Lesson #1: Ecosystem Services BINGO!

Teacher Guide

Engage, Lesson #1: Ecosystem Services BINGO!

These materials are all part of EPA Report #: EPA/600/R-18/231.

Time Consideration

Prep time: 0-5 minutes, Activity time: 15-20 minutes

Materials

Printed handouts, clipboards, writing utensils, an area outside to observe the environment

Teacher Preparation

1. Print all of the Ecosystem Services BINGO! cards. There are ten different cards, with and without images for different ages or abilities of students. All of the BINGO cards can be found in the Appendix.
2. Get writing utensils for all of the students.
3. Place the BINGO cards on clipboards with writing utensils for the students to use. Having the students work in pairs is recommended.

Procedure

1. Talk about the concept of ecosystem services: providing the benefits that humans receive from nature with your students. Have students provide examples of ecosystem services and related human benefits.

   Examples of ecosystem services: trees provide oxygen which we breathe; trees provide shade on the playground (US EPA 2008); wetlands filter water (Vellidis et al., 2003); forests provide places for people to recreate (Kline et al., 2011).

   Examples of human benefits: reductions in stress and anxiety from spending time at the beach (MacKerron & Mourato 2013); reduced symptoms of post-traumatic stress disorder after spending a weekend fly-fishing by the river (Vella et al., 2013).
2. Explain that you’re going to examine your local environment and to look there for elements on the BINGO cards. Tell students that when they find something outside that fits the slots on their BINGO cards, they should write in some details about it. For example, in the “Can positively impact air quality” BINGO slot, the students could write “trees remove pollutants from the air.”

**ESL/ELL tip:** Allow students to draw images instead of writing words in their BINGO cards.

Optional: Use Power Point slides with images of different ecosystems as a guide to walk your class through the entire activity indoors.

3. Once outside, walk through the natural environment wherever you are (playgrounds, fields, and woods work well). Narrate some of the things you see and have ongoing discussions with students as they discover ecosystem services right in front of their eyes and around their schoolyards.

4. **Evaluate:**
   Discuss ecosystem services elements as you see them outdoors. These informal conversations during the activity can help evaluate student understanding.

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*Figure 2. Students find a flower for pollination as they explore local ecosystem services during the “Ecosystem Services BINGO” activity.*

*Figure 3. Mrs. Jennifer Carson, ESL 4th and 5th grade teacher at Grady A. Brown Elementary School in North Carolina, instructs students on the ecosystem services in their schoolyard during “Ecosystem Services BINGO.”*
The cards that follow are all the same on the front side but are different on the back side (the BINGO side) so that you can give different cards to different pairs of students. There are ten cards total, and they are numbered 1-10. It is recommended that students work in groups of two, so this would work well with a class size of 20.

There are also cards without images. Those cards can be used for upper-level students. They have the exact same layouts as the 10 cards with images.
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<td>Can promote social interaction:</td>
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<td>Promotes engagement with nature:</td>
<td>FREE SPACE</td>
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<td>Promotes positive human health outcomes (which ones?):</td>
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# Ecosystem Services

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APPENDIX, Lesson #1: Ecosystem Services BINGO!

Student Handouts, with images

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<td><img src="image9.png" alt="Hot Day Reduction" /></td>
<td><img src="image10.png" alt="Recreation" /></td>
</tr>
<tr>
<td>Has been found to have associations with healing:</td>
<td>Can positively impact water quality:</td>
<td>FREE SPACE</td>
<td>Can promote physical activity:</td>
<td>Can provide habitats for species (extra points for naming a species!):</td>
</tr>
<tr>
<td><img src="image11.png" alt="Healing Associations" /></td>
<td><img src="image12.png" alt="Water Quality Impact" /></td>
<td></td>
<td><img src="image13.png" alt="Physical Activity" /></td>
<td><img src="image14.png" alt="Species Habitats" /></td>
</tr>
<tr>
<td>Can be used as a source of energy:</td>
<td>Can reduce carbon dioxide in the atmosphere:</td>
<td>Can inspire art:</td>
<td>Can provide food for humans:</td>
<td>Can be used for shelter for humans:</td>
</tr>
<tr>
<td><img src="image15.png" alt="Energy Source" /></td>
<td><img src="image16.png" alt="Carbon Dioxide Reduction" /></td>
<td><img src="image17.png" alt="Art Inspiration" /></td>
<td><img src="image18.png" alt="Food Provision" /></td>
<td><img src="image19.png" alt="Shelter Provision" /></td>
</tr>
<tr>
<td>Has economic value ($):</td>
<td>Can reduce effects of flooding:</td>
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</tr>
<tr>
<td><img src="image20.png" alt="Economic Value" /></td>
<td><img src="image21.png" alt="Flooding Reduction" /></td>
<td><img src="image22.png" alt="Anxiety Reduction" /></td>
<td><img src="image23.png" alt="Writing Inspiration" /></td>
<td><img src="image24.png" alt="Health Outcomes" /></td>
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# Ecosystem Services BINGO!

**Card 1**

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<td></td>
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<th>Bonus points for details: _____</th>
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<tbody>
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**APPENDIX, Lesson #1: Ecosystem Services BINGO!**

*Student Handouts, without images*
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### Ecosystem Services BINGO!

**Card 5**

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<tbody>
<tr>
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<tr>
<td>Can provide habitats to pollinators (extra points for naming a pollinator!):</td>
<td>Can be used as a source of energy:</td>
<td>Has associations with increases in asthma and respiratory symptoms:</td>
<td>Has economic value ($):</td>
<td>Can provide habitats for species (extra points for naming a species!):</td>
</tr>
</tbody>
</table>

**FREE SPACE**

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**APPENDIX, Lesson #1: Ecosystem Services BINGO!**

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As you spend some time outside with your class, fill in the BINGO card on the back of this page.

Name(s): __________________________________________ Date: __________________

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