



Helping People Help the Land

Conservation Notes

USDA - Natural Resources Conservation Service - Michigan



May - June 2013

Study: Ag Impact on Bay can be Reduced

A study on water quality in the Saginaw Bay basin found that targeted conservation on agricultural land can significantly improve fish habitat.

The purpose of the study was to determine the effects of conservation on water quality and especially how much conservation is needed and where does it do the most good in terms of water quality, said Mary Fales, Saginaw Bay Watershed project director for The Nature Conservancy.

The Nature Conservancy in collaboration with Michigan State University studied the relationship between conservation on agricultural land and water quality in four Saginaw Bay basin watersheds. The study found that runoff from row cropped-land is the major source of pollution limiting fish communities. The study also reports that if conservation practices are implemented on targeted areas of agricultural land, major improvements in water quality can result.

The study, part of the NRCS Conservation Effects Assessment Project, focused on the Cass, Pigeon/Pinnebog, Rifle, and Shiawassee River watersheds. The final report, Assessing the Costs and Benefits of Conservation Practices to Restoring Biological Integrity in Agricultural Watersheds was completed on March 31, 2013.

The selected watersheds had different levels of agricultural activity, ranging from 25 percent



As the welcome sign to Linwood illustrates, agriculture and fishing are both important to the Saginaw Bay region.

of land in the Rifle, to 80 percent in the Pigeon Pinnebog Watershed. The outlets of all four watersheds had at least one environmental factor limiting fish populations. Some of the limiting factors included phosphorus, nitrates and sediment, largely from agricultural land.

The study judged water quality by examining the fish populations of streams within the watersheds. Important data included the number of fish species present, including the presence of fish species that are most sensitive to water quality. Healthy streams should include a variety of

-continued on page 3-



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State Conservationist's Message	Page 2
The Zen of Pomology	4
Target Tillage to Protect the Soil	5
Alien Invaders	6
Envirothon Winner	8
MIFFS Workshops	8
Website Migration	9
Event Calendar	9

State Conservationist's Message

The NRCS community in Michigan, including employees, partners and landowners, are mourning the loss of District Conservationist L.J. Donahue. L.J. died suddenly on June 6 at the age of 29.

Many people got to know L.J. during his eight years of conservation work in Michigan, beginning with the U.S. Forest Service in the Upper Peninsula in 2005. He went on to work for the St. Joseph County Conservation District and served five years with the Branch Conservation District before becoming district conservationist in Tawas City in 2011. During his career L.J. made many friends and was highly respected for his hard work and dedication to conservation.

On behalf of NRCS, I offer my heartfelt condolences to L.J.'s wife Chelsea, along with his family, colleagues and friends. The impact of L.J.'s work to conserve and protect the land will live on just as the memories of him held by his family and friends.

- Garry Lee, State Conservationist



Lawrence Joseph "LJ" Donahue, age 29, of Whittemore, MI formerly of Ithaca, died Thursday, June 6, 2013 at St. Joseph Hospital, Tawas, MI.

Funeral Services will be held at Smith Family Funeral Homes Ithaca, MI on Wednesday, June 12, 2013 at 11:00 A.M. with Pastor Richard Jolliff officiating. Burial will take place at Sumner Township Cemetery, Sumner, MI. Visitation will be held on Monday, June 10, 2013 from 6-8 P.M. and Tuesday, June 11, 2013 from 2-8 P.M. with family present from 2-4 & 6-8 P.M. at the funeral home.

LJ was born in Carson City, Michigan on August 13, 1983, the son of Lawrence Eugene and Debora K. (Wiegman) Donahue. He graduated from Ithaca High School with the class of 2001. He then attended Northern Michigan University and received his bachelors degree in 2005.

On June 1, 2013 LJ married Chelsea Jo Hudson in West Branch, Michigan. He was a District Conservation Officer for the Federal Government in Iosco and Alcona Counties. LJ was an avid hunter, enjoyed fishing and he loved to camp and hike with his wife and their dog Josie. LJ was involved in 4-H for 10 years and was a member of Central Michigan Poultry Club and Michigan Bear Hunter Association. He was the most loving and generous person you would have ever met.

He is survived by his wife Chelsea Donahue of Whittemore, MI, parents Lawrence and Debora Donahue of Sumner, MI, 3 sisters: Jessica and Bob Gross of Fowlerville, MI, Andrea Donahue of Fowlerville, MI, Stephanie Donahue of Reno, NV, his niece and nephew Lennox & Zander, and grandmother Ann Henry of Hillsdale, MI. He was predeceased by grandparents, Jack Henry and Lawrence & Stella Donahue.

Memorials may be made to a Charity of the Donor's Choice. Online condolences can be sent to www.smithfamilyfuneralhomes.com The family is being served by Smith Family Funeral Homes Ithaca, Michigan.

-continued from page 1-

Targeted Conservation Can Improve Water Quality

fish species, said Fales. Carp and stickleback are examples of species tolerant of poor water quality while rock bass and black redhorse are much less tolerant and are indicators of good water quality.

The study advocates strategic conservation on agricultural land to improve aquatic habitat in the Great Lakes region. Strategic conservation is described as getting the right conservation practices to the right places in the right amount to achieve the desired ecological goals. An advisory panel that included local conservation professionals compiled a list of conservation practices to include in models on the impact of conservation practices on water quality. The list of practices included:

- Nutrient Management/Waste Utilization
- Conservation Crop Rotation
- Filter Strip
- Conservation Cover
- Residue and Tillage Management, No-Till/Strip Till/Direct Seed
- Mulch Till (Residue Mgt, Mulch Till; Residue and Tillage Mgt, Mulch Till)
- Residue Management, No-Till/Strip Till
- Cover Crop
- Pasture and Hay Planting
- Wetland Creation/Restoration

The study modeled the impact of implementing the selected conservation practices on 25 percent and 50 percent of the agricultural land in the four watersheds. The study showed dramatic water quality improvements at both levels but that the most significant improvements came at the 25 percent level.

“With the 25 percent conservation practice scenario, the entire Rifle River watershed is unlimited. In addition, several subwatersheds within

The Great Lakes CEAP Phase 2 Final Report is posted online at www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1088482.pdf

the Shiawassee and Cass watersheds are unlimited—including the outlet of both rivers, and the Pigeon-Pinnebog has improved substantially, though no individual subwatershed became unlimited... Under the current scenario, most subwatersheds outside of the Rifle River watershed were limiting by three or more water quality variables. In fact, many subwatersheds were limited by five or more, and most Pigeon-Pinnebog watersheds were limited by all seven variables.”

Conservation practices had the greatest impact on limiting nutrients, like phosphorus and nitrates, in surface water. Sediment was the most difficult limiting factor to reduce. The number of subwatersheds with no limiting factors on fish populations was most pronounced at the 25 percent level.

“Before this study we didn’t know where to apply conservation practices and how much conservation to do,” said Fales. “We realize that 25 percent is still a tall order.”

The estimated cost to implement conservation practices on 25 percent of the agricultural land in the selected watersheds was about \$22 million. The cost would double to put the conservation practices on 50 percent of agricultural land.

The Zen of Pomology (Growing Fruit)

submitted by Area 2 NRCS Staff

This May, the Presque Isle Conservation District offered a held a pruning and grafting fruit trees workshop at the Presque Isle District Library in Rogers City. This workshop is one of many recent 'complimentary' annual workshops providing community education and enrichment through area Conservation Districts and other NRCS cooperative partnerships thanks in part, to the Forestry Assistance Program. In 2013 alone, through this partnership, local landowners have had opportunities to attend workshops on a variety of agricultural topics such as maple syrup production, tree planting, property taxes and forestry, and now grafting and pruning fruit trees, each organized and led by District Forester, Derek Nellis.

"As backyard growers, you're not necessarily looking for yield and acreage" shares Nellis, "We are more concerned with disease prevention and tree vigor and overall health." Nellis went on to add that although approximately 50 varieties of apple trees go extinct each year, most fruit trees are adaptable and a great deal more resilient than people give them credit. Fruit trees can also typically bounce back from intense pruning as long trees have been provided a good open crown area and weight support for branches. Moreover, Nellis advises to consider location before planting including such things as lawn mowing habits (so as not to run over the new tender trees) and proximity to roadways for salt damage issues. All things come into play when deciding upon where you want your trees to grow.

When you bite into a sweet, juicy apple, it is a common misconception that you can take those very seeds and plant them in the soil in order to produce a tree with those same great tasting apples. If you do this, the tree that grows will not produce the same sweet fruit as its parents; instead you will end up with an inferior tree that produces small, hard, sour apples. The

scientific reasoning is complicated but it all boils down to DNA.

The art of grafting is used to clone trees by taking one cutting (a small branch or twig) off the tree – called a scion - and grafting it to a portion of compatible rootstock. Rootstock is the root system and the lower part of the truck of a grafted tree. It's important to ensure the



Forester Derek Nellis presents at a pruning and grafting workshop held in Rogers City.

rootstock you have is hearty to the zone you're in. Additionally, compatibility between scion wood and rootstock is highly important. They must be closely related, in other words cherry wood cannot be grafted to apple trees, for example. So to begin, scion wood is needed as well as root stock. Harvest scion wood (also referred to as 'donor wood') from your favorite fruit tree between Nov-March before the buds swell and start to break. Cut last year's growth and make sure the piece cut is at least 6 inches long. It is also recommended that at least 3 buds are on that 6" piece. Once you've cut the scion

-continued on page 5-

Target Tillage to Protect the Soil

by James DeDecker, Michigan State University Extension

Every year about this time (late April), a deep agrarian urge to turn the soil takes hold of many. Tillage has epitomized a farmer's relationship with the land for nearly 10 millennia and, until recently, spring tillage was considered an essential tool for weeding, amendment incorporation and seedbed preparation prior to planting. However, soil scientists and growers are becoming increasingly aware of the long-term negative impacts mechanical disturbance can have on soil health.

Tilling destroys soil's natural structure, breaking-up colloids and collapsing macro pores. The short-term result is a warmer, aerated and competition-free environment suited to seed germination. Yet, the fine particles and small pores characteristic of tilled soil are ultimately unstable, leaving fields vulnerable to erosion and compaction over time.

Tillage can also alter soil ecosystems. Research has shown that decomposition rates often increase behind the plow, hastening the

breakdown of soil organic matter and subsequent release of carbon dioxide into the atmosphere.

Organic matter loss paired with the drying effect of tillage dramatically limits soil water holding capacity and moisture available for plant growth.

All of these concerns have spurred the development of reduced tillage cropping systems in recent decades. Herbicides, tolerant crop varieties and innovative equipment now make it possible to control weeds and plant a field without upsetting the ground. Michigan State University Extension research on tillage effects on soybean yields in Michigan has demonstrated that no-till cropping systems can also yield as well as conventional systems. This spring, no-till may be an especially attractive option for Michigan growers thanks to a winter of multiple freeze-thaw cycles that loosened soils across the Midwest.

Yet, there are cropping systems and situations where few alternatives to tillage are available.

-continued on page 6-

-continued from page 4-

Pruning and Graphing Workshop

wood wrap the twigs in moist paper towels and wrap those towels in no less than 3 Ziplock bags before placing them in your refrigerator. This is highly recommended as Ethylene gas from other fruit in your fridge will cause the scion wood to start budding. Keep these bags cold (about 40 degrees F) until about April when it will be time to contact your local Conservation District and locate available rootstock.

To enable a successful grafting, the method in which the ends of the scion wood and the ends of the root stock are cut must be done with accuracy as well attention towards how the ends are connected together. The apical meristem must be pointing in the correct direction or the grafting will not 'take'. It's very important to

research this process online or attend a class to learn the proper cutting and grafting techniques. Paraffin wax or biodegradable, breakable tape is used to secure the two pieces together once the correct cuts and positioning has been completed and the two ends of the wood are united.

"I refer to them as Frankentrees" Nellis commented. "It's amazing that you can take two different pieces of a tree to make a newer and even better tree".

For more information on grafting and caring for fruit trees visit: <http://macd.org/local-districts.html> to locate your local conservation district and district forester for advice or Michigan State University Extension at www.msue.msu.edu.

Alien Invaders

by Lora Freer, FAP Forester, Oscoda & Ogemaw
Conservation Districts

Sounds like a science fiction plot but in reality alien invaders in the form of flora, fauna or pathogens have been a problem in the past, they are now a challenge and could be a greater threat in the future. Currently we are dealing with an exotic pest known as Emerald Ash borer which has the potential to eliminate ash trees much like a previous invader, Dutch elm disease, did to the American elm.

Pathogens are a problem when the target species have no natural defense as when Chestnut Blight infected and killed the American chestnut. Animal invaders such as starlings out-

compete native cavity nesters like bluebirds or woodpeckers.

When exotic plants grow to the exclusion of other native species they are considered invasive. As with all alien invasive species there are no natural checks and balances such as critters or disease that attack and limit the population.

In our landscape there a number of alien invaders that are considered invasive. Purple loosestrife is just getting a start in the moist ditches along our North Country roadsides but if you travel to the moist lowland areas of southern Michigan you will see whole fields of the plant.

- continued on page 7-

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Target Tillage to Protect the Soil

For example, when tillage is minimized, crop stover often builds-up on the soil surface. A certain amount of surface residue protects against erosion and excessive soil drying, but too much can keep soils wet and cool, complicating early-season field work. Shallow tillage is often the only practical way to manage this excess of surface residue.

The production of certain crops, like potatoes, requires significant soil disturbance. Innovative systems have been developed to reduce tillage in potato production, but conventional seedbed preparation, hilling and harvest operations used by the majority of growers move a lot of soil.

Tillage is also necessary in organic cropping systems. Without viable chemical control options, organic growers rely on tillage to kill and incorporate weeds or cover crops. In these and other circumstances where spring tillage cannot be avoided, it is important to consider how the timing and intensity of operations can be managed to minimize any negative impact. The points below offer some practical guidance to sorting this out.

Timing

- Before tilling, check soil moisture to a few inches below the anticipated tillage depth to make sure the field is sufficiently dry.
- It is hard to be patient, but tilling too early increases the likelihood of soil compaction, non-uniform soil moisture, crusting and clodding.
- When tilling for seedbed preparation, a single pass just prior to planting will maximize moisture uniformity and minimize water loss from the seed zone compared to multiple passes.
- Each additional spring tillage pass increases the potential for soil erosion, compaction and excessive drying while also adding to production costs.

Intensity

- If primary tillage was completed in the fall, consider no-till options for weed control and planting this spring.
- When tillage is necessary, choose the least aggressive implement and run it as shallow as possible to meet your objectives.

- continued from page 6 -

Alien Invaders

Autumn Olive is more pervasive in Northeast Michigan. It was planted for wildlife habitat but actually replaces more important species that are better suited to our native wildlife. It also changes the habitat by filling open lands with shrubs species. It even changes the acidity of the soil by fixing nitrogen with its roots and increasing the fertility of the soil. This might sound like a good deal except if you are one of the critters that depends on the plants that are adapted to the infertile acidic soils.

Many plant invaders are here because they were used in our many countries of origin. Our ancestors brought many plants to use for food and ornamental or medicinal purposes to smooth their way in an unfamiliar country. This is how we have plant invaders such as tansy, common mullein and St. Johnswort. If the habitat meets their cultural requirements well all of these can become invasive.

You might think that since we now understand the danger of alien introductions to our landscape that we don't have as much of a problem. That is simply not the case. Already heading for a site near you are many new alien invaders.

Garlic mustard is now replacing the ground cover in the understory in hardwood forest. Common landscape plants such as Japanese honeysuckle, Japanese barberry, and common privet replace valuable food plants in forest understory when they escape our home landscapes. Even Norway maple is a problem because it will displace sugar maple in our own forest while it is a beautiful tree it is not as useful as the sugar maple.

What should we do about these alien invaders to our environment? Do a little homework and educate ourselves about the alien invaders. When making decisions about additions to our home landscapes use native alternatives. Support legislation to limit the accidental importation of the invaders in wood crating and other plant materials. Remove or eradicate invasive invaders where possible. Most importantly be aware that they are here.



The invasive garlic mustard plant (above) displaces native groundcover plants in hardwood forests.

If you have questions about invasive species, forest health, woodland or wildlife management and tree & shrub planting contact your local Conservation District or Natural Resource Conservation Service Office. For more information about invasive species check out; <http://forestry.msu.edu/mipc/bodyPages/linksbod.htm>

With new invasive plants being identified regularly, it's extremely critical for conservation planners to choose plants used for conservation treatments carefully. As the Plant Materials program develops new potential conservation plants and conservation technology, an assessment of invasiveness potential is a critical component. Planting non-invasive species that are well adapted to a particular site, and have well-understood and documented growth characteristics (like the Plant Materials releases) can be critical to preventing invasive plants from being established on a site.

If you have a conservation need that you feel is not adequately addressed by currently available plant species and/or technologies, contact your Plant Materials Committee representative to discuss how the Plant Materials program can assist you.

Glen Lake Team Wins 2013 Michigan Envirothon

Glen Lake High School in Leelanau County had the top three finishing teams at the 2013 Michigan Envirothon state competition held at Michigan State University. The winning team, "Channel 4 News Team," will go on to represent Michigan at the Canon North American Envirothon.

Members of the winning team include Reed Deemer, Ian Hood, Peter Kerby-Miller, Theo Koda and Emma Velis. Karen Richard serves as team advisor for Glen Lake's Envirothon teams. The team will now travel to Montana State University in Bozeman to represent Michigan in the Canon Envirothon. Canon Envirothon takes place from Aug. 4 to Aug. 9 and includes teams from across the United States and Canada.

During the competition at Michigan State University, teams were tested in an outdoors, hands-on setting, on seven conservation topics including, aquatic ecology, energy, forestry, soils/geology, agriculture, wildlife and sustainable rangeland management. Each team also completed a community outreach project prior to the competition that addressed a natural resources concern in their community.



The Glen Lake "Channel 4 News Team," including (l-r) Emma Velis, Ian Hood, Theo Koda, Peter Kerby-Miller and Reed Deemer finished first at the 2013 Michigan Envirothon state competition.

-photo provided by Michigan Envirothon

Michigan Envirothon is administered by the Michigan Association of Conservation District. High school students from anywhere in Michigan are welcome to participate in the annual competition.

Farm Research Cooperative Hosting July 25 Workshops

The Farm Research Cooperative in Bloomingdale is hosting morning and afternoon workshops on July 25 targeted to small-scale farmers.



The morning workshop, scheduled for 10 a.m. to noon, provides information on harvesting crops and preparing for a successful market. The afternoon session will focus on funding sources available to farmers from 1 p.m. to 2 p.m.

The workshops will be led by Lee Arboreal, who operates a small organic farm near Bangor with his wife Laurie. The Eaters' Guild farm originated in 2001 and 2013 will be the tenth season that the Arboreals' have served as the farm's stewards.

Eaters' Guild provides internships for people seeking to start their own farming operations. It also has a community supported agriculture program where people can buy a share of the farm's produce and receive weekly boxes of organic produce.

The workshops are presented by Michigan Food and Farming Systems with financial support from the USDA Risk Management Agency. Anyone planning to attend the workshops is asked to notify Morse Dees of MIFFS at 269/208-1443 or e-mail at brownmo@msu.edu.

Upcoming Events - Upcoming Events - Upcoming Events

July		August	
16-18	Ag Expo, Michigan State University - East Lansing, for more information go to http://agexpo.msu.edu/	13	Keeping it Green: Recycling Waste to Resources Day, 9:30 a.m. to 4:30 p.m., MSU Livestock Pavilion - East Lansing, \$20 advance registration, \$30 day-of registration, for more information go to: http://events.anr.msu.edu/event.cfm?folder=adrec
25	Harvesting Crops and Preparing for a Successful Market, 10 a.m. to noon, Farm Research Cooperative - Bloomingdale, more information on page 7		
25	Finding Those Additional Funding Sources that can make the Farm Economically and Ecologically Successful, 1 p.m. to 2 p.m., Farm Research Cooperative - Bloomingdale, more information on page 7		

NRCS-Michigan Website Undergoes Changes



If you visited the NRCS-Michigan website after June 12 you should have noticed some major changes. One June 12, the Michigan website migrated to the USDA's new Oracle web system.

The look and feel of Michigan's website is now consistent with other USDA websites. The change will take some getting used for people familiar with navigating the old format. It will

also take some time until all of the web pages on the site are populated with information. An efforts is being made to update the most frequently accessed information first.

When the new website is completed it should be more user friendly, particularly for users not as familiar with NRCS programs and services.

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