

Fact sheet from presentation by Doug Tallamy

We are losing the plants and animals we share this planet with.

Biodiversity losses are a clear signal that humanity's life support systems are failing.

We need biodiversity because biodiversity runs the ecosystem on which we depend. The more diverse an ecosystem is, the more services (air, water, food, benign weather systems, carbon dioxide sequestration, garbage recycling etc.) it will provide for us.

With ever growing human populations, we need more ecosystem services. But as we kill off our biodiversity, we are getting fewer and fewer services from our ecosystems.

We are modifying nearly all of the earth's land for our own purposes.

Two million acres, an area the size of Yellowstone National Park, are lost to development each year

Nature Conservancy
NRDC

The Chesapeake Bay watershed has lost 100 acres of forest each day since 1985

Sprague 2007

We have paved 4 million miles of roads in the U.S. (Hayden 2004)

This is equivalent to 37,879 sq miles, or nearly five times the size of New Jersey.

We have converted 62,500 sq miles (40 million acres) to suburban lawn in the U.S. (45.6 million acres). This is over 8 times the size of New Jersey dedicated to an alien plant.

Our remaining undeveloped land is overrun with invasive aliens

100 million acres have been invaded by alien plants. This is expected to double in the next five years.

All of this habitat loss has taken its toll. Over 800 plant and animal species are rare, threatened, or endangered in Pennsylvania. 150 have already disappeared entirely.

40% of Delaware's plant species are rare or extinct and 41% of its forest birds no longer nest in the state.

State Natural heritage programs estimate that as many as 33,000 species of plants and animals are “imperiled” in the U.S.

Neotropical migrants have declined in population 1% per year since 1966 (Breeding Bird Survey)

Because 54% of the U.S. is now in cities or suburbs, and 41% is in agriculture, biodiversity will have to survive in those areas if it is going to survive at all. Truly natural areas are gone nearly everywhere.

Why can't biodiversity survive in our parks and preserves? Because we have changed large habitats into small habitats that can only support tiny plant and animal populations. And tiny populations are vulnerable to local extinction.

Biodiversity is not optional, and yet we are forcing it to extinction.

This doesn't have to happen! We can prevent many or most extinctions if we redesign our cities and suburbs so that other species can share those spaces with us. If we also redesign our agricultural land, we can prevent even more.

Today, suburbia supports very little biodiversity. Our challenge is to redesign suburbia so that it becomes a healthy, functioning ecosystem.

How do we increase diversity?

Animal Diversity Starts With Plant Diversity.

All energy is captured by plants and all animals get their food from plants. There fore, the amount of vegetation in a given area determines the carrying capacity of that area (i.e. the amount of life that can be supported indefinitely in that area).

Insects are the most important group of animals that transfer energy captured by plants to other animals.

If you remove insects from an ecosystem, the ecosystem will collapse because so many other creatures depend on insects for food.

For example, 96% of all terrestrial birds rear their young on insects. No insects; no baby birds.

90% of all insects that eat plants require native plants to complete their development. That is because plants protect their leaves with toxic chemicals. Insects can survive after eating those chemicals only after they have evolved physiological mechanisms for detoxifying them. This requires a long evolutionary history between insects and their host plants. Native insects only have such histories with native plants. They have not been

exposed to plants that evolved in Europe or Asia long enough to be able to use them as host plants successfully.

Every time we plant an alien plant, we are reducing the local insect population and thus depriving the birds and wildlife of the food they need to survive and reproduce.

Studies have shown that areas overrun with alien plants produce 35 times less caterpillar biomass, the most popular insect food with birds.

Alien plants used in the ornamental trade support 29 times fewer species of caterpillars than native ornamental plants.

Generalist insects will not be able to compensate for the loss of specialist herbivores. Although they are better able to eat a variety of plants, the chemical differences between most alien plants and our native species are too great even for generalist to overcome.

To share suburbia with wildlife, we need to: Create corridors connecting natural areas; Reduce the area now in lawn; and Begin the transition from alien ornamentals to native ornamentals.

Homeowners can do this by planting the borders of their properties heavily with native woody plants.

Studies have shown that even modest increases in the native plant cover on suburban properties increases the number and species of breeding birds, including birds of conservation concern.

As gardeners and stewards of our land, we have never been so empowered to help save biodiversity from extinction, and the need to do so has never been so great. All we need to do is plant native plants!