

Lesson Planning Tool for Climate Change & Ocean Science Work Group

Title of Lesson: Welcome to the Anthropocene

Grade Level: 11th - 12th Grade

Subject: Environmental Science

Source(s) of the lesson:(

https://www.natureworkseverywhere.org/asset/resources/Sustainable_Cities_Teacher_Guide_v1_2_8_2016.pdf

<http://story.maps.arcgis.com/apps/MapJournal/index.html?appid=d14f53dcdf7b4542a8c9110eeabccf1c>

Essential Question(s): How have humans altered Earth? How is human activity affecting all life on earth? How are both biotic and abiotic factors influenced by human activity?

Massachusetts Curriculum Frameworks Science Standards:

HS-LS2-6. Analyze data to show ecosystems tend to maintain relatively consistent numbers and types of organisms even when small changes in conditions occur but that extreme fluctuations in conditions may result in a new ecosystem. Construct an argument supported by evidence that ecosystems with greater biodiversity tend to have greater resistance to change and resilience.

HS-LS2-7. Analyze direct and indirect effects of human activities on biodiversity and ecosystem health, specifically habitat fragmentation, introduction of non-native or invasive species, overharvesting, pollution, and climate change. Evaluate and refine a solution for reducing the impacts of human activities on biodiversity and ecosystem health.

Content Objectives	Practice Objectives	Language Objectives
LS2. Ecosystems: Interactions, Energy, and Dynamics	HS-LS2-7 Ecosystems: Interactions, Energy, and Dynamics Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	SWBAT- summarize in writing how humans have altered both living organisms and abiotic process on Earth.

Important Vocabulary: Climate change, albedo, acidification, feedback loops, atmosphere, precipitation, carbonic acid, carbon dioxide, methane, ozone, greenhouse effect, mitigation, anthropogenic, urban heat island, permafrost

Materials Needed: Computer and internet access. Handouts from natureworkseverywhere.org

Other Resources: (websites, videos, books, etc.)

Background Information for Teacher: Teacher should know the complexities of human activity and how it is changing the planet, especially with greenhouse gases and Earth's atmosphere.

Background Information the Student Needs to Access the Lesson: Students should be comfortable explaining the cyclical patterns in nature like the nutrient cycles, water cycle, and energy transfer within ecosystems. Additionally they should understand the basics of human activity and how burning fossil fuels is adversely affecting the climate.

Lesson Structure: Please see attached document from natureworkseverywhere.org

Lesson Launch (Do Now)	
Background Instruction (pre-activity)	
Activity	
Discussion/ Debrief	
Formative Assessment	

Notes:

