ECOSYSTEM ENGINEERS

by Sebastian Harris, Heritage Conservancy Conservation Easement Steward

Architects of our natural environment

Negative interactions between organisms, such as predation and competition, are often thought to be the most important factors governing our ecosystems. But it may come as a surprise that positive interactions between organisms are just as important and prevalent in nature. This is best exemplified by ecosystem engineers.

A

Ecosystem engineers are organisms who *change the physical state of their environment, which provides resources to organisms who live alongside them*. Perhaps the most obvious ecosystem engineers in our Pennsylvania forests are woodpeckers. Woodpeckers drill holes into trees both to forage for insects and to create nests. Those holes, over time, become habitats utilized by an assortment of animals, plants, and fungi. Holes made by our largest woodpecker species, the Pileated Woodpecker, are so large that they're able to provide shelter for larger animals such as squirrels, owls, and even ducks (**A**)!

Animals aren't the only organisms engineering our ecosystems. Plants and Fungi both provide resources to other organisms by changing the physical state of the environment. The growth of a Sycamore overhanging a stream casts a shadow on the water, creating cool pockets of water where fish and invertebrates can thrive (**B**). In essence, a Sycamore engineers an ecosystem simply by growing and existing. Many types of Fungi break down wood, creating microenvironments where insects and amphibians can thrive. Essentially, ecosystem engineering is a very broad spectrum, but one of great importance!

B

HOW YOU CAN HELP:

1. Plant a diversity of **native species**, which will in turn attract ecosystem engineers to your property

2. Engineer your own ecosystems via removing **invasive species** of plants, creating space for native plants and animals to flourish

3. Allow trees on your property to grow old, as their growth in and of itself can create a wealth of micro-ecosystems