

LCDS Green Committee #1 - warfelg
Lancaster Country Day School
Project Green Challenge
Greenest Challenge Day 21

Define:

I want to make a sailboat sail using a material that mimics the durability and stiffness of a spotted lanternfly wing.

Biologize:

Sails need to be both stiff and very strong in order to stand up to weather conditions and also effectively power a boat.

Discover/Abstract:

When I was observing nature, I found a spotted lanternfly wing on the ground. I picked it up and started examining the structure and properties of it. It was very stiff, and its tensile strength was also very high. When I contorted it in my hands, it reminded me of the material of a sail on a sailboat. It piqued my interest because the wing was so stiff and relatively strong for something so small.

Emulate:

Compared to other insect wings that I have observed in the past, these spotted lanternfly wings seem much more strong. I couldn't find much information on the material that spotted lanternfly wings are made of, but one source said that all insect wings are made of "cuticle."

Evaluate:

If the inner workings of lanternfly wings can be studied, then we can create a synthetic material that mimics this, and perhaps we can make more durable sails in the future. However, there are a lot of problems that could go wrong. If the material in the wings doesn't scale up properly, the sails will be basically useless. Perhaps many wings of different insects can be studied, and the most strong, which may not be that of the lanternfly, will be chosen as a model.

Sources:

Sciencedaily.com
Wikipedia.org
Bucks County Gardens



How can we use
insect wings as
models for sailboat
sails?



LCDSGREEN
Posts



Icdsgreen



Icdsgreen While out in nature, I found a spotted lanternfly wing, and that got me thinking... Both insect wings and sails have to be stiff and durable in order to provide power. When examining the lanternfly wing, it had all of the properties that a sail had. By investigating the materials used in insect wings, we may be able to make more durable and efficient sails. Bio mimicry is amazing! @turninggreenorg @biomimicryinstitute #pgc2021 #biomimicrychallenge