Once a thriving shipyard, Shooters is now surrounded by the skeletons of old wooden piers and
barges, and in recent years, cormorants—black seabirds—have also arrived to nest among the ruins.

All the way across town, just west of the penitentiary on Riker’s Island, North and South Brother islands have also been taken over by the birds. Now, in the shadow of prison guard towers, about 1,000 black-crowned night-herons and 200 snowy egrets raise their chicks every year.

Altogether, on island rookeries throughout New York Harbor—one Shooter’s, North and South Brother, Pralls, the Isle of Meadows, Hoffman, and Swinburne islands—more than 4,000 wading birds are nesting. These birds have chosen their sites so well that most New Yorkers will never see a heron’s nest. In addition to being almost totally inaccessible (the harbor acts like an enormous moat), the islands are near sparsely populated, industrial areas where, despite passing boats, the birds can keep a relatively low profile.

Although the rookeries are well concealed, the herons themselves are easy to find—particularly the great egrets. During the summer, they fly to surrounding areas, their long white necks curved in a trademark S and their wide, 4½-foot-long wings cutting across the sky like billowing sails. They can also be seen walking on stiltslike legs in the shallows of ponds and lakes in city parks, along the shoreline at Jamaica Bay, and in the salt marshes beneath the White- stone Bridge and along the Hutchinson River Parkway.

**PIGEONS: BIRDS WITH A PAST**

The bird most associated with New York City, the bird we see waddling around our city parks and streets—the pigeon (*Columba livia*)—has a far more interesting past than most people would expect. Also called rock doves, pigeons were first brought to this country from Europe, probably during the 1600s, and their original status here was that of a barnyard animal, raised purely for the table.

Over the years, however, these captive pigeons struck out on their own, transforming themselves from potential dinner entrees into birds that roamed freely throughout the urban terrain. Despite this newfound freedom, pigeons never really severed their ties with people. Today, New York City’s pigeons survive primarily on a diet of bread and birdseed left out by pigeon lovers. Perched
atop the heads of bronze statues and flocking around park benches, pigeons wait around for handouts and can even recognize the people who regularly feed them.

The fact that pigeons thrive in such close association with people is not surprising, given their early history. Originally, pigeons came from northwest Africa and the Mediterranean, where they nested in the wild (and still can be found living today) on cliff sides. About 10,000 years ago, people living in North Africa figured out that they could entice some of the wild birds into their villages by building housing for them. Called dovecotes, the first pigeon coops were 10-foot-high, column-shaped birdhouses made of clay and mud—with holes built into them for each rock dove family. Adult pigeons came and went, but the young birds—squab—usually ended up on the dinner table.

Today, pigeons have traded in the dovecotes for building ledges and the girded undersides of bridges and overpasses. In these well-hidden nooks and crannies pigeon families live, and rarely seen baby pigeons are reared. These families are extremely close. The mother and father care for their young together, feeding them "pigeon milk," a curd-like protein-rich substance produced in the crops of both parents. The reason that no one ever sees baby pigeons is that they grow up remarkably fast, reaching close-to-adult size after only a week of pigeon milk feedings.

Despite this nominal independence, some pigeons maintain intimate ties with New Yorkers. Every now and then, you might spot flocks of pigeons flying in tight formation, banking and turning in unison above the rooftops. These are coop pigeons, raised by people who continue the tradition of keeping "lofts" of pigeons that compete in long-distance races. New York City was once one of the nation's pigeon-racing capitals. Pigeon lofts, or coops, were found in almost every neighborhood during the 1930s, '40s, and '50s. On any given racing day, 500 different pigeon owners would compete in long-distance races, driving their birds to release sites as far as 500 miles away. Once let go, the pigeons would fly home at speeds between 45
and 75 miles per hour, using their homing abilities to find their lofts.

During World War II, five pairs of birds from every loft in the city were drafted into the U.S. Army to breed homing pigeons, and this project became an important part of the war effort. In cases where no other means of communication were possible, fast-flying, homing pigeons could carry messages to their home bases. Some of the offspring of New York City's pigeons even went on to become war heroes, but others never adjusted to military life. In 1942, the New York Times reported that Red McWilliams Star, a champion racing pigeon, had gone AWOL from his military post at Fort Monmouth, New Jersey, flying back to his neighborhood coop on 52nd Street in Brooklyn. The Times reported, "Army Intelligence is vague on Red's motives. He may have just been homesick. . . . for days he ignored his mates in the cote and looked only in one direction—toward Brooklyn."

Today, only about 50 of the city's pigeon lofts remain, but at these lofts, thousands of dollars are spent caring for the birds. Even more is spent to purchase new pigeons, some costing as much as $3,000. Most loft birds, which are bred for speed and endurance, look similar to street pigeons; they have bluish gray feathers, two dark wing bands, and an iridescent sheen around their plump necks. The main difference is that loft birds have larger, more powerful chests; they're "pumped up" for faster flying. Coop pigeons have been clocked during about 80 miles per hour, while street pigeons can fly only about 45 miles per hour (which still makes Columba livia one of the fastest birds in the wild). Loft birds, called fancy flyers, are bred to have unusual color patterns, from reddish brown, and silver. A pigeon on the street that has flown away recently, or a loft escapee or the recent offspring of an escapee, is referred to as "the coop" commonly join the ranks of street pigeons and their offspring usually revert to their native blue-gray coloration like those in their fountaining.

Despite their impressive past, city pigeons are known troublemakers. They destroy statuary and architecture with their droppings, which work through limestone and disfigure statues. Their droppings have even been blamed for causing the death of a famous American poet. When a cable on the Brooklyn Bridge snapped, killing a tourist taking a photo, the accident was attributed to the breaking of a 30-ton pigeon droppings which had worn the cable down to a thready.

In some cities an enormous amount of energy is spent keeping pigeons...
from fouling New York City's buildings and monuments. Following a $9-million renovation of Bryant Park in midtown Manhattan in 1994, flocks of pigeons were discovered to be soiling the just-cleaned statuary and eating freshly planted flowers. To stop this vandalism, the pigeons were put on the "pill," a type of avian contraception called Ornitol that was laced into kernels of corn. The effort worked, reducing the population from about 150 to less than 20, at a total cost of $2,400 per year. However, the least expensive and most effective check on the city's pigeons is the peregrine falcon population. It has been estimated that these predatory birds remove 200 pigeons from city streets each week.

**D-DAY FOR GOTHAM'S RAREST BIRD**

A broad expanse of sand strewn with the shells of clams and sea snails, the Breezy Point Tip in the Rockaways is one of New York City's last pristine beaches. On spring days, however, the calm rhythm of the surf is broken—from dawn to dusk—by the whistle and crack of explosives. Positioned behind the dunes, gun-toting biologists are waging a war to save New York City's most embattled species.

A tiny sand-colored shorebird, the piping plover (*Charadrius melodus*) has been on the federal list of endangered and threatened species since 1986. Yet, every spring about a dozen pairs of these people-shy birds still fly into Breezy Point to lay eggs and raise their chicks. For reasons that mystify biologists, the ¾-mile-long beachhead at Breezy Point—with a view of the Manhattan skyline—currently boasts one of the highest concentrations of nesting piping plovers anywhere in the Northeast.

Because they are on the endangered species list, the plovers have been under federal protection since 1988. To safeguard the plover families, the National Parks Service virtually locks down the beach at the Breezy Point Tip—part of Gateway National Recreation Area—each spring and summer. A team of rangers and volunteers patrols seven days a week, shooing away sunbathers and anglers, setting up cagelike shelters over plover nests to keep predators out, and pepperering the sky with noise-making, aerial explosives to drive off marauding herring gulls.
FLOCKS OF SEAGULLS

While the piping plovers cling to survival, another group of shore birds is taking over. Biologists estimate that there are as many as 1 million seagulls in New York City—up from almost none 100 years ago.

Though most people don’t notice the difference, there are actually four species of seagulls common in New York City: the herring gull, the great black-backed gull, the laughing gull, and the ring-billed gull. Among these, the herring gull (Larus argentatus), with its white body, slate-colored wings, yellow beak, and high-pitched cries, is far and away the most familiar. The herring gull can be seen all along the city’s hundreds of miles of shoreline—sailing, diving, and hovering above lapping waves and pier pilings. Not particularly finicky about what it eats, the herring gull has experienced an enormous human-abetted range expansion throughout North America, thanks to easy pickings at local garbage dumps. Of all the herring gulls that live along the eastern seaboard, one-third are believed to live in the New York City area. And they don’t come here for the culture. At Staten Island’s Fresh Kills Landfill—the largest garbage dump in the entire world—their gulls can be seen swarming like locusts over the mountain of trash.

Though the herring gull is the most common of the city’s seagulls, the laughing gull (Larus atricilla) is the species that is causing trouble across town. Named laughing gulls because their calls sound like hysterical cackling, these black-capped birds were once driven completely from the state of New York by sportsmen and plume hunters. In 1979, however, about 15 pairs of laughing gulls began nesting at Jocas Marsh, a wetland in Jamaica Bay that borders John F. Kennedy Airport. By 1991, the number of nests had grown from 15 to more than 7,000, and airport officials became increasingly concerned about the number of collisions between birds and airplanes, in particular because they recalled a 1975 incident at JFK when a DC-10 was brought down by a flock of great black-backed gulls. Though no people were injured, the plane was destroyed. Meanwhile, the current situation has done nothing to relieve concerns: Between 1986 and 1995, airport officials reported the deaths of 1,129 laughing gulls in collisions with aircraft.

JFK workers have used noise cannons, pictures of owls, and recordings of “distressed gulls”—all without success—to try to convince the laughing gulls not to enter JFK’s airspace. Finally, in 1991, sharpshooters were brought in to bring down any gulls that dared near the runways. More than 30,000 gulls were blasted out of the skies in the program’s first four years, prompting protests from animal rights and environmental groups. Today, the protests continue—and the airport is trying a new tactic. Trained hawks and falcons are being brought in to attack the gulls when they approach the forbidden zone.
Ironically, the herring gulls—once a rare species themselves because of overhunting—have become one of the biggest threats to the plovers’ survival here. Able to thrive in a variety of situations (particularly among people and near garbage dumps), herring gulls have successfully adapted to urban life and dramatically increased their population, establishing a colony of about 1,000 birds behind the Breezy Point dunes and laying siege to the plovers’ territory.

Meanwhile, the plovers’ survival strategies have actually worked against them. In early spring, New York City’s plovers fly in from their wintering grounds in Florida and South America and proceed to lay three to four sand-colored eggs right on the beach. Although this technique helps camouflage the eggs from animal predators, it does not work very well when thousands of human sun worshippers are mobbing the shore. Moreover, when the eggs hatch, around Memorial Day, the plover families must make numerous daily trips to the water’s edge to feed, stamping their tiny feet to force insects and marine worms to the surface. Unfortunately, when these painfully shy birds see people or gulls on the beach, they protectively corral their chicks back to the dunes—sometimes causing the protein-needy youngsters to starve while they are in hiding.

Piping plovers were placed on the endangered species list because their lifestyle brought them in direct conflict with an increasing number of beachgoers. Decades ago, these plovers nested on local beaches by the hundreds, but they began to disappear when beach development and recreation mushroomed after World War II. The destruction of natural dunes and beach ecosystems has eliminated most of their prime nesting habitat. All told, biologists estimate that there are only 1,100 pairs of piping plovers remaining on the Atlantic coast from Newfoundland to North Carolina—most of them concentrated in small government-protected seashores such as the Breezy Point Tip.

Although the plovers must endure being attacked by other birds, being squashed by off-road vehicles, and even having their nests vandalized by people (who risk a $25,000 federal fine for harassing an endangered species), they maintain an uneasy peace with crowded conditions in New York City. “New York City plovers are tougher,” observes Mary Hake, a National Parks Service biologist who worked in the plover protection program for eight years. “They’re up against pressure from the natural world—from high tides, feral cats, and gulls—and pressure from the human world. Helicopters, jet skis, and even the
Concorde are zooming by all the time, yet they still use these beaches. You have to have respect for these little birds."

With the protection of the National Parks Service, New York City's piping plovers have managed to raise 118 chicks at the Breezy Point Tip since 1988—not a major success story and not without some bitterly disappointing years, but enough to help keep the species going.

**WARBLER MANIA**

Every weekend in April and May, thousands of bird-watchers crowd into the wooded areas of Central Park in search of bright red, yellow, and blue songbirds called warblers. Hundreds of these tiny birds stop in New York City on their way from Mexico, the Caribbean, and South and Central America. Surrounded by admirers, they rest a few days, eat a few insects, and soon are on their way again to nesting sites farther north. For them, the city is just one of many welcome pitstops on what could be a 1,000-mile-long migration. For people, however, the warblers' arrival in New York City is as enthusiastically anticipated as the return of the swallows to Capistrano. Often, the warbler-watchers outnumber the birds.

Forty-one species of warblers, many of which are hard to tell apart from a distance, have been spotted in Central Park alone. Frequently, the birds are not actually seen but are identified by their songs, which sound more buzzy than tuneful. For warbler connoisseurs who master these distinctions, expeditions to visit these brightly colored birds have become both a rite of spring and an obsession.

Each week brings a new wave of warbler species. Central Park's bird-watchers say you can even set your calendar by the birds. In mid- to late April, yellow-rumped warblers coming from the American South stop over by the hundreds. In early May, American redstarts—black warblers with vivid orange patches on their wings, tails, and bodies—
TIPS FOR FLEDGLINGS

With more than 320 resident and regularly migrating species, New York City offers some of the best bird-watching in the country, and city bird-watchers have an advantage over their rural counterparts: Because many of our birds have grown used to having people around, avid aficionados have a chance to see their quarry up close and personal. All you need are a sharp pair of eyes, a cheap pair of binoculars, and a field guide to North American birds.

David Burg, former president of the New York City Audubon Society, suggests that beginning birders head for the Ramble in Central Park to hone their skills. “In the Ramble, many birds act almost as if they were tame,” he says. “This is a great place to get to know woodland birds like warblers. They don’t maintain their distance or fly away, because they haven’t necessarily learned to see people as a threat.” For waterbirds, Burg recommends the Jamaica Bay Wildlife Refuge in Queens. Surrounded by green marshland, it’s the best spot to see a wide variety of ducks, long-legged waders, and sandpipers—they sometimes fly right overhead on the refuge’s trails.

More advanced birders may want to try farther-flung sites within the city to observe particular species and their habitats. For example, at the Breezy Point Tip, a federally protected beach in the Rockaways, you can visit a springtime nesting colony of common terns, rare white seabirds with orange bills. Or try Floyd Bennett Field, a decommissioned airport in Brooklyn that is now part of the Gateway National Recreation Area, to observe grassland birds such as kestrels (sparrow hawks) and savannah sparrows.

The New York City Audubon Society (212-691-7483) is the mecca for local birders. With about 10,000 members, it is the biggest Audubon chapter in the country. Its members lead birding expeditions throughout the five boroughs, going to spots like Inwood Hill Park to look for migrating songbirds and to Crooke’s Point on the Staten Island shore to spy on rare seabirds. Classes for beginning birders are held at the society’s headquarters in Manhattan, where novices are taught, among other things, to tell rose-breasted grosbeaks from common grackles.

fly in from Central and South America. In late May, black-throated blue warblers arrive from as far south as Bolivia.

One reason that warblers are so special is that they are increasingly rare. Over the past 20 years, warblers and other songbirds have been slowly vanishing. According to data from the North American Breeding Bird Census, three-fourths of all Eastern songbird species are seen less and less with each passing year. As forests are cut down in their wintering grounds south of the border and in their nesting grounds here, migrating songbirds have fewer and fewer places that they can call home. They have also suffered along their migration routes, where they have fewer and fewer places to stop and feed, thus making the continued preservation of sites like Central Park surprisingly critical.
LOCAL HEROES—SQUIRRELS

In the *Audubon Society Field Guide to North American Mammals*, the habitat of the gray squirrel is described as "hardwood or mixed forests, with nut trees." Obviously, New York City's squirrels have not consulted this publication. In fact, these bushy-tailed rodents are such a common sight that most city residents take them completely for granted. In Manhattan, the squirrel population density is thickest in pocket parks, such as Union Square, Madison Square, Tompkins Square, and Washington Square, where gray squirrels can be seen perched atop benches, prancing across lawns, and spread-eagle on the sides of wire-mesh trash cans.

Manhattan's plump, glossy-coated squirrels (*Sciurus carolinensis*)—which come in gray- and, less commonly, black-furred varieties—are descendants of the wild squirrels that lived in this region's forests before New York City was founded. Today, however, there are far more squirrels than when European settlers first arrived. In a natural forest habitat, each squirrel has a territory of about 1 acre, which it fiercely defends against interlopers (some squirrel-on-squirrel attacks result in death or dismemberment). Yet in Manhattan's pocket parks, more than 20 squirrels have been known to live on a single acre in apparent harmony.

The source of squirrels' complacency toward high-density living is easy access to food. City-slicker squirrels successfully mine the city's trees for acorns and seeds, and they mine the city's residents, too. These cute operators have so endeared themselves to people that some squirrel lovers befriend individual animals and return to the same spot every day to give them their favorite snacks. Thus, while squirrels in nearby forests spend their lives dodging predators and foraging for a limited food supply, New York City's squirrels are dining on unshelled peanuts, pecans, and filberts purchased from gourmet markets like Balduccì's.

Despite their reliance on handouts, city squirrels maintain certain wild affinities. Most significantly, they need to be around trees—something that the city's parks provide them in abundance. Female squirrels raise their families, usually three or four babies, in nests constructed out of leaves in the crooks of tree limbs, and both female and male squirrels use trees for resting. Looking at
a tree from the third story of a building often affords a view of normally frenetic squirrels loafing high in the branches. Squirrels also forage in trees and can be seen scampering up and down pine oaks for acorns and Norway maples for seeds. Thrifty souls, squirrels bury any unshelled nuts that they don’t immediately eat and dig them up again in the winter.

Aside from their dependence on trees and a certain sense of frugality, city squirrels behave differently than their wild counterparts. In the country, squirrels are active only at dusk and dawn—the times when they’re safest from predators like owls and hawks. New York City squirrels, however, have adopted a slightly different schedule and are most active during daylight hours when they are most likely to get freebies from squirrel lovers.

In rural areas where they are hunted, gray squirrels are known to be extremely wary of people. In a 1974 issue of the New Yorker, however, Eugene Kinkead proposed that the city’s squirrels could not be accused of similar craftiness. Kinkead reported that in 1901, after Central Park’s squirrel population had reached a peak of over 1,000, park officials decided that the population needed to be culled. Within a week, hired guns had blasted about 300 squirrels—presumably from close range. Since then the unwary squirrels have bounced back. Central Park’s squirrel population has not only rebounded but far surpassed its original numbers. In the early 1980s, more than 13,800 squirrels were estimated to live within the park’s 843 acres.
RAT NATION

They go by many names—sewer rat, brown rat, water rat, wharf rat, and most recently, "Super Rat." But they all refer to the same species, the Norway rat (*Rattus norvegicus*), a gray-furred, beady-eyed rodent that is the object of fear and hatred wherever it dwells.

Nothing freezes the blood of a New Yorker quite as much as meeting a rat scuttling out of a dumpster or maneuvering through the underbrush on the edge of a park. But such encounters—though memorable—only hint at the enormity of the rat's true presence here. Estimates of the city's rat population traditionally allow one rat for every person. That's 7.3 million rats. However, many experts believe that their numbers actually far exceed the human population.

Norway rats thrive in every borough. They live in old, abandoned, and neglected apartment buildings in East Harlem and the East Village; they occupy vacant lots in the Bronx and old wharves on Staten Island; and they prosper in the basements of high-rise buildings on Park Avenue. But it is how they live that makes the "Rat Nation" largely invisible to us. Grouped in colonies of anywhere from 20 to 150 members, Norway rats live in areas normally inaccessible to humans. They excavate elaborate underground homes, a foot below the surface, in abandoned lots and subway tunnels, and they travel inside the walls of buildings. Their favorite haunt, however, is the city's sewer system, where the amenities include running water, easy access to the street, and all the privacy they need. Biologists estimate that there may be 500 rats for every mile of New York City sewer line.

Rats enter the human world usually when they are scavenging for food. During their 1- to 2-year life span, most rats never stray more than 100 feet from their home turf, and a typical food foray can be just a matter of yards—from a midtown Manhattan sewer grate to a food-filled garbage bag outside a two-star restaurant. Rats also raid storage sites in basements and warehouses, accessing these areas by squeezing their supple bodies through holes as small as nickels. Where there are no holes, the rats create their own, gnawing through walls with their sharp teeth, which can grow as much as 5 inches a year.

Rats live off of any food in their reach; indeed, part of their success comes from the fact that they are not finicky eaters. Like humans, rats are omnivorous,
eating from all four food groups—meat, vegetable, cereal, and dairy. They also don't mind sloppy seconds. In fact, they eat anything from pet food left outside for stray cats to last night's Chinese takeout. On rare occasions, they have even crawled into children's beds to snatch cookies.

Our loathing of rats has tended to exaggerate their size to the level of urban legend. People traumatized by rat sightings on the street commonly make claims such as, "It was as big as a cat, I tell you!" Despite the heartfelt nature of such reports, all adult rats weigh in at about 1 pound and measure about 12 inches in length—with little variation.

By contrast, stories about the Norway rat's feats of physical prowess are based on fact. With sharp incisors and jaws that can exert more than 20,000 pounds of pressure per square inch, Norway rats can chew through lead pipes, concrete, and even bricks. They can swim half a mile and tread water for 3 days. They can jump 3 feet in the air and climb straight up brick walls. They can use their naked, scaly tails—which are half again as long as their bodies—as balancing rods while navigating exposed plumbing and pipes.

Even more impressive is their rate of reproduction. An adult female Norway rat can bear five litters every year, each containing 7 to 11 pups. Thus, in a single lifetime, one rat can produce 150 progeny.

The name "Norway rat" is a misnomer, for *Rattus norvegicus* comes originally from central Asia, where it lived in the wild on the cold, dry steppes, adapting to its harsh environment by digging extensive underground burrows. This rat was not recorded in Europe until the mid-1700s, and it was not documented in Norway until 1762. How these rats initially expanded their range is still debated. They may have traveled to Europe in wagons that accompanied migrants fleeing famine-stricken areas, or they may have made the journey on their own. In 1727, huge armies of rats were reported swimming across the Volga River in Russia—headed west. However they made their first move, Norway rats quickly spread throughout the world, traveling in the holds of sailing ships and ultimately colonizing six continents.

Norway rats are said to have first arrived in North America on the boats
of Hessian troops during the American Revolution. And ever since their arrival on these shores, New Yorkers have been trying to eliminate them. At Manhattan’s Bellevue Hospital, arsenic, strychnine, and even terrier dogs were used to kill thousands of rats during the 1850s. In spite of these efforts, a baby who had died on the heavily infested “female ward” was partially devoured by rats in 1860. Later, in 1931, thousands of toxic sandwiches (made with toast dipped in digitalis) were planted in known rat hangouts at the Central Park Zoo—because rats were stealing meat from the zoo’s lions and terrorizing the hippopotamus.

Countless efforts to eradicate the Rat Nation have continued ever since. During the 1960s, when President Lyndon B. Johnson declared a national “War on Poverty,” New York Governor Nelson Rockefeller simultaneously declared a “Total War on Rats.” Millions of dollars were spent spreading anticoagulant poison throughout the worst rat-infested neighborhoods in the city. But after a couple of years, the enemy came back with a secret weapon, the “Super Rat.” The Super Rat was immune to the anticoagulant poison and passed this immunity on to its offspring. Exterminators were then forced to change their strategy—switching their poisons every month to prevent the creation of more poison-resistant rats. To make things worse, rats have acquired another trait. Through their long association with people, rats have—as a survival mechanism—become “neophobic”; that is, they fear anything new, and even turn up their noses at fresh cheese and other goodies if they appear in unfamiliar spots. As a result, rats are wary of eating anything that is put out as bait. Today, exterminators actually have to coddle their prey, sometimes plying the rats with non-poisoned delicacies for days before sneaking in the deadly stuff.

These days, there is no more talk of a full-scale war against the rat world. City officials limit their battles to small, winnable skirmishes. Recent engagements have included the tunnels of Grand Central Station and the streets around Brooklyn’s Borough Hall. Thousands of rats perished at both locations, but these victories can be seen as only a momentary blip. If this is war, the rats are winning.

_Rattus norvegicus_
COYOTES: “NEW YORK CITY OR BUST”

In the winter of 1995, the discovery of coyotes running wild in New York City caused a media sensation. First, two coyotes were found dead—victims of hit-and-run accidents—in the Bronx. Then, a few days later, a sickly coyote, nicknamed Wiley, was reported in Woodlawn Cemetery, where a kindly couple, who thought it was a weird-looking stray dog, had been feeding it leftover spaghetti and meatballs. Following Wiley’s discovery, the local paparazzi started staging stakeouts to photograph the animal, and when the Parks Department finally held a press conference about the “coyote situation,” so many TV camera crews descended on the cemetery that Wiley decided to go permanently incognito.

A mammologist with the Bronx Zoo, Ed Spevak, also known as Dr. Coyote because of a stint he served in Texas, was the first to identify the bodies of the runover coyotes. Though coyotes (Canis latrans)—which, like the wolf, are a truly wild species of canine—are more commonly seen in the West, Spevak wasn’t at all surprised to see them turning up in New York City. Ever since the early twentieth century, these bushy-tailed and pointy-nosed canines have been extending their home base, moving farther and farther east with every opportunity. “It was only a matter of time,” says Spevak. “We knew coyotes were in Westchester, and there’s nothing separating Westchester from the Bronx.”

Coyotes are incredibly adaptable animals, making them ideal candidates for city life. They’re the fastest canines in the wild, able to reach speeds of 25 miles per hour at a trot and 40 miles per hour in short bursts. They’re not finicky, eating everything from rats and squirrels to grass and table scraps. And though shy of people, they make the most of their situation: In Los Angeles, they’re vilified for occa-
sionally making a snack out of house cats, and in New Jersey they have recently begun occupying small wooded lots, right next to suburban homes.

The road to New York City, however, has been a long one. Before 1900, coyotes lived only west of the Mississippi River. Then, they followed the trail of sheep farmers and openings blazed by the elimination of their enemy, the wolf. First, coyotes loped into the Midwest, then into Ontario, and finally into the Adirondacks in the 1920s. Since then, they have infiltrated almost all of New York State, where—despite early attempts to eradicate them by placing bounties on their heads—they are currently greeted by wildlife biologists as a welcome mammal, now that all the state's native wolves are gone. Today, coyotes are walking right into New York City. All they have to do is take the Old Croton Aqueduct Trail, which leads straight from Westchester County into Van Cortlandt Park.

Since the original three coyotes arrived, several others have been spotted in the Bronx—unfortunately, usually dead on the highway. These sightings have prompted proposals to put up "Coyote X-ing" signs on the Major Deegan Expressway.

REPTILES AND AMPHIBIANS

In 1929, the American Museum of Natural History conducted a census of reptiles and amphibians in New York City to determine how many kinds of snakes, turtles, frogs, toads, and salamanders were living within the five boroughs. The census found that some animals that had once lived here, such as the poisonous timber rattlesnake, had been driven out. However, many less-conspicuous reptiles and amphibians remained, and in total 44 species were counted.

During the 1990s, the New York City Parks Department conducted its own reptile and amphibian census to find out which species the city had lost during the intervening 6 decades. Biologists and volunteers searched the city's parks, working in the middle of the night, when these animals are most active. Using headlamps on their nocturnal expeditions, searchers looked and listened (many frogs and toads were identified by their mating calls). Altogether, they rooted out 32 species—12 fewer than their predecessors had in 1929. Among the 12 species that were missing were the wood turtle and the northern
MARINE MAMMALS

Most marine mammals, such as whales, dolphins, and seals, are confined to the city's aquariums and zoos. However, wild sea creatures sometimes do come calling in New York City's waterways:

- Perhaps the most renowned visit was paid by "Chessie," a 1,200-pound, rare Florida manatee. First sighted far from home in Chesapeake Bay, Chessie—who looks like a walrus minus the tusks but is more closely related to elephants—astounded wildlife biologists by continuing his journey northward, swimming by Manhattan through the East River and past Riker's Island on August 7, 1995. One of only 1,800 manatees left in the United States, Chessie ultimately traveled 2,000 miles round-trip from his home in Florida's Banana River to Point Judith, Rhode Island. On his return home, he passed through New York City again, where he was spotted in Staten Island's Kill Van Kull.

- Less carefree was the journey of Whilhemina, the pilot whale that contracted pneumonia and was spotted swimming in the waters off Orchard Beach in the Bronx. Rescued by volunteers from the Okeanos Ocean Research Foundation, the 1,300-pound, 12-foot-long whale was taken to Coney Island's Aquarium for Wildlife Conservation, where for 8 months she was nursed back to health. To be released back into the Atlantic on April 9, 1994, Whilhemina had to be lifted from her tank at the aquarium by crane, driven in a flatbed truck filled with ice to Canarsie, and taken by Coast Guard cutter to ocean waters 60 miles offshore. A few days after being set free, Whilhemina was spotted by a fishing boat, swimming off the New Jersey shore.

- The one marine mammal that can be called a frequent guest of New York City is the harbor seal. Though they usually prefer to lounge on Long Island's secluded beaches and offshore islands, harbor seals—which reach 5 feet in length and weigh up to 300 pounds—are seen more and more along the city's coastline. In winter they sometimes "haul out," or flop themselves up onto dry docks, in Brooklyn and Queens. They have also been seen sunning themselves on rocks in the East River underneath the Williamsburg Bridge. In the past decade, the number of harbor seals spending the winter on Long Island's watery perimeter has increased tenfold—from 400 to 4,000—and marine biologists believe that the local tribe is thriving because of laws that give seals and other marine mammals federal protection.
cricket frog. Among the lucky 32 survivors were red-spotted newts, garter snakes, and painted turtles. The researchers also found that some boroughs had fared worse than others. In Brooklyn and Manhattan, only tough "superspecies" like the snapping turtle and the bullfrog persisted in large numbers. Queens, the Bronx, and Staten Island, on the other hand, had pockets of habitat where an array of rarer species, like the spotted salamander and the northern water snake, could still make their homes.

Reptiles and amphibians have suffered losses in the city for a variety of reasons. Many of the areas where they once lived—ponds, streams, and swamps—simply were filled in, and unlike birds, these animals couldn't flee when their homes were being destroyed. The building of highways also fragmented areas of suitable habitat, and turtles, frogs, and salamanders often wound up getting hit by cars as they traveled back and forth between land and water during their life cycles.

One reptilian species for which the situation has improved, however, is the diamondback terrapin (Malaclemys terrapin). An aquatic turtle that lives in local estuaries and salt marshes, the diamondback terrapin was once almost eaten out of existence. A popular delicacy all along the Atlantic seaboard, terrapin flesh was the main ingredient in turtle soup, a dish that was all the rage at New York dinner parties during the latter half of the nineteenth century. By the 1940s, the terrapin's numbers had declined precipitously. When the terrapin soup fad faded away, however, diamondbacks began to return. Now these salt marsh–loving terrapins are once again thriving in the brackish waters around New York City.

Attempts are currently being made to reintroduce other reptiles into areas where their habitats have been restored. On hundreds of acres of protected land within the Gateway National Recreation Area in Brooklyn and Queens, black racer snakes, hognose snakes, painted turtles, and eastern box turtles are all being turned loose—and many of these creatures are doing well in their new homes. The eastern box turtle, a species of land turtle that was reintroduced at Floyd Bennett Field in Brooklyn, has now begun breeding. The Fowler's toad, a 5-inch-long warty toad that was reintroduced onto federal land on the Breezy Point Tip, has also been multiplying. In the spring of 1993, a Rockaways home-
THE SNAPPING TURTLE: URBAN SURVIVOR

Although the story of alligators living in New York City's sewers is pure urban legend, another fierce reptile, the snapping turtle (Chelydra serpentina), does inhabit the five boroughs. Able to grow to a weight of 40 pounds, the snapping turtle has a deserved reputation for being pugnacious, and it is the city's most successful native reptile. A member of the Testudines, an order of animals that has persisted through 200 million years of Earth's history, the snapping turtle has—perhaps even more impressively—survived the last 4 centuries in New York City.

Nearly every body of water, no matter how small, contains at least one snapping turtle. Dubbed "ecologically tolerant" by biologist, these turtles live both in freshwater ponds, like the lake in Prospect Park, and in the salty waters of estuaries, like Jamaica Bay. Snapping turtles have also been found living in some of the city's most contaminated waterways, including the notorious Newtown Creek in Queens and ponds within the Fresh Kills Landfill on Staten Island.

Aside from this tolerance for brackish, dirty water and a limited supply of oxygen, snapping turtles derive their success from their ability to live unobtrusively—a tough act for a creature whose shell is 2 feet across and whose serrated tail has a dinosaurlike appearance. Snapping turtles manage to keep a low profile by spending most of their time submerged. Although they may snatch an occasional duckling or gosling, snapping turtles more commonly eat dead fish, expired frogs, aquatic vegetation, and even sandwiches dropped into the water. This nonpicky attitude toward food has earned them the nickname "pond janitors."

Like many other animals that thrive in the city, snapping turtles are prodigious breeders. Female snapping turtles lay an unusually large number of eggs, as many as 70 per clutch, a strategy that increases their hatchlings' chances of survival. However, it is while laying eggs in late spring that females are also most vulnerable. To lay their eggs, snapping turtles must leave the safety of the pond and risk being hit by cars while they look for an appropriately sandy egg-laying spot. It is during these perilous land expeditions that these turtles are most likely to show their nasty streaks. To defend themselves, snapping turtles are more than happy to earn their names, and their bite can separate a person from a finger.

owner thought he was being visited by one of the seven plagues when thousands of baby toads besieged his backyard. The story received great play on local newscasts, but it turned out the Fowler's toads were just having a good year.
COCKROACHES: THE GUESTS THAT WOULDN'T LEAVE

Cockroaches (pronounced "cock-a-roach" in New York-ese) are the city's most common animals. Exterminators, who are on intimate terms with cockroaches, say that if there is one rat for every New Yorker, there are at least 100 roaches for every rat, putting the city's cockroach population well into the billions.

Despite cockroaches' strong attachment to city life, they are not native New Yorkers or even originally from North America. Among the New World's earliest settlers, cockroaches are known to have immigrated along with the colonists on wooden ships, perhaps as early as the Mayflower. Although their origins have been traced to tropical Africa, New York City's most common roach species have never been found anywhere in the wild. Apparently, they have adapted well to their new lifestyles, preferring the cozy comforts of drainpipes and crumb-strewn kitchens to the unpredictability of scavenging in the great outdoors.

Cockroaches need warm, humid environments to survive, and that makes them feel right at home in New York City, where heating and plumbing systems create a kind of artificial tropical habitat. If the city's buildings can be thought of as a vast zoo designed for this exotic animal, then the apartment tenants and homeowners are the zookeepers, providing daily feedings of food crumbs, book bindings, shed human skin, and even hair follicles as fodder. Entomologists say that if people suddenly abandoned the Big Apple and turned off the heat as they left, cockroaches would probably die off. However, these adaptable little pests are such tough survivors that no one is willing to bet that they wouldn't make it here on their own.

Within the five boroughs, four species of cockroaches live in close association with people. German cockroaches (*Blatella germanica*) are the small, light brown roaches that vanish in a flash after the kitchen lights are turned on. Growing to just over half an inch long, they stake out damp, warm places, such as under the kitchen sink, and can disappear into a crack only a sixteenth of an inch wide. American cockroaches (*Periplaneta americana*), or "water bugs," are much larger, growing up to 3 inches long. These slow-moving, red-tinted giants with long, waving antennae hang out in humid boiler rooms and occasionally drop by bathrooms and kitchens on steamy summer nights. One species
that has become more numerous in the last
30 years is the brown-banded cockroach
(Supella longipalpa), which often seeks
refuge in computer terminals and clock
radios. Winding up the public enemy list
are the 1-inch-long, all-black Oriental
cockroaches (Blatta orientalis), which live
outdoors in dumps, where they are kept
cozy by the heat generated by decomposing
garbage.

Of these four species, German cock-
roaches are the most common, accounting
for about 95 percent of the city’s roaches.
These are the cockroaches that New York-
ers spend so much time battling—with
boric acid, roach motels, cans of insecticide,
and plastic roach baits. Over the years,
cockroaches have proved formidable oppo-
nents. They are light-phobic (they come
out only in the dark) and touch-phobic (they
feel—and are—safest when they are being
touched on all sides, such as in a tiny crack
where they can’t be reached by a boot heel
or rolled-up newspaper). They are also
maddeningly quick. Although they have
wings and can fly, they usually don’t bother,
since they can run 50 body lengths per sec-
ond. (If humans could move that fast, they
would reach speeds of 200 miles per hour.)

One reason that New Yorkers try to
cleanse their homes of cockroaches is that
they think these insects are creepy and
gross, but medical researchers have discov-
ered an even better reason. A 1996 study
sponsored by the National Institute of
Allergy and Infectious Diseases found that the German cockroach was the number-one cause of asthma among children in America's inner cities. Although roaches carry no diseases per se, the proteins in their tiny droppings, shed skins, and carcasses can cause a powerful allergic reaction—especially after prolonged exposure. In heavily infested homes, children inhale this roach dust all the time and frequently develop chronic asthma, which is characterized by wheezing and labored breathing. Even research scientists who work with cockroaches in laboratories sometimes complain about such symptoms.

Until recently, cockroaches have proved impervious to almost every pesticide thrown at them. Because they live long (up to 3 years) and are amazing breeders (a single female cockroach produces as many as 35 offspring every 3 weeks), they can easily evolve into pesticide-resistant strains. But the arrival of Combat, a designer pesticide that first hit the shelves in the 1980s, has knocked cockroaches for a loop. Early advertisements for Combat showed distressed New Yorkers sharing horror stories about roaches walking across their toothbrushes. But a single 12-pack of Combat Superbait used in combination with Combat roach-killing gel can reputedly zap as many as 80,000 roaches. By 1995, New Yorkers were buying $9.8 million in Combat products a year (second only to Los Angeles), with no sign—yet—that the cockroaches were achieving any immunity to the poison.

Nonetheless, such products target only small-scale, self-contained infestations. One reason that cockroaches have always been tough to exterminate is that they move around a lot—and not just from apartment to apartment. German cockroaches have been recorded in sailing ships, airplanes, and buses. In fact, in the summer of 1987, both the driver and passengers on a New York City bus abandoned ship, fleeing in disgust when cockroaches started streaming out of the seats.

Despite efforts to eliminate them, cockroaches in all likelihood are here to stay. In terms of evolutionary history, they are ancient and highly perfected beings. Not only did cockroaches outlast the dinosaurs, they emerged eons before the first dinosaur. Fossils of roachlike creatures have been found that date back at least 330 million years, to the Carboniferous era, when Earth's climate was particularly tropical. In fact, cockroaches are so common in the fossil record from that era that scientists have
nicknamed the Carboniferous the “Era of the Cockroach.” With so many cockroaches around today, however, we may have to reclaim this title for the twentieth century.

**FISH AND OTHER UNDERWATER CREATURES**

New York City is a watery town—surrounded by the Atlantic Ocean, the Hudson River, several bays, tidal creeks, and the Long Island Sound. As one nineteenth-century issue of *Harper's Magazine* put it, “Venice itself is hardly more completely a city of the waters.” Residing in these submarine zip codes are thousands of varieties of fish, mollusks, and crustaceans—creatures that can spend their entire lives under water.

While people congregate in offices and apartment buildings, the city’s underwater denizens have their own ready-made hangouts. Bluefish loiter next to underwater rock outcrops in New York Harbor, lying in wait for smaller fish that are carried by the tides. Communities of hard-shell clams carpet parts of Jamaica Bay, often obscuring areas of the bay’s sandy bottom. Shipwrecks just offshore are so thick with blackfish that anglers and divers call them fish hotels.

Whereas people are trapped on bridges and in tunnels as they move from borough to borough, the city’s submarine residents have more freedom. Striped bass commonly travel from the Long Island Sound to the Hudson River via the East River. American eels, one of the most common species in the city’s waters, swim 1,000 miles to the Sargasso Sea—without passport or plane ticket—to lay their eggs. When the eggs hatch, the young eels make the return trip, ending up in places like the Bronx River and Spuyten Duyvil Creek north of Manhattan.

For further evidence of New York City’s link to this underwater world and its inhabitants, take the Circle Line cruise around Manhattan. Anglers can be seen poised with bait and rods all along the city’s shore.

**HISTORIC SHELLFISHERIES**

New Yorkers have always had a taste for seafood. The Native Americans, who were living in the five boroughs when the Dutch settlers first arrived, lived close to the shoreline. To them, Long Island was *Paumanok*, meaning “island of
shells," and they were known to dine abundantly on shellfish, eating hard-shell clams (called quahogs in the Munsee language), oysters, scallops, and blue mussels.

When the Dutch showed up in 1626, they quickly joined the feast. They called what is now Ellis Island Oyster Island, and Liberty Island was Great Oyster Island. As New York grew, oysters and hard-shell clams became one of the city's biggest exports, and different New York neighborhoods became world-renowned for their delicious frutti de mare. Throughout the nineteenth century, Little Neck Bay on the north shore of Queens was plied by clam boats for the plump quahogs that lived on its shallow, muddy bottom. Staten Island's Prince's Bay became famous for its fat, succulent oysters; in the best years, 500,000 bushels were sent to market.

Although New York shellfish was shipped all over the country and even to London, most of it was devoured right here in the storefront oyster saloons that riddled downtown Manhattan. At these bars, oyster fanciers gobbled down millions of dollars a year of the locally harvested bivalves, consuming them raw with lemon and mustard and washing them down with locally brewed beer. Ultimately, however, the feast was doomed to end.

The city's shellfishing industry slammed to a halt when several cases of typhoid fever were traced to oysters taken from New York Harbor in 1916. The

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**WILD FACT**

**SHELLING OUT**

Found on the city's sandy beaches, hard-shell clams (*Mercenaria mercenaria*) are one of New York's most common shellfish, and they are easily identified by their creamy white shell linings, usually splotched with purple. In precolonial days, the Native Americans on Manhattan Island fashioned both the white and purple parts into beads—*wampum*—later called simply wampum—that they used like money to trade with the Iroquois in upstate. When the Dutch and English settlers arrived in the early 1600s, they quickly adopted wampum as a medium of exchange. Three purple beads were worth six white beads, and both amounts were worth an English penny.

Purple wampum was made by breaking off the purple parts of clam shells and polishing them into one-third-inch-long cylindrical beads. A hole was bored through the shell parts with a sharp stone and the beads were strung on animal sinews. But you couldn't just go down to the seashore and mint your own wampum; quality of workmanship was integral to its value.

Ultimately, wampum became so crucial to the commerce of the colony that the Dutch had to pass anticyr-counterfeiting laws. In 1647, a New Amsterdam ordinance required anyone trying to pass bad wampum as the real thing had to pay a fine of 10 guilders to the town's poor.
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relentless use of the harbor as an open sewer and garbage dump had taken its toll, and the oyster beds had to be condemned by the city's Board of Health. An important chapter in New York's culinary and natural history had come to a close.

Today, clams still thrive beneath the surf on almost every beach in New York City. On Staten Island's southern shore, the beaches are still littered with shells from oysters living in the old beds in Prince's Bay. Despite these signs of life, most of the city's shellfisheries remain off-limits. Because mollusks eat by filtering food from seawater—as much as a quart an hour—their fleshy bodies, more than any other type of seafood, become the repositories for bacteria and toxic chemicals in the water surrounding them. Nonetheless, the city's waters have become cleaner in recent years, and—in a small way—the shellfishing industry has returned. Today, clam boats take as many as 11 million hard-shell clams from Staten Island's Raritan Bay each year and transport them to clam beds in Eastern Long Island. After filtering clean water for a month, these expatriate clams are considered safe to sell to the public.

In fact, clams are becoming so popular these days that officers from the city's Department of Environmental Protection have to watch out for clam rustlers. In 1996, three men in scuba gear were arrested for allegedly poaching 12 bushels of clams from Jamaica Bay. Though the bay's clams are not considered fit for human consumption, such illicit clams can be sold for large amounts of cash on the black market.

**Urban Angling**

Many anglers have discovered the great secret of city fishing, and surveys have shown that more than 80,000 New Yorkers fish from the city's shores each year.
In summer and fall, surf casters line the seawall in the Rockaways in pursuit of bluefish and striped bass. Private motorboats cruise Jamaica Bay in October and November, their captains obsessively searching for winter flounder. And almost every day, "party boats" leave from Brooklyn's Sheephead Bay, taking as many as 30 deep-sea fishermen out to fish-filled wrecks beyond the Verrazano Narrows. Anglers have even been spotted parked next to the East River, fishing from the backseats of their cars.

The best times of year for fishing are late summer and fall, when an enormous number of species are in town—including bluefish, weakfish, porgies, fluke, and even albacore. Striped bass, considered by many anglers to be the king of northeastern sport fish, are in city waters in amazingly large numbers. Marine biologists estimate that 1 to 2 million stripers enter the harbor every year, many of them sizable. Twenty-pound stripers are common, and the unofficial record for a striped bass caught in New York City was a 50-inch-long, 43-pound giant (estimated to be 20 years old) that was landed in Staten Island's Raritan Bay in 1991.

Although the abundance of fish is not a problem, getting to the fish can be. The majority of New York City's 578 miles of coastline are off-limits to the public, owned by commercial concerns or the Port Authority. Every waterfront spot that is legal (or not aggressively defended against trespassing) is quickly rooted out by savvy urban anglers. People fish high atop bridge roadways, their bait dangling 50 feet down. Anglers risk their necks on dilapidated piers and rock jetties slippery with algae. For urban anglers, the appeal of casting into city waters for a wild fish, with one of the world's greatest views as a backdrop, is addictive. As one longtime Hudson River fisherman, Christopher Letts, an educator for the Hudson River Foundation, put it, "When you're out in the middle of the river with a view of the city skyline, and hear the traffic and sirens from Manhattan, it's magic pulling a silvery fish from the dark waters of the river. It's wilderness in the middle of the city."

Beginners who want to take on a wild fish can get into the act simply by purchasing a rod and reel preloaded with fishing line. Sinkers and bait can be found at tackle stores in fishing-friendly places ranging from City Island in the Bronx to Cross Bay Boulevard in Queens. The rest involves finding the right fishing hole, which can be anywhere from the easily accessible Battery Park City Esplanade along the Hudson River to Robbins Reef (reachable by boat only) in the middle of the harbor, near the Statue of Liberty. Those without their own
THE URBAN ANGLER’S LEXICON

B U L E S (a.k.a. bluefish, *Pomatomus saltatrix*). Bluefish are the city’s most popular game fish. Weighing up to 30 pounds and equipped with sharp, conspicuous teeth, bluefish voraciously attack schools of smaller fish, often slaughtering more than they actually eat. Although bluefish are feared by swimmers, their arrival in New York Harbor in summer is heralded by anglers who admire their fighting spirit. Hooked blues are known to put up a battle and often break fishing lines. Anglers have to be especially careful when removing fishhooks from blues, because these carnivores have been known to bite people’s fingers off. Usually served grilled or broiled, bluefish have a strong, gamy taste.

B U N K E R. “Bunker” is local lingo for the Atlantic menhaden (*Brevoortia tyrannus*), a silvery herring that is among the most common fish found in New York City waters. Every spring, 12- to 18-inch-long bunker run into the harbor in enormous schools that, as a unit, may weigh several tons. Bunker are often accompanied—and eaten—by schools of hungry bluefish and striped bass.

B U N K E R C H U N K S. Bunker are not generally considered good eating, but carnivorous fish think differently. Bits of bunker meat, called bunker chunks, are often used as bait by anglers hoping to catch stripers and blues.

F L U K E (a.k.a. flarties, summer flounder, *Paralichthys dentatus*). Fluke are flatfish that hide on the sandy bottoms of the city’s bays, rivers, and inlets from May to October. Camouflaged in the sand, with just their eyes peering above the surface, fluke aggressively ambush smaller fish as they pass by. Delicious, with firm, sweet white flesh, fluke can be caught by gently skipping baited fishing line along the bottom of the city’s waterways.

S N A P P E R S. Snappers are baby bluefish, usually less than 7 to 10 inches long, that show up during late summer in shallow bays and tidal creeks around New York City. Easily caught from piers and bridges, these small fry are among the best targets for young and first-time anglers.

S T R I P E R S (a.k.a. striped bass, *Morone saxatilis*). Streamlined silver fish with purplish brown racing stripes, stripers reach weights of 50 pounds and are one of New York’s most coveted game fish. Known to live as long as 50 years, stripers have a certain mystique and are not easily caught. Striped-bass anglers will fish at any time of day, in any kind of weather, to match wits with them. Because of overfishing in past decades, there are strict limits on the number and size of stripers that can be kept. Most anglers simply catch them for the pleasure of the hunt, and then release them.
equipment or the desire to seek out their own secret spots can go fishing in boats that depart twice each day from Emmons Avenue in Sheepshead Bay. And fly-casters unable to escape to Beaverkill for the weekend have been known to take their hip waders into the Central Park Pond beneath the Plaza Hotel to fish for bass.

All this fishing raises the inevitable question: Can you eat what you catch? The waters around New York City have become much cleaner in recent years, and most city anglers admit that they do eat the fish. However, depending on the type of fish and where it is caught, this may not be such a good idea. In general, the New York State Department of Health advises anglers to eat no more than one meal a week of fish caught in city waters, and women of childbearing age and children under the age of 15 are advised not to eat any fish taken from local waters. That said, these restrictions are aimed primarily at fish caught in the Hudson, East, and Harlem rivers, and the harbor. Fish caught in the Atlantic Ocean off the Rockaways, in Jamaica Bay, in Long Island Sound, and from party boats are considered safe to eat—as long as they are washed and cleaned in fresh water. (To be doubly safe, anglers are also advised to remove the skin and dark, fatty parts of the meat before cooking, and to restrict eating striped bass and bluefish to once a month.) For the latest health updates, call the state Health Department’s Environmental Health Information Line at 1-800-458-1158.

In addition to health regulations, the number and size of fish that anglers can keep are limited by the New York State Department of Environmental Conservation. In particular, strict regulations protect striped bass, which are recovering from overfishing. Currently, anglers may keep only one striped bass per day, and it must be at least 18 inches long. For detailed regulations, call the Recreational Fishing Information Line at 1-800-REGS-DEC.

Because most of New York City’s waters are marine—meaning that they are affected by the tides—anglers do not need a license to fish here. (According to federal law, oceans and estuaries are open to anyone.) However, if you are fishing within Gateway National Recreation Area, parking permits are often required for anglers’ lots (call 718-318-4300 for more information). For fishing in fresh water—such as the lakes in Central Park and Prospect Park, where all fishing is on a “catch and release” basis—a state fishing license (obtainable at many sporting-goods stores) is required if you’re older than 16.