



Photos: © iStockphoto.com, Ken DeWitt, © iStockphoto.com

# CREATE IT AND THEY WILL COME

By Nicole Cavender, Ph.D.

**C**reate the habitat and they (butterflies) will come. That is the hypothesis that is being tested at The Wilds in southeastern Ohio.

Over the past several years, numerous conservation organizations have recognized the importance of conserving the world's butterfly species. With their dependence on specific plants for various stages of their life cycle, global declines in butterfly populations are directly linked to the loss of critical habitats and the disappearance of numerous plants. The Wilds is no exception. Located on almost 10,000 acres of land, the Wilds has experienced ecological disturbance from agriculture and surface mining for coal followed by subsequent land reclamation. With the loss of much of the original forest and vegetation, native butterfly populations have certainly been impacted.

The idea for creating the butterfly refuge was initiated in partnership with BFCI (Butterfly Conservation Initiative) and Ohio zoos. The vision was to create a large-scale habitat (eventually reaching up to 200 acres) at the Wilds which would include a diversity of restored and created habitats suitable for a variety of butterfly species including those that may be endangered, threatened or rare to the state of Ohio. Other components of the vision included the incorporation of scientific and experimental methods in order to gain insight into the habitat restoration and creation process as well as incorporating a human component. The initiative was given a chance to flourish with a grant provided by the George Gund Foundation of Cleveland in 2003. Along with the creation of a large-scale butterfly habitat at the Wilds, other Ohio zoos have participated in this initiative through developing educational and exhibitory components, increasing public awareness and local community efforts as well as volunteering time to the habitat.

## HABITAT CREATION

It is one thing to create a vision on paper, but it is another to actually make it come to fruition on the ground. Not to be taken lightly is the ecological history of the Wilds. Layers of earth were removed with monstrous machines and seams of coal torn out. The overburden was replaced with a top dressing of soil and an over seeding of grass. Visually, the casual observer at the Wilds today sees a landscape of beautiful green rolling hills with pockets of forests and a plethora of clear deep lakes. As one looks closer at the ecology however, there is the realization that many elements are missing such as the once expansive hardwood forests and the prestigious soil structure which took millions of years in the making. Although beautiful in its simplicity in many ways, it is now a landscape covered mostly with foreign grasses, few flowering plants, and plenty of invasive species. There is a great need for ecological restoration and habitat creation.

When one pictures a butterfly habitat, the image that usually comes to mind is a field of intensively colored flowers. Although this is not all together incorrect, as nectar is a very important source of energy for the adult butterflies, it is not the complete picture. One only has to consult the early childhood book, *The Very Hungry Caterpillar*, by Eric Carle, to get the other half of the story. This book illustrates an essential point and reminds us not to forget that if you desire the beautiful butterfly, you must feed the hungry caterpillar. To complete metamorphosis, there must be the necessary resources for each of the life cycle stages. Each

butterfly species is unique requiring different host plants for their larval stage. The swallowtails (*Papilionidae*) are very desirable to see fluttering in the temperate climate of Ohio, as they are large and their beauty is captivating, but each species requires different types of habitat. The more common tiger swallowtail (*Papilio glaucus*) requires a woodland habitat for survival as they use cherry, tulip, ash, basswood, and other hardwood trees for larvae food. The spicebush swallowtail larva (*Papilio troilus*) can only survive if there is a member of the *Lauraceae* family such as spice bush (*Lindera benzoin*) or sassafras (*Sassafras albidum*) on which to feed. While the less common swallowtail, the pipevine butterfly (*Battus philenor*), requires members of the *Aristolochiaceae* family such as pipevine and Virginia snakeroot, plants not all that common to Ohio. Other species such as the bronze copper butterfly (*Lycaena hyllus*), a lustrous butterfly tiny enough to fit on a thumb, requires plants such as docks (*Rumex spp.*) and smartweeds (*Polygonum spp.*), while the brightly mottled red admiral (*Vanessa atalanta*) requires nettles (*Urtica* and *Laportia spp.*), weeds that no respectable horticulturist would allow in their landscape.

Creating a butterfly habitat inclusive of the plants needed for most of the naturally occurring butterfly species in Ohio requires an extensive amount of ecological diversity. To incorporate as much diversity as possible, the habitat at the Wilds is strategically located nearby remnant woodlands that were not directly mined for coal as well as a stream fed wetland. The primary objective is to build upon these existing higher quality habitats by replacing some of the surrounding expanses of low diversity grasslands with a much higher diversity meadow ecosystem that incorporates a variety host plants, nectar sources, and microhabitats. Plant selection for the habitat must be based on their ability to survive and thrive in the harsh soil conditions of the Wilds. Establishing such a meadow requires extensive site preparation, careful plant selection for varying soil conditions and hundreds of pounds of seeds. Keen observations about its growth are necessary to adjust management and achieve the desired succession. Since 2003, over 12 acres have been planted using a variety of preparation, planting, and management methods. The habitat is still in its early stages of growth and has been changing dramatically each year. Examples of Ohio native plant species that were established by seed, and were expected to be in bloom this summer, include:

- **SWAMP AND COMMON MILKWEED** (*Asclepias incarnata* and *A. sullivantii*- host plant for monarchs and excellent nectar source)
- **BROWN AND BLACK-EYED SUSANS** (*Rudbeckia triloba* and *R. hirta* – early summer nectar source)
- **WILD BERGAMOT** (*Monarda fistulosa* – excellent summer nectar source)
- **NEW ENGLAND AND FROST ASTERS** (*Aster novae-angliae* and *A. ericoides*- host plant for pearl crescents and good late summer nectar source )
- **PURPLE CONEFLOWER** (*Echinacea purpurea* – excellent summer nectar source)
- **STIFF GOLDENROD** (*Solidago rigida*- excellent late summer nectar source)
- **TICKSEED SUNFLOWER** (*Bidens polylepis* – good late summer nectar source)

BUTTERFLIES, CONTINUED PAGE 18

The roughly 25 acres of woodlands and 2 acres of wetlands that are contiguous with the created meadow have also been managed and enhanced with the augmentation of a variety native plants. Species include: mallows (*Hibiscus spp.* - host plant for gray hair-streaks, *Strymon melinus*), cardinal and great blue lobelia (*Lobelia cardinalis* and *L. siphilitica*- both excellent nectar sources), black cohosh (*Actaea racemosa* - host plant for Appalachian azure and spring azure)

### BUTTERFLY MONITORING

While the habitat is growing, and changing, we want to know how the native butterflies are responding. A long-term monitoring program has been established in order to monitor their activity over time. A transect has been created that follows the methodology used by The Ohio Lepidoptera Society, Long-term Monitoring Program (adapted from Pollard and Yates, 1993). This transect is a fixed path that is divided into sections according to habitat changes and is surveyed weekly to record butterflies and larvae observed on and nearby the trail. Other environmental observations are noted such as time of day, temperature, cloud cover, wind speed and the species of flowers that are currently in bloom. Each week it takes an experienced observer about an hour to complete the survey. Since 2004, the transect has been run weekly (April-October).

Since the habitat is still in its early stages of establishment, this information can be considered baseline data in which to compare future activity as the habitat matures and expands.

Between 2003-2004, 1,412 individual butterflies have been recorded at the habitat including 29 different species. During the 2005 season, noticeable increases in numbers were observed for the following species: eastern-tailed blue, pearl crescent, monarch, viceroy, summer azure, orange sulphur, and painted lady. As we continue making improvements to the habitat, we anticipate that butterfly numbers and species will increase, however there are always many variables and factors to consider.

### A NATURAL APPROACH TO DISPLAY AND LEARN ABOUT BUTTERFLIES

The habitat is now accessible to the general public via paths and bridges. Students, teachers, and scientists are encouraged to use it for education and research purposes. It is certainly not the typical butterfly display or house. Thus far, no pupae have been brought in or propagated by hand, although the Wilds is considering propagating specific native species that are less common to Ohio. For now, we completely rely on the natural butterfly cycles. As one explores the setting of the habitat, butterflies are not guaranteed to land on one's head. But if the observer looks closely, there are many to be found and other exciting things to discover. Because the habitat is diverse and dynamic, it is a wonderful experience for the casual visitor as well as a great teaching tool for school groups of all ages. On your next visit to the Wilds, plan to spend some time at the butterfly habitat, especially during the mid-summer peak bloom.

---

NICOLE CAVENDER, PHD, IS DIRECTOR OF RESTORATION ECOLOGY, THE WILDS