

# Dare to be a force of nature!

**Focus:** Ecosystems, Species and Human impacts

## Driving Questions:

- How do humans have a lasting impact on species or populations and their environment?
- What can we minimize humans impact on the environment?
- How do we humans prioritize the solutions to minimize human impact on the environment given social, environmental, and economic factors?

Earth is ever changing and precious!

- There are about 1.75 million different species known on our planet and it is predicted that there are up to 8.7 million species existing today.
- 25% of medicines are taken from or modeled on molecules found in plants, animals, or other living things.
- The world's oldest trees are more than 4,600 years old.
- Rainforests are cut down at a rate of 100 acres per minute.

*National Geographic*

Right now Earth is in need of an advocate and you have been chosen! You will study the ecology of a chosen species or ecosystem, find out how humans impact it, and create an action plan to allow the ecosystem or species to thrive into the future!

“Solving the climate crisis is within grasp, but we need people like you to stand up and act.” -Al Gore

**You will produce:** a **presentation** (Prezi, PowerPoint or Google Slides), **paper**, or **video** that presents an action plan that will allow your species to thrive in its current environment. The action plan must be justified by explaining how humans are impacting your species/population. You must also follow through on part of your action plan to make a difference!

## What makes a good topic for this project:

- Environmental issue connected to a specific species or ecosystem
- An ecosystem must have multiple trophic levels
- Human contribution to the problem must be demonstrated.
- Information from multiple credible sources including scientific data

## Project Checklist

|  |  |
|--|--|
| Under these topics   | Successful Projects:   |
| <b>Interdependent Relationships in Ecosystems:</b>   | <ul style="list-style-type: none"> <li>● Identify specific species/ecosystem, the problem it has and the authors of the project</li> <li>● Clearly explain how different biotic and abiotic factors may affect the <b>carrying capacity</b> of this ecosystem.             <ul style="list-style-type: none"> <li>○ Explanation includes <b>resources, predation, competition, and disease</b></li> <li>○ Show food webs and ecosystem interactions for chosen ecosystem</li> </ul> </li> </ul>                          |
| <b>Cycles of Matter and Energy in Ecosystems:</b>  | <p>Include a model of energy flowing and matter cycling in the ecosystem that includes:</p> <ul style="list-style-type: none"> <li>● Photosynthesis, cellular respiration</li> <li>● Movement of energy through trophic levels</li> <li>● <b>Connections to the carbon cycle, biosphere, atmosphere, hydrosphere.</b></li> </ul>   |
| <b>Ecosystem Dynamics functioning and Resilience:</b><br>Homeostasis, small vs. large disturbances (Human impacts) | <ul style="list-style-type: none"> <li>● Clearly state how homeostasis in this ecosystem has been challenged or disrupted and has affected species ability to survive and address explicit complex interactions that keep an ecosystem stable/resilient</li> <li>● Explicitly detail the changes in the ecosystem that have occurred as a result of human influence</li> <li>● Balance of human dependence on ecosystem services vs. exploitation</li> <li>● The importance of and dependence on biodiversity</li> </ul> |
|  | <ul style="list-style-type: none"> <li>● Use current and relevant research to support your claims throughout the slides, video, or research paper.</li> </ul>  |
| <b>Solutions to the Problem</b>  | <ul style="list-style-type: none"> <li>● Discuss what is currently being done by people to address this ecological disruption</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>● Suggest your own idea(s) of a strategy that might be employed to help address this issue</li> </ul>   |
|  | <ul style="list-style-type: none"> <li>● Discuss how these solutions might impact biodiversity in your ecosystem</li> </ul>  |
| <b>Give credit to all sources of Pictures, Graphics, Data and Ideas that do not belong to group members:</b>       | <p>Include a complete annotated bibliography of all sources in MLA format</p> <ul style="list-style-type: none"> <li>● annotations for each source</li> <li>● all resources are good scientific sources according to research notes methods</li> <li>● there are at least 6 sources/individual in group</li> <li>● include one peer-reviewed journal source</li> </ul>   |