

## Lesson 8


### Conservation Efforts

Grade Level: 6th-8th

Lesson Length: 50 Minutes

This lesson has been adapted from: [Causes and Consequences of Biodiversity Decline + Conservation Efforts Teacher: Erin Scott](#)

AZ Science Standard:	<p>6.L2U1.13</p> <p>Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors</p> <p>8.L3U3.10</p> <p>Communicate how advancements in technology have furthered the field of genetic research and use evidence to support an argument about the positive and negative effects of genetic research on human lives</p>
Learning Objective:	<p>Students will be able to create and communicate at least one solution to a conservation issue regarding loss of biodiversity.</p>

<p><b>Scientist of the Week:</b></p>	<ul style="list-style-type: none"> <li> <p>Cristian Román-Palacios</p>  </li> <li></li> <li>Data Scientist &amp; Biologist</li> <li>University of Arizona in Tucson, AZ</li> <li>Cristian Román-Palacios is a biologist with expertise in phylogenetics, biostatistics, and machine learning (a branch of artificial intelligence (AI) and computer science). He has published more than 25 papers on a variety of topics. His research has been featured in Science news, Popular Science, CNN, USA Today, among many other news outlets. Cristian primarily studies large-scale biodiversity patterns from an ecological/evolutionary perspective and examines the effects of climate change on species survival.</li> </ul>
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Vocabulary	Materials
<ul style="list-style-type: none"> <li>Conservation</li> <li>Biodiversity</li> <li>Climate Change</li> </ul>	<ul style="list-style-type: none"> <li> <a href="#">Causes and Consequences of Biodiversity Decline + Conservation Efforts</a> </li> <li> <a href="#">City Planning Activity Worksheet</a> </li> </ul>

### Guiding Questions

- What is the effect of climate change on biodiversity decline?
- What are the costs of biodiversity loss?
- What groups of people does the loss of biodiversity affect first? What groups are affected the most and why?

### Engagement Activity:

- As a class, investigate the [Climate Time Machine](#)
- Have students write down observations from the changes seen in Arizona and globally
- As a class, discuss any findings related to biodiversity loss. Proceed to watch the following video, encouraging students to take notes throughout it: [Endangered Species | Environment & Ecology](#)  
4 mins

### Exploratory Activity (25 minutes):

- Tell students that we will be working on designing a city where they make choices about transportation, energy, spaces, and waste management and learn about sustainability through that.

### Objective:

**Design a city that maximizes conservation and minimizes environmental impact by making choices about transportation, energy, green spaces, and waste management. Points are awarded based on the climate impact and sustainability of each choice.**

### Materials:

- **City Planning Worksheet (for tracking choices and point totals)**
- **Reference Guide with point values for each option**

**Setup: Each student or group starts with 100 points and aims to create the most sustainable city possible. They'll make selections in four key areas: Energy, Transportation, Green Spaces, and Waste Management. Each choice has a point cost or reward, incentivizing low-impact and sustainable options.**

### Extension Activity (15 mins):

- After planning their cities, the students will plot their sustainability points vs each step to see how their choices impacted the sustainability of their cities.
  - We will create an example of the activity completed including the graph to serve as guide for the students

- Next, the students will inspect their graphs and find areas (energy, transportation, green spaces, waste management) where their sustainability points decreased. They will come up with rules or actions their residents must take to be more environmentally conscious.
  - Examples: reduce excessive water/energy use , install solar panels, walk as mode of transportation, etc.
- After coming up with rules, students will share their rules / actions for their residents

**Evaluation Activity:**

- Using available technology, have each students take this quiz: [Ecological Footprint Calculator](#)
- Have students read through their results and share their conclusions with their table groups.

**Reflection (5mins):**

1. What is the effect of climate change on biodiversity decline?
2. What can we do to be more sustainable?
3. What was fun about the activity?
4. What was challenging?

Modified from the UA Community and School Garden's Green Academy Lesson Plan Template