

# 1) Welcome & Introduction



## Welcome

**Welcome to the exciting adventure upon which you are about to embark!**

Using this curriculum, you will expand your **senses** and challenge your **intellect** as you learn new concepts and skills. You will increase your own **comfort** in the outdoors as you learn **place-based** lessons that will engage and excite your students. You will study current **environmental issues** and learn how to lead your **students** to investigate and find solutions to issues in their own community.

## Alice Ferguson Foundation

The curriculum incorporates the mission of the Alice Ferguson Foundation, which is:

### Mission

*“To connect people to the natural world, sustainable agricultural practices, and the cultural heritage of their local watershed through education, stewardship, and advocacy.”*

## The Main Themes

This curriculum has 3 overarching themes, detailed below, that run throughout the activities:

### Watershed

When we think of where we live, work and play, we tend to think of political boundaries, such as streets, cities, counties and states. In the natural world, land is divided into *watersheds*, land areas that drain into a specific body of water, irrespective of our political boundaries. The creek behind your house/apartment drains rain and snowmelt from your yard. If you follow that creek, it joins a larger stream or river, and so on until you come to the Chesapeake Bay, which drains into the Atlantic Ocean. All choices that we make regarding land use affect our water, as all land on earth is in a watershed of some stream, river or larger body of water.



### Cycles of Nature

Some cycles are well known, such as the water cycle: precipitation, runoff, evaporation, transpiration, and condensation. Other cycles, such as the producer-consumer-decomposer cycle, or nutrient cycles, are ways for Nature to break down and reuse materials. Humans interfere with these natural cycles by producing trash that does not decompose, but can last for very long periods of time in our landfills, landscapes and waterways.



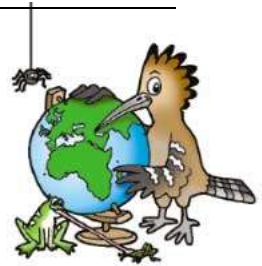
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# Welcome, Continued

## The Main Themes (continued)

### **Biodiversity**

Variety is the essence of life. The more species living in harmony, each in its own niche, the more stable the ecosystem. When we lose a link in the food chain, the whole food web is affected and biodiversity is lessened, weakening the stability of the whole ecosystem.

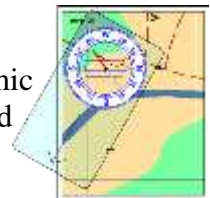


## Key Skills

During this curriculum, you will develop the following skills, which are necessary for investigating a variety of environmental issues with your students.

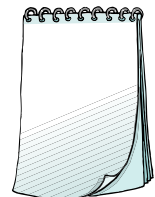
### **Mapping**

We use road maps to figure out where we are going. We can use topographic maps and satellite images to learn our “watershed address,” and understand our connection to the streams and rivers that define our watersheds. We explore online digital tools such as Google Earth and the Fieldscope.



### **Journaling**

Observation of nature is the first step toward appreciating and caring about it. Journaling teaches us new ways to use our senses to see what we so seldom take time to observe. Written and drawn reflections are ways to clarify what we experience and make it personally relevant.



### **Issue Investigation**

You will learn how to guide your students to use mapping and journaling skills to look at their schoolyard or community, see what problems exist, and find solutions.





## 1.2 Curriculum Organization

**Overview** Seven units comprise this curriculum, which is designed to lead you and your students from basic scientific concepts and skills, through a scientific understanding of three specific environmental issues, to informed, authentic issue investigation methodology and action plan development to impact your chosen environmental issues.

**Curriculum Organization Specifics** The curriculum organization is detailed in the table below. For each unit, you can see the major concepts used, as well as the rationale for the curriculum structure.

Unit	Major Concepts	Rationale
<b>1. WELCOME &amp; OVERVIEW</b>	This unit provides basic information regarding the curriculum rationale and organization, as well as providing information about the Alice Ferguson Foundation and environmental education programs here at Hard Bargain Farm.	This unit was organized to answer basic questions regarding the creation and organization of the curriculum.
<b>2. INVESTIGATING YOUR WATERSHED</b>	This unit is designed to provide activities that will allow you and your students to master the concept of watersheds, as well as the important scientific skills of mapping and journaling.	<p>The concept of watershed is one of the overarching themes of the unit, and is critical to each of the subsequent units, each of which focuses on a specific environmental issue.</p> <p>The skills of mapping and journaling are crucial to careful observation and data collection.</p>

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## 1.2 Curriculum Organization, Continued

### Curriculum Organization Specifics (continued)

Unit	Major Concepts	Rationale
<b>3. EROSION &amp; RUNOFF</b>	<p>This unit focuses on the specific issues of erosion and runoff, which are significant problems in our watershed.</p> <p>Students learn about:</p> <ul style="list-style-type: none"> <li>• soil availability and structure;</li> <li>• how erosion occurs and what factors influence/mitigate it;</li> <li>• water quality; and</li> <li>• the importance of various wetland habitats to the health of the Potomac and Chesapeake Bay watersheds.</li> </ul>	<p>These three units each focus on a specific environmental issue, chosen for its relevance to the health of the Potomac and Chesapeake Bay Watersheds.</p> <p>The activities involved in each unit lead students to an understanding of basic underlying science concepts, thereby preparing them to conduct informed, authentic issue investigations on environmental topics of their own interest.</p>
<b>4. WASTE MANAGEMENT</b>	<p>This unit focuses on nutrient cycles and how human actions affect these natural cycles.</p> <p>Students learn about</p> <ul style="list-style-type: none"> <li>• the biodegradability of common materials in our trash,</li> <li>• recycling,</li> <li>• composting and</li> <li>• vermiculture.</li> </ul>	
<b>5. ECOSYSTEM DIVERSITY</b>	<p>This unit focuses on the issue of biodiversity, as variety is important to ecosystem health.</p> <p>Students become familiar with</p> <ul style="list-style-type: none"> <li>• identifying organisms in aquatic habitats;</li> <li>• the cycles of interactions between various organisms in a habitat, including predator-prey dynamics and those in food chains/food webs; and</li> <li>• how animal adaptations relate to environmental conditions.</li> </ul>	

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## 1.2 Curriculum Organization, Continued

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### Curriculum Organization Specifics (continued)

Unit	Major Concepts	Rationale
<p><b>6. ISSUE INVESTIGATION, REFLECTION, AND ACTION PROJECTS</b></p>	<p>This unit provides a framework for teachers to guide students conducting issue investigations in their schoolyard or community.</p> <p>Students will conduct authentic investigations of chosen issues relevant to their schoolyard/community, and form action plans to remedy identified environmental problems.</p>	<p>After students are engaged in an environmental issue, they need the tools to investigate, gather data, analyze that data, draw conclusions and form action plans to address the problems they discover.</p>
<p><b>APPENDICES</b></p>	<p>The appendices include:</p> <ul style="list-style-type: none"> <li>• Appendix A: An illustrated glossary section, with individually reproducible information sheets, which can be used to provide students with basic overviews of key concepts in this curriculum.</li> <li>• Appendices B &amp; C: Indices that allow teachers to identify activities based on key concepts covered, science skills used, and subject areas involved.</li> </ul>	<p>The appendices to this curriculum provide aid in planning a curriculum tailored for your students.</p> <p>Multiple indices enable teachers to reference and identify activities based on multiple criteria.</p>

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## 1.3 Lesson Plan Format

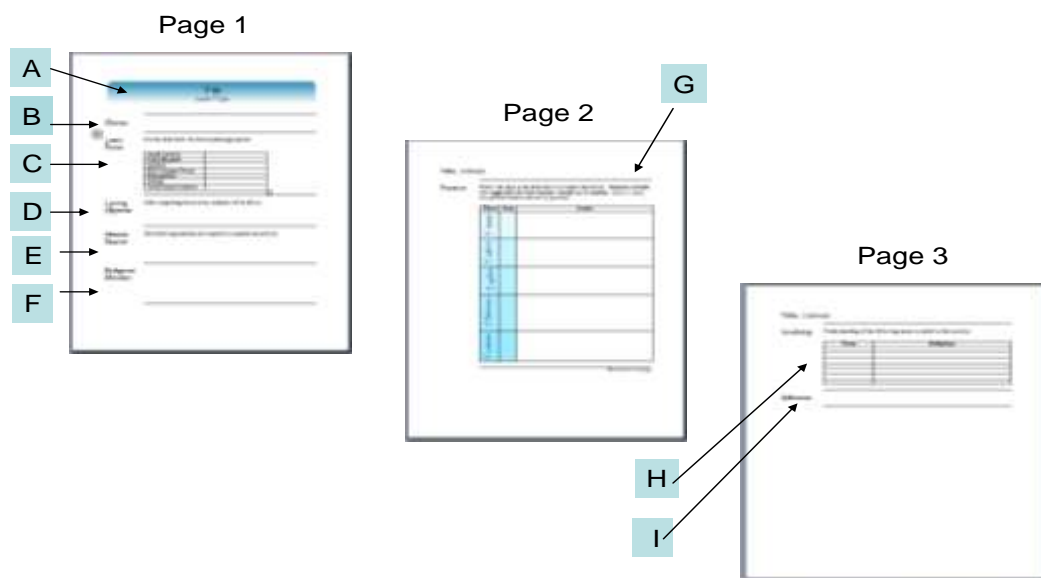


### Overview

Each lesson plan is constructed in the same format for consistency and ease of lesson planning and implementation. This page explains the various sections of the basic lesson plan format.

### Sample Lesson Plan Diagram

The diagram below shows the major parts of the basic lesson plan format, and the accompanying table explains what you will find in each section.



Part	Name	This section...
A	Header	contains the lesson title, as well as a brief phrase that explains what type of lesson it is.
B	Overview	explains, in a sentence or two, what happens in the lesson.
C	Lesson Planner	provides basic lesson information, including time required, key terms, prerequisites and setting for lesson planning purposes. <b>All lesson plans are written for grades 4-High School, unless explicitly stated in the lesson planner.</b>
D	Learning Objectives	explains what students should know and be able to do after completing the activity.
E	Materials Required	contains a list of all required and suggested materials to conduct the lesson successfully.
F	Background Information	provides science content knowledge the teacher should know, pertinent to the specific lesson.
G	Procedure	explains how to conduct the lesson using the 5 E's format (see <i>The Five E's Model of Learning</i> , pg. 1-7).
H	Vocabulary	lists pertinent vocabulary for the lesson.
I	References	provides reference information for lesson source material.

## 1.4 The Five E's Model of Learning



### Overview

The Institute and all student activities use the 5 E's model of instruction, and the constructivist approach to learning.

### Constructivism

The following excerpt from The Case for Constructivist Classrooms, by Jacqueline and Martin Brooks, explains the concepts behind a constructivist approach to education.

*"It sounds like a simple proposition: we construct our own understandings of the world in which we live. We search for tools to help us understand our experiences. To do so is human nature. Our experiences lead us to conclude that some people are generous and other people are cheap of spirit, that representational government either works or doesn't, that fire burns us if we get too close, that rubber balls usually bounce, that most people enjoy compliments, and that cubes have six sides. These are some of the hundreds of thousands of understandings, some more complex than others, that we construct through reflection upon our interactions with objects and ideas.*

*Each of us makes sense of our world by synthesizing new experiences into what we have previously come to understand. Often, we encounter an object, an idea, a relationship, or a phenomenon that doesn't quite make sense to us. When confronted with such initially discrepant data or perceptions, we either interpret what we see to conform to our present set of rules for explaining and ordering our world, or we generate a new set of rules that better accounts for what we perceive to be occurring. Either way, our perceptions and rules are constantly engaged in a grand dance that shapes our understanding.*

*Consider, for example, a young girl whose only experiences with water have been in a bathtub and a swimming pool. She experiences water as calm, moving only in response to the movements she makes. Now, think of this same child's first encounter with an ocean beach. She experiences the waves swelling and crashing onto the shore, whitecaps appearing then suddenly vanishing, and the ocean itself rolling and pitching in a regular rhythm. When some of the water seeps into her mouth, the taste is entirely different from her prior experiences with the taste of water. She is confronted with a different experience of water, one that does not conform to her prior understanding. She must either actively construct a different understanding of water to accommodate her new experiences or ignore the new information and retain her original understanding. This, according to Piaget and Inhelder (1971), occurs because knowledge comes neither from the subject nor from the object, but from the unity of the two. In this instance, the interactions of the child with the water, and the child's reflections on those interactions, will in all likelihood lead to structural changes in the way she thinks about water.*

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## 1.4 The Five E's Model of Learning, Continued

Constructivism  
(continued)

*As human beings, we experience various aspects of the world, such as the beach, at different periods of development, and are thus able to construct more complex understandings. The young child in this example now knows that the taste of seawater is unpleasant. As she grows, she might understand that it tastes salty. As a teenager, she might understand the chemical concept of salinity. At some point in her development, she might examine how salt solutions conduct electricity or how the power of the tides can be harnessed as a source of usable energy. Each of these understandings will result from increased complexity in her thinking. Each new construction will depend upon her cognitive abilities to accommodate discrepant data and perceptions of her fund of experiences at the time.”*

The 5 E's

The following table explains each of the 5 E's in more detail.

<b>E</b> Engagement	<p><b>This phase is designed to grab the student's interest.</b></p> <p>An object, situation, or problem that relates to the student's world is presented with an authentic question, a problem description, or an interactive scenario. The engagement is meant to lead the student to the task to come. The role of the teacher in this phase is to present the situation or problem and to identify the task. If this phase is successful, students are motivated to continue to the next phase: the exploration.</p>
<b>E</b> Exploration	<p><b>Exploration activities are meant to provide students with concrete experiences, which they can build upon as they discover new concepts and learn new processes and skills.</b></p> <p>These activities bring answers and, if successful, satisfaction to the student. During the exploration phase, students need time to explore objects, events, or situations. They gather data to help them establish relationships, construct mental pictures, observe patterns, and question preconceptions. The teacher facilitates the exploration and coaches students from the sidelines. The teacher answers students' questions and helps them to begin restructuring their knowledge. At the end of this phase, students should be prepared to explain what they have discovered.</p>

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## 1.4 The Five E's Model of Learning, Continued

The 5 E's (continued)

E xplanation	<p><b>This is the phase in which students should “see the light.”</b></p> <p>The concepts, processes, and skills to which they have been exposed become clear. The learning is internalized. During the explanation phase, students and teachers agree on appropriate vocabulary to discuss the discoveries students have made. The teacher’s role is to ask students to summarize what has happened in their own words. The teacher then begins to introduce scientific terms to describe the results. Explanation often provides order to the earlier phases and should lead quickly to the ability to elaborate on what has been learned.</p>
E laboration	<p><b>This phase is designed to provide students with a chance to take what they have learned and extend or apply the concepts, processes, or skills to their lives.</b></p> <p>Often, elaboration activities are interdisciplinary and may involve writing, mathematics, or social studies. When students can clearly connect the early explorations with the explanations and the concepts with the observations, learning has been internalized. They are ready to evaluate their work.</p>
E valuation	<p><b>During this phase, students receive needed feedback on whether their explanations have been adequate.</b></p> <p>Informal evaluations occur all during the learning task, but a more formal evaluation should occur after the elaboration phase. Students should evaluate their own work and understanding, as well as be evaluated by the teacher. Authentic assessment techniques can be employed to give students meaningful feedback on their individual work or any group work in which they participated.</p>

How the 5 E's  
are Used in  
This  
Curriculum

The 5 E's form the basis for the lesson plan and unit structure of this curriculum. At the beginning of each unit, you will find a unit organizer, which explains the following about each activity in the unit: title, main concepts, setting and page references. Each of the units starts with Engagement activity options, and continues through Evaluative activities.

*Note: There are often multiple activities for each E category. You may choose which of these are most relevant to your instruction, and accommodate your students' needs. You may do more than one lesson in a specific E phase, and/or change the order in which you do the activities, even looping back and forth as your students progress.*

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## 1.4 The Five E's Model of Learning, Continued

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The Teacher's Role

The teacher's role in the 5E's learning model:

- Elicit student preconceptions (ENGAGE)
  - Guide hands-on investigations (EXPLORE)
  - Guide analysis of data, modify preconceptions and present alternative explanations (EXPLAIN)
  - Apply knowledge gained from investigations and data analysis to further studies or topics (ELABORATE)
  - Conduct evaluations and guide student self-evaluations (EVALUATE)
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## 1.5 An Overview of the Hard Bargain Farm Environmental Center Environmental Education Program

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### Program Structure

Student programs are either one day (4-6 hours) or two days (overnight).

On a one-day program, or on the first day of a two-day visit, students learn where their food comes from in the *Farm Life Exploration*, and investigate wetland, forest and meadow ecosystems during the *Habitat Hike*. Students on a typical two-day program also take classes in cow milking, antique tools and problem solving.

For a complete list of program options, descriptions of classes, standards alignments, student lessons and activities to do before and after your HBF visit, and more visit the Hard Bargain Farm website at [fergusonfoundation.org](http://fergusonfoundation.org).

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### Benefits of HBF Environmental Programs

#### Our Student Programs:

- Connect classroom learning with direct, authentic experiences;
  - Are interdisciplinary and “hands-on, feet wet;”
  - Align with state and local standards of learning; and
  - Can be used to fulfill the “Meaningful Watershed Educational Experience” (MWEE) requirement of the *Chesapeake 2000 Agreement*.
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### Other Programs at HBF

In addition to providing exciting hands-on experiences for student groups, Hard Bargain Farm Environmental Center has numerous other opportunities for individuals of various ages to participate in educational events, such as:

- Summer Environmental Science Institutes for teachers
  - Award winning Website: [www.fergusonfoundation.org](http://www.fergusonfoundation.org)
  - Annual Potomac River Watershed Cleanup: [www.PotomacCleanup.org](http://www.PotomacCleanup.org).
  - Special events (see Website for dates):
    - Spring Farm Festival
    - Oktoberfest
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### How to Schedule a Student Trip

For scheduling requests and information, please contact:

AFF Office Manager,  
2001 Bryan Point Road  
Accokeek, Maryland 20607  
301-292-5665

[officemanager@fergusonfoundation.org](mailto:officemanager@fergusonfoundation.org)

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## 1.6 The Alice Ferguson Foundation



### Our Mission

The Alice Ferguson Foundation is a non-profit organization whose mission is:

*“To connect people to the natural world, sustainable agricultural practices, and the cultural heritage of their local watershed through education, stewardship, and advocacy.”*

### The Structure of the Alice Ferguson Foundation

The organization has many areas of focus, including:

#### EDUCATION

- [Hard Bargain Farm Environmental Center](#), an on-site elementary and middle school environmental and agricultural education program; and
- [Bridging the Watershed](#), an off-site secondary school partnership program providing field studies in partnership with national parks.

#### THE ARTS

- [Hard Bargain Farm Players](#) offer musical and theatrical programs at the Foundation’s outdoor amphitheatre, as well as summer theatre workshops for children;
- [Art and Garden Conservation Program](#), which focuses on the legacy of Alice Ferguson as an early to mid-twentieth century artist of the Washington, D.C. metropolitan area.

#### ENVIRONMENTAL ISSUES

- **Annual Potomac River Watershed Cleanup and Trash Free Potomac Watershed Initiative** engage citizens and community leaders throughout the watershed to generate momentum for environmental change and elimination of trash in the Potomac River watershed. [www.fergusonfoundation.org](http://www.fergusonfoundation.org)

### Alice and Our Beginnings

Alice Lescinska Lowe Ferguson, wife of Henry Gardiner Ferguson, was a dynamic, creative artist who trained as a painter at the Corcoran School of Art in Washington, D.C. When Alice and Henry Ferguson bought Hard Bargain Farm in 1922, little did they imagine that it would become a place where children from the Washington, D.C. metropolitan area would come to learn about the environment, agriculture and history. The purchase of Hard Bargain Farm changed the course of Alice's life as she transformed it into a unique, remarkable center that is still alive with the mark of her creative touch.



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## 1.6 The Alice Ferguson Foundation, Continued

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### Alice and Our Beginnings (continued)

Hard Bargain Farm, initially a 130-acre plot of land along the eastern banks of the Potomac across from historic Mount Vernon, included an old farmhouse, farm structures, rolling hills, fields, woods and streams in relatively untouched, undeveloped condition. The Farm became Alice's passion. While it became a place where the couple would bring their friends and entertain them, it also became the place where Alice developed her creative forces as a painter, architect, garden planner, writer, amateur archaeologist, environmental conservationist and philanthropist.

In the 1930's, Alice Ferguson initiated archaeological investigations along the farm's shoreline. Her discoveries, together with those made later by archaeologists from the Smithsonian Institution and the University of Michigan, provided evidence that this area had been occupied by Native Americans for more than 10,000 years. In 1966, these findings resulted in the designation of the Accokeek Creek Site as a National Historic Landmark.

Alice was responsible for taking the first step toward protecting the area's natural landscape and preserving the beauty of the land and the open space across from Mount Vernon. With foresight and wisdom, she purchased hundreds of acres of neighboring land and sold it to conservation-minded individuals who began building homes in the area. Later, this community was formally established as the Moyaone Reserve. Its residents fought to protect the Potomac shoreline from industrialization in the 1960's by accepting deed covenants through the U.S. Department of Interior, which limited tree cutting and road building and prohibited commercial development. In support of the community, the Alice Ferguson Foundation donated all of its riverfront land to help establish Piscataway Park in 1968.

Upon Alice's death, Henry Ferguson established the Alice Ferguson Foundation in her memory, in collaboration with the Moyaone Association. It was officially chartered in autumn of 1954, with bylaws created by three local community members: Louise North, Mary Thornhill and Nancy Wagner. The charter members imagined creating a foundation that fostered and supported the local education system. This vision has led the organization to become a vibrant education center that thousands of citizens enjoy annually.

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## 1.6 The Alice Ferguson Foundation, Continued

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### Highlights of Our Accomplishments

Some of the Alice Ferguson Foundation's most notable accomplishments are that it has:

- Donated all of its riverfront land in 1968 (some 86 acres) to the Department of Interior to help establish Piscataway Park, serving as a unique model of public/private development.
- Served and taught more than 300,000 students in innovative environmental education programs.
- Trained hundreds of educators to integrate environmental education across the curriculum using outdoor sites and hands-on investigative approaches.
- Mobilized more than 30,000 volunteers working with over 220 partner organizations, businesses, and government agencies to remove 1,022 tons (more than 2 million pounds) of trash from the Potomac watershed since the Potomac Cleanup was launched in 1988.
- Preserved and protected Hard Bargain Farm's historic legacy and working farm, including conserving works of art and the Ferguson farmhouse. It is one of only three early twentieth century artist's estates intact near Washington, D.C. and Baltimore.

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### FAQ's

#### **Why is it called Hard Bargain Farm?**

According to Alice L. L. Ferguson: "All old Maryland places have names and we knew that ours must have one too, but the real estate agent ignored all questions. When we signed the deed, we saw it for the first time. We were the owners of Hard Bargain. It is rather a nice name after you get used to it, but it is no name to use when you take apples to market. About 1800 someone had only dower rights to the farm but sold it just the same. In the course of time, the unlucky purchaser found he did not own the place and had to buy it again. The only time we resented the name was many years later when we had a station wagon marked Hard Bargain. We discovered that everyone thought the perfectly good station wagon was no good and that we had named it in the same way that college boys call their forlorn jalopies lemons."

Source: **Adventures in Southern Maryland 1922-1940 by Alice L.L. Ferguson, 1941**

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## 1.6 The Alice Ferguson Foundation, Continued

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FAQ's  
(continued)

### **What is the Moyaone Reserve?**

When Alice died in 1951, she left most of the land to the residents. On her behalf, they formed the Piscataway Company, a non-profit organization that received and managed the land as Alice had envisioned. As development crept nearer and nearer, the Piscataway Company purchased more and more land, first in Apple Valley, next in Auburn, then in Poplar Hill. With Alice as its catalyst, the Moyaone Reserve became a community designed and developed by its residents. Today, many people live in the woods surrounding Hard Bargain Farm in a residential community called the Moyaone Reserve.

### **How is AFF in partnership with Piscataway Park and the National Park Service?**

In 1968, the Alice Ferguson Foundation donated all of its riverfront land to the federal government to help establish Piscataway Park. Since that time, the Foundation and the National Park Service have formed a highly successful working partnership. By joining forces, together they have developed an award-winning environmental education program that reaches more than 10,000 students annually. In 1996, the partnership received national recognition when it received Renew America's prestigious National Award for Environmental Sustainability.

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### **HARD BARGAIN FARM ENVIRONMENTAL CENTER**

The Alice Ferguson Foundation operates the 330-acre Hard Bargain Farm as an environmental education center. With two miles of shoreline on the historic Potomac River, directly across from Mount Vernon, these rolling forested hills, meadows and agricultural lands are an ideal setting for natural history studies. A freshwater tidal marsh and the pristine Accokeek Creek, where wildlife, fish and water birds abound, offer ideal areas for environmental study.

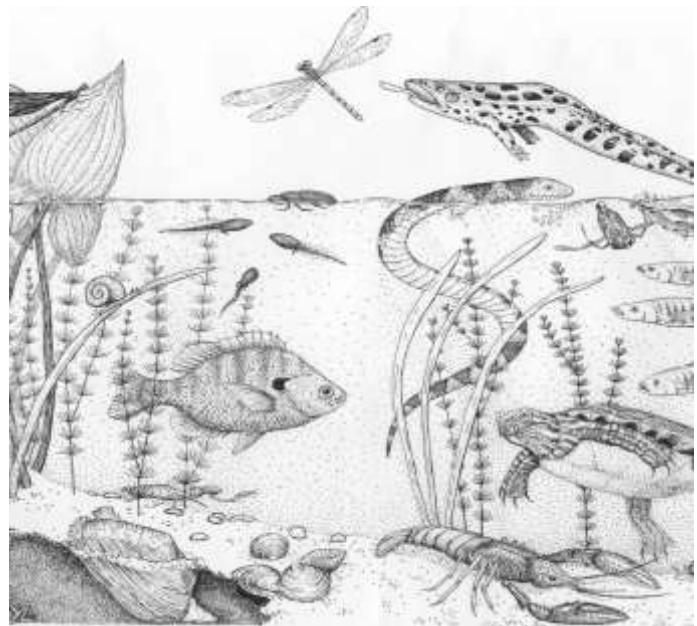
The Potomac River is a fascinating and easily accessible resource for the study of natural ecosystems. The Potomac River Program at Hard Bargain Farm provides “hands-on” experiences for students grades pre-K -12 to achieve a better understanding of our natural world and the impact we all have on the environment.

*For more information about the Alice Ferguson Foundation, and additional educational resources, visit us on the Web at*

[www.fergusonfoundation.org](http://www.fergusonfoundation.org).

### **ALICE FERGUSON FOUNDATION HARD BARGAIN FARM ENVIRONMENTAL CENTER**

2001 Bryan Point Road  
Accokeek, MD 20607  
(301) 292-5665  
[www.hardbargainfarm.org](http://www.hardbargainfarm.org)



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## 1.7 Hard Bargain Farm Brochure, Continued

### The Potomac River Program

<b>About the Program</b>	The Potomac River Program (PRP) provides environmental learning experiences designed for students in grades pre-K to 8 <sup>th</sup> . The goal of the program is to provide an introduction to the ecology, water quality and geography of the Potomac River through field courses and hands-on activities.
<b>Standard one-day Field Trip</b>	The program consists of two courses: a <i>Habitat Hike</i> and <i>Farm Life Exploration</i> . These courses are adaptable for grades pre-K to 5, and include a wagon ride. Students will complete one activity before and the other after lunch. The day typically runs from 10:00am to 2:00pm.
<b>Standard two-day (overnight) Field Trip</b>	<p><i>Day 1</i> of the program will consist of two courses: <i>Habitat Hike</i> and <i>Farm Life Exploration</i>. A class of students is divided into multiple groups. Each group will do both courses: one in the morning and the other in the afternoon. The day typically runs 10:00am to 4:00pm, with a thirty-minute lunch break.</p> <p><i>Day 2</i> of the program begins at 8:00am in the barnyard for the courses <i>Cow Milking</i> and <i>Antique Tools</i>. From 10:00am to noon students will complete <i>Whole Polluted the Potomac?</i> and <i>Children's Garden</i> courses. Departure is after lunch and clean-up.</p>

### Course Descriptions

#### Day 1 Selections: Choose 2

##### **Habitat Hike<sup>#</sup>**

The hike on trails through the diverse ecosystems of the Accokeek Creek and Potomac River watersheds focuses on plants and animals that live there, the interdependence of organisms in food webs, natural cycles, and each person's connection to the environment

##### **Farm Life Exploration<sup>#</sup>**

Students have the opportunity to experience a small family farm, help with farm chores, and discover the sources of some of their favorite foods. Students will learn about changes in technology over time as they explore this 1950's era working farm

##### **Birds Up Close<sup>‡</sup>**

Learn some basic ways to locate and identify our local birds, then practice those skills on a birding hike. Examine adaptations and variations of birds using study skins

##### **Corn: From ancient ways to now-a-days\* (pairs well with Hunter-Gatherers course)**

Corn is native to the Americas, and has a long tradition in many cultures. Hear history and legend as you try your hand at shelling and grinding corn using ancient and modern techniques.

##### **Down to Earth\***

This course focuses on soil. Students will examine erosion and sedimentation, as well as the many properties and values of soil.

##### **Exploration by Canoe\* (counts as two courses)**

Experience the river from the viewpoint of the fish, birds, and mammals that live there. Study plant and animal interactions, aquatic habitats, and our relationship with the river. *Course includes basic canoeing instruction and is paired with Habitat Hike.*

**Fish Adaptations\***

Examine the external and internal anatomy of fish to discover clues to their habitats, feeding patterns, and defense strategies.

**Geocaching\***

Using the latest technology, participants will explore the beautiful landscape of Hard Bargain Farm while searching for the clues to solve an environmental mystery.

**Hunter-Gatherers\* (pairs well with corn course)**

Learn how people who lived at this site in Accokeek many years ago found food, clothing and shelter in this woodland-riverine environment.

**Up a Creek\***

Hike up Accokeek Creek to investigate physical characteristics and living organisms of this pristine stream. Learn about water cycles and watersheds as you see how the creek forms cut banks and sandbars on its way to the Potomac River.

**Day 2 Selections: Choose one****Children's Garden and Who Polluted the Potomac #**

At the *Children's Garden* students experience where their food comes from and are actively involved in planting plants. They will develop a greater understanding of producers and how it relates to their personal life. *Who Polluted the Potomac?* is a role playing activity that reveals students' connection to the environment of the Potomac River.

**Other Options Available:**

**Habitat Hike      Farm Life Exploration      Birds Up Close      Down to Earth**

**Fish Adaptation      Rivers in Action      Up A Creek**

# -- *Included in the standard program courses*

\* -- *Additional material's cost involved (please see website for current prices)*

## 1.8 Alice Ferguson Foundation's Annual Potomac River Watershed Cleanup



### **Take Pride in Our Potomac! It Starts in Your Back Yard.**

#### **Why Have a Watershed Cleanup?**

Each day, the Potomac River provides 477 million gallons of drinking water to the Washington area and 100 million gallons of ground water to rural regions. It is a symbol of the health of our community. What does it say about us when we allow trash to line the river shoreline and lodge in its streambeds?

Plastic bottles, Styrofoam, food wrappers, coffee cups -- you name it, and it's in Our Potomac River and tributaries! How did most of this trash get there? As water washes down our sidewalks and streets, then into storm drains, it carries with it whatever is in its path. Storm drains then dump the water and litter into nearby tributaries, or into the river itself.

#### **The Annual Potomac River Watershed Cleanup**

Thousands of dedicated volunteers remove tons of trash from cleanup sites in Maryland, Virginia, Pennsylvania, West Virginia and Washington, D.C. Volunteers collect data on trash including numbers of plastic bags, tires, straws, cigarettes, bicycles, and recreation equipment (including a bowling ball, and furniture). This event happens annually.