

## Tropical Thelotremoid Graphidaceae lichens: remarkable species diversity from Thailand

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Thelotremoid lichen was belong to family Graphidaceae, with two tribe; Ocellularieae and Thelotremateae. This is project was studies on species diversity in Thailand were found 87 species and 16 genera such as *Astrochapsa* (4), *Chapsa* (5), *Chroodiscus* (6), *Compositrema* (1), *Cruentotrema* (2), *Glaucotrema* (2), *Leucodecton* (3), *Melanotrema* (2), *Myriotrema* (3), *Nitidochapsa* (2), *Ocellularia* (42), *Pseudochapsa* (2), *Pseudotopeliopsis* (1), *Rhabdodiscus crassus* (3), *Stegobolus* (1), *Thelotrema* (8). Twelve new species from Thailand were reported; *Glaucotrema thailandica*, *Leucodecton confusum*, *Ocellularia cerebriformis*, *O. klinhomii*, *O. kohangangensis*, *O. phatamensis*, *O. pseudopapillata*, *O. pseudokrathingensis*, *O. rotundofumosa*, *O. salazinica*, *O. siamensis*, *O. subdolichotata* and 13 species were found in the first time. The highest species diversity belong to genus *Ocellularia* and most of all Thelotremoid lichen species presented in tropical rainforest.

## Composition of lichens from two contrasting ecosystems from Puebla, Mexico: mountain cloud forest and desert

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The state of Puebla in Mexico features various types of ecosystems, ranging from oak-pine forest to tropical rain forest, to dry shrub and desert. Many studies have been performed assessing the diversity of animals and plants in this region, such as amphibians, fishes, mammals, angiosperms, gymnosperms, pteridophytes and fungi. However, little is known about the lichen biota. The objective of this study was to inventory the lichens in a mountain cloud forest of Cuetzalán and in the desert of Tehuacán-Cuicatlán Valley. Sampling was opportunistic and non-quantitative, on all available substrates. We found a total of 111 species, 84 in the mountain cloud forest (belonging to nine families and 32 genera) and 62 (15 families and 24 genera) in the desert. Notwithstanding the differences between these two ecosystems, the most diverse family in both was Parmeliaceae, whereas foliose lichens generally dominated over crustose and fruticose one, and the most commonly colonized substrate was bark. Only four species were shared between the two sites: *Candelaria concolor*, *Lecanora leprosa*, *Parmotrema austrosinense*, and *P. tinctorum*.

## Habitat acquisition of tropical lichens in Dong Phrayayen – Khao Yai forest complex: Natural World Heritage site, Thailand

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The Dong Phrayayen – Khao Yai forest complex is a natural World Heritage site in Thailand. It is home to various kinds of tropical forest habitats, ranging from wet humid tropic to xeric warm conditions, where a high diversity of wildlife is known. More than 500 taxa of lichens are recognized in this site. Lichens are sensitive to environmental change, which could provide precautionary measures for conservation of area under pressures from anthropogenic encroachment and climate change. This study assessed lichen communities across different environmental gradients, among forest structures, ages, tree heights and bark textures. Foliose lichens with phycobionts, Parmeliaceae and Physciaceae, favours open conditions, such as deciduous forest, secondary forest and canopy in tropical rain forest. The crustose groups colonized wide ranges of habitats, of which the thelotremoid-Graphidaceae, Poriaceae and Pyrenulaceae prefer the shady and humid conditions of evergreen forest, old growth forest and tree base. Whilst, the lirellate-Graphidaceae seems highly abundant in more open and dry forests. Therefore, the complex systems existing in the different forests are essential for conservation of genetic diversity of lichens, which provide novel natural products, as well as other ecosystem services that need further intensive study.

## The project Lichens of Peru

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The knowledge of the taxonomy of lichens in Peru is limited, because of paucity of comparison material in national herbaria, difficulties in the access to scientific literature and the lack of specialists in this group. The focus is mainly the taxonomy and the use of lichens as bioindicators of air quality. For this project specimens in the national herbaria USM, HUSA, HUT, CUZ, CPUN, TKA and PGR have been studied and different parts of the country were surveyed; numerous courses in different universities, a symposium and a workshop. At present, there is 872 species; a preliminary key for determining crustose and foliose lichens has been produced and taxonomic studies for *Teloschistes* and *Diploschistes*; distribution maps of 100 genera; in relation as bioindicators of air quality a study of the city of Lima has been done in which the IPA has been calculated and heavy metals quantified in *Rocella gracilis*; in terms of academics two students were advised in their theses and there are four more currently advised. However, it is necessary to increase the collections of national herbaria; having duplicates cited in scientific articles; increase the number of new specialists, so that this country better advances in the field of lichenology.