A Trail To Every Classroom (TTEC) 
Curriculum Development Tool

UNIT DESIGN COVER SHEET

Author contact: David Adamiak

Urbana Middle School Ijamsville, MD:

Title: Habitat Heroes: Invasive-exotics are threatening local ecosystems and what can we do about it!

Abstract/Vignette: Our schoolyard, local trails, and the Appalachian Trail, provide an excellent opportunity to study ecosystems. By engaging in place-based, service learning activities with exotic-invasive and native plants, students will develop an understanding of a real-world problem, possible solutions, and be empowered to make a difference.

Grade level(s): Please check all that apply.

☐ K-2 ☐ 3-5 ☐ 6-8 ☐ 9-12 ☐ College and Lifelong Learning

Discipline: Please check all that apply.

☐ Art and Music ☐ Health and PE ☐ Foreign Language

☐ Literature and Language Arts ☐ Mathematics ☐ Science

☐ Social Studies and Geography ☐ History
Year Developed: Summer 2015

Period (month long unit vs. week long):

Teaching environment:
X In the Classroom (indoors)  X On the Trail  X on school property  X in the community

A Trail To Every Classroom (TTEC)
Curriculum Development Tool

UNIT DESIGN TEMPLATE

| Unit Title: Habitat Heroes – Invasive and Exotic Species –What can we do about it? |
|-----------------------------|---------------------------------|---------------------------------|
| School: Urbana Middle       | Grade level/s: 6 and 7th        | Discipline/s: Science and Language Arts |
| Unit Designer/s: David Adamiak |

A. Big Ideas
The high-level ideas, concepts, principles or processes for the TTEC unit include:

- Students will be able to understand ecosystems
- Engage in a service learning activity involving the elimination of exotic-invasive and native plants
- Students will develop an understanding of a real-world problem, research possible solutions, and be empowered to make a difference
● Students will integrate information skills practice with Science and Language Arts
● Research the problem of non-native invasive plants in our area several times throughout the year.
● Participate in invasive-exotic control eradication project on the school property
● Students survey invasive-exotic species on the school property using GPS units
● Organize a field trip with coordination with Potomac Appalachian Trail Club and identify invasive-exotic species along a section hike on the Appalachian Trail.
● Students share what they have learned with the use of technology

B. Enduring Understandings
Students will understand that:
● Natural ecosystems may be affected by invasive-exotic species
● Many times these invasive-exotic species negatively affect ecosystems
● Invasive-exotic species should be removed from any given area. Different species require different ways of removing it.
● Removal of invasive-exotic species benefits the community in a number of ways.
● Removal of invasive-exotic species may provide a service learning opportunity

C. Essential Question(s):
Students will keep considering:
● What is an invasive-exotic species?
● How did they get here? – Where did they originate from?
● How are they harming the native ecosystem?
● How does one eliminate them?
● What is the desired results?
● Predict what would happen if invasive species were left unchecked?
● How would this affect other plants and animals that currently live in the area?
● How can one quantify what is happening in our forest?

D. Content Standard(s):
DCI LS2.c: Ecosystem Dynamics, Functioning, and Resilience. Performance expectations MS-LS2-4 and MS-LS2-5.

E. Place-based Service Learning Lens (Assumes PBSL Principle #5 Integrated & Principle #6 Rigorous):

Grounded in Place
In what ways is your unit a direct reflection of local landscapes, resources, culture, and values?
Why does doing this unit with these students in this community make sense?

Students will survey and identify invasive species that are on the school grounds including the slope of the nearby forest to the stream along the east side of the property. Seeing this may spark a project in which students will create a plan to eliminate them from the school grounds. Students may create a document to encourage residents of the Urbana community from planting the same species on their property.

Real
What authentic, real-world need or opportunity exists in your community that students will address through their project?

Invasive-exotic species are a problem everywhere.

Empowering
How will your students help determine what project they take on? How will they help design the project, make decisions along the way, and evaluate their success?

After the survey, students will determine the best course of action. They will investigate what resources are available to them to take the necessary steps to restore the school grounds for which it was meant to be.

Collaborative
What opportunities will students have for mutually beneficial collaboration with other disciplines, community or public land partners? To answer this, identify how each of the partners will benefit.

Students will compile a list of community, government services, and private agencies that may provide support for their endeavor.

F. Acquisition:
Students will know:

- What is an invasive-exotic species
- How an invasive species may impact an area and how it may affect the environment
- How to identify them
- Using GPS, learn how to create a map of the school grounds and show where invasive species are located
- Learn how to eradicate particular species that is safe and effective
- Key Terms – invasive-exotic species, plant inventory, GPS, succession of flora, environmental stewardship, ecological succession, indigenous plant species, change over time, topography, mechanical removal, chemical removal
Students will be skilled at:

- Will learn how to contact and gather support for their project
- Communication skills
- Research/investigation skills
- Presentation skills
- Problem Solving
- Drawing/mapping
- Decision making

Performance Task(s):

*Learners will show that they really understand by:*

- Students learning will be assessed by participation in various projects.
- Students will share / present their knowledge as a post assessment.
- Becoming effective stewards of the environment.
- Students will collaborate and work as a team.
- Service-learning and volunteerism to improve the school’s surroundings.
- Ability of each student to witness change for the better.
- Reflect on their accomplishments through journaling.
- Pre and Post assessment

Students will know…

- How to identify invasive-exotic species in our area
- How to use a GPS unit to create waypoints
- How to create and read a map
- How to orientate a map
- How to use a compass
- Identify native tree species
- Learn about the ways to remove invasive-exotic species
- Learn how to research resources available to support school project
- Students will learn how to use a dichotomous key
- Take and edit photos

**Students will be skilled at**…
- Research skills
- Create a bibliography
- Presentation skills
- Working outside
- Nature observation and identification
- Reading symbols, maps, words
- Compare / Contrast
- Compass
- Photography
- Teamwork
- GPS units

**Other Evidence:**
*Students will show they have achieved Stage 1 (Desired Outcome) goals by…*
- Stewardship of the environment
- Conservation of natural resources
- Volunteerism
- Effect change for the better

**Evaluative Criteria (score sheets, rubrics, observation check-lists, grading key)**

### Adaptations
*Learner-centered and context-sensitive adaptations for our TTEC unit include:*

### Reflections
*Post-instruction reflections by TTEC unit designer(s)/instructor(s) include:*

### Attachments:
Include substantial supporting materials such as:
- Detailed lesson plans
- Partners contact list
- Instructional materials and supplies
- Resources: books, articles, web links
- Exemplars and benchmarking models
- Checklists and rubrics
- Diverse samples of student work/artifacts
- Press releases

<table>
<thead>
<tr>
<th><strong>NGSS Lesson Plan - Lesson 1 - Invasive Species</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade/ Grade Band:</strong> 6-8 graders</td>
</tr>
<tr>
<td><strong>Brief Lesson Description:</strong> Students will see and learn about the problem of Invasive species</td>
</tr>
<tr>
<td><strong>Performance Expectation(s):</strong> Students will complete a assessment on invasive species of the school grounds</td>
</tr>
<tr>
<td><strong>Specific Learning Outcomes:</strong> SC.600.60B3, SC.700.B3, SC.700.B1</td>
</tr>
<tr>
<td><strong>Narrative / Background Information</strong> Urbana Middle School was built on a former farm field on the edge of woods. On the transition area, a number of invasive species have taken root. Students will learn about invasive species to determine what we should do about this ecological change.</td>
</tr>
<tr>
<td><strong>Prior Student Knowledge:</strong> Conduct a short five question preassessment to access prior knowledge.</td>
</tr>
<tr>
<td><strong>Science &amp; Engineering Practices:</strong> SC.700.B3. Recognize and explain how human activities can accelerate or magnify many naturally occurring changes. b. Identify and describe how human activities produce changes in natural processes:iii. Introduction of nonnative species</td>
</tr>
<tr>
<td><strong>Possible Preconceptions/Misconceptions:</strong> With exception to poison ivy, all plants are native and in their natural biome. Invasive species would not survive in an area that they are not indigenous. Native species would overcome invasives.</td>
</tr>
</tbody>
</table>
All trees are good regardless if they are invasive.

### LESSON PLAN – 5-E Model

#### ENGAGE: Opening Activity – Access Prior Learning / Stimulate Interest / Generate Questions:

Take a walk in the woods on the school grounds. Start on the nature trail and move towards the mature stand of trees that are free of invasives. Have students claim a tree to “adopt”. Have them mark it as a waypoint on their GPS unit. Line the tree with rocks or sticks to help them identify it later. Have them bring a leaf back to the building. Disperse journals. Have students describe their tree in complete sentences or as a Haiku. Make an illustration of their “adopted tree”. Use wax paper to preserve the leaf.

#### EXPLORE: Lesson Description – Materials Needed / Probing or Clarifying Questions:

- Cutters to collect samples, bags, journals, colored pencils, pencil and pens
- Take a walk to an area on invasive species. Ask questions that include:
  - What happened to the understory? How is this different from our area of adopted trees? Is this good or bad? If it is bad, why? How would this affect the wildlife? Do they benefit from the change? Do you think this will spread to other areas? Will it spread to our area?

#### EXPLAIN: Concepts Explained and Vocabulary Defined:

Invasive Species occur throughout the world. They can be plants, animals, insects, diseases and more.

- Vocabulary: Invasive and non native species

#### ELABORATE: Applications and Extensions:

- Students will go back into the field and collect samples of invasive species. We will then bring them back and use resources to identify them. One such resource is: [http://www.invasivespeciesinfo.gov/resources/identify.shtml#pla](http://www.invasivespeciesinfo.gov/resources/identify.shtml#pla)
- Students will preserve samples using an iron and wax paper.

#### EVALUATE:

- Students will create slides using google CR to create a program to show other science classes the evasive species that are on the school grounds. Based on their research, they will explain what an evasive species is and how it originally got here.

**Formative Monitoring (Questioning / Discussion):**
Summative Assessment (Quiz / Project / Report): Sharing the completed project to others in their regular class.

Elaborate Further / Reflect: Enrichment: Students will go around their homes and neighborhood to locate and identify other invasive species of plants in our area.

### Materials Required for This Lesson/Activity

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Potential Supplier (item #)</th>
<th>Estimated Price</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Journal</td>
<td>Amazon - ASH10700</td>
<td>$6 each</td>
</tr>
<tr>
<td></td>
<td>water color pencils</td>
<td>Jet-</td>
<td>$4.5</td>
</tr>
</tbody>
</table>

Google Slides/Powerpoint Appearance and Content

Student Name: __________________

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content - Accuracy</td>
<td>All content throughout the presentation is accurate. There are no factual errors.</td>
<td>Most of the content is accurate but there is one piece of information that might be inaccurate.</td>
<td>The content is generally accurate, but one piece of information is clearly flawed or inaccurate.</td>
<td>Content is typically confusing or contains more than one factual error.</td>
</tr>
<tr>
<td>Sequencing of Information</td>
<td>Information is organized in a clear, logical way. It is easy to anticipate the type of material that might be on the next card.</td>
<td>Most information is organized in a clear, logical way. One card or item of information seems out of place.</td>
<td>Some information is logically sequenced. An occasional card or item of information seems out of place.</td>
<td>There is no clear plan for the organization of information.</td>
</tr>
<tr>
<td>Spelling and Grammar</td>
<td>Presentation has no misspellings or grammatical errors.</td>
<td>Presentation has 1-2 misspellings, but no grammatical errors.</td>
<td>Presentation has 1-2 grammatical errors but no misspellings.</td>
<td>Presentation has more than 2 grammatical and/or spelling errors.</td>
</tr>
<tr>
<td>Effort</td>
<td>I worked on the task</td>
<td>I worked on the</td>
<td>I put some effort</td>
<td>I put very little effort</td>
</tr>
</tbody>
</table>
until it was completed. I pushed myself to continue working on the task even when difficulties arose or a solution was not immediately evident. I viewed difficulties that arose as opportunities to strengthen my understanding.

task until it was completed. I pushed myself to continue working on the task even when difficulties arose or a solution was not immediately evident.

into the task, but I stopped working when difficulties arose.

into the task.

| Bibliography | Student includes a bibliography of at least 3 credible primary resources. No evidence of Google or Wiki website. | Student includes a bibliography of at least 2 credible primary resources. No evidence of Google or Wiki website. | Student includes a bibliography of at least 1 credible primary resources. Evidence of Google or Wiki website. | No bibliography present. |

**NGSS Lesson Plan - Lesson 2 - Invasive Species**

<table>
<thead>
<tr>
<th>Grade/ Grade Band: 6-8 graders</th>
<th>Topic: Invasive species</th>
<th>Lesson # 2 in a series of 3 lessons</th>
</tr>
</thead>
</table>

**Brief Lesson Description:** Students will identify and map the Invasive species at the UMS campus

**Performance Expectation(s):** Students will complete an accurate map of invasive species of the school grounds

**Specific Learning Outcomes:** SC.600.60B3,

**Narrative / Background Information** Urbana Middle School was built on a former farm field on the edge of woods. On the transition area, a number of invasive species have taken root. Students will identify and map the invasive species on the UMS campus

**Prior Student Knowledge:** Conduct a short five question preassessment to access prior knowledge. Students will complete an on-line questionnaire (Kahoot)
Science & Engineering Practices:
SC.700.B3. Recognize and explain how human activities can accelerate or magnify many naturally occurring changes. b. Identify and describe how human activities produce changes in natural processes:iii. Introduction of nonnative species

Disciplinary Core Ideas:
SC.700.B1. Recognize and explain that human-caused changes have consequences for Maryland’s environment as well as for other places and future times.

Crosscutting Concepts:
L5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings (SC,6) RL4 Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone. (SC, 6)

Possible Preconceptions/Misconceptions:
Invasive species cannot be removed.
Native species cannot recover to their original location on the school grounds.
Native species would overcome invasives on their own with out assistance from us.

LESSON PLAN – 5-E Model

ENGAGE: Opening Activity – Access Prior Learning / Stimulate Interest / Generate Questions:
Return to the mature stand of trees that are free of invasives. Have students check their adopted trees. Check and maintain their markers that help identify their tree. Complete a journal entry on their tree. Move to the Southeast section of the school property. Have journals and pencils for students.

EXPLORE: Lesson Description – Materials Needed / Probing or Clarifying Questions:
marking flags of several colors, engineering tape, permanent markers, gps units, map source software, google earth, samples of invasives, heavy gloves, long paints and shirt, sturdy shoes, large map of school and its grounds.
Share samples on invasives that are in this area. Organize students in teams. Each team is responsible for one invasive. One person marks way-points, one labels and places flag near an invasive. one gives the direction of travel, one is the “seeker”- he finds them but travels in the direction that the guide tells them to go. The guide makes sure that the seeker travels parallel to the side if the building. They will travel along the top edge of the slope. They will travel and mark the invasive in “20 foot bands” across the slope. At the end of the building, the will go done another 20 feet and start back. They will continue going back and forth until they complete the slope at the stream. Once students have marked all of the invasives along the slope, they will go in and download the information.
EXPLAIN: Concepts Explained and Vocabulary Defined:
Once the invasives are marked and identified by the way-points, the students will download the information. Students will mark the invasives on the large map. The large maps will show all the types of invasives, and where they are located.

Vocabulary: Map Source, GPS way-points

Now that we have the information, students will brainstorm about how to remove the invasive in a safe manner. They will research on the best ways to remove them. They will most likely find out that there are different ways that they are to be removed.

EVALUATE:
Student will meet with an expert in the field of eradicating invasive species. They will share their findings. Together they will create an action plan. This plan may be presented to the school’s grounds manager. Based on the results of the between the students it will be determined what the students can and cannot do to complete the elimination of the invasives.

Formative Monitoring (Questioning / Discussion):

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Potential Supplier (item #)</th>
<th>Estimated Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>PVC -Marking Flags- Pink - Qty -25</td>
<td>Lowes Item #: 157198</td>
<td>Model #: 2315PG-345 - $3.98 each</td>
</tr>
<tr>
<td>2</td>
<td>PVC -Marking Flags - Orange</td>
<td>Lowes Item #: 157195</td>
<td>Model #: 2315OG-345  $3.98 each</td>
</tr>
<tr>
<td>2</td>
<td>PVC -Marking Flags - White</td>
<td>Lowes Item #: 330632</td>
<td>Model #: 2315W-345</td>
</tr>
<tr>
<td>4</td>
<td>Marking Flags - Lowes - Qty- 10</td>
<td>Lowes Item #: 235350</td>
<td>Model #: 27950</td>
</tr>
<tr>
<td>1</td>
<td>Printing of large map of school grounds</td>
<td>Office Depot</td>
<td></td>
</tr>
</tbody>
</table>
NGSS Lesson Plan - Lesson 3 - Go On A Hike!

<table>
<thead>
<tr>
<th>Grade/ Grade Band: 6-8 graders</th>
<th>Topic: Hiking</th>
<th>Lesson # 3 in a series of 3 lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brief Lesson Description:</strong> Students will hike at Sugarloaf Mountain</td>
<td><strong>Performance Expectation(s):</strong> Students will go on a hike and more importantly want to do it again</td>
<td></td>
</tr>
<tr>
<td><strong>Specific Learning Outcomes:</strong> SC.600.60B3,</td>
<td><strong>Narrative / Background Information:</strong> Urbana Middle School is located near a mountain. It may be seen from the school grounds. It would be a perfect place for the first hike</td>
<td></td>
</tr>
<tr>
<td><strong>Prior Student Knowledge:</strong> Survey students - Found out what hiking experiences what the students have</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Science & Engineering Practices: SC.700.B3. Recognize and explain how human activities can accelerate or magnify many naturally occurring changes. b. Identify and describe how human activities produce changes in natural processes:iii. Introduction of nonnative species | Disciplinary Core Ideas: SC.700.B1. Recognize and explain that human-caused changes have consequences for Maryland’s environment as well as for other places and future times. | Crosscutting Concepts: L5 Demonstrate understanding of figurative language, word relationships, and nuances in word meanings (SC,6) RL4 Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone. (SC, 6) |

**Possible Preconceptions/Misconceptions:**

Hiking is easy and doesn’t require any preparation.  
A cell phone will get you out of any situation. 
One needs boots to go on a hike.

**LESSON PLAN – 5-E Model**

**ENGAGE:** Opening Activity – Access Prior Learning / Stimulate Interest / Generate Questions:

Students work in groups. Have them determine the “10 Essentials” for a safe back country hike. Use the worksheet “Survive with the 10 Essentials”- Have the students complete the part one. Present the answers with explanations. See which team has the best chance to survive.
EXPLORE: Lesson Description – Materials Needed / Probing or Clarifying Questions:
Materials: Map and compass
Prepare students for a hike to Sugarloaf Mountain. Students visited this location during their Outdoor School experiences. Remind them of their past experience.
Probing Questions:
  - When was the last time you were here?
  - What type of rock is this mountain mostly made of?
  - What type of mountain is this?
  - Who owns it?
  - How long is the mountain?
  - How many trails are on it?
  - What types of trees would you expect to see here?
  - Do you expect any invasive species?
  - Is there any historic significance to this mountain?

EXPLAIN: Concepts Explained and Vocabulary Defined:

Vocabulary: Monadnock, topographical map, orient a map, compass

Review rules for hiking as a group.
  - Dress for the hike. Wear sneakers or hiking boots, not sandals. Bring a warm jacket even if it's hot at home. It's cooler in the woods and on mountains.
  - Carry your own gear.
  - Hike with a buddy.
  - Stay with your group. If you run ahead or lag behind, you may miss a turn and become lost.
  - Never play hide and seek on a hike.
  - Always wait at trail junctions.
  - Be a responsible hiker. Carry all your trash out.


Gear list:
  - Whistle
  - Garbage bag - make a hole at the top, slip the bag over your head and you'll stay warm and dry!
  - Water
  - Trail food - enough for the hike and an extra meal
  - Warm clothing such as a fleece jacket or vest
  - Flashlight

ELABORATE: Applications and Extensions:

Choose a section and hike it! Choose a hike that isn’t too hard so that students will want to come back and do it again. Students bring journals to write about their experience. Pick a spot on the trail and allow them time to reflect their surroundings.

EVALUATE:

Formative Monitoring (Questioning / Discussion):

Have students “share their experience”. Keep things positive.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
<th>Potential Supplier (item #)</th>
<th>Estimated Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Topographical Quadrangles with Sugarloaf mtn.</td>
<td>The Trail House</td>
<td>$8.50</td>
</tr>
<tr>
<td>10</td>
<td>Compasses</td>
<td>UMS</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>Small trail maps of Sugarloaf hiking trails</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Survive!!!

You're on a family vacation backpacking near beautiful New Zealand. Your flying over a remote island when suddenly your plane develops engine trouble and crash lands. Fortunately, no one is hurt. You spotted a town about 40 miles away just before you went down. Your pack can only carry 10 items. List your items that you would take in the order of importance. Your choices will be compared to the "10 Essentials". The person/team with the lowest number is the "Survivor".

Rank the following items from most important (1) to the least (10).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Yours</th>
<th>Actual &quot;10 Essentials&quot;</th>
<th>Difference (Absolute Value)</th>
<th>Choices:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Large Trash Bag</td>
<td>Sun Glasses / Sun Screen</td>
<td>Matches /Flint &amp; Steel</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Emergency Shelter</td>
<td>Duct Tape</td>
<td>Extra Layer (clothing)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>GPS receiver</td>
<td>Bear Bag</td>
<td>Life Raft</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Duct Tape</td>
<td>Bear Bag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Duct Tape</td>
<td>Bear Bag</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rank</td>
<td>Yours</td>
<td>Actual &quot;10 Essentials&quot;</td>
<td>Difference (Absolute Value)</td>
<td>Sun Glasses/Sun Screen</td>
</tr>
<tr>
<td>------</td>
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<td>------------------------</td>
<td>-----------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Map and Compass</td>
<td>Large Trash Bag</td>
<td>Flash Light</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bottle of Water and Purifier</td>
<td>Emergency Shelter</td>
<td>Paddle</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Extra Food</td>
<td>GPS receiver</td>
<td>Teddy Bear</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rain Jacket</td>
<td>Duct Tape</td>
<td>Extra Layer (clothing)</td>
<td></td>
</tr>
<tr>
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<td>Extra Layer</td>
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<td><strong>6</strong></td>
<td>Matches /Flint &amp; Steel</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Flash Light</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>First Aid Kit</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Pocket Knife</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>Sun Glasses / Sun Screen</td>
</tr>
</tbody>
</table>

**Total:**

**Explanation:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td><strong>1</strong></td>
<td>Map &amp; Compass</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Bottle of Water and Purifier</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Extra Food</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Rain Jacket</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Extra Layer (clothing)</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>Matches /Flint &amp; Steel</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Flash Light</td>
</tr>
</tbody>
</table>
Prepackaged first-aid kits for hikers are available at any outfitter. Double your effectiveness with knowledge: take a first-aid class with the American Red Cross or a Wilderness First Aid class.

These enable you to cut strips of cloth into bandages, remove splinters, fix broken eyeglasses, and perform a whole host of repairs on malfunctioning gear.

Especially above treeline when there is a skin-scorching combination of sun and snow, you'll need sunglasses to prevent snow blindness and sunscreen to prevent sunburn.


**Partners Contact List for UMS Habitat Heroes**

Reston Homeowner Association  
Daniel Adamiak - Environmental Resource worker

Amateur Entomologist  
Mr. Davis

Frederick County Government - Sustainability and Environmental Resources  
Heather Montgomery

Frederick County Public Schools - Outdoor School  
Brett Querry

Chesapeake Bay Foundation

American Chestnut Foundation  
Bruce Levine, President MD-TACF President mdchapter@acf.org

M-NCPCC’s Wee Warrior Program  
Paul Carlson – paul.carlson@montgomeryparks.org or 301-962-1343

National Phenology Network  
[www.usanpn.org](http://www.usanpn.org)

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Fountain Rock Park and Nature Center - Frederick County Nature Center

School Presentation - Habitat Heroes

http://prezi.com/b4dvotebq2yw/?utm_campaign=share&utm_medium=copy