

Joining Forces with Nature's Work Teams

Prince William County Department of Public Works actively seeks innovative ways to incorporate sustainable practices into our daily tasks and fulfill our obligations to lead by example. Our search did not require us to look far beyond our community's backyards and barnyards. We simply needed to watch how nature deals with issues and follow its lead. Their clues sparked new programs to remove unwanted plants, encourage pollination and eliminate damaging forest pests.

Nature's Efficient Weed Munching Machines

One of our daily tasks is to maintain properties, safely tackle areas that are difficult to mow and prune, and ensure local tall grass and weed ordinances are enforced. In addition, as part of our Sustainability Partner and E3 status with the Virginia Department of Environmental Quality, Public Works committed to reduce our use of gas powered equipment, plus find feasible and environmentally friendly alternatives.

One alternative trotted in on four hooves. After reading about goats used in other jurisdictions, staff began a search for possible goat herders that would work in our County. Our search led us to ScapeGoats, LLC. We decided to pilot a project to determine whether goats can effectively handle overgrown brush and control invasive plants.

A community project lent itself as the perfect pilot project. Concerns were found on an abandoned property that was completely overgrown with weeds and out of compliance with the local ordinance. The property was just about one quarter acre, so it was the right size as a test run.

We asked permission from our purchasing office to ensure the pilot was in line with purchasing regulations. With their approval, we requested quotes and ScapeGoats were less expensive than local mowing firms. This allowed us to test the capabilities of goats for plant clearing while saving money.

We also ran the pilot project through our zoning office since the property was in a neighborhood. They approved the project and asked us to inform neighbors about the use of goats for the clearing project. We delivered letters to the neighboring properties before we began. We also inspected the property to identify and remove any plants that could be poisonous to the goats and debris that might endanger the animals or the goat herder.

ScapeGoats brought a herd of seven goats to begin the task of eating vines that were climbing head-high to the top of a chain-link fence, thigh-high grass and weeds and all manner of vegetation growing on the property. The neighboring property owners were pleased with the work and enjoyed watching the goats. They even ensured the goat herder and goats had water throughout the day.

We anticipated the project would take about a week for the goats to finish. The work took a bit longer due to a number of factors identified in our lessons learned.

- Goats do not eat non-stop. They take breaks throughout the day to chew cud and get away from distractions. Goats are generally very social and stop to greet anyone who visits.

- Weather conditions change over a week as opposed to completing the work in a day or two with mowing equipment. We called one day off work for the goats when intense heat and then heavy thunderstorms were predicted.
- Goats graze the most in the afternoon and early evening.



At the end of the project, Public Works learned that using goats is a good way to get rid of brush and weeds, particularly in areas that are difficult to mow. It reduces the impact of using gas-powered equipment. Two additional benefits included less soil compaction with the project as opposed to heavy equipment and the natural fertilizer left behind. We recognize it is a very viable option as long as there is no pressing deadline to complete the work.

Safeguarding the Critical Link to Food Production

Besides seeking ways to manage our projects in a sustainable manner, we have the responsibility to lead by example and take on projects that benefit the entire community. This opportunity flew in on wings. We offered to host a sanctuary at one of our historic sites for honey bees. Honey bees are essential to people and the environment because they pollinate 2/3 of the world's plants and serve a crucial role in food production.

Sadly, bees are facing a serious threat to their survival. Honey bees are decreasing in numbers because of Colony Collapsed Disorder (CCD), pesticides, viruses, and flowerless landscapes. Public Works is hoping to raise awareness about the plight of the honey bee and take action to help restore and preserve honey bee populations.

This project is a unified effort between local government and local beekeepers. The honey bee hive was placed as a Gold Award project by a local Senior Girl Scout, who has trained to be a beekeeper. The Scout has been trained by a local beekeeper with the Sweet Virginia Foundation. The foundation will be our local advisors on bees and provide ongoing assistance with issues at the hive, such as times when the bees swarm. In addition, the beekeeping club of Freedom High School will also participate in the project. Finally, staff at Rippon Lodge is ready to respond to support the bees and keep the public safe. Staff has received training in responding to bee stings and contacting experts when there is an issue with the hive.

Bees are not new to Rippon Lodge. Many wild bees already visit the gardens at Rippon Lodge on a daily basis. We do not believe visitors or volunteers will notice a significant increase in the number of bees in the area.

Visitor Safety

- Established a safety perimeter around the hives. Remind visitors not to approach the hives for human and bee protection.
- Advised guests not to swat, taunt or aggravate the bees on the property.
- Placed the hive in an area at the historic site that is not in the travel area for visitors or part of an interpretive area.
- Posted information so visitors understand that when bees swarm, it is not an aggressive attack. It is the first Queen Bee leading part of the bees from the hive to seek a new location for a new hive. This occurs when the bees outgrow the first hive and a new Queen Bee is ready to take over.
- Alerted guests that we have bees on the property so they can come prepared if they are allergic to bees and instructions on how to request help from staff if they are stung.



Together, this team has learned a great deal about the plight of honey bees and is taking the lead in our community to educate others. In the future, the County will offer educational programs about bees. We hope the community will learn about honey bees and their important role in our food supply.

Uses Nature's Means to Control Pests

Public Works is tasked with monitoring and seeking ways to minimize the presence of forest pests, including the emerald ash borer. We have discovered that there are wasps that are natural predators of these devastating insects that can wipe out a community's ash tree population. It offered a much more environmentally wise way to control the pests rather than using chemical pesticides.

Staff members release lab-raised, non-stinging wasps (*Tetrastichus planipennis*, *Spathius agrili* and *Oobius agrili*) at two designated and heavily forested areas in the County. These areas presented a difficult treatment area to control the emerald ash borer using traditional chemical means. It would have been very expensive and required a long period before we would potentially see any results.

The wasps are released every other week from June to September. These tiny wasps penetrate the emerald ash borer larvae and lay their eggs. When the eggs hatch, the wasps feed on the larvae.

These wasps are not native to the area. They are actually from China, just like the emerald ash borer. Since there were no natural predators in the United States, the United States Department of Agriculture (USDA) had to find wasp predators in China. Before being approved for use in the United States, the USDA conducted years' worth of lab and field trials to make sure the wasps would not become an invasive pest.

Based on the recommended management plan, staff will release the wasps for two years. Staff will conduct sampling and monitoring in the third year to determine if the wasps have become established and impacted the population of emerald ash borer. We are working in partnership with the USDA and are the only jurisdiction in Northern Virginia to undertake this program.

Tapping Nature's Resources Make Us Very Effective and Sustainable

The staff of Prince William County Public Works is proud of these unique sustainability efforts that allow us to work in harmony with nature. We simply worked with animals that naturally perform the tasks we need to resolve issues for our community. From gobbling up unwanted plants to providing safe places for bees to using natural predators to reduce the population of unwanted forest pests, we have dealt with critical issues with the least amount of impact on nature. That, of course, is the very core purpose of sustainable practices!