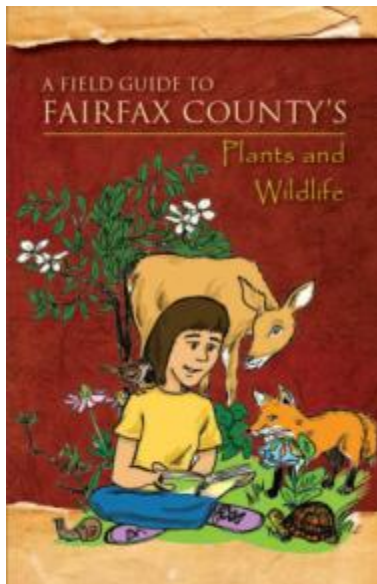


## VACo 2013 Achievement Awards: Environmental Category

### Fairfax County 5<sup>th</sup> Grade Field Guide Development Project

#### Overview

Staff from divisions of the Fairfax County Department of Public Works and Environmental Services (DPWES) and Fairfax County Public Schools (FCPS) created *A Field Guide to Fairfax County's Plants and Wildlife*, an innovative curriculum supplement given to all 5th grade students and teachers in the county school system. The field guide skillfully combines practical and descriptive factual information with fun icons and cartoons to motivate students to explore and learn how to protect nature.



#### Description

A team composed of staff representing the Stormwater Planning Division, Maintenance and Stormwater Management Division and Urban Forest Management Division of DPWES and FCPS' Science Department collaborated extensively to develop supplemental teaching tools for the county school system's new *Fields of Science* study unit. The goals of the study unit included introducing 5<sup>th</sup> grade students to the different disciplines and specialized fields of natural science, as well as encouraging students to actively explore the natural world "in the field." The team decided to produce a field guide to enhance students' outdoor activities by helping them identify common organisms they might see at school or at home, discover how organisms fit into the ecosystem, and become more aware of how human influences and environmental changes can impact organisms. It was important to the team that the field guide be age-appropriate, easy for small hands to handle in the field, and fun as well as educational. Through a competitive bidding process, a consultant, Allen Wayne, Ltd., was chosen to provide graphic design and publication layout.

The graphic design included original, scientifically accurate illustrations that would additionally serve to brand the field guide with recognizable images that would come to be associated with the overall public education program, while being accessible and appealing to students at the 5<sup>th</sup> grade level. The greatest challenges faced by the team were deciding which species to include in the guide and how to represent them in a way that was approachable and interesting to all 5<sup>th</sup> graders, even those who were previously uninterested in science.



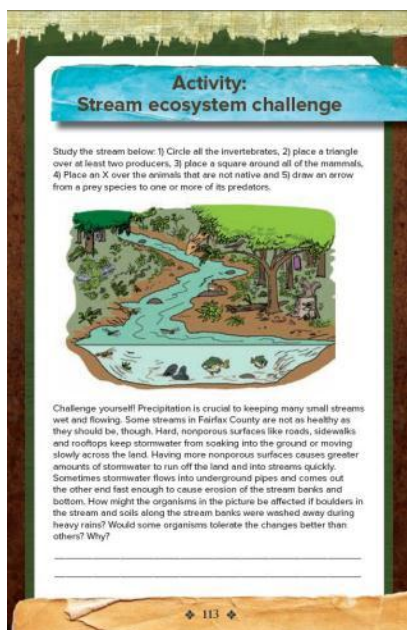
The team worked closely together to create the design concept, select organisms and develop educational activities that would expose students to topics like ecology, biological classification, watersheds, measuring and estimating, reading and interpreting maps, and language arts (including word origins and journaling). Team members researched and discussed organisms' natural histories in depth and developed written content for the field guide's introduction, activities and individual species' biography pages. Species pages included scientific illustrations of the organisms and descriptions of their physical appearances, life histories, habitats, distributions across Fairfax County and the Commonwealth, and roles in the food web; but they went further by including icons to help categorize organisms, "fun facts" and cartoon-type drawings, all of which imparted additional knowledge. Although thousands of species call Fairfax County home, the guide represented a selection of organisms commonly found in typical neighborhoods, schoolyards, parks and other outdoor areas of the county. Certain species were selected to tell the story of how invasive species damage our ecosystem, while others were included to show how the county monitors the health of our streams. All were weighed against whether or not the information provided met the needs of the school system. Activities such as

“How big is it?”, “You are what you eat,” and “Stream ecosystem challenge” were designed to promote critical thinking and interpretation of students’ environment.

The guide needed to be easy for a 10-year-old child to handle. This need influenced the final print size (8.5” by 5.5”) as well as the number of pages and the bond weight of the covers. Spiral binding was chosen to make it easier for small hands to flip pages easily. A ruler was printed on the outside back cover to enable students to measure organisms without having to carry additional supplies.

The FCPS Science Educational Specialist and Science Curriculum Writer ensured that the field guide and its contents aligned with both Virginia’s Standards of Learning and the Fairfax County Public School System’s Program of Study for 5<sup>th</sup> grade students. Additionally, input was requested from the FCPS Science Teacher’s Pyramid and from Language Arts instructors. Several teachers volunteered to be “field testers” and provided detailed comments and valuable input on the field guide’s contents and appearance. During the January 2013 FCPS Teacher In-Service Day, team members gave presentations on the field guide to approximately 500 interested attendees.

In April 2013, approximately 13,800 color print copies of *A Field Guide to Fairfax County’s Plants and Wildlife* were distributed on schedule to all 5<sup>th</sup> grade public school students and teachers in Fairfax



County for the start of the Fields of Science study unit. The field guides were printed by a subcontractor through the county’s Print Shop. Additionally, digital copies of the guide in both color and black-and-white versions were provided to FCPS through its web-based Electronic Curriculum Assessment Resource Tool to make it easier and less expensive for teachers to make multiple page copies for student handouts. The team developed and distributed a Pacing Guide to assist teachers in using the field guide to review, reinforce

or enrich lessons and activities in any, or all, of the lessons in the *Fields of Science* Unit.

At the conclusion 2013 school year, the team intends to survey a group of science pyramid teachers to evaluate the impact of the guide among students and teachers.

In addition to the completed field guide, all of the original drawings created for the guide were conveyed to the county. This wealth of artwork will be used for myriad outreach and educational purposes in the future.

## **Outcomes**

### *Innovativeness*

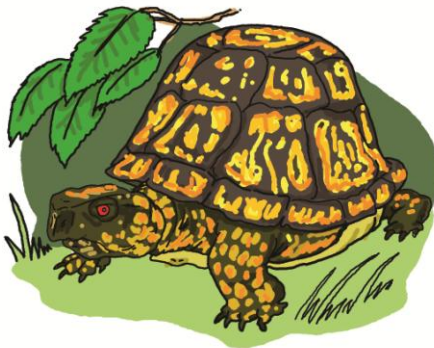
This field guide is the product of a cross-collaboration between the school system and county ecologists that represents one of the most innovative teaching tools created by Fairfax County staff for the public school system. The team has produced a professional-quality, customized reference tool and teaching resource specifically to supplement a newly created 5<sup>th</sup> grade study unit in the FCPS science curriculum. The field guide emphasizes the outdoor experience and exploring nature at the local level. Creatively combining practical information and descriptions with icons, cartoons and fun facts serves to appeal and amuse as well as educate. Entertaining activities explore key ecological concepts and connect students with local issues as well as enabling them to practice scientific thinking skills. This field guide has the potential to reach beyond the classroom and into the homes of students and teachers, conceivably reaching families and friends, not only during the school year but into summer and perhaps beyond. The team has provided an invaluable learning tool to any residents who want to know more about the local environment where they live, work and play. The resulting guide is a true collaboration between DPWES staff who wanted to promote environmental awareness to a new audience and the public school system that wanted a way to encourage both students and teachers to get outside and observe nature. We believe that this field guide will encourage pride in Fairfax County's diverse ecosystems and promote environmental awareness for years to come.

### *Improves customer service*

Improving the collaborative partnership between the school system and local government agencies represents an example of “open government” and provides better information to improve public education and inform multiple stakeholders (teachers, parents and students as they grow) of the mission of DPWES and the Fairfax County Government. Providing the field guide to all public 5<sup>th</sup> grade students and teachers in Fairfax County creates the opportunity to increase the environmental awareness and consciousness of thousands of residents who many not have previously understood the connection between their actions and consequences to the environment. Additionally, the field guide facilitates a closer connection between teachers and students and their local government, enabling them to better understand the importance and challenges of properly managing the environment.

Teachers and parents have written to DPWES stating that students who previously showed little interest in reading or science are fascinated by the field guide. Comments received since the field guide’s release in April 2013 include:

- “An awesome resource”
- “The students LOVE them. Some of my less than enthusiastic readers are engrossed with them.”
- “I have come across the best little *Field Guide to Fairfax County’s Plants and Wildlife*. How can we get some more of these booklets? I love the one I have! People are asking me how they can get one. Can we have a few?”
- “My 5th grader at Armstrong Elementary brought home his copy of *A Field Guide to Fairfax*



*County's Plants and Wildlife* and is so excited to sit down and read through it. I was wondering if I would be able to purchase additional copies (4) for my other children? The guide is just what my son needed as he has not been interested in science this school year. Coincidentally, my dog and I happened to cross paths with an Eastern Box Turtle on our walk yesterday and I took a picture to show my kids and my 5th grader immediately found the page in the book to tell us more about our acquaintance. Well done Stormwater Planning! ;-)”

We believe that the field guide has met the challenge of lack of interest in science by students head on, and won.

### *Supports the county's mission*

With over a million residents, Fairfax County seeks to protect and enrich the quality of life within its diverse communities by presenting opportunities for environmental stewardship and encouraging a culture of engagement. An important component of STW's mission is to improve the public's ability to understand watershed issues and actions that can be taken by individuals. Community outreach and involvement to increase knowledge and change behaviors are also essential parts of the County's Phase I Municipal Separate Storm Sewer System (MS4) permit requirements.

DPWES staff regularly reaches out to residents with a message of watershed protection through public fairs, school visits, watershed forums, volunteer organizations, distribution of printed materials and use of electronic media. Educational materials such as the field guide that offer a message (protect nature, control pollution) as well as practical and/or entertainment value are useful tools to help increase knowledge and change the behaviors of target audiences. While environmental results may not be seen immediately, educating children encourages them to appreciate and take better care of their environment, and to pass on this desire to their peers and parents. The long term benefit is informed and motivated residents willing to advocate for higher standards for environmental health in their communities.

### *Model for other local governments*

By working collaboratively, the team further defined and strengthened the open relationship between the public school system and local government and increased DPWES staff's ability to educate students on key environmental issues facing the county. While DPWES staff members are often asked to speak at various county schools, this field guide represents a more efficient way to reach an entire class of elementary school students, their teachers, and their families. As noted above, educating children encourages them to become more environmentally conscious of their behaviors. It is more cost-efficient to prevent bad environmental behaviors than to clean up after them.

Various additional measures served to minimize costs in developing and implementing the program. Team members researched and developed all written content for the field guide. The company that illustrated and designed the layout of the guide was selected through a competitive bidding process. In addition to pricing, the selected company was chosen based on the quality of sample illustrations, examples of previous work and staff qualifications. For printing, the team coordinated with the county's Print Shop to select a vendor using the lowest-bidder method. Additionally, the team required the printing vendor to deliver all boxes of guides to the FCPS warehouse in one shipment rather than mailing the boxes to 140 individual schools and passing shipping costs on to the county. The guides were subsequently distributed to individual schools through the FCPS interoffice mail system.

By working together, DPWES and FCPS were able to more efficiently address the residents they both serve to meet the public education requirements of both agencies' MS4 permit requirements.

