

WHAT'S HAPPENIN' ON THE HILL
NATURAL HISTORY OF HAYS COUNTY
Beacon Hill, Texas
February 2022

IT'S ALIVE!

The Edwards Plateau is well known as one of Earth's unique places, in part because of its rich diversity of life forms. On Beacon Hill, for example, there are over 500 species of plants and animals that call this eastern edge of the plateau home. But there are still hundreds of other living organisms found here that don't fit into these two large categories of life. Some are very strange indeed and here are two of them.

LICHEN, *Fruticose, Foliose, and Crustose growth forms*, are unusual life forms that combine a fungus with an alga. These are ancient organisms and it is thought that long ago fungi incorporated algae into their structure as the algae are photosynthetic and provide the fungi with a food source. The fungus in return provides moisture, minerals and shelter to the tiny algae. There are many thousands of species found around the world in all types of habitats, from brutal arctic to sweltering tropical regions. They grow on solid objects like rocks and trees. Over centuries of time the organic acids produced by generations of lichens turn rock into mineral soil. However, they cause no harm to trees as they are attached to the dead bark surfaces and derive no nourishment from the tree itself. They are grouped into the 3 growth forms noted above and on close inspection of the photo at right all three can be seen. The orange shrubby one is a Fruticose, gray leafy one is a Foliose, and the lime-green one is a Crustose.



Lichens are members of the fungal kingdom (Fungi)

NOSTOC, *Nostoc commune*, is a type of bacteria known as Cyanobacteria, formerly called blue-green algae. In its world-wide distribution it is found in damp terrestrial habitats and after a rain it appears on the ground as a small, green, jelly-like blob. After several days of drying out, it shrinks and begins to look more like a dark curled-up leaf, only to reappear again as green jelly after the next rain storm. Nostoc is important as a nitrogen fixer and through photosynthesis produces oxygen. With fossils dating back to almost 3.5 billion years, Cyanobacteria are known to be some of the earliest oxygen producers and they helped the Earth become habitable. Referring to the first life form mentioned this month, roughly 8% of lichens have a Nostoc species as a partner instead of a green alga. In various places around the world, primarily in Asia, Nostoc is utilized as food and medicine. There is ongoing extensive research into its anti-inflammatory, anti-microbial, and anti-cancer properties.



aka Star Jelly is a member of the Nostoc family (Nostocaceae)

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