Invasive species will save us: The new way we must think about the environment now

Nature no longer congregates where we expect to find it — so conservationists must radically rethink priorities

Fred Pearce 2015-04-11T19:30:00Z • 2015-04-11T19:30:00Z
Excerpted from “The New Wild: Why Invasive Species Will Be Nature’s Salvation”

Around the world, nature is moving to the cities. “Ecological novelty pervades the urban environment,” says Michael Perring of the University of Western Australia. Gardens and cemeteries, abandoned industrial areas, transport corridors, and even suburban trash cans are all grist to nature’s mill. Sometimes cities provide specialist habitat. Buildings and bridges in cities from Budapest and Florence to Brussels and New York provide substitute cliff roosting sites for birds of prey such as peregrine falcons (Falco peregrinus). For a decade now, I have enjoyed watching the fastest birds of prey in Europe swooping on city pigeons from their nests in the turrets at Chichester Cathedral on the southern coast of England. They seem to like it as well as their “proper” sea-cliff habitat.

More often, cities are irresistible food sources. Australia’s once rare gray-headed flying foxes found so much food in Melbourne that a colony of thirty thousand of the bats has formed there in the past two decades. Raccoons (Procyon lotor) are joining others who forsake the rural life for city scavenging. They are smart enough to negotiate any American urban obstacle course in search of a meal. They are “able to squeeze into locked garages, open secured garbage cans, unzip tents, and pry up lids on Tupperware,” wrote one blogger after watching a PBS documentary. Mile for mile, there are five times as many raccoons in American suburbs as in the surrounding countryside.

Oddly, many species find cities safer than the countryside. The coyote (Canis latrans) lived mainly in the southwestern United States until the twentieth century but then headed for the cities. In the absence of hunting, their survival and reproduction rates are higher there. There may now be two thousand coyotes living in the suburbs of Chicago, navigating the city’s highways by night with rarely a mishap. Los Angeles, New York, and Boston also have substantial populations. They will eat rabbits, rats, and even household pets. Ecologists say they are the new top predators on the mean streets and have adapted to their new territories by living more densely, with smaller home patches, and becoming increasingly nocturnal. Once known as the ghosts of the plains, they are now increasingly the ghosts of the cities. Like foxes in the United Kingdom, they are in part fleeing human foes in the countryside. But while British foxes no longer fear showing themselves, coyotes keep to dark places and go out mostly at night, “quietly conquering urban America,” as the Economist put it.
Golden-headed lion tamarins, squirrel-sized monkeys, came out of the disappearing coastal forests of Brazil and found a new home in the suburbs of Rio de Janeiro. That, as James Barilla of the University of South Carolina points out, makes them both endangered and invasive.

Many species that traditionally get on well with humans have become convinced urbanites. The house sparrow (Passer domesticus) seems to have been with us at least since we started farming. Rarely found anywhere remotely wild, it sticks with humans, their landscapes and buildings. The relationship has served the bird well. It is probably the most common bird in the world. Only the chicken comes close. A flock lived for several years inside Heathrow Airport’s old Terminal 2, feeding off crumbs from the snack bars. Sparrows will even join us underground. Yorkshire coal miners at Frickley Colliery found a nest two thousand feet down at the bottom of a shaft in the mid-1970s. The birds stayed for three years.

In recent years, sparrows have been in decline in some of their favorite urban environments, with numbers halving in Britain since the 1970s and similar declines in the United States. Nobody is sure why. Theories range from unleaded gasoline and mobile phones to our urban tidiness. But the fact that, after thousands of years, they seem to be finding us uncongenial is worrying.

There are few such fears for the wild boar (Sus scrofa). It is another old friend that has certainly not lost its love of human habitat. We domesticated it nine thousand years ago. Since then it has ranged the Old World, from Japan to Britain, and Indonesia to the Atlas Mountains of Morocco. It has often been our calling card. The Polynesians took it to Hawaii, the Spanish to Florida, and the English to New England and Australia, where some twenty million now roam free. The United States has some six million of them. The wild boar is not a fussy companion. It will roll around in mud or dig up golf courses. It will sweat it out in Texas or the Borneo rain forest but produce its own steam in the forests of Siberia. It will eat kitchen scraps, mushrooms, snails, turtle eggs, live birds, or rotting carcasses.

Such Homo sapiens– loving species adapt to city dwelling in interesting ways. Gray squirrels get more aggressive and daring. Many birds sing louder and move up the scale, singing higher notes that are less likely to be drowned out by the rumble of city traffic. Pigeons make what appear to be regular planned journeys on the London Underground, saving their wings and energy as they commute to get to food supplies or return to their nests.

In many postindustrial landscapes, including places such as Milwaukee, there are movements to “green” cities by putting nature onto former industrial sites. But too often the emphasis is on creating sanitized, planned green spaces rather than sitting back to see what emerges. Studying the urban wildlife that nature itself throws up has long been a backwater of ecology, but a new generation of researchers is catching up, with resources like the Nature of Cities blog, founded by New York environmental scientist David Maddox. Britain’s University of Bristol has set up an urban pollinators project, tracking down urban wildflower meadows. But many governments are hostile. They see cities as hotbeds of alien invasions, disreputable ecosystems, and species that just shouldn’t be there. The European Union, which has passed new legislation to force governments to act against aliens, reported in 2013 that invasive species “threaten urban environments.” It never quite explained why.
The International Union for the Conservation of Nature (IUCN) published its own study of “invasive alien species” in urban Europe, highlighting the presence of American bullfrogs and Canada geese in Flanders, rabbits in Helsinki, hogweed in Estonia, New Zealand flatworms in Scotland, the raccoon in Berlin, the Hottentot fig in Dublin, and Indian parakeets in London. The charges included spreading disease, damaging monuments, and triggering allergic reactions. They also “take over resources and space from the indigenous species,” said Chantal van Ham, the IUCN’s European program officer. But do they? Or do they expand biodiversity and create opportunities for others?

Urban parks and gardens are increasingly valuable spaces for wildlife of all sorts. In Britain, domestic back gardens cover up to a quarter of most urban areas. A study found 70 percent of their flora is foreign. Does that make them a “threat to urban environments”? American domestic gardens and parks are similarly planted with foreign as well as domestic plants, leading James Gagliardi, a horticulturist with Smithsonian Gardens, a division of the Smithsonian Institution, to describe the incomers as “bullies that crowd out native plants and damage the diverse ecosystems that many living things depend on.” But often this lively mix of natives and aliens are the urban environment. According to the British government agency Natural England, urban gardens, even if dominated by aliens, are vital habitats for many native species, from the common frog and the song thrush to the hedgehog.

Transportation links can be equally important novel ecosystems for wildlife. Railway routes have been valuable ways for alien species and others to move around. Highways, too. Conservationists usually see roads as barriers to migrating wildlife, because they fragment the landscape into small pieces and can trap the unwary. But highway easements can also be migration corridors. In the 1980s, the British government successfully recruited the easement on the highway between London and Oxford to link two protected woodlands. Invertebrates such as butterflies could not make the journey using the surrounding countryside because the fields were full of agricultural chemicals. So wildflowers and blackthorn bushes were seeded beside the roaring traffic. The plan worked, and twenty-five butterfly species, including the rare black hairstreak, duly colonized.

Europe’s most remarkable brownfield site—an area the size of Luxembourg—is the exclusion zone around the stricken Chernobyl nuclear reactor in Ukraine. With humans banished since the catastrophic nuclear accident there in 1986, creatures of all sorts have come flooding back to this once-busy landscape of farmland, villages, urban areas, and forests. This came as a huge surprise to almost everyone. In the immediate aftermath of the world’s worst nuclear power accident, a cloud containing radioactivity equivalent to twenty Hiroshima bombs blew north from the burning power station, heading over the border from Ukraine into Belarus. Some areas received massive radiation doses. An area known as the “red forest” turned rusty brown and died. After the accident, Soviet authorities removed all humans living within twenty miles of the reactor. The risk of the lingering radiation causing cancers and other diseases was very real. But the immediate damage to the nature they left behind was mostly much less drastic. While the area still sets off Geiger counters, nature has made a huge comeback. Native species have reveled in the absence of humans, and many new species have moved in too.

Today, radioactive wolves (Canis lupus lupus) patrol the streets of Pripyat, once a city of fifty thousand people and now the largest ghost town in the world. Strontium-stuffed mushrooms flourish in the surrounding marshes. Mice scamper around the abandoned power-station reactors, and wild boars root in the cesium-soaked soils. British radiation physicist and keen angler Dave Timms caught a sixty-
six-pound catfish in contaminated Chernobyl cooling ponds, where altogether thirty-eight fish species live.

For some wildlife, the radiation may make their lives shorter. But nature overall is doing fine, living off the fat of the land. Top carnivores like lynx, eagles, and wolves do especially well. There are also moose, beavers, badgers, and otters. Migrating birds drop by as if nothing had changed. Black storks, green cranes, and white-tailed eagles are breeding. Deer shelter from winter storms in derelict country cottages. Rich grasslands and pine forests are moving in on the old collective farms. Sergey Gaschak, a Ukrainian naturalist who works for the International Radioecological Laboratory in Slavutich, the city built to house refugees from the exclusion zone, told me: “There are more opportunities for wildlife. The villages and towns have more diverse conditions than surrounding landscapes, with buildings, ponds, gardens and different kinds of vegetation.” Only pigeons and rats, which once relied on human leftovers to flourish, have failed to prosper.

Visiting Western scientists agree. “Most people think of the zone as a post-Apocalyptic wilderness, either occupied by two-headed monsters that glow in the dark, or completely empty,” says Jim Smith of Britain’s Portsmouth University. “But from the wildlife point of view, the disaster has been beneficial, because it forced people out. Wild animals rarely die of the diseases of old age. Wildlife in the Chernobyl zone is now more abundant and diverse than before the accident.” Cham Dallas of the University of Georgia found that Chernobyl mice are more radioactive than any creature ever found before in the wild. Yet they seem virtually untouched by the experience. A team from Texas Tech University, led by Ron Chesser, found that genetic variation among voles (*Myodes glareolus*) in the exclusion zone reflected nothing more than natural variability. This, they said, “failed to support” arguments that there were mutations as a result of the accident.

In Belarus, where the radioactive fallout was greatest, scientists swiftly saw the conservation potential of an area from which people were excluded. Two years after the disaster, they set up the Polesye State Radiation Ecological Reserve to protect wildlife in the zone. It is, by some measure, the largest area in Europe set aside exclusively for nature. Fearing radioactive water flowing out of the zone into rivers like the Pripyat and Braginka, Belarus authorities dammed drainage channels. The result is the most radioactive wetland in the world, containing a gloriously diverse assembly of black grouse, partridge, roe deer, and much else. Ukraine’s reformist government, in August 2014, announced plans to set up its own biosphere reserve, including most of the exclusion zone around the reactor, setting the scene for a cross-border radioactive nature reserve twice the size of Rhode Island.

Wildlife especially likes the empty human settlements, which provide a host of unusual and valuable hidey-holes. “Abandoned buildings attracted many species of wild animals that use them to rest and bring up their young,” says a report from the radiation ecological reserve.34 Badgers burrow in cellars, barns, and under the concrete slabs of roads. Wild boars rest in sheds. Roe deer, foxes, and pine martens feed in the overgrown gardens. Elk meet in the abandoned villages. Owls and kestrels nest in empty buildings. The reserve has the country’s largest lynx population. Bears have arrived.
Chernobyl is not quite alone in its radioactivity. Testing sites for nuclear bombs have suffered much more. Half a century ago, the waters of the Bikini Atoll in the northern Pacific were boiled by twenty-three US nuclear weapons tests over twelve years. The fifteen-megaton Bravo test destroyed three islands, irradiated the ocean, and blasted millions of tons of coral, sediment, and marine life into the air. Yet today two-thirds of the atoll’s former coral species are back, along with some newcomers. Nobody in their right mind would want more such places, but their ecological survival still tells us something important about nature’s powers of recovery—something that should help the world undo some of the environmental devastation of the twentieth century.

Conservationists need to take a hard look at themselves and their priorities. They must learn from Puerto Rico and Chernobyl, the Tilbury ash heap, the Bikini Atoll, the feral streets of Chicago, and the wider world of novel ecosystems. Nature no longer congregates only where we expect to find it, in the countryside or in “pristine” habitats. It is increasingly eschewing formally protected areas and heading for the badlands. Nature doesn’t care about conservationists’ artificial divide between urban and rural or between native and alien species. If conservationists are going to make the most of the opportunities in the twenty-first century to help nature’s recovery, they must put aside their old certainties and ditch their obsessions with lost causes, discredited theories, and mythical pristine ecosystems.

One of the few conservationists I have met who is willing to make the change is Peter Kareiva, chief scientist of the Nature Conservancy in the United States, the world’s largest and richest environmental organization. Ironically, his members are among those nature enthusiasts who are most wedded to the old ecology—the most reluctant, as Kareiva puts it, “to shed the old paradigms.” TNC’s slogan used to be “Saving the last great places on Earth.” But Kareiva rejects the whole idea. “Conservation’s continuing focus upon preserving islands of [old] ecosystems in the age of the Anthropocene is both anachronistic and counterproductive,” he argued in a polemic for the California-based Breakthrough Institute.

There are hard choices to be made. Conservationists often suggest that protecting each last individual native species is somehow essential to maintaining the “ecological services” that nature provides for us—services such as carbon storage and maintaining the chemistry of the oceans; protecting watersheds and maintaining river flows; pollinating plants and dispersing seeds; maintaining soils and preventing runaway erosion. But that argument is a romantic illusion. Those services are best done by the species on hand that do it best. In much of the world that increasingly means nature’s pesky, pushy invaders.

Conservationists have “grossly overstated the fragility of nature, arguing that once an ecosystem is altered, it is gone forever,” Kareiva says. The trouble is that the data simply do not support the idea. Conservation scientists spend too little time investigating how ecosystems change when invaders come in or humans disrupt their operation. A narrow pursuit of evidence of “harm,” driven by invasion biologists, has blinkered researchers. And so has their pervasive belief that stability is the norm and change somehow abnormal. Neither is true. Nature is rarely in a steady state. It is the dynamics that matter, and for too long researchers have denied this.

By its own measures, conservation is failing, Kareiva says. Many protected areas, in which conservationists have invested so much, are about as true to nature as Disneyland. From the Serengeti to Yellowstone, and from the Amazon jungle to Siberia’s Pleistocene Park, these are managed ecosystems. Conservation cannot promise a return to pristine, pre-human landscapes. It needs to “jettison idealised
notions of nature, parks and wilderness—ideas that have never been supported by good conservation science—and forge a more optimistic, human-friendly vision.”

As an article in New Scientist magazine in May 2013 argued, conventional conservation has focused “on two goals: saving threatened species and restoring Earth to how it used to be. Both are doomed. The first misses the point, and the second is impossible. . . . The concept of natural has outlived its usefulness in conservation.” Ecosystems, it said, are not worth preserving “in aspic, or rewinding to some romantic, pristine past.”

I would add one more thing. The more damage that humans do to nature—through climate change, pollution, and grabbing land for intensive agriculture and plantation forestry—the more important alien species and novel ecosystems will be to ensuring nature’s survival. Aliens are rapidly changing from being part of the problem to part of the solution. And in a world where supposedly pristine habitats require constant micromanagement to keep them going, where they are increasingly like theme parks for conservation scientists, the truly wild lies elsewhere. It is in the unmanaged badlands and novel ecosystems. The bits of nature we don’t cosset and pamper. The new wild.

Excerpted from "The New Wild: Why Invasive Species Will Be Nature’s Salvation" by Fred Pearce (Beacon Press, 2015). Reprinted with permission from Beacon Press. All rights reserved.