

Research on world's largest tree group will help conservation and management of rain forests

September 12 2022



Credit: University of Aberdeen

An international study that analyzed the world's largest tree group has made breakthrough findings. The results are expected to guide future

conservation of tropical and subtropical rain forests as well as help with predicting how certain plants will respond to climate change.

More than 60 researchers explored the evolution and speciation patterns of the tree group Syzgium, which includes the trees that gives us the spice clove as well as numerous fruits.

The study was led by the Singapore Botanic Gardens of Singapore's National Parks Board in collaboration with 26 international research institutions including the University of Aberdeen, Royal Botanic Gardens, Kew, Nanyang Technological University and the University of Buffalo.

Published in *Nature Communications* the research is the most extensive study of any Syzgium group of trees to date and was carried out over two years using samples from some 300 species growing in Africa, Sri Lanka, Malaysia, Singapore, Indonesia, Japan, Australia and the Pacific Islands.

Trees growing in [tropical areas](#) are understood to be some of the most valuable in the world in protecting biodiversity and global warming, but they are also among some of the most threatened because of commercial needs and use of the land for farming.

Native and widespread in tropical and subtropical rain forests, studying the origins and drivers of the large hyperdiverse tree group Syzygium contributes to the understanding of how [plant species](#) have emerged in the past in response to environmental changes. This knowledge is valuable for predicting how plants might respond to ecological changes brought about by climate change and will guide conservation and management efforts for plant communities.

The Syzygium species may be found growing together with other trees

within the understory and canopy layers of forests. Because of its large diversity, they play an inordinate role in the functioning of forest ecosystems. Many Syzygium species are also cultivated in [tropical countries](#) for different types of spices as well as their large edible fruits.

Understanding how Syzygium species have evolved will help to advance knowledge of the highly complex species-environment relationships in forest ecosystems and anticipate forest ecosystem changes in response to climate change.

The University of Aberdeen's Interdisciplinary Director for Environment and Biodiversity Professor David Burslem says that "[tropical forests](#) are under severe threat from conversion, industrial logging and climate change. The new results on the origins and biodiversity of Syzygium, an important group of tropical trees containing many species of commercial importance for timber and fruit production, provides the raw material for devising strategies for species conservation and restoration."

"This new paper will serve as a benchmark for future studies combining genomic analyses with extensive data-sets on species distributions and satellite-derived environmental sensing to finally understand the mechanisms that drive patterns of tropical forest biodiversity."

"It was a privilege for the University of Aberdeen to work closely with experts from Singapore Botanic Gardens as well as many other prestigious international organizations on this vitally important project which is one of the first genome-scale plant evolutionary studies on a single group to be published that was so widely-sampled."

Dr. David Middleton, coordinating director at Singapore Botanic Gardens, says that "Southeast Asia is a region of exceptionally rich species diversity. The Singapore Botanic Gardens has played a contributory role to the study of plant diversity in the region since its

founding in 1859, as part of the Gardens' core roles in research, conservation and education."

"The enormous genus *Syzygium*, the species of which are mainly understory trees, has long been neglected in comparison to the iconic forest giants and plant groups of more immediate economic interest. However, their role in the diversity and functioning of our forests must be better understood if we are to succeed in our conservation goals."

"In partnership with our collaborators at home and abroad, we have begun to understand what drives such exceptional species diversity in tropical Southeast Asia and can make better informed decisions on how to conserve this diversity. This strengthens the science on conservation in the region and contributes towards Singapore's City in Nature vision."

More information: David Burslem et al, Genomic insights into rapid speciation within the world's largest tree genus *Syzygium*, *Nature Communications*(2022). doi.org/10.1038/s41467-022-32637-x

Provided by University of Aberdeen

Citation: Research on world's largest tree group will help conservation and management of rain forests (2022, September 12) retrieved 11 July 2024 from <https://phys.org/news/2022-09-world-largest-tree-group-forests.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.