NCVMA
North Carolina Vegetation Management Association

2017 Spring Newsletter

2017 NCVMA President
Korey Meadows

I grew up in Eastern North Carolina and went to North Carolina State University to pursue a degree in Forest Management. My intent was to have a job that allowed me to be in the outdoors that I loved and not have to deal with people. How little did I know what I was getting myself into!

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North Carolina Vegetation Management Association

After a few semesters, I came to the realization that interacting with people was going to be part of my job in some capacity no matter what unless I changed paths. I decided to stick with it by convincing myself that my time would be somewhat limited talking to people, and at least I wouldn't have to stand in front of large groups and speak. Leading up to graduation, with the real world fast approaching, the hunt for jobs was on. Job posting from entities that traditionally hired graduates with Forest Management degrees were scarce, so I started to expand my search to less traditional job markets. About a week after graduating I received an email that said, "Utility Contract Forester." I didn't know about the Utility part, I had an idea about the Contractor portion, but I knew what a Forester was…that was me. A paying job with Forester in the title? Sign me up!

That day was almost 10 years ago. It has been a fast paced, whirl wind of a roller coaster ride since. I was a Utility Contract Forester for about 6 years before I was hired by Duke Energy as a Vegetation Management Specialist. In both roles, the idea of not talking to or dealing with people was totally thrown out the window! The idea of not getting in front of large groups of people also went by the wayside the first time I attended an NCVMA meeting. I showed up to my first NCVMA event for the same reason most of us probably start off--continuing education credits! How little did I know at the time how attending that meeting would impact my career.

One of the livelier speakers giving a presentation on chemical spills somehow managed to pluck me out of the crowd and set me on a chair, on a table in front of the whole auditorium. Talk about a

quick way to become a familiar face to an industry to which I was brand new. It wasn't until the last few years that I realized how big a moment attending that first NCVMA meeting was for me. It was that moment that I decided I wanted to try to give back to the organization. I inquired to the president about becoming a board member. At the next annual meeting, I was nominated and voted in. As my role, has developed on the board from member to Vice President to President so has my understanding of the organization and its importance.

To me the NCVMA is about expanding knowledge, exposing people to new ideas, kick starting personal and professional development opportunities, providing the tools for Best Management Practices (BMPs) and most of all networking among peers and industry leaders. Each of you bring something different and valuable to the table as a NCVMA member. I've worn many hats during my short career and every one of them involved talking to people. The connections made and information gained through NCVMA have served me extremely well both personally and professionally as I continue to interact with people daily.

In 2017 I encourage you to find someone that hasn't ever attended an NCVMA event and invite them to attend with you. You never know what the outcome might be!

2017 Field Day
NC Vegetation Management Association

Thursday, June 1, 2017

Biltmore Estate
Asheville, North Carolina

Register @ http://www.ncveg.com

THE V FOUNDATION® for Cancer Research

"Don't Give Up . . . Don't Ever Give Up!"®

We are again proud of our membership and the generosity at the NCVMA symposium for the fight against childhood cancer. Our contributions to this fight through the Jimmy V. Foundation helps win one more battle in the war against childhood cancers. Let's keep working until we win war.

NCVMA Annual Scholarship Awards

NCVMA Scholarship
Undergraduate Student Award

Alston N. Willard, Biological Engineering
Craig W. Person, Forest Management

Derek C. Smith NCVMA
Graduate Scholarship Award

Erika Haug
Fisheries and Wildlife Sciences, PhD Student

NCVMA members are encouraged to send articles or other information that would be of interest to the NCVMA membership. Articles will be considered for publication in the Newsletter by the NCVMA Board of Directors. The Newsletter will be posted on the NCVMA website twice per year: 1) A spring issue prior to the NCVMA field day; and, 2) A fall issue, prior to the NCVMA Annual Meeting. Articles should be sent via email in MS Word format to the Newsletter Editor. www.ncveg.com

The VIP Column
(*V*egetation Mgt. *I*nformation for the *P*rofessional)

Aquatic Plant Found in Pender County -First find of this invasive in the US-

Wooly Frogsmouth in Pender County, NC. September 2016.

(*Philydrum lanuginosum*) is an invasive weed that was found to be growing in Pender County, NC on August 3, 2016. This is the first reported find of this weed in the US, which is outside of its native range. The plant is commonly cultivated as an aquatic plant in Australia, and seeds and plants are readily available for purchase online. Officials were notified of the plant after biologists with the Wildlife Resources Commission checked the pond for populations of a rare Gopher Frog. The plant was concurrently identified by scientists at North Carolina State University and the Unites States Department of Agriculture. WRC Biologists noted that the plant had rapidly overtaken an artificial pond located near the Holly Shelter gamelands. The pond was dug between 2005 and 2010 and the population of wooly frogs mouth is known to have been in place since 2013. Photos of the pond dating from 2013 show just a few isolated plants along the margin of the pond, but the current population is much higher. Using this information, a Weed Risk Assesment was completed for this plant species by Dr. Tony Koop at the APHIS Peral lab in Raleigh, NC in September 2016. The analysis resulted in a classification that this plant has the potential to be a major invader in the US, and is therefore to be considered "High Risk".

Yellow flowers of Wooly Frogsmouth.

Identification

Wooly Frogs Mouth is an herbaceous, perennial, aquatic plant that can grow between 20 and 70 inches tall. The spongy flat leaves are linear and grow between 11 and 28 inches in length. Many yellow, bilateral and symmetrical flowers are produced on a simple spike, and are self-pollinated. Each flower only blooms for one day, and each "pod" on the fruiting structure contains hundreds of tiny seeds. The seeds were observed floating in water, and will germinate when conditions are right. The NCDA&CS seed lab was able to successfully germinate some of the seeds just days after they were collected, with no dormancy requirements. This plant has short rhizomes and a fibrous root system. The plant prefers full sunlight to 50% shade, and can grow in up to two feet of water, but is mostly a marginal plant that prefers to grow in coastal and inland climates.

http://www.ncveg.com

Geographic History

Wooly Frogs Mouth is native to tropical Asia (India, Malaysia, Myanmar, Papua New Guinea, Thailand, and Vietnam), three provinces in China and two in Japan. This plant also grows in northern Australia, Palua, and Taiwan. It appears that the plant is easily obtained in Australia, and is a preferred plant by those in the aquatic plant community because it is native. Plants and seeds are readily available online in Australia, as well as other e-commerce sites such as eBay.

Wooly Frogsmouth growing along the entire margin of a private pond in Pender County, NC. August 2016.

Each pod of the fruiting structure contains thousands of seeds.

Spread and Impact

This species is a self-pollinating, aquatic weed that produces thousands of dust-like seeds that are dispersed by water. The seeds can also be dispersed through other mediums such as birds, wind, other animals, or even by people using the water for recreational activities. Seeds can readily germinate and will float in a water body until they find a suitable area to grow. The NCDA&CS lab was able to successfully germinate some of the seeds just days after they were collected, with no dormancy requirements. Wooly frogs mouth appears to be quite aggressive in aquatic ecosystems, and likely out-competes other desirable wetland vegetation.

Others have reported that this plant is present in rice fields in Asia, and is considered a weed in Cambodia, Myanmar, Laos, Malasia, Thailand and Vietnam. It is also considered a weed of plantation crops in southern Thailand. Anecdotal reports note that this plant may be toxic to cattle and freshwater turtles.

Current Situation

Since North Carolina is the first state to have reported this species; it is unknown if other naturalized populations exist in the US. It has been cultivated in several University and botanical gardens in the US (Santa Barbara Botanic Garden, The University of Connecticut, The Missouri Botanical garden and California State University at Chico). A weed risk assessment was completed by the Plant Protection and Quarantine group associated with USDA-APHIS. Their assesment concluded that this plant is High Risk for Impact and Establishment

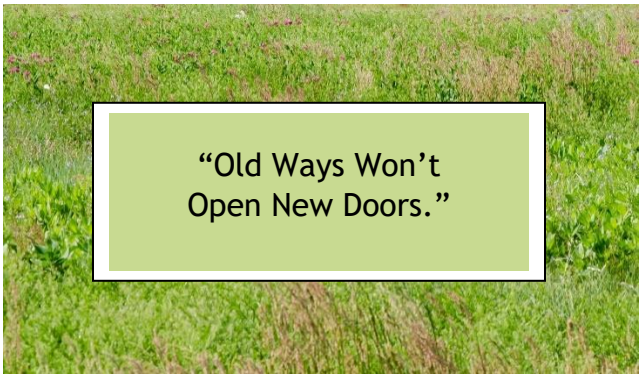
and Spread in the US. The assesment also estimates that about 27% of the southern coastal region of the United States may be suitable for establishement of this species.
A herbicide spray was made to the population (Glyphosate) in October of 2016. The treatment was very successful (i.e. – it killed the plants), but we are sure that there are many seeds in the soil. Therefore, monitoring and eradication efforts will be ongoing for several years. Other ponds in the area are being inspected for additional populations of the plant.

As always, if you think that you have spotted this or any other invasive weed, please contact me at bridget.lassiter@ncda.gov or (919) 707-3749.

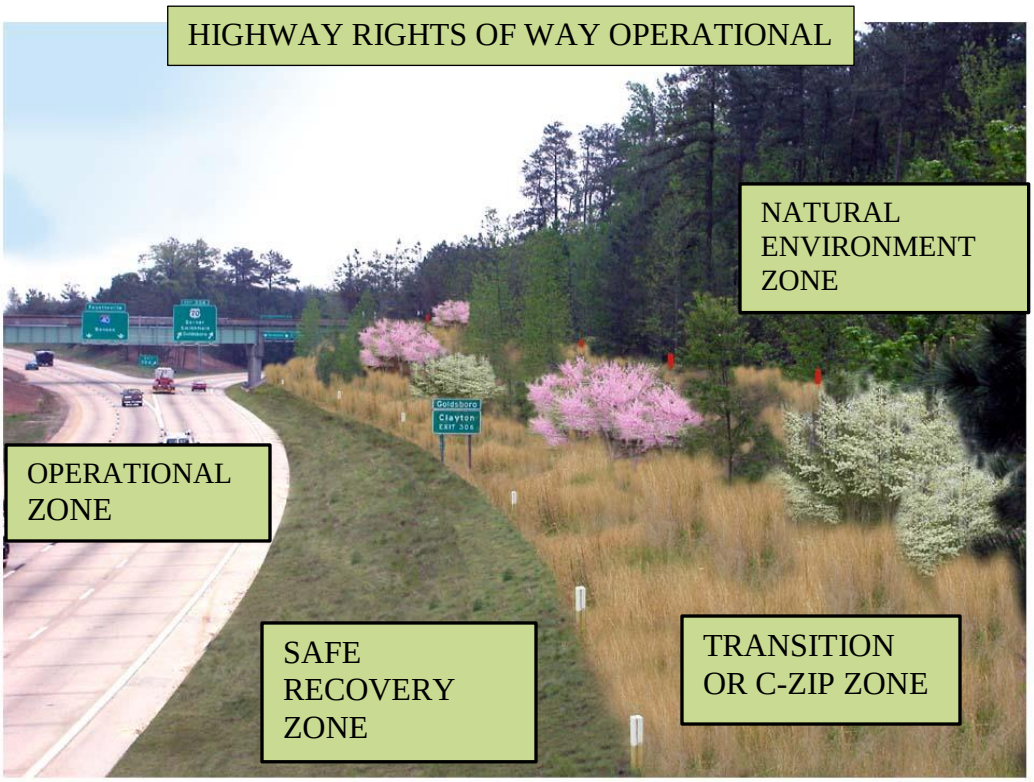
Tips for Certified Pesticide Applicators

- Follow all requirements on pesticide product labels.
- Maintain all application equipment in good working order and calibrate it regularly.
- Check equipment for leaks and malfunctions before use to minimize the potential for accidental spills.
- Rinse pesticide application equipment and pesticide containers on a solid surface where it won't drain to waterways.
- If not specified on the label, apply when wind speed is between 3 and 10 mph.
- For ground boom applications, apply using a nozzle height of no more than 2 feet above the ground or crop canopy, unless a greater height is required for efficacy or safety.
- Use a low pressure, large droplet sprayer, and spray close to the crop canopy or the ground.
- Do not spray if heavy rain is expected within 48 hours as the pesticide may wash away from the area of application and into water bodies.
- Where possible, leave a vegetative buffer strip between the field and areas where wildlife may be present, including downhill aquatic habitats. Be sure to follow any label requirements related to buffers, as well.
- Make sure you get and maintain proper training and certification.

Applicators Use Caution along NC Corridors



ROADSIDE ECOLOGY
Managing NCDOT's Roadsides



The primary goal of Departments of Transportation is to provide infrastructure that facilitates the movement of people and goods. In North Carolina, the components of aesthetics, tourism and economic development are woven into this commitment. These components make North Carolina's roadsides visually appealing to travelers and distinctly different than those of surrounding states.

Accessibly located in the mid-Atlantic region, North Carolina is considered a drivable destination. According to the Department of Commerce, NC consistently ranks among the top six visited states. Tourism results in a $26 billion economic impact on the State's economy.

North Carolina, with a population of approximately 10 million, continues to rank among the fastest population growth areas in the Nation. As North Carolina's population continues to grow, moving people and goods safely and efficiently while maintaining existing infrastructure will remain a top priority. Since Congress enacted the Highway Beautification Act of 1965, our State has placed emphasis on right of way appearance. Appearance drives tourism and fosters economic development.

Today's driver expects travel corridors that are designed to save time, handle an ever-increasing flow of traffic, and are aesthetically pleasing.

A man-made transportation network that fulfills these expectations consequentially disturbs the natural ecology.

Ecology is loosely defined as the interdisciplinary study of how organisms interact and impact their environment. Man is a component of the ecology and is not separated from these interactions.

A quoted key word string search of the term 'ROAD ecology' produced 1,200,000 results focused on the often malign impacts of road construction on the natural environment. Impacts related to water movement, animal migration, and soil profile alterations have been studied by numerous authors. Ecologist have also studied the impacts altered vegetation has on habitat and animal movement.

ROADSIDE ecology, as practiced in North Carolina, focuses on the amelioration of these impacts. ROADSIDE ecology focuses on the stabilization of soils, storm-water remediation, the protection of federally endangered plant species and beneficial pollinators, wetland mitigation and the aesthetic profile.

In North Carolina, the state manages the entire right of way. Many states endorse a 'county-based' maintenance system. North Carolina's is the nation's second largest state-maintained right of way with approximately 80,000 miles of roadway and approximately 300,000 acres within its purview.

For operational purposes, the transportation rights of way are comprised of several zones. These zones receive varying degrees of maintenance and are subject to different level-of-service expectations.

Illustrated in sequence, from left to right, are the operational zone, and the safe recovery zone, the transition/C-ZIP zone and the natural environment zone. Collectively, the operational, safe recovery and transition zones are referred to as the 'built environment'. These zones, from left to right, when considered holistically, have decreasing Level Of Service (LOS) expectations, the number of obstacles increase, less funding is appropriated for maintenance, and the zones become less impacted by construction and routine operational activities. The operational zone includes the travel lanes, structures and the array of hidden infrastructure that support the travel way.

From the illustration, the safe recovery zone is the area of mown grass that provides drivers of errant vehicles a safe place to stop or regain control of their vehicle before reentering the travel lanes of the operational zone. For this reason, by design, it is a zone of few obstacles. To the right of the safe recovery zone is the transition zone. It is also called the C-ZIP area.

C-ZIP is an acronym for Clear Zone Improvement Program. This area is traditionally planted in wildflowers, ornamentals, small flowering trees and native grasses. This zone serves a vital purpose by linking remnant farmlands for pollinators. It also provides pollinators with nectar, pollen and habitat. The C-ZIP zone also serves as a transition between the mown area and the natural environment zone. It is the area designated for storm water remediation devices, bioremediation basins, as well as wetlands and stream mitigation. NCDOT currently manages 31 acres of wetland mitigation on 60 sites and 46,000 linear feet of stream restoration and approximately 1,750 storm water control measures.

To the right of the C-ZIP zone is the natural environment zone. This area contains mature trees and most closely resembles the environment prior to road building activities.

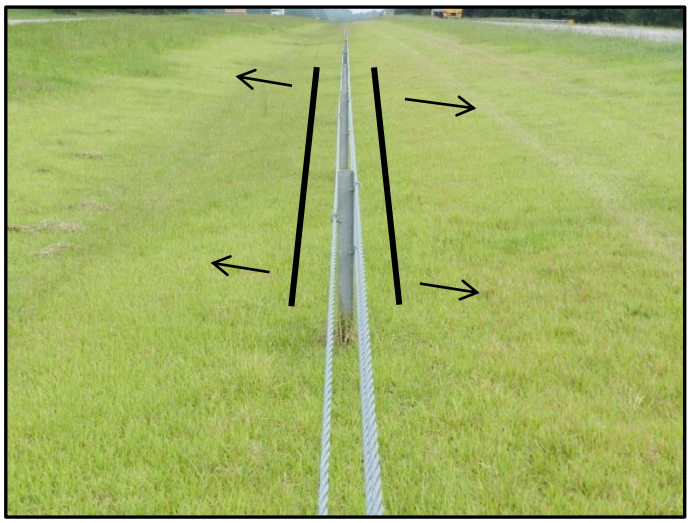
ROADSIDE ECOLOGY focuses on activities that ultimately mitigate for the impacts studied in 'Road Ecology'. Let's be clear; how one chooses to manage the built environment ultimately determines the success of these mitigation efforts. The activities associated with roadside ecology are an attempt to recreate the natural environment – not replace it.

In the publication *Ecology and Society* Rodney Van Der Ree[1] et al *state:*

> *Many road agencies have "environmental sustainability" as one of their goals and the only way to achieve such goals is for them to support and foster long-term and credible scientific research. Every road project is essentially an experiment and when combined with other road projects, they become replicated. The challenge we face as researchers is to (1) use good scientific approaches to design studies that are scientifically robust and*

maximize the individual value of each road project within a larger experimental scope; (2) ensure our research is applied and has tangible value for road agencies and for ecological outcomes; (3) address the higher order effects of roads, traffic, and mitigation measures.

NCDOT is strongly committed to research. As a routine practice, NCDOT commits $8 million annually to research. Part of this commitment focuses on roadside ecology. Beginning in 1962 (Project ERD-110-S), Dr. Bill Gilbert, NC State University, led investigations to determine the best turfgrass for the safe recovery zones and to determine the best management practices to stabilize these areas.



Subsequent research investigated the 'Selection, Establishment, and Maintenance of Vegetation Along North Carolina's Roadsides' (Project # 23241-80-2). Of the numerous vegetative covers studied, this project concluded that Centipede was worthy of consideration and that approximately 60% of the state's rights of way could be established with Centipede.

In 2011, NCDOT began in earnest installing zoysiagrass beside guardrails. Currently, NCDOT is funding zoysiagrass research with Drs. Milla-Lewis and Grady at NC State University (NCDOT 2018-8401). The objectives of this investigation are: to determine the best zoysia cultivar for roadside operations, to evaluate reselected first-generation zoysiagrass genotypes, and study installation timing, as well as installation methodologies. The photo (above) indicates how zoysiagrass spreads following an 18 inches wide sod installation beside the guardrail.

By far the program that receives the most notoriety is the NC Wildflower Program. Begun with 12 acres in 1985; today, North Carolina DOT has the largest planted wildflower program in the nation with approximately 1,500 acres in standard production. Approximately 23 species including annuals, perennials and NC native wildflowers adorn transition zones across the state. Often thought of for its aesthetic value, the program benefits pollinators, too. Research conducted in 2015 by NCSU's Dr. Seth-Carley, Horticultural Science Department, shows that compared to adjacent, non-mown rights of way, wildflower beds have:

6 times more pollinator bees,
2.5 times more pollinator flies,
5 times more pollinator butterflies, and
37 times more pollinator wasps.

Pollinator Habitat

Recently, two of NCDOT's rest area facilities – Madison and Wilkes Counties – earned the recognition of certified Monarch Waystations by MonarchWatch.org. These facilities incorporated plantings of milkweed and pollinator support species in their facility landscape designs. Travelers are free to explore informational signage and are encouraged to visit our web site for more information.

In addition to planting wildflowers, NCDOT also preserves and protects populations of federally threatened and endangered plant species, most of which are wildflowers. Protecting these species embodies the concept of 'roadside ecology' at its core level. In 39 of North Carolina's 100 counties, there are 145 recorded populations of 12 such endangered species. For some of these species, naturally occurring populations are only found on North Carolina rights of way.
The same travelers who demand highway infrastructure that meets their expectations are also becoming increasingly conscious of how transportation corridors are managed from an ecological standpoint. Roadside ecology, as practiced in North Carolina, provides solutions to numerous issues posed by road ecology scholars.

[1] 'Effects of Roads and Traffic on Wildlife Populations and Landscape Function: Road Ecology is Moving toward Larger Scales', Rodney Van Der Ree et al (*Ecology and Society, Vol. 16, #1, Art 48, 2011)*

Make Pollinator Habitat a Priority

Why Technology Is Important to Keep Railroads and Roadways Safe and Free of Vegetation

January 24, 2017

By: David Spak, Ph.D.

VM Stewardship and Development

Many of us are returning from a period of holiday travel where we may have traveled by car or train to spend time with family and friends. In our eagerness to get to our destination, we probably didn't think about the efforts of those who keep our roads and railways clear of vegetation (weeds, brush and tree limbs) to allow for our safe passage. Recently, Bayer's Vegetation Management team, working with industry partner organizations, the North Carolina Department of Transportation (NCDOT) and the DBI Services, invited members of the U.S. Environmental Protection Agency (EPA) to experience first-hand how this vital work is conducted, as well as how vegetation management workers are trained to keep our roads and railways safe.

Little known fact: There are 140,000 miles of rail in the U.S. that are used to transport people, food, cargo, equipment and livestock every day. In addition, there are thousands of acres of rail yards and off track areas that need to be maintained and kept clear of any vegetation –

which means zero weeds, brush, grass or trees. Why is this so important? Even small weeds growing on a track could cause a fire in the dry summer, ignited by sparks from the train wheels. This zero-tolerance policy helps ensure public and worker safety, but it also allows for proper drainage and prevents potential hazards, such as the buildup of mud, which could lead to wheel slippage and possible derailment.

The people responsible for keeping those 140,000 miles of track free of unwanted vegetation are highly trained to protect themselves, the traveling public and the environment. Their trucks are fitted with versatile equipment to allow the use of different types of spray nozzles and booms to reach signage adjacent to the tracks and control vegetation as far as six feet away from the main track line. Safety is of the upmost importance when applying these herbicides, and drift control measures are taken to ensure the products are placed only where they are supposed to go – and stay there (pictures).

In addition to the railways, state departments of transportation (DOT's) are responsible for roadside vegetation management for the more than 164,000 miles of highway we drive on each year. While most states preserve the beauty of our roadsides by maintaining borders lined with grass and trees, the NC DOT has taken this one step further, by using an innovative approach to create beautiful flowering spaces alongside many highways, which are not only pleasing to travelers, but also provide important habitats for bees and other pollinators. Efforts to establish and maintain these gorgeous landscapes are made possible through public/private partnerships with funding from companies like Bayer and with additional tax payer support generated through the purchase of special North Carolina license plates. (pictures)

Managing vegetation on roadsides and at railroad crossings is not only beneficial for aesthetic reasons, but it is critically important for improving visibility and enhancing safety, particularly during the winter, when snow and

icy weather hit. Keeping encroaching trees a safe distance from the roads has the added benefit of allowing sunlight to help naturally de-ice the road, which can help reduce labor and the amount of chemicals needed to treat the roads. It also keeps provides drivers with room to address roadside emergencies that may arise safely and to facilitate the speedy passage of any support equipment required (e.g. tow truck, ambulance, etc.).

During the training and demonstration event, an important part of the dialogue with the EPA was about stewardship and worker training. There have been great strides within the industry to reduce the amount of herbicides, energy, fuel and water used in order to minimize the environmental footprint associated with vegetation management. Such efforts include:

1. A reduction in the amount from chemicals used – to only a few ounces per acre. Newer formulations and advances in precision application have significantly reduced the volume of products used in our environment.
2. The use of lighter trucks, outfitted with aluminum racks and other new materials to reduce their weight and increase fuel efficiency.
3. Updated water management processes to make water use more efficient, which is especially important in areas where water availability is at a premium.

Workers handling vegetation management herbicides and equipment undergo more than 80 hours of classroom training each year. Continuous education programs, supported by chemical partners like Bayer, offer certification and recertification required by the National Railroad Contractors Association (NRCA) and National Roadside Vegetation Management Association (NRVMA).

Even as the industry continues to innovate in this area, we still face challenges. Herbicide resistance and a lack of new modes of action provide fewer options for applicators to achieve the zero-tolerance approach so critical to roadside safety and vegetation management. State, federal and local regulations on when, how and what chemistries can be used, as well as encroachment of agricultural lands, can make it difficult to implement this important work.

The day's activities facilitated good, open dialogue and learnings by all participants, and we expect that there will be more events like this in the future. Thanks to our partners, DBI Services and NCDOT for co-presenting to EPA and Amtrak and for taking the time to participate in this event. While most of the public didn't notice it, it takes the work of all vegetation management stakeholders to help make sure that travelers, whether it be during a busy holiday season or just running the week's errands, arrive safely to their destination.

By Travis Rogers, market development specialist, Dow AgroSciences and Pat Burch, field scientist, Dow AgroSciences

You've likely heard about the decline in worldwide pollinator habitat and the many initiatives taking place around its restoration and preservation. But perhaps you're wondering why this is considered such a serious and mounting issue.

Pollinators include bees, butterflies, moths, flies, beetles, birds and some mammals like bats. According to a 2015 report from the White House's Pollinator Health Task Force, pollinators contribute more than $25 billion annually to the U.S. economy, with honeybees alone accounting for $15 billion through their vital role in keeping fruits, nuts and vegetables available for consumption. Those are staggering numbers. Yet, bee, monarch butterfly and other pollinator populations have experienced significant declines over the past decade for various reasons but in part because of a lack of habitat — native forbs to provide pollen and nectar. For example, bee colonies (beehives) have shrunk from around 6 million in the late 1940s to just 2.5 million today. Now you might be wondering how this relates to the Vegetation Management industry.

Reverse the trend using sound vegetation management practices

Even as pollinator habitat is in decline, there are opportunities to reverse that trend. Those in our industry can contribute by managing vegetation in a manner that is both effective in achieving operational goals, while also promoting healthy habitat for pollinators and wildlife.

Rights-of-way such as electric utility, gas and pipeline, and roadsides in particular are perfect candidates for creating or restoring pollinator habitat. Using selective herbicides or selective application techniques to manage vegetation allows plant species desirable to pollinators to thrive in these corridors while at the same time improving the habitat for wildlife species like large and small mammals, game birds and many other wildlife species. Misinformation is everywhere about the role herbicides can play with respect to pollinators. It's important to understand many of the commonly used herbicides for rights-of-way management are classified by the U.S. Environmental Protection Agency (EPA) in the least toxic category with regard to these species. Since the products do not directly impact pollinators the benefit comes through habitat improvement.

Federal and state agencies across the United States are already dedicating significant resources to this issue and are working with partners and private land owners across the country. In fact, the 2008 and 2014 farm bills made pollinators and habitat improvement a priority and encouraged "the development of habitat for native and managed pollinators; and the use of conservation practices that encourage native and managed pollinators."

Are your vegetation management practices compatible with pollinator habitat? If not, perhaps only minor changes would make a substantial difference. Dow AgroSciences has accumulated a wealth of information around establishing and maintaining these critical habitats based on sound

science and operational experience. We will gladly share what we've learned in helping develop a program that fits within the scope of your current vegetation management goals. Contact your local Dow AgroSciences IVM specialist or contact us evistas@dow.com.

NCVMA
2017 Annual Symposium

December, 6-7, 2017

Save the Date!

Stay tune @ http://www.ncveg.com
For additional information

2017 ISA Events

28 -30 July 2017 Washington D.C., United States
International Tree Climbing Championship

29 July - 2 August 2017 Washington D.C., United States
ISA Annual International Conference and Trade Show

MAC-ISA

Mid-Atlantic Conference

ANNUAL MEETING

Date: October 1, 2017 - October 2, 2017
Location: Virginia Beach, VA

One day Annual Meeting with welcome reception and registration on October 1. Registration and more info will be coming Summer 2017.

Contact Name: Nancy Herwig
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NC Urban Forestry

COUNCIL EVENTS

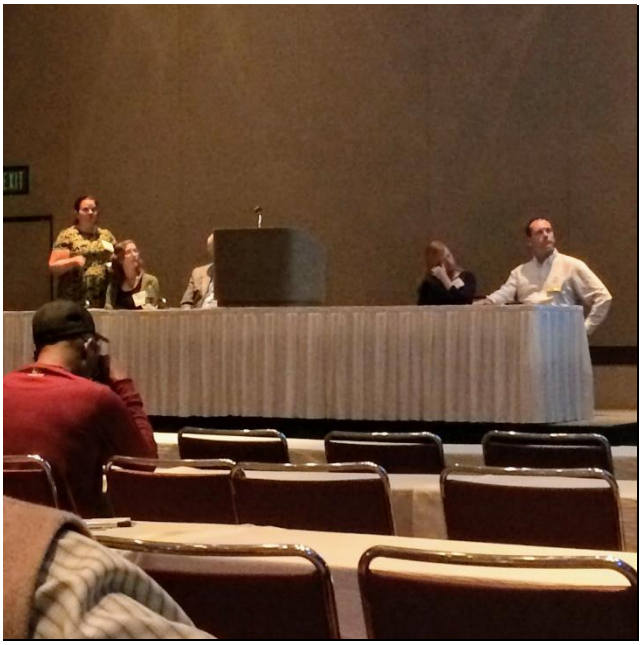
NC Tree Board Webinar Series
2017 DATES: Jun.7th, Aug.16
12:00 - 1:00 pm
Free Webinar (online)- ***Register here***

Carolina Canopy Workshop- Triangle Hard Knocks: Trees and Landscape Interactions
Thursday, May 18, 2017
9:00 a.m. - 12:00 p.m.
JC Raulston Arboretum, Raleigh, NC
Register here

NC Urban Forestry Awards
Nomination Deadline: June 30, 2017
More Information & Application

10th Annual Great NC Tree Conference - SAVE THE DATE
Sept. 14-15, 2017
iTree Training Workshop on Sept. 13th
DoubleTree by Hilton Raleigh - Brownstone
Raleigh, NC
More information coming soon!

2016 NCVMA Annual Symposium



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NCVMA
2017
Sustaining Members

ACRT, Inc.

Aerial Solutions, Inc.

Asplundh Tree Expert Company

Bayer Environmental Science

Bost/Centaur ATV

Carolina Tree Care

Clearion

Crop Production Services (Timberland Division)

CWC Chemical, Inc.

Davey Tree, Inc.

ECI Environmental

Helena Chemical Company

HOMS, LLC

NaturChem

NC Electric Cooperatives

NuFarm Americas, Inc.

PLM, Lake & Land Management Corp.

Progress Rail Services, Inc.

TriEst Ag. Group, Inc.

Rotor Blade

Superior Forestry Service, Inc.

Wolf Tree

Woodland Vegetation Management, Inc.

Xylem Tree Expert

Pilot Mountain Blue Star Memorial