

Fourth National Climate Assessment (2018) Discussion Questions and Case Study

Note: This activity and case study are to be used after a general introduction to weather, climate, and climate change.

SCRIPT:

Where can we go to find reliable climate information? Where is the latest information posted?

Intro to National Climate Assessment (Fourth) – Powerpoint – Review National Climate Assessment Intro Powerpoint, which provides an overview of the structure of the NCA and an introduction to the climate predictions from Chapter 22: Northern Great Plains. The powerpoint leads into the case study activities below using the NCA as the basis for group discussions (5 groups).

Count off in groups of 3-4:

Pull up website so that everyone knows where this information comes from:

<https://nca2018.globalchange.gov/>



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NATIONAL CLIMATE ASSESSMENT CASE STUDY EXERCISE

GROUP 1: Key Message 1: Livelihoods & Economics (p 578-581)

1. What do you think are the top 3-4 industries in your community? How would those industries be affected by the climate change predictions for the region?
2. How do you think agriculture has changed on the reservation in past 10-20 years?
3. What are several ways that energy development and production is linked to climate change or the effects of climate change?
4. What are some opportunity areas for tribes to improve economic development in changing climates?
5. How safe/resilient is your (1) water supply, (2) water delivery system (water treatment, pumps, piping, etc.), and (3) wastewater disposal infrastructure in the face of major events such as extreme flooding or droughts?

NATIONAL CLIMATE ASSESSMENT CASE STUDY EXERCISE

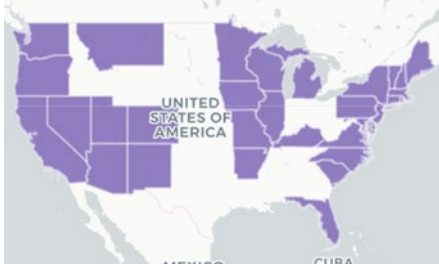
GROUP 2: Key Message 2: Health Risks (p 581-583)

1. Often only the physical side is considered when there are discussions of health. What role does the mental, spiritual, and emotional aspects of health play in the overall well-being of your community?
2. Are there specific examples of fractures between traditional knowledge of the natural environmental and the current state of the environment due to recent climate or environmental changes in your community?
3. How are health disparities (differences in health measurements between groups of people) linked to climate change? How might increased climate impacts result in more health issues for Indigenous people in this region?
4. Looking at the climate predictions for the Northern Plains, what are some mental health issues that could increase due to climate change impacts on the community?

NATIONAL CLIMATE ASSESSMENT CASE STUDY EXERCISE

GROUP 3: Key Message 3: Adaptive Capacity (p 583-587)

1. What are some renewable sources of energy available to your community? Using the website: <https://eerscmmap.usgs.gov/uswtdb/viewer/#3/37.25/-96.25> what do you notice about this region of the state? Why might that be?
2. How would you define “climate vulnerability”?
3. How is climate change affecting tribal populations in the Northern Plains? How have tribes adapted to changing climates in the past? How is it different today than before?
4. Looking at the map below of states that have completed a climate adaptation plan, what reasons can you suggest for the states that have plans completed and the states that do not have plans completed?



States that have completed climate adaptation plans are indicated in purple.

5. Does your tribe/community have a disaster management plan? Have you seen it? Does it include sections that would help mitigate the effects of climate change impacts (such as drought, heat waves, torrential rain events, etc.)?

NATIONAL CLIMATE ASSESSMENT CASE STUDY EXERCISE

GROUP 4: Key Messages, Executive Summary, and State of the Section (p 573-577)

1. What are some of the projected changes as a result of climate change? If they occur, what do you think would be particularly concerning for your community?
2. The three key messages of this chapter focus on economies, health, and ways of dealing with climate impacts. Are these the key messages that you would focus on in a chapter about climate and tribal communities? If you were able to add a key message #4, what would it be?
3. How has the “trust” responsibility of the federal government impacted your community’s climate, natural resource, or land-use discussions?
4. Looking at the map of Indigenous Peoples’ Climate Initiatives and Plans, which tribal communities’ adaptation plans would you be interested in learning more about? Why?
5. Does your tribe/community have a disaster management plan? Have you seen it? Does it include sections that would help mitigate the effects of climate change impacts (such as drought, heat waves, torrential rain events, etc.)?

NATIONAL CLIMATE ASSESSMENT CASE STUDY EXERCISE

GROUP 5: Case Study – Crow Nation and the Spread of Invasive Species (Ch22)

Crow Nation and the Spread of Invasive Species

A warming climate is projected to hasten the spread of invasive species within riparian ecosystems.^{134,137,138,139} Indigenous populations who harvest and hold sacred flora and fauna along rivers within the semiarid region of south central Montana are particularly vulnerable.¹⁴⁰ Post-reservation settlement of Treaty Tribes and multiple land policies aimed at assimilation of Native American Tribes in the United States created a checkerboard of land ownership within reservation boundaries. The Apsaalooké, or Crow, Reservation was established after the Fort Laramie Treaty of 1886 and is located within the mountains and valleys along the Little Bighorn and Bighorn Rivers in south central Montana.¹⁴¹ Promotion of agriculture in the late 19th century, along with the establishment of divergent dams for floodplain irrigation, resulted in decreased water flows, affecting the natural pulse of these river systems and their associated native riparian species. Cascading effects of river regulation, along with intentional planting of the invasive species Russian olive (*Elaeagnus angustifolia* L.) during the Indian Emergency Conservation Work era of the 1930s, have drastically altered natural vegetation within these watersheds (Figure 22.8). These complex networks of policy and culture determine the ways in which land and riparian regimes were drastically changed. The resulting conditions favored invasive plants and ecosystem degradation.¹⁴²

The Apsaalooké, or Crow, people regularly harvest riparian plant species for food, ritual, and ceremonial uses. For example, plains cottonwood (*Populus deltoides*, Marsh) and willow (*Salix sp.* L.) are used for ceremonial (sweat lodge and Sun Dance) purposes. Crow Elders indicated that they must travel on average more than 15 miles farther now than they did 25 years ago to locate cottonwoods of specific sizes. They also find it difficult to locate and harvest traditional food sources such as chokecherry (*Prunus americana* L.) and buffalo berry (*Shepherdia argentea* Pursh., Nutt.). What was once a cottonwood- and willow-dominated river system is now dominated by Russian olive. Populations of salt cedar are likewise increasing along both the Bighorn and Little Bighorn Rivers and associated floodplains. Projections using habitat species distribution models suggest that Russian olive plants will continue to spread in the next 10 years as a result of increasing temperatures and precipitation (Figure 22.8). Continued spread of Russian olive species ultimately threatens the ability of the Crow people to harvest culturally important riparian species that provide subsistence, medicine, and plant species used in ceremony.¹⁴⁰

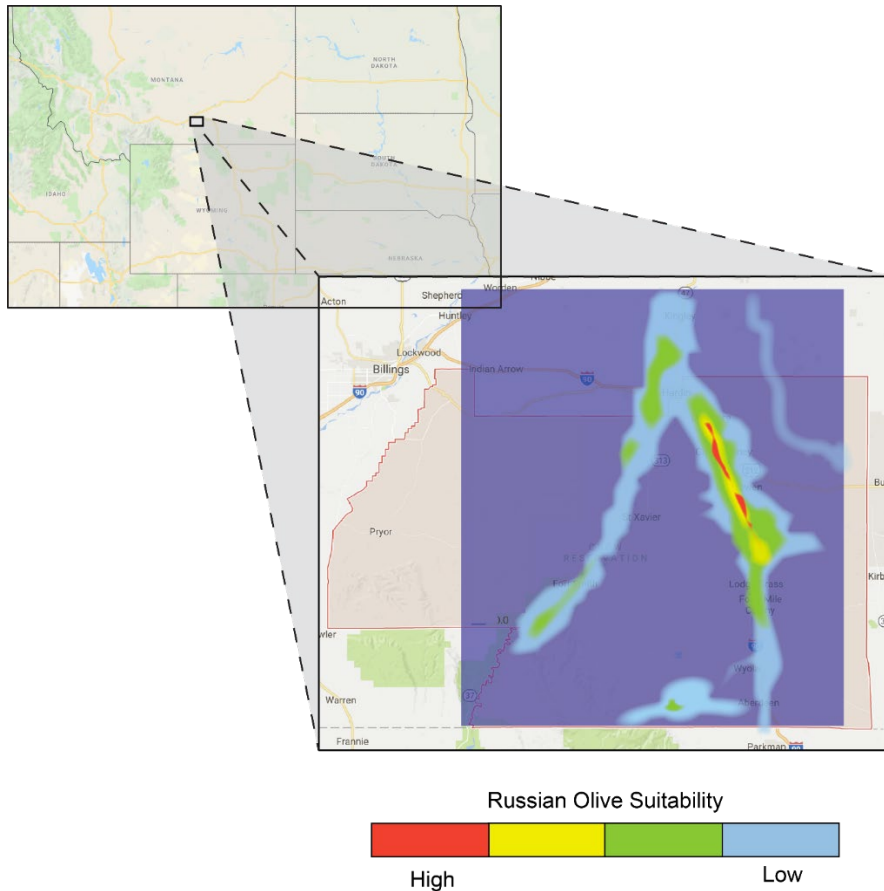


Figure 22.8: The map shows the projected expansion by 2021 of Russian olive habitat. Warmer colors indicate favorable habitat for future spread of Russian olive based on mapped presence points along the Little Bighorn and Bighorn Rivers within the Crow Indian Reservation in south central Montana. The Crow Reservation is outlined and shaded in red. Purple areas are outside of the suitability zone. Source: University of Arizona. Map data © 2018 Google, INEGI.

Crow Nation and Spread of Invasives Questions:

1. What are semi-arid regions and why might they be particularly susceptible to the impacts of climate change?
2. Why do you think Russian olive trees were intentionally brought into the region in the first place?
3. The map provided is a habitat suitability map. These maps are used by land managers to make decisions on the best use of their resources. How might a land manager for the tribe use this map to combat the spread of Russian olive trees?
4. Do Russian olive trees occur in your community? Are they seen as a threat/problem for native species?
5. Is your community experiencing any similar impacts, such as reduction in a particular important food/medicine, having to travel much further to find specific species, etc?