

The Road to Restoration — Comprehensive data drives land management decisions

By Ed Collins, Natural Resource Manager

The Conservation District manages one of the largest and most comprehensive ecological databases in the state and new information is being added on a monthly basis.

Currently this database contains records on ecological communities, vascular plants, mammals, reptiles, amphibians, butterflies, dragonflies, fish, freshwater mussels, snails, breeding birds, fungi, soils and many other species groups and ecological features. Over 3,824 surveys containing 347,000 individual data records are contained in the ecological database which cover the entire county.

Every acre of land that is not in agricultural production receives a comprehensive baseline inventory of a number of these species groups in the first full growing season after its purchase by the Conservation District. This alerts District biologists to any endangered or threatened species on the site, allows a grading of its ecological health (A through E), and identifies any immediate environmental problems such as soil erosion, gypsy moth infestations, etc.

During this evaluation each acre is assigned a unique management unit within the conservation site. This management unit number is a permanent tracking system that allows staff to document all management work, biological information and long term monitoring that will occur over several decades on that specific site.

A comprehensive review of past land use history is also undertaken to determine what ecological functions and processes have been altered on the site since settlement began. This process, known as forensic ecology, allows district staff to identify the source of some ecological problems and at the same time to become aware of any unique cultural history that should be preserved on that site.

This comprehensive gathering of knowledge allows District biologists to determine what management activities need to occur on the site to allow it to flourish—not only for future generations to enjoy, but for its own intrinsic value as a living ecosystem.

Such activities may include removal of exotic species, management of invasive weeds, restoration of original hydrology, replanting of native wildflowers, grasses and sedges, re-introduction of animal species, stream re-meandering and re-forestation. Each site is unique in its land use history, its level of ecological health and the management activities that are required to insure the long term survival of the plants and animals that call that area home.

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Orange Sulphur
photo by Bob Williams



Combating the County's Exotic Species

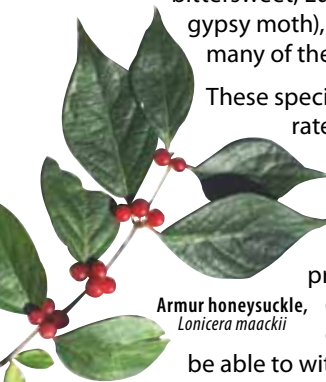
One of the most common problems associated with much of the acreage that makes up the public open space trust for McHenry County is invasive species infestations. These species can be herbaceous weeds (Canada thistle), trees and shrubs (oriental bittersweet, European buckthorn) or animals (zebra mussels, gypsy moth), which all share a common history and result in many of the same ecological consequences.

These species can reproduce and spread at phenomenal rates, often crowding out native species that must not only compete with the exotic invader, but also with its own natural insect and predator controls. As the overall health of native communities such as woodlands and prairies declines with invasive species invasions, other problems can become exacerbated. For example, there is a chance healthy woodlands may be able to withstand an outbreak of gypsy moth infestation

if they were not already weakened by invasive species problems. Native mussels that strain detritus from streams for food may find themselves covered with zebra mussels that they can no longer sustain themselves.

As key components of the natural community disappear, we witness other species dependent upon them also begin to disappear. The inter-linked system of plants and animals that has taken thousands of years to develop can eventually collapse as ecological problems cascade.

Changes to the ecosystems they infest include decreased sunlight, subsequent reduction or elimination of oak reproduction, loss of native ground layer plants due to soil erosion, and loss of key components of an ecosystem such as native butterflies and songbirds. Even shifts in the soil Ph and chemistry can occur, brought on by the decomposition of the leaves of some exotic species.



Armur honeysuckle,
Lonicera maackii

Types of Brush Removal

One size does not fit all. Most brush clearing operations are small scale and done in house by District ecologists.

Larger scale infestations and those that have been in place for many decades are sometimes contracted out through competitive bid to qualified brush removal companies. Such projects typically occur in areas where the ecological quality of the site is degraded and remaining pockets of native species are scattered or non-existent.

In many such areas, the only remaining component of the original ecosystem still evident is the large older oaks. Following brush clearing, prescribed fires, replanting of native species and long term monitoring are completed by staff.

The majority of brush clearing projects happen at a smaller scale and over longer periods of time. The scale of a project is decided based on many factors including:

- **What is best for the site in terms of impact—several repeated disturbances or a larger disturbance done all at once?**
- **What is the most cost effective method?**
- **What is the best season for the project?** (Some sites, especially those with sensitive soils, can only be done on frozen ground. Other projects require warmer weather. Seasonal issues such as flooding or the lack of frost can delay the completion of a project.)
- **What are the impacts to site users if the site needs to be closed during the work?** (Visitor safety is a priority and can result in a site being closed during a project.)
- **Will leaving larger patches of exotics result in reinvasion?** The potential for re-invasion of a site by adjoining patches of exotic species is carefully considered. Many exotics are prodigious producers of seed which is how they can overwhelm native systems so rapidly. Sometimes complete removal of exotics increases the success of native species reestablishment.

After Brush Clearing — Myth vs Fact

Large brush removal projects can seem extremely destructive to a casual site user, especially if that user has become accustomed to a particular appearance in the past. Common perceptions include:

- **Chips and cutting debris may cover large portions of the site.** Some of the material will be decomposed by fungi and micro-organisms. Typically larger brush clearing sites will undergo a prescribed burn as soon as possible after completion. The burn will remove a good portion of the chip layer and allow replanting of native species to occur more effectively.
- **Everything seems to have been cut except the bigger oaks.** The number of young oaks, hickories and other native trees and shrubs are so low in many degraded ecosystems that once the exotics are removed the lack of recruitment of replacements for the older trees is drastically apparent.
- **The ground seems too bare and lifeless.** This is often a very accurate observation as one of the relentless effects of exotic brush invasion is the loss of native ground covers such as grasses, sedges and wildflowers. Reseeding the native flora is essential.
- **It is too open, windy and sunny.** There are structural changes to wooded ecosystems after large brush clearing projects. The ecosystems of McHenry County developed under ecological forces that include frequent wildfires, ample sunlight and open conditions. Often older trees in a project area will provide clues in their growth patterns to the conditions they germinated and grew into maturity under. Note the wide spreading crowns on many older oaks that tell of a time when ample sunlight and rain reached the woodland floor.
- **The birds and animals are gone.** Not only will the wildlife already on the site respond positively to the changes, but the populations and types of native wildlife using the site will increase as it regains ecological health. Healthy ecosystems produce more food for wildlife in general and for the base of the food chain that eventually sustains predators such as foxes, hawks and owls. Dead trees and snags are left to provide habitat for the wildlife that depends upon them.



Before deciding that your old favorite site is gone forever and can never be replaced, observe the ecological shift that is underway. Watch for new wildflowers, grasses and sedges. Notice the effects that enough sunlight and water can have on the health of plant and animal life. Discover how wind moves through the trees and what role it plays for winged species like owls, hawks and butterflies.