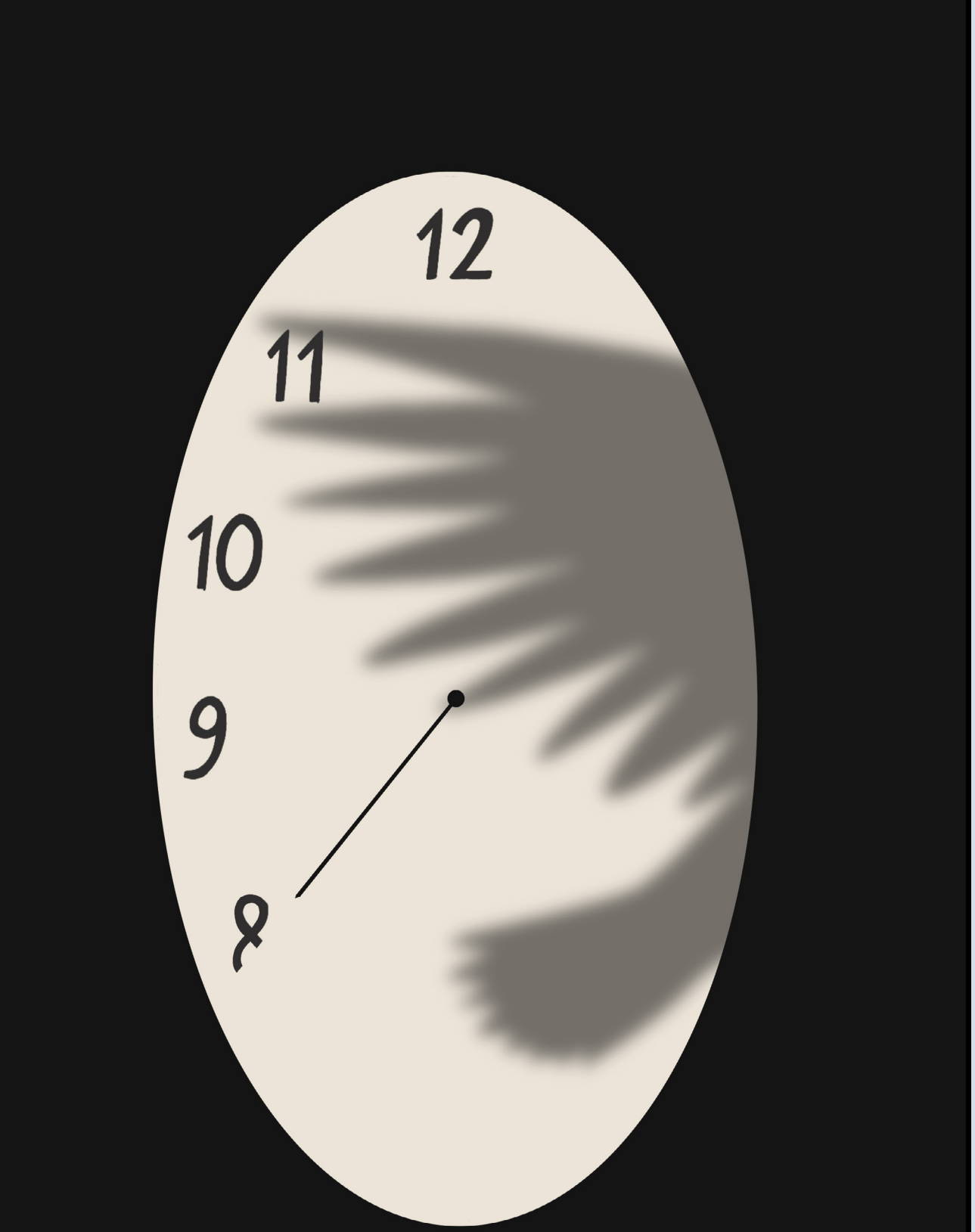


An Answer to Forgetting

Shifting Baseline Syndrome is undermining our ability to recognize dramatic changes in biodiversity and the climate. The solution isn't quick or easy, but it starts with paying attention.

TEXT—MARK MANN

To be honest, I always hated birds. I could never stand their drill-bit faces, their dinosaur screams, or that mechanical twitching of their heads. Chickens and seagulls are the worst offenders, and together they share most of the blame for my harsh outlook on avian-kind, which I formed as a kid growing up in rural Prince Edward Island and hadn't bothered to relinquish, until recently.

In December my family moved to a new home in Montréal, with an office that looks out onto a small backyard. This seemed like a good occasion to attempt a reset on my feelings for fowl, especially when my wife gifted me a bird feeder for Christmas. Come spring and the pandemic, I dutifully filled it with birdseed and took my perch at my desk to see who would appear.

Within days the yard was overrun by a mesmerizing swarm of brown-winged, white-cheeked little hoppers. A week of sporadic Google searching revealed that they were house sparrows—one of the most common animals in the world, a fact that did not diminish my triumph at identifying them. The following week, with only slightly less effort, I also learned to recognize the starlings scavenging in the alleyway by their cosmic speckles and bright yellow beaks.

Feeling like a budding ornithologist, I began hunting out more birds to name, but all I could find were sparrows and starlings everywhere. Both, it turns out, are ubiquitous European invaders, notorious for taking over nesting sites and food sources of native birds. For serious birders, they elicit boredom at best. Still, I loved them.

It's a strange time to be discovering the joys of birding. Across North America, bird populations have fallen by 29 per cent since 1970, according to a study published last October in *Science*. While populations of wetland birds and raptors are recovering, other groups, like aerial insectivores and seabirds, are being shoved toward extinction by a combination of insecticides, habitat loss, pollution, and climate change. Cats alone are responsible for killing as many as four billion birds in North America each year.

For novice birdwatchers, the slow erasure of some species is easily obscured by the undiminished pleasure of birding. The pastime is actually enjoying a renaissance, thanks to apps that help people identify birds and share their sightings. "Young birdwatchers today will go to an area and see a number of birds, and they'll say, 'Wow, that's a lot of birds!' But the person who's been birding for 70 years remembers when there were four or five times more birds," says Joël Coutu, a wild bird specialist in Montréal.

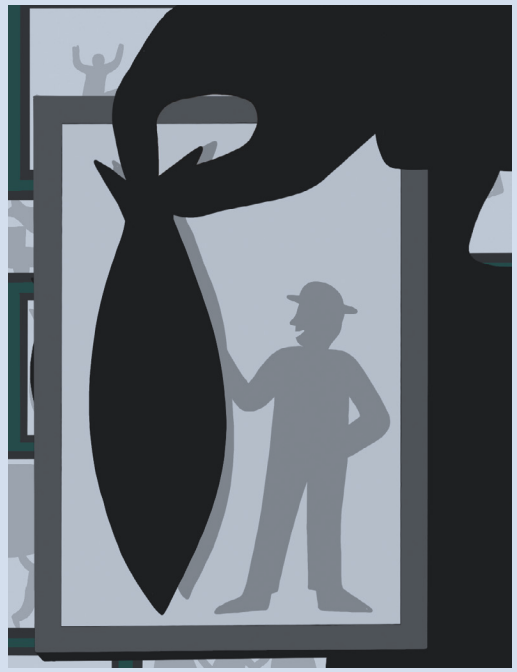
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>
> —DANIEL PAULY

The term for this form of environmental amnesia is "Shifting Baseline Syndrome," a concept that has proven revolutionary in ecology and other disciplines over the last few decades. The idea is simple: every generation creates its own yardstick for nature based on the condition in which they first find it—their "Point Zero."

The consequence of measuring changes in nature against the puny time scale of our human lifespans is that we fail to collectively respond to environmental decline, because we don't recognize its true scale. And when we do take action, we set goals for recovery that may be far off the mark of what healthy nature really looks like.

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Twenty-five years ago, marine biologist Daniel Pauly coined the term "Shifting Baseline Syndrome" to describe a blind spot, at once subtle and glaring, in the way that he and his colleagues assessed overfishing. He wrote that "each generation of fisheries



scientists accepts as a baseline the stock size and species composition that occurred at the beginning of their careers," thereby inadvertently erasing the loss that came before and setting an invisible backstop against rehabilitation. "We transform the world, but we don't remember it," Pauly would say many years later in a TED Talk delivered on the Galapagos Islands—a place still described as "pristine" in brochures, but where native species like giant tortoises and marine iguanas are critically endangered.

Pauly's idea made instant sense to his peers, but it wasn't until researcher Loren McClenachan discovered a box of old fishing photos in 2009 that the concept received empirical validation. While poring over a collection of unorganized photos dating back to the 1950s, she came across images of sport fishers in Keywest, Florida, posing with their day's catch strung up on a board. Comparing the older photos with ones that she took herself at the same pier, McClenachan was able to determine that the mean fish size declined from nearly 20 kg to just over two. Even so, the shrinking fish hadn't diminished the enthusiasm or the satisfaction of the fishers catching them.

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Though we formulate our initial Point Zero as children, new research shows that we continue to generate new baselines throughout our lives. A recent study examined more than two billion U.S. Twitter posts to trace how people's perceptions of unusual or remarkable weather changed over time. The author found that our memory for what we consider "normal" weather is much shorter than we might hope: on average, our intuitions about the weather are based on what we experienced in the last two to eight years. Needless to say, this isn't good news for our ability to mentally track changes wrought by global warming.

Beyond Twitter, the evidence for our ability to normalize the recently unthinkable is abundant. Last winter, bushfires in Australia consumed 18.6 million hectares and killed more than a billion mammals, birds, and reptiles. Thirty-four people lost their lives, and more than 35,000 homes were destroyed. But as the fires continued to rage over months, media coverage dwindled. David Wallace-Wells, the author of *The Uninhabitable Earth*, wrote that "the duration of this climate horror has allowed us to normalize it even while it continues to unfold." As I write this, California is experiencing its worst fires on record. So far, 1.3 million hectares have burned. But from my desk nearly 5,000 km away, they are part of what Wallace-Wells calls the "white noise of catastrophe all around us." The media coverage of California's fires has yet to relent. But the fire season isn't over, hurricane season is already starting, and then we'll be back into Australia's fire season again. It'll go on. We'll keep getting used to it.

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There's no one alive with a personal baseline that comes even remotely close to pre-industrial levels of biodiversity, and the losses keep accruing. Roughly 174,000 species were lost in the last 20 years, according to the most dire computer models. Do you remember the disappearance of the Taiwanese snow leopard or the Caribbean monk seal? Maybe not, but you probably remember the death of the last male northern white rhino from the widely circulated photos of its final days and moments, communing with the game wardens who protected it. There used to be thousands, but by 1984, poaching reduced their numbers to 15. Now there are two females left, and the species is



functionally extinct. “An animal that is very abundant, before it gets extinct, it becomes rare,” says Pauly. “So you don’t lose abundant animals. You always lose rare animals. And therefore, they’re not perceived as a big loss.”

Even our conservation successes aren’t what they seem. Environmental scientists Jennifer Jacquet and Jeremy Jackson offer several examples of celebrated recoveries, like bald eagles and grey whales, both recently brought back from the brink of extinction and removed from the endangered species list. But they argue that the current numbers only seem high relative to their lowest ebb in the last half century. Look back to accounts from history and it’s clear that these populations are still dramatically smaller than they once were.

The loss of so-called charismatic megafauna hints at an even quieter calamity: not just the infamous sixth extinction and the destruction of biodiversity, but also the precipitous decline in populations of birds and insects that still seem common, but were once numerous beyond belief.

In 2018 the *New York Times Magazine* announced that “The Insect Apocalypse Is Here.” In this viral story, journalist Brooke Jarvis charts the growing scientific concern “that a whole insect world might be quietly going missing, a loss of abundance that could alter the planet in unknowable ways.” Entomologists, she writes, have developed a shorthand to describe this uncanny evanescence: they call it the windshield phenomenon. Just 20 or 30 years ago, a drive in the country produced an insect massacre so gory that wipers were sometimes needed to see the road properly. Today windshields stay disconcertingly clean.

I still remember riding in the back seat of my parents’ station wagon and watching the periodic splatter of insects on the windshield: reliable entertainment for a kid on a long drive when the radio was set to the news. But my one-year-old son won’t get to enjoy this morbid distraction. Data published by a German entomological society in 2017 found that the biomass of flying insects in German nature reserves had fallen by 76 per cent since 1990, while other studies elsewhere have found similar drops. Of course, as the

number of insects free-falls, the birds that eat them are also disappearing: “Half of all farmland birds in Europe disappeared in just three decades,” Jarvis notes.

One small note of hope in this story is the simple fact that we know about it. If not for the vast enthusiasm of the citizen-scientists who diligently tracked insect populations, we’d be stuck with a vague sense of something being not quite right, and even that would eventually fade. The awareness itself is a miracle. “Amateurs have long provided much of the patchy knowledge we have about nature,” Jarvis writes. “As technologically advanced as we are, the natural world is still a very big and complex place, and the best way to learn what’s going on is for a lot of people to spend a lot of time observing it.”

Scientists are increasingly relying on data produced by enthusiastic observers. “The eBird app made birding cool again,” says Samuel Denault, an ornithologist in Montréal. “Now it’s probably the most accurate database we have.” Mistaken identifications are quickly corrected by the app’s avid and highly engaged community, who are partly motivated by the competitive structure of the app’s scoring for top birders.

McClenachan also relies heavily on non-scientific observers to advance her research. While she continues to mine the archives for the longer sweep of natural history—studying, say, a nautical chart from the 1770s to document coral reefs in the Florida Keys, or restaurant menus to show what was being caught and served in particular places—she also spends a lot of time interviewing fishers. “Fishermen are amazing natural historians,” she says. “The big issue for the ocean is that we’re terrestrial animals, so the amount of hours and eyeballs out on the water over time is pretty small. But fishermen have observations about all of this marine life.”

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The more I researched Shifting Baseline Syndrome, the more I became convinced of the value of noticing, especially if we can organize ourselves into battalions of diligent witnesses. I wanted to contribute to some collective repository, but my own birdwatching practice hadn’t advanced much past the two banal species that frequented my backyard and alley. So on a chilly Saturday morning in September, I joined a birdwatching tour at a large, undeveloped tract of land near the airport, called Technoparc. Part of an industrial research park, this unprotected urban oasis of wetland and forest is a cherished hot spot for Montréal birders, in part because it is frequented by almost no one else.

The autumn migration season was well under way when we parked on a disused lane next to the airport runway, and many of the birds passing through had spent their summer up north, some as far up as the Arctic, raising children and feasting on insects. Now they were travelling the Atlantic flyway southward to the tropics. Coutu led the tour of about 15 people, carrying a scope on a tripod and amiably giving names to the shadowy figures fluttering in the branches. A grey catbird, on its way to the Caribbean, mewed in the underbrush to frighten off competitors. The group moved slowly, pausing every six or eight metres to stare fixedly into the woods. My son, who enjoys pointing and babbling at trees, seemed to relish the company of so many other people who also liked pointing and babbling at trees.

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Walking back to the car, I logged the catbird into eBird—my first entry! Birding is an art of serendipity, I realized. You stand around, hoping something special will happen. But my satisfaction didn't last long. A few hours later, I received an email news alert that humans have wiped out two-thirds of the world's wildlife in the last half century. That's the sort of thing that most of us have to learn from the media; it doesn't turn up when we go outside. Birdwatching feels meaningful, but what good is registering a single sighting of a grey catbird—a common species with a stable population—when the big picture is so grim?

Ever since the huge climate marches last September, I've been thinking more about the small-big paradox of collective action: how when you're a body in a crowd, you ARE the crowd. Just as walking down the street is a paltry addition to the climate fight, identifying common songbirds at the park is an extremely meagre contribution to the great eco-awakening. But hundreds of thousands of people walking down the street together is powerful. And hundreds of thousands of observations together form a picture of nature that is both vast and granular, extending through time and space and offering a perspective that rises above the myopic outlook of individuals and even whole generations.

Even dramatizing it like that, I still honestly don't know how much it's worth, keeping track of a few birds on an app. But it does feel like pulling in the right direction. Each entry in the database is like a vote for the long view. Shifting Baseline Syndrome can easily elicit a feeling of pessimism, as it suggests our amnesia might be a hard psychological limit, one that prevents us from grasping the real plight of the natural world. But it also shows us just how adaptable we are. If we can normalize the bad changes, then we can normalize good ones too. We can treat our Point Zero like a place of discovery, where we notice nature and our place in it more expansively—not a borderline, but a frontier. ■

DOSSIER

SECOND NATURE



Our intimacy with the land over time is what allows us to detect slow disappearances, François Landry observes. Twelve years after moving to a forest in the Upper Laurentians, he bears witness to this nature he has learned to name and care for.

TEXT—FRANÇOIS LANDRY