



The Environmental Synopsis

A Monthly Update from the Joint Legislative Air and Water Pollution Control and Conservation Committee

MAY 2016



The Chairman's Corner

**Senator Scott E. Hutchinson,
Chairman**

Early spring is the perfect time of year to get outdoors and shake off the winter blues.

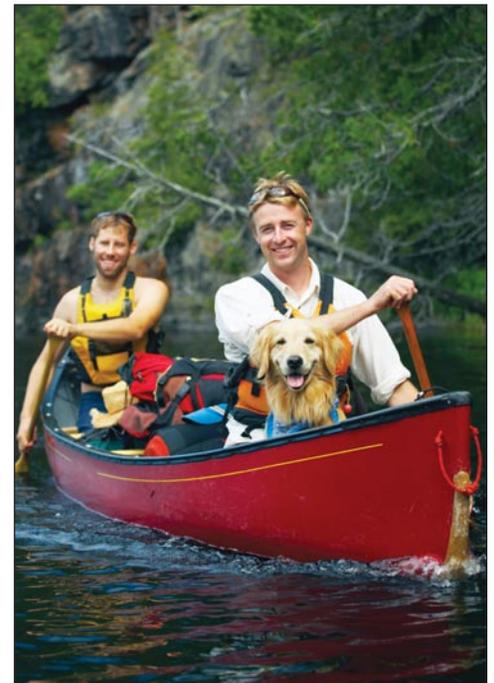
Back home in Venango County, my family and I enjoy getting some fresh air and exercise after a long winter hibernation. Whether you take advantage of the spring gobbler season, camp in one of our state parks, or simply go for a bike ride on a Sunday afternoon, Pennsylvania is home to some of the best outdoor recreation in the country.

But what if you are looking to try a new activity or searching for other like-minded adventurers? Where can you find outdoor activities going on in your neighborhood? A statewide partnership called Get Outdoors PA (GOPA) has been helping connect families to fun, healthy and educational outdoor activities for over a decade now. With over 1,200 sponsored events each year, Get Outdoors PA is a great resource for those looking to get outside and enjoy nature.

The program was originally formed in 2004, when officials with the Department of Conservation and Natural Resources (DCNR) wanted to better promote outdoor recreation in the Commonwealth's state parks and forests. In 2012, the agency partnered with the Pennsylvania Recreation and Park Society, the Pennsylvania

Fish and Boat Commission (PFBC) and the Pennsylvania Land Trust Association to expand its outreach to the local level. Today these agencies and organizations are Get Outdoors PA's flagship partners, along with the Game Commission, Department of Health and the PA Parks and Forests Foundation, who were added in 2014.

The mission of the partnership is simple: "to connect citizens with outdoor recreation activities to increase their appreciation and active use of parks, forests and public spaces while imparting a message of environmental stewardship and healthy living." Establishing a single, unified platform for promoting the benefits of outdoor recreation has been the key to GOPA's success.



A lot of that success depends on the support of community partners. While state agencies such as DCNR and the PFBC

Continued on page 8

IN THIS ISSUE

May 2016
Volume 17, Number 5

<i>The Chairman's Corner</i>	1
<i>Notes from the Director</i>	2
<i>Research Briefs</i>	3
<ul style="list-style-type: none"> • Buyers Pay More for Green Homes • The Importance of Roadside Vegetation • Nitrogen Legacy in Subsurface Soil • Federal Bee Support is Lacking 	
<i>Committee Chronicles</i>	7

Notes from the Director

Tony M. Guerrieri, Executive Director

Keeping the wheel steady on Pennsylvania's roads and highways has become increasingly difficult as drivers encounter pothole after pothole. Cars line up for pothole-inflicted repairs at tire and alignment service stations across the Northeast. Potholes have always been a headache for drivers, but now you can put a price on how bad of a problem they really are.

Drivers in the U.S. have spent an estimated \$3 billion a year to fix damage caused by potholes, according to a survey by the automotive organization the American Automobile Association (AAA). The survey also found that drivers in the Northeast are particularly concerned about this kind of problem.

In the last five years, 16 million drivers across the country have suffered pothole damage to their vehicles. The problems include flat tires and bent or cracked rims. A new tire, wheel, and valve stem can be over \$500. Not only do drivers have to pay for wheel and tire damage, but potholes can cause underlying problems. Potholes can damage ball joints, brake axles, mufflers and shock absorbers. If the pothole has damaged or destroyed components of the suspension, repair bills can easily exceed \$1,000.

State and municipal road patching crews begin making repairs in early spring. A pothole forms when water seeps through cracks in the road surface, eroding the earth beneath it. This erosion undermines the road by creating a space beneath the pavement. Under the stress of passing traffic, the surface eventually buckles. Potholes are especially common in the spring, since the freeze and thaw cycle exacerbates the process.

On average, American drivers individually report spending over \$300 to repair pothole-related vehicle damage. Badly damaged cars could cost thousands of

dollars. Adding to the frustration, vehicles incurring this type of damage tend to have it happen frequently, with an average of three times in the last five years.

According to the American Automobile Association, drivers in the U.S. spend nearly \$3 billion per year to repair pothole-related car damage.

AAA conducted two surveys related to pothole problems in the U.S. The first collected responses from 1,000 adults to measure how concerned people were about potholes on their local roads, while the second interviewed 1,000 people to find out how much they have paid for vehicle damage stemming from potholes.

AAA's survey found nearly two-thirds of U.S. drivers are concerned about potholes on their local roads. On a regional level, drivers in the Northeast were most likely to worry about potholes, with 74 percent saying they were a cause for concern. Sixty-eight percent of respondents in the Midwest, 61 percent of those in the South and 57 percent of those in the West also said they considered potholes to be a problem on local roads.

Fifteen percent of all respondents and one-out-of-five respondents from the Northeast said they have had to repair vehicle damage caused by potholes in the past five years. Sixteen percent of drivers in the South, 15 percent of those in the West and 10 percent of those in the Midwest said they had to complete these repairs.

Nearly one-third of respondents between the ages of 35 and 44 said their vehicle has been damaged by potholes in the past five years, more than any other age group. However, drivers above

the age of 45 were more likely than younger drivers to express concerns about potholes.

On average, a driver reported having to spend \$306 to repair damage caused by a pothole. Sixty-four percent said their bill was \$250 or less, 30 percent said it was more than \$250 but less than \$1,000 and 6 percent said it exceeded \$1,000.

Not surprisingly, drivers with lower or mid-range incomes were more likely to be concerned about potholes than wealthier respondents. More than half of those making less than \$75,000 a year said they were "very concerned" about potholes on the local roads, compared to only one-third of those making \$75,000 or more.

Asphalt plants shut down for the winter because it takes too much energy to heat the asphalt mix to the required 325 degrees. Most winter pothole repairs involve a temporary "cold patch" – a mixture of stone, asphalt and oil. It does not require any special heavy rolling machines or applicators as it can be shoveled or poured into a pothole and tamped down with a hand tool. Unfortunately, the patch often fails to bind to the pothole and soon disintegrates.

Probably the best material to use for pothole repair is traditional "hot patch" asphalt. This product is made at plants that mix liquid asphalt, sand and different sized gravel into a mix that flows while it is hot. As it cools, the liquid asphalt binds to the existing pavement producing a very durable surface. This heated mixture has a much better chance of lasting.

To report a pothole on a state road the Pennsylvania Department of Transportation asks motorists to call its pothole hotline 1-800-FIX-ROAD. Callers will be asked for a detailed description of the pothole's location and size. For potholes on local roads, the best option is to call the local municipality.

Research Briefs

Each month, the committee's staff researches and prepares a number of "briefs" on several topics relevant to the committee's mission. Very often these briefs include references to reports and further research on the topics so that readers may pursue issues on their own. Please note that the information and opinions expressed in the Research Brief articles do not necessarily represent the opinions or positions of the Joint Legislative Air and Water Pollution Control and Conservation Committee, nor those of the Pennsylvania General Assembly.

D.C. Properties with Green Energy Yield Major Resale Premiums

Tony M. Guerrieri
Executive Director

Are homebuyers interested in homes that incorporate green design features – and are they willing to pay more for them? According to a report by the Institute for Market Transformation (IMT) and the District of Columbia's Department of Energy and Environment, the answer is yes.

The report, *What is Green Worth? Unveiling High-Performance Home Premiums in Washington, D.C.*, finds that high-performance homes (HPHs) – both single and multi-family – marketed with green tech features, such as a solar photovoltaic array or a LEED certification, were able to sell for tens of thousands of dollars more than properties without them.

The widely-used definition of HPHs applied in the report cites six elements of green building that are found in most third-party certifying organizations' rating systems, including LEED. These environmentally responsible and resource-efficient green building elements include site, water, energy, indoor air quality, materials and maintenance.

Data for the report included 40 total sales in seven different areas within D.C. between February 2013 and June 2015. Eight of those included the sale of HPHs, while 32 were not listed as high-performance.

The IMT acknowledged that the number is small because multiple listing service (MLS) data does not reflect the true num-

ber of green homes. Previous research found that between 2008 and 2013 only 27 unique, certified high-performance units were listed in the MLS – only 14.8 percent of the expected certified homes on the market, the report claims.

The report paired each of the eight certified homes with three or more non-certified homes. This resulted in a dataset of 32 paired sales, or 64 total homes.

Homes in D.C. outfitted with green technology are commanding sale premiums as high as 8 percent, according to the latest market analysis.

The report examined final sales prices for HPHs and non-HPHs with similar variables such as location, amenities, square footage and parking between February 2013 and June 2015. The analysis found that 29 of those 32 pairs indicated a premium for green design. Three of the pairs were inconclusive. Of those, 19 had sale premiums that ranged from just over \$10,000 to over \$50,000 or an average premium of 3.46 percent. Some premiums on individual houses ranged as high as 6 percent to 7.7 percent. When renewable energy-generating technologies such as solar were incorporated into the home, that resale premium climbed even higher.

Six of the eight HPHs had third-party certifications from LEED, which is offered through the U.S. Green Building Council.

As of September 2015, the District had 457 LEED-certified homes, and as of August 2015, 329 new ENERGY STAR Homes

had been certified, the report stated. To date, while no homes or multi-family buildings in D.C. have been certified through the ICC 700 National Green Building Standard (NGBS), several multi-family buildings are in the process of obtaining this certification.

In pairing HPHs with multiple non-HPHs sales, the report also identified current barriers in the real estate transaction process that may be preventing home sellers from receiving the full market value of their HPHs. While the report's comparisons and conclusions demonstrate that homebuyers are willing to pay more for HPHs, the MLS does not adequately collect and showcase data on green features. In addition, the market is in need of real estate professionals with knowledge of green building principles and practices in order to better market HPHs.

Previous research on green price premiums in California and the Pacific Northwest have shown that HPHs and solar arrays command more at resale. Some premiums have ranged significantly higher than what was found in the D.C.



Continued...

study but did not use the same methodology and some focused on newer houses, not necessarily retrofits of older homes.

The report employed an appraiser-led technique to value green features in homes and produced a credible set of quantifiable results. The findings will help support the growing movement to properly value high-performance homes.

The 52-page Institute for Market Transformation report, *What is Green Worth? Unveiling High-Performance Home Premiums* in Washington, D.C., is available online at: http://www.imt.org/uploads/resources/files/HighPerformance_Home_Valuation_Report_Sept2015.pdf.

Maintaining Roadsides and Pollinator Populations

Coleen P. Engvall
Research Analyst

The plight of pollinators has drawn international attention, particularly in the last decade or so. Honey bees, as well as other vital species such as butterflies and micro bats, have seen sharp population declines in recent years. Aside from the threat to the species themselves, this crisis has sent shockwaves through the natural environment and the economy.

While the plight of insects might not seem like cause for alarm, the truth is that much of our agricultural sector relies on their services. Many studies have pointed to the possibility that a weakened pollinator population could lead to widespread food shortages.

Although the source of the die-offs varies between species, and is often unclear, researchers are finding ways to aid the remaining populations. One such group of researchers conducted a study on butterflies near highways. They chose butterflies, not only because of their own role as pollinators, but also for their sensitivity

to stressors. In other words, a healthy butterfly population is a good indicator that their environment is healthy as well.

The researchers from the University of Florida, with the support of the Florida Department of Transportation (FDOT), monitored how roadside maintenance affected the populations of butterflies in those areas. Their study, entitled *Reducing Mowing Frequency Increases Floral Resource and Butterfly Abundance in Managed Roadside Margins* was published in the *Florida Entomologist* in December.

Using roads managed by FDOT in their study, they selected three stretches of highway with similar speed limits, occupancy and vegetation. Each stretch was divided into several sections, which were randomly assigned a schedule for mowing. One section was never mowed, while the others were mowed every six and three weeks, respectively.

At regular intervals, the researchers measured the amount and diversity of butterflies and flowers in the different sections. They also noted the number of dead butterflies. As expected, leaving the vegetation along highways untouched increased the diversity and health of flowers. While this answer is not unexpected, it does raise important questions.



There are very few places in the United States that are far from a roadway, especially on the East Coast. So a change in policy in these narrow strips of vegetation could potentially have a big impact. But what does this mean for managing agencies such as FDOT, or Pennsylvania's equivalent, PennDOT?

Researchers at the University of Florida noted that mowing roadside vegetation decreased the diversity and abundance of certain flower and pollinator species.

The researchers recognize that pollinator health is not the only consideration when maintaining roadsides. Landscaping in these areas often takes into account safety, visibility, headlight penetration, resistance to salt and the ability of the vegetation to capture and purify runoff water. Aesthetics is also important to those who use roads and many drivers consider uncut grasses and vegetation unsightly.

The researchers took these concerns into account in their recommendations. Instead of advocating for the cessation of all highway margin mowing, they suggest leaving the vegetation alone during peak butterfly seasons. Even if pollinator population health were the only concern, they note that some mowing is beneficial. This is because areas that are completely unmaintained eventually experience ecological succession, where shrubs and trees replace grasses. They also recommend reducing the frequency year-round. This would not only protect the vegetation and pollinators but it would also save the department money on gasoline and labor.

The researchers recommend future research that tracks populations over a longer time-frame to see how high mortality rates impact the next generation of butterflies and other pollinators.

Reducing Mowing Frequency Increases Floral Resource and Butterfly Abundance in Managed Roadside Margins is available to read at:

<http://www.bioone.org/doi/pdf/10.1653/024.098.0412>

Determining Legacy Nitrogen in Subsurface Soil

Michael McKelvey
Intern

Pollution resulting from the broad use of nitrogen fertilizers in agricultural practices has been widely recognized as having a negative effect on water quality. Excessive use of nitrogen fertilizers can lead to an unnatural surplus of nutrients in the water. This unnatural surplus of nutrients yields several negative environmental consequences and can produce so-called “dead zones.”

Dead zone is a more common term for hypoxia, which refers to a reduced oxygen in the water resulting from an overgrowth of algae due to an excess of nutrients such as nitrogen and phosphorus. This excess of nutrients is referred to as eutrophication, and stimulates an algal bloom. Algal blooms often live and die fast, which leads to massive amounts of algae sinking to the seafloor, where it is decomposed by bacteria. The decomposition of dead algal blooms uses almost all of the oxygen in the water, rendering the water uninhabitable to any other living creatures. The second largest dead zone in the world is located in the northern portion of the Gulf of Mexico at the estuary of the Mississippi River.

For years, scientists have attempted to track the amounts of nitrogen runoff entering the seas in calculations referred to as watershed mass balance studies. These studies take estimates of the amount of nitrogen introduced by fertilizer application and compare them to estimates of nitrogen entering water sources. Until now, these studies have consistently

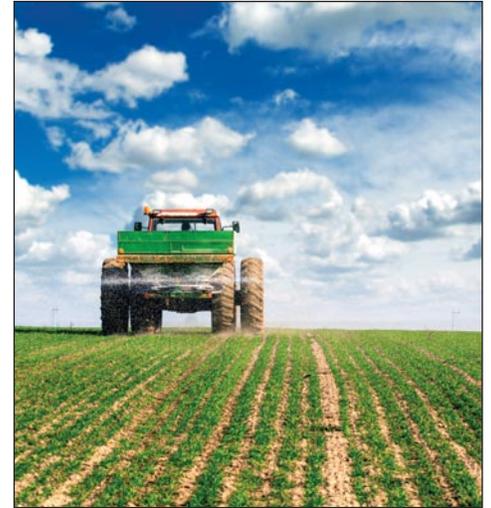
shown that a significant sum of nitrogen seems to be “missing” from the calculations. A recent study, published in a special issue of the journal *Environmental Research Letters*, claims to have found this “missing” nitrogen in the root layer of agricultural land.

The study analyzed long-term soil data from over 2,000 sites across the Mississippi River Basin, ranging in date from 1957 to 2010. By analyzing data collected over several decades, researchers were able to attain an extensive historical understanding of the progression of nitrogen depletion and accumulation in the basin.

Nitrogen that accumulates in lower soil levels over a 30-year period will persist in the soil for at least another 30 years, even if fertilizer application is stopped entirely.

From this approach, researchers found that significant amounts of nitrogen are being stored in soils below plow layers. The report refers to this as “legacy” nitrogen, and claims that this subsurface accumulation may account for at least 50 percent of the nitrogen that was previously considered to be missing from mass balance calculations. Researchers did not find a similar accumulation of nitrogen in plow layers. Instead the plow layers actually exhibited a depletion of nitrogen.

The accumulation of nitrogen in lower soil levels is significant because the nitrogen can slowly seep into water supplies. The study shows that nitrogen which accumulates in lower soil levels over a 30-year period will persist in the soil for at least another 30 years, even if fertilizer application is stopped entirely. For those 30 additional years, nitrogen stored in the lower soil levels will continue to pollute lakes, rivers, streams and oceans.



The report suggests more attention must be paid to the potential for nutrient legacies as such legacies can lead to long time lags between conservation actions and the observation of measurable improvements in water quality. Even if there was a complete cessation of nitrogen fertilizer application, we would continue to observe nitrogen pollution and subsequent dead zones in water sources for decades to come. It is critical to research further and be able to quantify and consider nitrogen legacy time lags in order to set successful conservation policy goals, according to the report.

To read the full report go to:
<http://iopscience.iop.org/article/10.1088/1748-9326/11/3/035014/meta>

Feds: USDA, EPA Need to do More to Protect Bees

Tony M. Guerrieri
Executive Director

Honey bees and bee species are instrumental in the production of an estimated \$15 billion of crops; however, annual surveys of U.S. beekeepers have found that about 29 percent of honey bee colonies die during the winter.

Continued...

A report by the U.S. Government Accountability Office (GAO) examines selected U.S. Department of Agriculture (USDA) agencies bee-related monitoring, research and outreach efforts, as well as bee conservation efforts. It also reviews the U.S. Environmental Protection Agency's (EPA) efforts to protect bees through its regulation of pesticides.

The GAO report concluded that efforts by the EPA and the USDA to address the wide range of factors affecting bee health – including pests, disease and pesticide exposure – will be “a complex undertaking that may take many years and require advances in science and changes in agricultural land use practices.”

The GAO report highlights potential vulnerabilities in how the federal government is acting on recommendations unveiled in 2015 by a White House Pollinator Health Task Force, comprised of more than a dozen federal agencies, including the USDA and EPA. The task force set a number of strategic targets, including cutting overwintering bee colony losses to 15 percent by 2025. And it identified several areas of research that agencies should pursue, ranging from bee population and health monitoring, to environmental stressors, to bee conservation methods.

One of the issues specifically addressed in the GAO report was the need for improved USDA monitoring of wild, native bee populations.

The USDA and EPA have taken numerous actions to protect the health of honey bees and other species of bees, thereby supporting agriculture and the environment. Even with these efforts, honey bee keepers continue to report rates of colony losses that they say are not economically sustainable.



As part of a review into efforts to protect bee health, the GAO said that while the USDA has increased monitoring of honey bee colonies managed by beekeepers to better estimate losses nationwide, it does not have a mechanism in place to coordinate the monitoring of wild, native bees. Native bees, which also pollinate crops, are not managed by beekeepers and are not as well studied. According to USDA officials, they had not coordinated with other agencies to develop a plan for monitoring wild, native bees because they were focused on other priorities.

The USDA also conducts and funds research and outreach on the health of different categories of bee species, including honey bees and, to a lesser extent, other managed and wild bees. The USDA has increased its conservation efforts on private lands to restore and enhance habitat for bees, but has conducted limited evaluations of the effectiveness of those efforts. A 2014 evaluation audit found that agency staff needed additional expertise on how to implement effective habitat conservation practices but the USDA has not defined those needs through additional evaluation.

The EPA, meanwhile, has taken steps to protect honey bees and other bees from risks posed by pesticides, including revising the label requirements for certain pesticides, encouraging beekeepers and others to report bee deaths potentially associated with pesticides, and urging state and tribal governments to voluntarily develop plans to work with farmers and beekeepers to protect bees.

The EPA also issued guidance in 2014 that expanded the agency's approach to assessing the risk that new and existing pesticides pose to bees. While the EPA has been called upon to develop tools to assess the risks posed by mixtures of pesticide projects, the agency does not have data on commonly-used mixtures and does not know how it would identify them.

According to stakeholders GAO interviewed, sources for data on commonly-used or recommended mixtures are available and could be collected from farmers, pesticide manufacturers and others. By identifying the pesticide mixtures that farmers most commonly use on crops, the EPA would have greater assurance that it could assess those mixtures to determine whether they pose greater risks than the sum of the risks posed by individual pesticides.

Among the GAO's recommendations are that the USDA coordinate with other agencies to develop a plan to monitor wild, native bees, evaluate gaps in staff expertise in conservation practices, and that the EPA identify the most common mixtures of pesticides used on crops. According to the GAO, the USDA and EPA generally agreed with the recommendations.

The report was based on assessments from October 2014 to February 2016. The GAO report, *USDA and EPA Should Take Additional Actions to Address Threats to Bee Populations*, is available at:

<http://www.gao.gov/assets/680/675109.pdf>.

Committee Chronicles *A review of memorable committee events*

On April 11, the Joint Legislative Conservation Committee hosted an Environmental Issues Forum with representatives from the American Forest and Paper Association and the Pennsylvania Forest Products Association, who discussed ongoing sustainability efforts within their respective industries. Pennsylvania has a historic role in the forest products industry, with the first paper mill in the nation built near Philadelphia in 1690. Today the industry employs over 53,000 Pennsylvanians and produces countless household and commercial goods.



Senator Hutchinson (pictured at right), introduces the guest panel at the April forum. Presenters included (from left to right) Craig Timm with Domtar Corporation; Paul Lyskava with the Pennsylvania Forest Products Association; and Jerry Schwartz from the American Forest and Paper Association.



Legislators, guests and members of the audience (pictured above) take the opportunity to socialize after the forum. The Environmental Issues Forums encourage informal dialogue between legislators and stakeholders on topics of environmental importance.

On May 16th, the Committee held an Environmental Issues Forum on chronic wasting disease (CWD), a fatal neurological condition that has been detected in segments of Pennsylvania's whitetail deer population. Discovered in the late 1960s, CWD has spread throughout the U.S. deer and elk populations, posing a significant risk to the health of our official state animal. Guests from DCNR, the Department of Agriculture and the Game Commission discussed interagency initiatives aimed at controlling this incurable disease.



Senator Hutchinson (pictured standing, right), generates discussion after the presentations. Presenters included (from right to left) Greg Hostetter from the Pennsylvania Department of Agriculture and Wayne Laroche from the Pennsylvania Game Commission.

Check Us Out on Social Media!

You can now receive updates on committee events, new research and more by following the Joint Legislative Conservation Committee on social media. You can find us on Facebook at www.facebook.com/jointconservationcommittee, or on Twitter at www.twitter.com/PA_JLCC. Take a moment and follow us today for the latest on issues related to Pennsylvania's diverse natural resources!



JOINT LEGISLATIVE CONSERVATION COMMITTEE

CONTACT INFORMATION

LOCATION

Room 408
Finance Building
Harrisburg, PA 17120

PHONE

717-787-7570

WEBSITE

jcc.legis.state.pa.us

MAILING ADDRESS

Joint Legislative
Conservation Committee
PA House of Representatives
P.O. Box 202254
Harrisburg, PA 17120-2254

The Chairman's Corner

Continued from page 1

already have established recreation programming, GOPA enlists the help of local parks, non-profits and municipalities to connect a statewide audience to outdoor activities in their neighborhood. The organization has amassed over 100 community partners across Pennsylvania, including over 40 park and recreation departments and over 40 trail and conservation organizations. There is an online portal that provides partners with training, best management practices and activity lesson plans.

Get Outdoors PA has helped connect thousands of Pennsylvanians with their natural surroundings through organized events, and by providing grants to communities for outdoor recreation.

GOPA-sponsored programming encompasses a variety of popular outdoor pursuits. In fact, participants can choose from 16 different activities, ranging from the more traditional sports of fishing, hunting and backpacking, to more unique hobbies such as orienteering, snowshoeing and geocaching. The partnership even offers wilderness survival classes, where you can learn how to build a shelter, make fire and find wild edible plants. Each activity is taught by an experienced, local instructor who is trained through the GOPA program.

The easiest way to find activities going on near you is to visit the online event calendar on GOPA's website. The calendar can be filtered by either region or zip code, but no matter where you reside, there is bound to be an activity within a short drive from your home. Visiting the

website, I found several activities in-and-around my district this summer. One event, an introduction to orienteering at Chapman State Park, is only 20 minutes from my Warren district office. The website also gives you all the information you need to register, such as level of difficulty, equipment requirements and fees. Many of the programs are free.

Along with their events, GOPA helps communities invest in their outdoor recreation. Any of GOPA's community partners are eligible to apply for a mini-grants, designed to help fund equipment and training expenditures that will increase the quality of the community's programs and activities. The grants can cover up to 50 percent of a project, or up to 3,000 dollars. If your community would like to take advantage of these grants as well as the organized activities hosted by GOPA, keep in mind that only community partners that have been approved in 2015 can apply for this year's grant cycle.

If you are interested in learning more about the program, check out the fact-sheet at http://www.prps.org/resources/documents/2016GOPAMini-GrantProgramFactSheet_001.pdf.

This year, GOPA is highlighting June 11th, which is National Get Outdoors Day. The day focuses on connecting first-time visitors, underserved populations and children to healthy, outdoor lifestyles. Participants can expect programs to be offered on a wide variety of traditional and non-traditional outdoor activities. GOPA hopes that exposure and education about activities will inspire lasting lifestyle changes and an appreciation of public land and water, beyond the one day of fun.

So whether you are an individual looking to lead a healthier, more adventurous lifestyle, or if you are a community leader trying to make better use of local parks, you may want to check out GOPA's website. You can find them at getoutdoorspa.org as well as on Facebook.



Printed on Recycled Paper