Pocket Forests using the Miyawaki Method

pocketforests.org
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The impacts of habitat loss and extreme weather are being felt, and can be reasons to despair. But there's a lot we can do about it, starting right here in our community. One way is by harnessing the benefits of the Miyawaki tree-planting method, inspired by natural forests.

Natural forests are made up of a multi-layered diversity of plants adapted to their environment over millennia. The plants grow close, intermingling both above and below ground. Their interactions nourish each other, and they in turn support a diversity of organisms, from fungal and microbial life to multitudes of wildlife.

In traditional human-created landscapes, trees are planted singly, away from plant neighbors, surrounded only by turf-grass. So they lose out on beneficial interactions, which in Rachel Carson's time were suspected to be important, but in today's science, are understood to be crucial.

Further problems are created when the tightly interwoven roots of lawn create a dense mat that sheds water, instead of letting the rain soak down to the tree roots, as it does in a forest. This not only contributes to flooding, but keeps trees from getting much-needed rain during dry spells. Whereas in a forest, the thick humus layer acts as a sponge to keep moisture in, moderating the dry times.

When trees are surrounded by grass, another threat is landscaping machinery. A tree's Achilles heel is its cambium–where the lifeblood of the tree travels. Whether cut by mowers or weed whips, damage to the cambium is like cutting arteries and exposes the tree to disease. But in a mini-forest, mowers and weed wackers aren't used at all–it's a relatively maintenance free and protected environment in which trees can thrive.

To address climate change and harness trees' abilities to sequester carbon, cool urban areas, and slow stormwater, billions if not trillions of trees need to be planted worldwide. Why not plant at least some of them utilizing these strategies so successful in nature: A multi-layered diversity of native species growing close together, with thick mulch, not turfgrass, in between. This is not a new concept! In the 1950's, a botanist named Akira Miyawaki began experimenting with planting trees in small forests–variously called mini-forests, micro forests, tiny forests, or pocket forests.

He found that as in nature, trees spaced densely grow fast, racing to reach the sun. Faster growth equals faster carbon dioxide uptake. As in natural forests, natural thinning occurs, and those that don't survive, nourish the soil.

In a human-created landscape, planting big trees equals a big investment, and mortality rates–commonly about 30%--can be a big hit. Whereas trees planted small–in dense, protected and highly mulched sites–have a better chance of making it. And they are less of an investment loss if they don't. In fact, native woody species routinely "volunteer," sprouting up on their own, free for the taking. Why not make the most of them, instead of mow or weed them out!

Popping up around the world are Miyawaki-inspired forests of all types: urban and rural, large and small. They're proliferating in tropical areas such as Kenya, Chile, and India. And in the northern climates of Europe, Canada, and the UK . They're found on former industrial sites, as in Canada, and Japan. On top of old city dumps, as in Cambridge, Massachusetts. Along roadways, in Japan. On slopes, like this schoolyard in Berkeley. In fact, many are springing up in schoolyards around the world. The learning potential is exciting.

Pocket Forests are found in neighborhood parks, such as these in Ontario, and Oregon. Some are on tribal lands, as in Washington State. This one features traditional indigenous edible species. Some are specifically planted for their therapeutic qualities. Or to address tree equity, as does this one in Chicago. They are even being planted in people's yards, like this one in Hamilton, Ontario.

The city of Hamilton has a project, based on their rain garden program, in which they support homeowners, schools and businesses in creating and maintaining their own Pocket Forests. With a climate similar to ours, their how-to guide includes a familiar set of native species. In fact, the whole country of Canada has a program to encourage Mini-forests.

Some projects closely follow Miyawaki methods, such as mechanically tilling the soil a meter deep and mixing with organic matter to achieve a light, fluffy soil texture. Others use them as inspiration and adapt. For instance, in Hamilton, Canada, they're experimenting with laying down cardboard, mulching heavily above, waiting a few months, and planting through that.

But all must be watered and weeded during their first 2 to 3 years, until they create their own shade. They also must be heavily mulched when first planted–this further keeps the moisture in and the weeds down. And all use native plants adapted to the local site conditions, creating a forest that is self-sustaining after a few years.

But beyond that, the concept can take many forms. Some Pocket Forests are fenced, to keep critters out, or to signal they're managed, intentional plantings. Some have signage, to raise awareness of benefits and why the pocket forest looks different from traditional tree plantings. Some have paths running through them. Some include native nut and fruit-bearing plants, and some have flowering species along the perimeter.

With Pocket Forests, the possibilities are endless–the sky is the limit. As the trees reach for the sky, they do us the critical services of drawing down carbon dioxide, cooling our cities, cleaning our air, and slowing floodwaters. We're in a climate crisis, and we must do what we can to address it. Considering their relatively low investments to plant and maintain, Pocket Forests should be considered wherever a bit of space, and access to water are available. They're a great community-building project that can create a greener, healthier world for both humans and wildlife.

A project of volunteers
from the Ann Arbor chapters
of the
Wild Ones
and
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