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Tree canopies unveil a new world

Columbia Forum speaker spreads the word on the value of trees

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“Just an amazing little world up in a forest canopy that I found really fascinating to investigate,” says forestry researcher Nalini Nadkarni, referring to forest canopies, which she discussed Tuesday evening at the Columbia Forum.



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Nadkarni brings awareness of forest canopy biology to the public in unusual ways, which include Treetop Barbie, a doll dressed as a forest researcher.

Would you value the forest more if you knew that trees or forests were mentioned more than 300 times in the Old Testament?

How about if you realized that your new dress is made of wood pulp, or that life-saving drugs are derived from extracts of trees?

Would you value a forest more if you had played with a tree-scaling Barbie doll as a child?

While ecologists and folks who spend time with forests are quick to recognize the value of these ecosystems, other groups might need help, Nalini Nadkarni, a member of the faculty at Washington's Evergreen State College, told the Columbia Forum audience Tuesday night.

To give that help, "think about how scientists and people like you and me can relate the value of trees to some of these other values that people may have already," Nadkarni said.

First, there's the ecological value of trees and forests. Nadkarni does research in the canopies – or the tops of trees – in the Pacific Northwest and the Monteverde cloud forest of Costa Rica. Scientific studies of canopies only really began about 20 years ago, because canopies are hard to get to and "unfortunately we lost the use of our prehensile tail," a long time ago, she said.

But now, scientists use mountain-climbing techniques, platforms, bridges, canopy cranes and even hot air balloons with rafts dangling below them to study the uppermost reaches of trees.

"There actually are now a wonderful array of access techniques that are available to all of us to study this, what I think of as the most important part of the forest ecosystem," Nadkarni said.

There's a large amount of biodiversity up there, with 80 different species of moss found on big leaf maple trees alone. Scientists can look at the reproductive biology of plants, how they pollinate and disperse seeds. They can observe the adaptations animals have evolved, like the skin flaps on gliding lizards or flying squirrels.

There are plants in the top branches of trees that create their own communities, living, dying and decaying in tree branches, and creating an arboreal soil high above the ground that becomes home to earthworms, beetles and bugs.

It's "just an amazing little world up in a forest canopy that I found really fascinating to investigate," Nadkarni said.

Spreading the word

But forest canopies are disappearing and fragmenting in many parts of the world, and people who care about them need to spread the message to others, she said.

One way is to stress the recreational value of forests.

To appeal to an urban demographic, Nadkarni's lab looked to skateboarders. Skateboard decks are made of wood, so they designed skateboards with a tree-motif for dwellers of the concrete jungle.

To appeal to girls, Nadkarni turned a popular icon into an outreach tool with the "Treetop Barbie."

Although Mattel wasn't interested in the project, Nadkarni and her crew bought Barbies from Goodwill and Value Village, then had a seamstress create an outfit appropriate for field work.

Treetop Barbie comes with a pamphlet describing forest canopies and a field guide to the trees, plants and animals that thrive up there.

Treetop Barbie chimes in as well: "This is why I climb trees. I think it's really cool to climb trees, and Ground Support Ken has been a real help to me."

The doll connects girls with science, Nadkarni said.

"I really believe that Treetop Barbie is an example of how a scientist can link with an existing popular icon to make a statement in society about what is important, and for showing young girls that you can be strong, you can be interested in intellectual and scientific and important things and still be cool."

Biblical mentions

Another value that Nadkarni has worked to link with forests is a spiritual aspect. Some think of trees as uniting heaven and Earth, she said. She conducted a search of the Old Testament, looking for references to trees and forests, and found 328 mentions. Bearing a chart that illustrated these mentions and what they related to, she visited churches, synagogues and Buddhist temples.

"I was able to relate to the people in churches, in their own congregation, in their own setting when they were dressed in their Sunday best, ready and receptive for listening."

She's also working to link trees to healing, with patients in Intensive Care Units and rehabilitation areas.

A third value that trees and forests can appeal to is aesthetics.

"When you think about it, it's an easy sell," Nadkarni said.

She has brought artists and musicians up into the canopy, allowing them to paint, compose music and even rap songs high above the ground. In one case, a woman was up in a tree for two days painting.

"When she brought it back to camp, I just screamed with delight, because I thought, 'This is

a piece of canopy work, you can really see that third dimension,” Nadkarni said. The paintings bring insight into how trees appear when you look down on them, she said.

She brought blind people to the canopy, and they described the flow of wind and birdsongs. She invited Inuits, who don’t even have a word for tree, but instead use a word that translates as ‘pole.’

Nadkarni and two other biologists went with urban children and a rapper to the beach and forest. Because the rapper was there, the kids realized what they were doing could be “pretty cool,” she said, and they left with a CD of rap songs about their experiences in the field.

Economy in focus

There are also economic values to the forest that people can relate to. Advertisements are filled with pictures of nature and forests, even for products that aren’t very eco-friendly, like SUVs.

Forests are intertwined with economics in the Pacific Northwest, but Nadkarni focused on a secondary forest product, moss. Moss is being harvested for the horticulture trade at unsustainable levels, she said. So she has enlisted prisoners to help figure out how moss can be farmed.

“It’s been just an absolutely fantastic learning experience, partly because the inmates have gotten such a charge about doing something with living things, with nurturing living things.”

They are trying to get stores like REI and Norm Thompson to sell moss pots complete with an informational tag.

Nadkarni is also trying to put tags on other things, like a dress made partly of rayon, which is cellulose based and made from wood pulp.

“That means, when I am wearing that little cute dress, I am wearing a tree, isn’t that the coolest thing?” she said. People can share the story of the origin of their clothes, spreading the word about the benefits of trees.

Nadkarni has even got into fashion design herself, since most camouflage clothing isn’t “botanically correct” and is only worn by hunters and the military. So she took a picture of *Piper auritum*, translated the image into material, and had it fashioned into a jacket.

It’s all about linking the tropical rainforest with what people value in their lives, she said.

Not at all dull

To those who think that trees are stationary and a tad dull, she conducted an experiment by tying paint brushes to the tips of a vine maple branches, and calculated how much a tree moves in a year. It turns out that one tree does quite a bit of moving: 286,540 miles a year, a distance 10 times around the equator.

Although scientists are often taught to move steadily, to take time to consider things and study them in a measured way, Nadkarni said that with all the threats to forests, slow is not the way to go.

“I feel in some ways that maybe this is not the time to do that, maybe we need to move forward more forcefully, because the pressures are indeed so pressing,” she said.

“I thought she did a fascinating job,” said John Christie, a retired forester who taught at Clatsop Community College. She was a very good speaker and had lots of enthusiasm, he said.

“It really is fascinating, there’s a whole world up there.”