The Arboretum

AT PENN STATE BEHREND

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PENNSTATE Erie The Behrend College

The Arboretum Is About You!

Great things are happening at the Arboretum at Penn State Behrend. Friends of the arboretum continue to donate trees, faculty members continue their support and research, and the Penn State Master Gardener program has been helping with our educational efforts. I'm especially proud of the outreach activities we do with local groups. School children have visited several times, and local garden clubs have met and taken tours quite a few times over the past year. (Let me know if you want to come by!)

I'm also thrilled to report that this year's graduating class has decided to donate trees to the arboretum as its class gift. These flowering crab apples will add to the beauty of the college entrance, and will replace some of the trees that have been lost over the years.

We rely on your generosity to keep good things happening here. Support for the arboretum comes entirely from donations, and from the many volunteers who contribute to our education and outreach efforts.

Many thanks to all of you who support us. My colleagues and I appreciate your help and commitment.

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Why Plant Native Species?

At the Arboretum at Penn State Behrend we are proud of the wide variety of tree species that represent temperate regions throughout the world. Some of these exotic species were planted by the Behrend family. Behrend faculty and staff members, and students continue to increase the diversity. One goal of the arboretum is to provide visitors with a chance to study these different species from around the world. However, when you plant trees you should also consider planting native species.

Climate is an important consideration when planting a tree. The United States Department of Agriculture divides North America into twenty plant-hardiness zones (eleven major zones, with nine of them broken into sub-zones). The zones are numbered from the coldest region (zone 1), to, the warmest region (zone 11). These zones are distinguished by the average annual minimum temperature of a region. Plants are classified by the minimum zone in which they should be able to survive. For instance, a plant or tree that is classified as zone 5 will survive in zones from 5 though 11. If such a plant is growing in a lower-numbered zone, it will probably die from the cold within a year or two of planting. That is why we have, unfortunately, lost a few trees in the arboretum; they were planted in a zone where they typically cannot survive. It is important also to be careful about where trees are purchased. For example, a sugar maple grown in Michigan has a better chance of surviving in northwestern Pennsylvania

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For information about the arboretum call 814-898-6160

Trees, Jung, and Myth

For many of us there is a certain natural sense of developing an emotional bond with trees. It is a sense that transcends culture, time, personality, and even a common aesthetic experience. We love trees because of our humanity, and whether that love is based on an affinity for the beauty around us, an expression of peace in our midst, a sense of shared ecological destiny, or some greater spiritual depth, the image of the tree as a bridge between the spiritual and the natural is common to world mythology and mature faith. Indeed it is perhaps in that very commonality that we feel some discomfort! Early Christians suspected the paganism of the sacred copse, and sure enough, a simple Web search for the Celtic "Druids" reveals their etymology as "men of the oak" (Duir), yet we are not so distant from Druid superstitions that regarded the power of the oak, the hazel nut, and rowan. Trees in the mythology of human origins are probably the one universal symbol of all peoples and expressed a common sense of awe.

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In Norse mythology, in the gods' abode in Asgard, grows the tree of life. The roots of "Yggdrasil," a giant ash, give life to the human world of Midtgard. "The gods' tree reflects the state of the world and holds the world together," yet "the snake gnaws on one root." The tree sustains life and drinks from the fountain of destiny, yet grows into the realm of serpents in Niflhein.

Perhaps better known are the biblical tree of life and the tree of knowledge that are recalled in the Book of Genesis. Disobedience to God by eating the fruit of knowledge brings the sorrows of mortal life and denies mankind the fruit of the tree of life and immortality. The tree of life reappears again in the bible in Proverbs and the Book of Revelation. The latter promises its fruit along with the "Paradise of God" to the "one who conquers."

The Koran's many references to the olive and date palm offer a rich source of lessons and parables, and here too the value of a parable is found in comparison with a tree: [A] goodly Word like a goodly tree, whose root is firmly fixed, and its branches reach the heavens ... and an evil Word is like that of an evil tree: it is torn up by the root from the surface of the earth: it has no stability [14:24,26].

Perhaps the most elaborate of all symbolic expression of the tree of life is contained in the vast system of Jewish mysticism known as the Zohar Kabbalah. Here there is not a specific tree, but a symbolic tree, which expresses the attributes of God, ten spheres (sephirot), or "emanations" of creation and the Torah. The first sphere, represented by the Crown (Kether), is the cosmic "intention of the creator for creation" nourished by the Chochmath of divine wisdom and foreknowledge, and related directly to understanding (binath), determination (gevurath), beauty (tifert), compassion (chesed) and abundance (yesod). This is but a fragmentary list of a body of knowledge that, in its fullness, aspires to express the ineffable, and yet the concept of the tree found an image that might bring the infinite to human comprehension.

Clearly the image of the tree is something more profound in human experience than its casual sight can suggest, but how can we describe its persistence? Among the few great thinkers who sought to interpret the mind, perhaps none is more popular than Karl Gustav Jung (1875-1961). Among his many contributions Jung wrote about "archetypes" in human thinking as a "preconscious psychic disposition that enables one to react in a human manner." The few pure archetypes were expressed ideas like the "shadow," the darker and often chaotic side of our personality, known in dreams and fairy tales as the wilderness; the anima and animus-the masculine and feminine idea of traits common to all persons; and the self, the source of integration and identity. The lifelong task of "individuation" by which the self was realized depended on bringing the unconscious to realization in purposeful living.

Not surprisingly, trees loomed large in the symbolic understanding of each archetype. In one of his most popular works, *Man and His Symbols*, Jung told the story of a Chinese sage who spoke of a carpenter who considered useless a gigantic oak that had survived for centuries because its wood was too hard and gnarled, but the tree appeared to him in a dream. The oak rejected any comparison with more "useful" trees:

You poor mortal! Imagine if I had been useful in any way, would I have reached this size? Furthermore you and I are both creatures, and how can one creature set himself up so high as to judge another? You useless mortal man what do you know about useless trees?

Perhaps the lesson of such tree stories is to offer guidance about ourselves, who we are, and what we may be.

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Black Cherry

The black cherry tree (*Prunus serotina*) grows in eastern North America from southern Canada south to the Gulf of Mexico and west to the central Great Plains. On the periphery of its range, black cherry is a poorly formed tree—short in stature and highly branched. In a narrow strip, running from central New York State, through the Allegheny Plateau and western Pennsylvania, and into northern West Virginia, black cherry is transformed into a major forest tree. Occasionally a unique specimen can be found in the Deep South or in parts of New England but it is in western Pennsylvania that the black cherry tree gains a significant stature and takes command of the forest ecosystem.

As a tall and prominent tree, black cherry is an important commodity in Pennsylvania, while in other parts of its range it remains a tree of little commercial value. Because of this restricted locality of tree form, cherry wood and veneer from western Pennsylvania is highly regarded throughout the world. In addition to use as a timber tree, the fruit from black cherry is eaten by a large variety of animals. However, its leaves, twigs, bark, and seeds contain a highly toxic compound called prunasin, which can result in cyanide poisoning of livestock and fish. The fruits are edible by humans and have been used to flavor drinks but they are not often eaten as fresh fruit due to their extremely sour taste. Trees that produce sweeter fruit have been reported, but no varieties of black cherry have been developed strictly for fruit production.

Black cherry is rarely used as a landscape planting in residential settings because the flowers are small, the fruit is tart, and the foliage is not especially interesting. Stately black cherry trees are rare in most residential settings because they develop best in a forest setting where some competition from other plants exists. On the Penn State Behrend campus there are some exceptional specimens of black cherry located on the west side of the college grounds in the wooded area above Four Mile Creek gorge. Black cherry deserves recognition in the Arboretum at Penn State Behrend because of its unique historical, commercial, and ecological importance in Pennsylvania.

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The black cherry is the largest of the native cherry trees, reaching 40–60 feet with a trunk diameter of 1–2 feet. The bark on young trees is smooth, dark brown or greenish with strong horizontal markings. On old trees, it is blackish to reddish brown, very rough and scaly with turned-back edges. The leaves are pointed, elliptical, dark shiny green above and paler beneath, with fine rounded teeth. The flowers are white and hang in drooping clusters, appearing in late May. The immature fruit is dark red, the mature fruit is shiny and black in September. The fruit is 1/2 inch in diameter and forms irregular clusters. The wood is greatly valued for its use in cabinetmaking and interior finishes.

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than a sugar maple that originates in Georgia. This zone system only considers the lowest temperature in which the plant will survive; that is, where the plant won't freeze during the winter. There are other considerations when selecting a tree or other plant for a particular zone. If the plant requires a dormancy period, it is important to provide a critical amount of cold and day-length in order to induce the dormant state. Many perennials, those plants that grow and flower year after year, require a dormancy period for proper growth and development. Without a dormancy period, such plants can die within two or three years. Thus, a plant from northwestern Pennsylvania planted in Florida may only survive a few years unless it is exposed to the cold treatment necessary to induce dormancy.

Other considerations in tree planting are sun, soil, and water conditions. It is important to read instructions provided with plants in order to maximize success. Mismatching a plant to site conditions may result in loss—or worse—creating an unhealthy and unsightly landscape.

Planting native species will help ensure the best possible success in your landscape. The United States Environmental Protection Agency recommends that native species be planted to preserve species diversity and promote stewardship of our natural heritage. For more information, visit the following Web pages:

www.audubon.org/bird/at_home/PlantNativeSpecies.html
www.epa.gov/greenacres/links.html
www.nps.gov/plants/

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McCARTHY GETS TREE!

When Penn State employees celebrate their 25th anniversary with the University, they generally are rewarded with an "official" Penn State chair. When Mary Beth McCarthy reached her 25-year milepost, she got another surprise—a tree!

McCarthy, Behrend's director of career development and academic advising, has many friends at the college. Those friends pooled their money and told McCarthy she could choose which tree to have planted in her honor. "I chose a Korean Pine," she said, "It will add to the pine collection already here." Pine nuts are harvested from the cones of the Korean Pine. People often use pine nuts when cooking. "I look forward to watching 'my' tree grow, and I'll certainly eat the pine nuts!" said McCarthy.

Anyone can donate a tree to the Arboretum at Penn State Behrend. To make your donation, just call us at 814-898-6160.

Mapping Eastern Hemlocks

Two Penn State Behrend biology seniors are volunteering their time to create a dataset of eastern hemlocks in the arboretum. Lee Beers and Ray Beinhauer began the work as part of Geographic Positioning Systems. They were also inspired by a biology lab in which they estimated the age of trees by measuring their diameter. The location work was done using a Trimble ProXRS GPS, allowing them to plot tree locations to within half a meter of their true location.

GPS systems are steadily becoming a part of everyday life. They find their way into cars, boats, and even cell phones. These devices determine your location by calculating your distance from multiple satellites. Data from a GPS can then be used to create maps and analyze trends.

While not as widely known as GPS, GIS or Geographic Information Systems, is an indispensable tool for science, government, and private industry. GIS software allows a user to create, store, retrieve, and query spatial data (such as GPS data). The School of Science at Penn State Behrend has licensed ESRI's ArcMap software. With this program, faculty members and students can study spatial relationships, create publication-quality maps, or even explore three-dimensional landscape models.

GPS and GIS are well suited to horticultural studies. Tree locations and attributes (type, size, health, etc.) can be recorded in the field using GPS. These data can then be imported to a GIS, where spatial trends (how soils, elevation, slope, etc. affect tree growth) can be analyzed.