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## 'Greedy' trees still leave room for the little plants

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While they might hog the bulk of the resources, trees still leave enough "crumbs" for smaller neighbouring plants to eke out a living, researchers say. The finding contradicts previous notions of plant competition and adds support to a new view of how a plant's size affects the survival and composition of its neighbouring species.

Previously, it was assumed that trees and other large plants [monopolized sunlight](#), water, and other available resources, limiting the number of smaller plant species that can coexist in their vicinity. Research in greenhouse settings supported this view.

Now a study of forests in southern British Columbia shows that larger plants do not always correlate with fewer species in an area.

### Creating niches

Laura Keating and [Lonnie Aarssen](#) of Queen's University in Ontario, Canada, targeted nearly 160 plants of various species and sizes, ranging from wild rose bushes to Ponderosa pines, counting the number of species present beneath their canopies.

As a control, the team compared those numbers with the average number of species in randomly selected patches in each plant's habitat. They found that for larger and larger trees, the ratio of the number of species beneath their canopies to the number expected in an average random patch stayed more or less the same. In other words, the size of the tree had little effect on the number of species that coexist with it.

Aarssen believes that small plants in the understory of larger plants feast on the "crumbs" of sunlight, water, and soil nutrients that their hosts cannot exploit. "The bigger it gets, the less efficiently a plant uses available resources," says Aarssen. He thinks this leaves niches available for species better adapted to small spaces.

Keating and Aarssen did find that trees tended to have fewer nearby species than small bushes. They think this is caused by the loss of shade-intolerant species. Once the canopy reaches a few square metres in size, however, the species richness beneath it stays relatively constant for larger and larger canopies.

### Help the neighbours

"This is a classic ecology question: what are the effects of sizes of individuals on species?" says [Scott Abella](#), an ecologist at the University of Nevada at Las Vegas, who was not involved with the study.

Abella, who found a similar result studying one species of oak tree last year, says that this new work adds to a changing view of competition in the field of plant ecology. "A lot of these concepts about competition aren't really held by ecologists anymore," he says. "It's about facilitation."

Abella explains that plant interactions are more complex than a ruthless contest to grab resources; many plants derive an advantage by living underneath their larger and more resource-intensive

neighbours.

Like many questions in ecology, the role of size as help or hindrance to other species is difficult to pin down exactly. According to Abella, other factors such as soil composition can play an equally important role in determining which plant species coexist with one another in a given habitat.

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