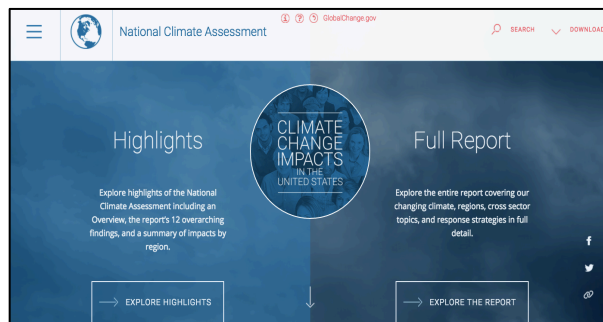




## Quick Guide to Using EcoChains: Arctic Crisis™ with the National Climate Assessment

**EcoChains: Arctic Crisis** is a fun and educational card game designed to highlight the impacts of climate change on the Arctic marine ecosystem. In this 2-4 player game of strategy and survival, players build an Arctic marine food web, learn about the importance of sea ice, and see the potential impact of future changes on the ecosystem. The game also incorporates climate change solutions and ecosystem-based management options.

The **National Climate Assessment (NCA)** summarizes the impacts of climate change on the United States, now and in the future. The most recent NCA, released in 2014, is an interactive and easily accessible online report that is searchable by region and topic. All components of the report can be downloaded, including graphics. In each section, teachers can click on the “Supporting Evidence” icon for additional information that can be further explored with students.



The NCA focuses on a number of issues highlighted in the EcoChains: Arctic Crisis card game. The game can enhance learning about climate change impacts detailed in the following sections of the NCA report:

### ‘Our Changing Climate’ Section

- Key Message #11: Melting Ice  
<http://nca2014.globalchange.gov/report/our-changing-climate/melting-ice>
  - “Rising temperatures are reducing ice volume and surface extent on land, lakes, and sea. This loss of ice is expected to continue. The Arctic Ocean is expected to become essentially ice free in summer before mid-century.”
- Key Message #12: Ocean Acidification  
<http://nca2014.globalchange.gov/report/our-changing-climate/ocean-acidification>
  - “The oceans are absorbing about a quarter of the carbon dioxide emitted to the atmosphere annually and are becoming more acidic as a result, leading to concerns about intensifying impacts on marine ecosystems.”

### ‘Sectors’ Section

- Ecosystems, Biodiversity and Ecosystem Services chapter  
<http://nca2014.globalchange.gov/report/sectors/ecosystems>
  - Key Message #3: Plants and Animals  
“Landscapes and seascapes are changing rapidly, and species, including many iconic species, may disappear from regions where they have been prevalent or become extinct, altering some regions so much that their mix of plant and animal life will become almost unrecognizable.”
- Indigenous Peoples, Lands, and Resources chapter  
<http://nca2014.globalchange.gov/report/sectors/indigenous-peoples>
  - Key Message #3: Declining Sea Ice  
“Declining sea ice in Alaska is causing significant impacts to Native communities, including increasingly risky travel and hunting conditions, damage and loss to



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settlements, food insecurity, and socioeconomic and health impacts from loss of cultures, traditional knowledge, and homelands.”

### ‘Regions’ Section

- Alaska chapter  
<http://nca2014.globalchange.gov/report/regions/alaska>
  - Key Message #1: Disappearing Sea Ice  
“Arctic summer sea ice is receding faster than previously projected and is expected to virtually disappear before mid-century. This is altering marine ecosystems and leading to greater ship access, offshore development opportunity, and increased community vulnerability to coastal erosion.”
  - Key Message #5: Native Communities  
“The cumulative effects of climate change in Alaska strongly affect Native communities, which are highly vulnerable to these rapid changes but have a deep cultural history of adapting the change.”
- Oceans and Marine Resources chapter  
<http://nca2014.globalchange.gov/report/regions/oceans>
  - Key Message #2: Ocean Acidification Alters Marine Ecosystems  
“The ocean currently absorbs about a quarter of human-caused carbon dioxide emissions to the atmosphere, leading to ocean acidification that will alter marine ecosystems in dramatic yet uncertain ways.”
  - Key Message #3: Habitat Loss Affects Marine Life  
“Significant habitat loss will continue to occur due to climate change for many species and areas, including the Arctic and coral reef ecosystems, while habitat in other areas and for other species will expand. These changes will consequently alter the distribution, abundance, and productivity of many marine species.”



### Other NCA-related teaching resources

National Climate Assessment: Americans on the Front Lines of Climate Change video series

- Indigenous Peoples, Lands and Resources chapter  
<https://vimeo.com/100528198>
- Alaska chapter  
<https://vimeo.com/92563357>

National Climate Assessment Learning Pathways

- Alaska region  
<https://www.climate.gov/teaching/alaska-region>