



Title: 'Crustose lichen'

Description: Crustose lichen growing on a rock at Waikawa Marina

Photographer's name: Noelle Bennett

Where and when: Waikawa Marina, Marlborough. August 2021.

Sustainability: Lichens that form a crust clinging to rocks or vegetation are called 'crustose'. They cover as much as eight percent of the earth's land surface. You might have seen it on trees, those pale patches of crusty lichen clinging onto the bark. Or perhaps you've noticed it on the ground or even on rocks. It grows where the soil is shallow - or so shallow it's almost bare rock. It produces acids that very slowly (we're talking centuries here) convert the coarse earth together with the rock just beneath it into new soil. And that new soil will later feed plants such as the mosses.

For the organisms equipped to benefit from lichens, they are rich in food. Everywhere you go, and if you look carefully, you will find lichens - on trees and shrubs, pieces of wood, soil and stone. So long as the air is pure, they are prolific. In old forests, tall trees have their trunks covered with them which is no surprise really because trees, especially when they're together in a forest, are great purifiers of the air. Even just a few square kilometres of healthy forest is able to remove tons of dust and man-made pollutants from the atmosphere every year.

Lichens are long-lived, some living for centuries. They are survivors that can eat stone and even live remote from any land-borne nutrients, absorbing what they need from mist and breeze-borne dust. But very specifically, lichens are a symbiotic amalgamation of two or more independent or separate organisms, each of which can easily live on its own. When on their own, they look so different that they would be completely unrecognisable as a lichen. But when they come together, they form a union which is so tightly bound to each other that they resemble a single entity.

But wait, there's more! Lichens are even more complicated. Many lichens are an amalgamation of three or more organisms - cyanobacteria, algae and fungi. It is the fungi that provide the structure to the lichen - its body being known as the phthalus. Fungi that take part in the creation of lichen are known as basidiomycetes and ascomycetes.

Basidiomycetes that you may have seen or heard of include puffballs, bracket fungi, earth stars and chanterelles. Ascomycetes include cup fungi, dead man's fingers, truffles and even bakers' and brewers' yeast. New research has discovered that many lichens share their structures with even more species of fungi than previously thought. One lichen in the South American ecosystem which fixes nitrogen into the soil contains 126 species of fungi in the one lichen - that's 126 fungi in one single lichen. Amazing!

You can read more about lichens and their importance in ecosystems in the description of my photograph "Sunburst Lichen" in this gallery.

Photographer's notes: There are so many things in nature that we simply ignore probably because they seem a little mundane or unexciting. But if you simply take the time to look at these apparent non-entities, such a journey of discovery opens up to you. That's certainly what happened to me with lichen.

Photo specs: This individual image was focus-stacked using 50 images taken at two unit increments to ensure the whole of the structure was in sharp focus. Technical specs: The image was taken using a Panasonic DC-G9 camera and a Panasonic Leica DG Macro-Elmarit 45mm f/2.8 macro lens. Exposure details - 1/320 sec at f5.6 with an ISO of 100 and a focal length of 45mm (90mm full frame equivalent).

Digital specs: 7706 x 5777 pixels (44.52MP) @ 300dpi

Key words: lichens, lichen, crustose, crustose lichen, Waikawa, algae, cyanobacteria, fungus, fungi, Noelle Bennett, Ecosystems Photography, sustainability.

Price: \$150 (incl. GST) for use of the digital image. Visit www.ecosystemsp photography/sales for details & to order, or to get a quote if you would like a high-quality print.

Donation: The price includes a \$100 donation to a sustainability organisation or project of your choice, or otherwise to the *Marlborough Branch of the Royal Forest & Bird Protection Society* <https://www.forestandbird.org.nz/branches/marlborough>.

We recommend that the donation goes to *the Marlborough Branch of the Royal Forest & Bird Protection Society* to support their work on environmental monitoring, advocacy and education. Regional offices keep their eyes and ears tuned for local issues and combine with other branches to support a vigorous and effective national body based in Wellington – a good example of thinking nationally and acting locally.

Image ref: NB#035 (please use this reference in all orders and correspondence).

Noelle Bennett

19 December 2021