

Smaller plants punch above their weight in the forest

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New findings from Queen's University biologists show that in the plant world, bigger isn't necessarily better.

"Until now most of the thinking has suggested that to be a good competitor in the forest, you have to be a big plant," says Queen's Biology professor Lonnie Aarssen. "But our research shows it's virtually the other way around."

Previous studies revealed that larger plant species monopolize sunlight, water and other resources, limiting the number of smaller plant species that can exist around them. But new research has proven that this is not generally the case in natural vegetation.

In the Queen's project, PhD student Laura Keating targeted the largest individuals or "[host plants](#)" of 16 woody plant species growing in the Okanagan Valley, British Columbia. The research team calculated the number and variety of plants that neighbored each large host plant. They then randomly selected plots without host plants and calculated the [plant species](#) there as well. The research showed that the massive trees have no effect on the number of species with which they coexist.

"Think of the plants like professional boxers," says Professor Aarssen. "To win the fight, you need more than a solid punch; you need to be able to tolerate all the punches you're going to take. The winner may be the competitor with the superior 'staying power'."

Smaller plants have many advantages over their overbearing neighbours, Professor Aarssen notes. Larger species generate physical space niches under their canopies where smaller species thrive. Smaller [plants](#) are much more effective than large trees at utilizing available resources. They also produce seeds at a much younger age and higher rate than their bigger counterparts, and establish much more quickly - thus competing with the seedlings of larger species.

"A growing body of literature is calling for re-evaluation of traditional views on the role of plant size in affecting competitive ability, community assembly and species coexistence," he adds.

More information: The study was recently published in the international *Journal of Plant Ecology*. It can be viewed at jpe.oxfordjournals.org/cgi/content/full/rtp012v1 .

Source: Queen's University ([news](#) : [web](#))

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