

# State of the world's orchids revealed in new report

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CSIRO's Katharina Nargar was a senior author of the report's chapter on orchids.  
Credit: Tapio Linderhaus

Up to 45% of all known flowering plant species across the globe could be under threat of extinction with the plant family Orchidaceae (orchids) among the most threatened, according to a new report.

Kew's [State of the World's Plants and Fungi \(SOTWPF\) 2023 report](#), tackles the nature emergency by laying out the current condition of the world's plants and fungi.

Australia's national science agency, CSIRO, contributed to the report with CSIRO orchid researcher, Dr. Katharina Nargar, a senior author of the report's chapter on orchids.

"Plants and fungi sustain life on Earth and provide valuable ecosystem services, food, medicine, clothing, and raw materials. But the [natural world](#) is threatened by the dual crises of climate change and biodiversity loss," Dr. Nargar said.

"With some 350,000 [species](#) of vascular plants—which includes trees, shrubs, ferns and flowering plants like orchids—already known to science, researchers are in a race against time to scientifically name and assess as many as 100,000 more."

Worldwide, scientists name about 2,500 new plants each year.

New estimates suggest as many as three in four undescribed vascular plants are already likely to be threatened with extinction.

The SOTWPF report sets an important international standard for

researchers and conservationists to annually track trends in the global status of plant and [fungal diversity](#).

Dr. Nargar said recent DNA sequencing had added to botanical knowledge based on physical characteristics and challenged previously held beliefs on the evolution and distributions of orchids.

"New data suggests the orchid family did not originate in Australia as we thought. Instead, it originated in the [northern hemisphere](#) around 83 million years ago before it spread across the world," Dr. Nargar said.

"However, Australia's largest orchid lineage, which accounts for over 60 percent of Australia's orchid species diversity, originated in Australia and dates back more than 40 million years.

"In contrast, most [orchid species](#) worldwide originated fairly recently in Earth's history, within the last 5 million years."

The Australian Tropical Herbarium and the Australian National Herbarium contributed approximately 20 percent of the original DNA sequence data for the study, covering around 80 percent of Australian orchid genera, through participation in the Bioplatforms Australia led Genomics for Australian Plant (GAP) Initiative, which sequenced over 90 percent of Australian flowering plant genera.

Unfortunately, more and more newly described species have narrow geographic ranges, with many new plants described from only a single location, and are undergoing population or habitat decline.

"Last year we led a project to have 23 threatened orchids from Australia added to the International Union for Conservation of Nature Red List of Threatened Species, bringing the total number of Australian orchids on the Red List to 51," Dr. Nargar said.

"Almost all of the 23 species are terrestrial, meaning they grow on the ground, showcasing the rich diversity of terrestrial orchids found in Australia. In contrast, most [orchids](#) worldwide are epiphytic, meaning they grow on trees.

"Their inclusion on the Red List serves to increase awareness about Australia's orchid diversity and paves the way for international funding opportunities for those engaged in orchid conservation efforts."

Based on the work of 200 international researchers based in 30 countries, the underlying scientific evidence in SOTWPF was co-released today with a special collection from the journals *New Phytologist* and *Plants, People, Planet*, titled "[Global Plant Diversity and Distribution](#)" and in [a review of global fungal diversity](#) and conservation published by the journal *Annual Review of Environment and Resources*.

Provided by CSIRO

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