

Garden

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DIY project; a professional company should be hired.

However, be forewarned that caustic alkaline cleaners may also injure foundation plantings, especially acid-loving plants like rhododendrons and azaleas. Sealing after cleaning will also reduce the rate of re-infection by *Gloeocapsa magma*.

Oh, and by the way, the "moss" that typically grows on the north side of your siding (and trees) is not a moss but a green micro-alga, *Desmococcus olivaceus* (*Protococcus viridis*).

This is easily removed by power spraying with a bleach. Again, unless you have protective clothing and know what you are doing, this is best left to a professional, and nearby plantings can also be injured if you are not careful.

On the campus of Delaware State University, the Claude E. Phillips Herbarium is Delaware's center for research, education, and outreach about plant identifications, locations, and uses. Call 302-857-6452 (Dr. Susan Yost) to arrange a tour of the Herbarium, and call 302-857-6408 (Dr. Arthur Tucker) for more information about this article.



Submitted photo/Delaware State University

The black streaks on this roof, so common on Delmarva, are caused by the dead bodies of a bacterium, *Gloeocapsa magma*.

It's a lichen! No, it's a moss! It's a super-cyanobacterium!

By Arthur O. Tucker
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Delaware Cooperative Extension and the Claude E. Phillips Herbarium have received requests to identify the "lichen" on homeowners' roofs. A lichen is a unique organism, an association of a fungus and an alga. This association used to be called symbiosis, but now the general agreement is that it is a controlled parasitism in which the fungus provides suitable conditions for the alga, and the alga supplies food to the fungus.

Lichens do, indeed, grow on old cedar shake roofs or other roofs that are moist and/or shaded, and these are often colored gray, yellow, or black and raised, but the problem afflicting DelMarVa roofs is usually not a lichen.

We've also heard this problem called a "moss." Mosses are green photosynthetic plants, often branched and elevated, but the black streaks on our roofs are not mosses. True, there is a group of tiny, black mosses called the granite mosses, but these typically are found on granite boulders in mountains, not on roofs on the Coastal Plain of DelMarVa.

Actually lichens and mosses are an indication of clean air, so if you have these growing on outside structures, you should be thankful that your lungs are being spared.

No, the affliction of many of our roofs is usually a cyanobacterium, *Gloeocapsa magma*. Cyanobacteria were once called blue-green algae ("cyano" refers to the color cyan, a blue-green) since they are photosynthetic, often found with other algae

in aquatic systems, and often with a blue-green to black color.

However, the lack of a nucleus firmly places them firmly as a bacterial group. Furthermore, fossil evidence (and DNA) indicates that the cyanobacteria were probably the first major photosynthetic organisms on earth, and their ancestors evolved into the chloroplasts of today's plants during the mid-Proterozoic (about 1.6-1.8 billion years ago).

The black streaks on our shingles can be dated to the innovation of a "green" (and cheap) technology, developed a few decades ago, that combined recycled limestone into the asphalt and fiberglass of shingles. The problem is that the limestone granules support *Gloeocapsa magma* in humid climates. This can lead to deterioration of the shingles and even raised lumps. Furthermore, growth of the cyanobacterium will, in turn, lead to the growth of lichens and mosses, further deteriorating the shingles.

Power washing will simply remove the granules of the shingles, resulting in further deterioration. Zinc strips along the peak are only successful in preventing growth of this cyanobacterium within about 12 to 18 inches from the peak. The cure is annual cleaning with special cleaners, usually lye-based (bleach, even concentrated, is only partially successful).

Because of the caustic nature of the cleaners and the possibility of dislodging the granules, this is not a

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