

## Go Beyond: Considering Species Needs

How can climate change cause population extinctions?

**Choose one (or both) of the activities below.** Record your observations and research in your science journal.

**Seeing Support Systems:** *In one circumstance that Dr. Parmesan describes, the caterpillars die because of a timing-mismatch: the plants they needed to eat during a crucial phase of their development had already dried up. All living things have certain types of life-support that they must obtain from the environment. Humans have those needs too, but we have extended our local ecosystems (the area where we physically live) in order to meet those needs.*

*In this clip, the Edith's Checkerspot Caterpillars had difficulty meeting their survival need within their current habitat. What are our habitat requirements as human beings?*

1. Make a list of your survival needs.

Consider: What is your water source? Does the amount of water you need occur where you live naturally? Where does your food come from? How does it get here? What are the temperatures like where you live? Do you use a heating or cooling system?

2. Many of the necessities keeping you alive may not come from your immediate habitat. In a sense, humans have found ways to *extend* their habitats using technology. What are your habitat extenders? Make a list of the technologies, infrastructures, or transportation means that bring your life support to where you live.

3. Where has your habitat been extended to? In other words, where do some of the items you rely upon to survive come from? This step may take some research. Try calling a power company, looking at clothing labels, checking signs at the supermarket, looking at maps of water sources, and using the Internet. How do these life support components come to where you are?

4. Look at your list of habitat extenders and prioritize it: which of these could you survive without? How long could you go without them?

5. Now that you have considered your life support and where it comes from, map your habitat.

- Print a map of the United States off the Internet or draw a rough map of the country.
- On this map, mark where you live. Draw a box around the borders of your town or city.



- Next make a dot that is roughly near the area where each of the following life support components comes from:
  - water source (This is where the water originates in nature, not where your local water-treatment plant or well may be.)
  - food sources (pick 4-5 foods you eat on a regular basis)
  - energy source (if you believe that energy is necessary to survival)
  - clothing (if you live somewhere where clothing plays a role in health and survival)
  - other components of life support
- For components that come from another country, draw a line to the edge of your map with an arrow pointing off the page.
- Looking at your map, how large is your habitat? What technological developments have made this type of extended habitat possible? Can you think of technologies (or tools) used by early humans that allowed them to live in places where survival of our species might not have otherwise been possible?

6. Have a discussion with a friend, colleague, or family member about what you discovered.



### Changing Spaces

1. Make a list of animals that live in your area that might be impacted by climate change. From the list, pick a favorite animal.

2. Imagine that you are a wildlife manager. You have been asked to ensure the survival of the animal you chose. The habitat you choose to protect for it must be a good place for this species to live for many

generations.

3. Make a list. What are this animal's requirements to survival as a population? Remember that in addition to daily survival needs, in order for the population to persist in this area, this animal must be able to successfully raise young. Are there any other species (plant or animal) on which your animal is dependent? What are a few of that other species' requirements?

4. Look at the list of survival needs for your animal. How might climate change impact these needs? Is there one type of change (e.g. drought or increased heat) that would challenge their survival more than others?

5. Now you must make a decision as a wildlife manager. Where will you locate your wildlife preserve and why? Write or present a brief proposal of a habitat location for your animal.

6. Assess your plan. How likely is your species to survive changes to the climate of its habitat?