

One tree at a time

In her new book, *Our Green Heart*, the author and renowned botanist makes the case for a collective tree-planting effort that she says could buy humanity a bit more time

ERIN ANDERSEN

PHOTOGRAPHY BY SHELBY LISK

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Diana Beresford-Kroeger, Irish botanist, talks about the medicinal properties of the honey locust tree (*Gleditsia triacanthos*) on her property near Ottawa, Ont.

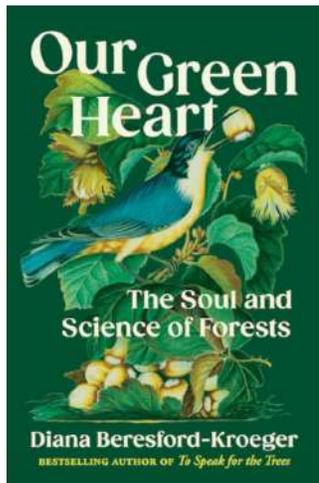
Diana Beresford-Kroeger wants you to plant an acorn. For decades, the Irish botanist has been doing her part, carefully planting rare trees on her property, a former sheep farm outside Merrickville, a village 70 kilometres south of Ottawa.

Where there was once rocky mud and meadow, she and her husband, Christian, have grown a forest. Over 50 years, they have planted many thousands of rare and diverse trees. Kingnut hickories grow on the south side of the orchard. A tulip tree thrives a few steps from her house. Her driveway alone is a contemplative marvel; about a kilometre of gravel passage under the flickering shade of reaching branches, until you reach a circle of 45 soaring black walnuts.

Many years back, the walnuts from her nuttery enticed a gang of Hell's Angels to her home. Upon hearing the rumble of motorcycles coming up the road, "I thought I'd have a bloody heart attack," says Beresford-Kroeger, relishing this one of many tales over tea in her rustic kitchen. "But they were very polite." They had land, they explained, with room to plant trees, and so they went home with a stash of walnuts. "They were better planners than the politicians."

But back to the acorn. Planting one is simple enough. And the results of a collective effort, Beresford-Kroeger argues in her new book *Our Green Heart*, will eventually produce a harvest of grand old oaks, "a rescue crop" to save humanity from itself. This bounty would include shade and oxygen and, in fair measure, wood for shelter. But oak trees are also long-living and drought-resistant. In that acorn, they produce a source of protein. Their roots find a welcoming home in Canada. The oak, as she likes to say, is the right tree in the right place.

Reading *Our Green Heart* is like wandering through a forest with a world-renowned expert pointing out the fascinating parts you've missed, sprinkling the botany and chemistry with memories and reflections.



But mostly the book is an urgent plea from an elder scientist, internationally recognized for expanding the way we think about trees, who's spent a lifetime defending something precious and knows time is growing short. To save the trees – and ourselves – we need to protect the forests we have, Beresford-Kroeger writes, and plant new ones as quickly as we can.

According to her calculations, a diverse, global forest of 50 billion trees, planted over the next six years, would stall climate change and buy humanity some time. That's roughly equal to every person in the world planting six native trees. It means adding trees to schoolyards and backyards, farms and parks, and city streets. Those with more space, plant more. Those with money, give more. "Use your imagination," she says. "But find a way to do it."

Our Green Heart, her eighth book, returns to her roots, acquainting the reader with her great-aunt Nellie, who showed her precocious niece how to live in communion with nature. Beresford-Kroeger was orphaned at 13 when her Irish mother died in a car accident, and the aristocratic British family of her estranged, deceased father declined to take her in. A sympathetic judge spared her a trip to the laundries, where she would have been put to work, and she was adopted by a bachelor uncle who lived in Cork, and who possessed a large library to indulge her curiosity. "That was the luckiest day of my life," she says.

She spent her summers with Nellie, in the nearby valley of Lisheens. From her aunt, she learned the knowledge of Druids – the use of medicinal herbs and a spiritual understanding of nature. The community trained her in the laws and lessons of the early Celts, about the sustainable use of

land, hospitality among neighbours (“Never come into a house with your hands dangling”), and an awareness of humans being bound to each other and “connected to the universe as a whole.”

This ancient wisdom continued to guide her, even as her advanced degrees in biology, chemistry and medicine, piled up. She came to Canada in 1972, working as a research scientist in the medical school of the University of Ottawa, and two years later married Christian Kroeger, a linguist and mathematician, who worked for NASA before taking a post with the federal government. For wedding gifts, friends brought peach, plum and apricot trees for an orchard, the beginnings of their forest.



Beresford-Kroeger stands among the black walnut trees she planted on her property, a former sheep farm outside Merrickville, Ont. Some of the trees on her land are so rare they may be among the last of their species.

They now live, surrounded by trees, in a white-pine house they built themselves – aided by a gang of rocket propulsion engineers who arrived with roofing material, and, Beresford-Kroeger says, a “helluva lot of beer.” Since the 1980s, after turning down a professorship, Beresford-Kroeger has travelled to forests around the world, conducting research, advocating for nature and collaborating with fellow scientists. But here, in the forest she created, she can be still and listen to the life growing around her.

Her latest book reflects a lifetime of keen observation, explaining the science behind a leaf while also wondering at its beauty, describing how trees seed the soil while contemplating history from a tree’s perspective.

A tree species takes 500 million years to reach “its own state of perfection,” she writes. That means half a billion years to fill the hole left when a tree seed goes extinct. “We have to wait for something new, while never fully grasping what we’ve lost.”



Beresford-Kroeger's book is an urgent plea to protect the forests we have and plant new ones as quickly as we can.

So much about trees remains a mystery. In 2022, an international study published in the journal *Proceedings of the National Academy of Sciences* estimated that there are 73,300 species of trees growing on Earth, including many thousands that scientists know little about or have yet to properly identify. In *Our Green Heart*, Beresford-Kroeger laments the reckless loss of her favourites, including the towering redwood, *Sequoia sempervirens*, and Australia’s giant flowering *Eucalyptus regnans*, which can grow 33 storeys high. These trees are being cut down, she writes, “before we understand how they function even though they are the largest green machine on the planet.”

This worry is driving another ambitious goal: to create a DNA library of the global forest, to preserve its diversity for future – an urgent task, she believes, that scientists and countries have so far overlooked. A genome project, she says, would allow us to restore rare trees wiped out by disease, create hardier, hybrid trees and find new medicinal properties that science has yet to discover.

“It just makes me really angry that people have been so careless with the things on which the foundations of our life rests,” Beresford-Kroeger admits, in the tone of someone weary of repeating herself.

Some of the trees on her land are so rare they may be among the last of their species. She can’t say how many trees she planted – “I didn’t count them” – but knows all their stories and what they need to thrive. On a stroll, just beyond her house, she names each one, fondly, in Latin. There’s the honey locust (*Gleditsia triacanthos*), a salt- and drought-tolerant tree that grows thorny spikes from its trunk like sea urchins. On a tour, in the field of the roundabout driveway by her house, she points out the red elongated fruit and waxy leaves of the spreading cucumber tree (*Magnolia acuminata*), Canada’s only magnolia species, now at risk of being lost forever. Yet here’s a tree, once tropical, that learned to live in a northern environment. “It has the history of climate change,” she says.

(Her magical forest does deliver one disappointment: Under the walnut trees, near a clothesline, Beresford-Kroeger had hoped to find the appropriately named *Phallus impudicus* sprouting from the ground. No luck. “It looks exactly the same as a penis,” she explains, her Irish lilt dancing with laughter. “If you were hanging up your laundry, you’d see the whole place studded with penises.”)

Other absences are described more sorrowfully. Her most beloved tree was one of the few already growing on the land when they brought it: a massive umbrella-shaped American elm (*Ulmus americana*) that hosted the swinging nests of Baltimore orioles. She would admire it from her porch window, or sit under it and clear her mind. But Dutch elm disease killed the tree not long before the pandemic, despite Beresford-Kroeger's expert efforts to save it. Only the stump remains. "It's like losing a dog you love so much," she says. "I am still mourning it." That loss is also a reminder that science still knows too little about how to cure even the trees we care most about.

Occasionally, Beresford-Kroeger will hold a plant sale for charity, or offer seedlings and seeds for free. Next spring, she hopes to have extra seeds from the cucumber tree, a rare gift for those who pass scrutiny. "They have to prove to me they'll look after it," she says, "and promise to never cut it down."

Meanwhile, on her front stoop, she is "babying" two young trees, barely seven feet tall: a rare but tough white cherry from the French Alps, and the yellow version of the pawpaw, which is indigenous to Southern Ontario and produces fruit that tastes like pineapple and mango. They will go in her cold cellar for the winter, and hopefully emerge strong enough for a permanent home in the ground come spring.

While still sprightly and sharp at 80, Beresford-Kroeger doesn't expect to be around to see them reach their full height. This is every tree grower's fate eventually. More than a decade ago, she travelled to Japan to help plant trees that would grow deep roots to hold the soil firm against future tsunamis. Another long game. But looking down on her seedlings, knowing they would help keep people safe, felt "like winning a Nobel Prize."



The deed meets her definition of happiness: a generosity of spirit, in which you expect no reward. Although, as small pleasures go, a single strawberry and a spot of tea would not be refused. "I like strawberries," she says. "And a cup of tea brings conversation."

In this case, the conversation often returns to worry about the fate of the next generation. She is angry that we have put "the onus on them to solve a problem that we should be solving," and vows: "I will not die without answers out there for the kids." Even now, she has a new stack of names from her book signings; young people who came to her with questions, keen to talk more. (They can expect an old-fashioned letter; she loathes e-mail.)

She once asked a stadium of middle-school students in Texas, gathered to hear her talk about trees and climate change, if "they had ghosts in their head," and were worried about the future. They all raised their hands. "I believe in the philosophy of the mind," she says. When a problem makes those ghosts restless, you find a way to soothe them with action. As an example, she produces her latest correspondence from a teenager in Michigan, who, after seeking her advice, is now growing a hummingbird

forest, one that includes flowering trees, trumpet vines, pines and cedars so the birds can drink nectar, preen and rest.

More generally, Our Green Heart recommends: "When in doubt about what to plant, look to the oaks." To begin, seek out the grandest oak tree where you live, and visit it often. Find a black or brown acorn, ripening right about now, and remove the cup. (The best acorns, Beresford-Kroeger writes, will sink in a

bucket of water.) Bury the acorn, on its side, under a half inch of soil. Add a pinch of baking soda to mask its scent from squirrels. Cover with wood chips or mulch – even this newspaper, if you have the print version in hand. And then wait. “The baby oak,” she promises, “is one of the most beautiful plants to observe.”

“Every one of us on this Earth, can do at least a little,” she says. It will help quiet the anxious ghosts in our heads. And few things, Beresford-Kroeger would say, will bring more pleasure and meaning than someday sitting under the lush and stately tree you grew to save the world.

