

LS-HHMI Outreach Curriculum Project Information

Title	Arctic Biodiversity and Climate Change ArcticBiodiversityLesson.pptx; ArcticBiodiversityLessonGuide.docx; ArcticBiodiversityCards.pptx		
Resource Type	Lesson Plan <input checked="" type="checkbox"/> Classroom Activity <input checked="" type="checkbox"/> Laboratory Activity <input type="checkbox"/> Homework Assignment <input type="checkbox"/> Bioinformatics <input type="checkbox"/> Other <input type="checkbox"/>		
Description	This lesson is designed to reinforce and “test” various ecology and biodiversity concepts from other lessons and the text. Students will learn about arctic tundra biodiversity and about the potential effects of climate change on the biodiversity of this system. Multiple connections/extensions can be made to other key concepts of ecology and biodiversity.		
Author(s)	Matt Bingham		
Author Institution(s)	Milton Academy		
Objective	To investigate the effects of climate change on a world biome, in this case the arctic tundra. The tundra has low annual net primary productivity and therefore has a relatively simple trophic structure that may be easier for students to understand than more complex systems. This activity is meant to be an extension of a unit on basic ecology and biodiversity. The idea is to extend their knowledge of these topics by relating it to ecosystem changes forced by anthropogenic climate change.		
Key Concepts	Biodiversity; trophic structures; trophic pyramids; food webs, biotic and abiotic ecosystem factors; adaptation; basic classification; niche		
Student Prep	Students should be familiar with many of the concepts above. An introductory chapter on ecology and biodiversity should suffice. For users of Campbell and Reece’s Biology: Concepts and Connections (6 th edition) chapter 34 will suffice, but chapters 36 and 37 are also helpful,		
Materials	Cards provided in the PlantAnimal.ppt file. ArcticBiodiversityLesson.ppt file. Computers and internet access either in the school or at home.		
Grade and Level(s)	Introductory Biology (11 th grade); Environmental Science, AP Environmental Science		
Teacher Prep Time	1 hour to read over materials	Class Time	1-2 period or a single double period. 1-2 homeworks depending on teacher extension.
National Standards	12AS11.1,4,5,6 12AS12.1,5,6 12CLS3.2,3,5 12CLS4.3,4,5 12FSPSP6.5		
State Standards	Massachusetts Science and Technology/Engineering Framework 5.3,6.2,6.3 SIS1		
Sources			
References	Ims, Rolf A., Eva Fuglei. Trophic Interaction Cycles in Tundra Ecosystems and the Impact of Climate Change. BioScience. April 2005/Vol. 55 No.4. Accessed on 7/17/10 at http://www.arcus.org/alaskafws/downloads/pdf/general_arctic_change/Ims2005.pdf		

Assessment	See Lesson Guide.
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