

**Ecology: Solution for global puzzle of nitrogen-loving trees (AOP)**

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**\*\*\*This paper will be published electronically on *Nature's* website on 18 June at 1800 London time / 1300 US Eastern time (which is also when the embargo lifts) as part of our AOP (ahead of print) programme. Although we have included it on this release to avoid multiple mailings it will *not* appear in print on 19 June, but at a later date. \*\*\***

A new analysis may have solved the riddle of why plants associated with bacteria that convert nitrogen gas into living matter only tend to flourish in particular regions of the globe. The research offers an explanation for why symbiotic N<sub>2</sub>-fixing plants are predominantly found in tropical regions, and not at higher latitudes, where they might be expected to occur.

Converting nitrogen gas (N<sub>2</sub>) into biomass offers an advantage when other forms of nitrogen, such as nitrate, are in short supply. So why, then, are N<sub>2</sub> fixers not found in mature temperate and boreal forests where soil nitrogen is limiting? And conversely, why are they so prevalent in tropical savannas and lowland tropical forests, where nitrogen is in ample supply and they might be expected to be out-competed by other species?

Benjamin Houlton and colleagues perform a meta-analysis in combination with modelling to answer these questions. Writing in this week's *Nature*, they suggest that the temperature at high latitudes is too low for N<sub>2</sub> fixers to flourish, whereas in some tropical regions the unique metabolism of the symbiotic partners gives them an advantage where levels of another nutrient, phosphate, are low.

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