

NAVAL HISTORY STEM-H LESSON PLAN

LESSON PLAN: The Great Green Fleet

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ACTIVITY THREE: Sonar and Environmental Stewardship

OBJECTIVE: This activity presents students with the issue of integrating environmental stewardship and advanced science into the real world need of providing national security and protecting natural resources (marine mammals). Students will view a video covering Navy sonar and environmental stewardship and discuss the implications of using active sonar in waters that marine mammals call home.



PACIFIC OCEAN (Jan. 27, 2008) While standing watch aboard the Arleigh Burke-class guided missile destroyer USS Momsen (DDG 92), Boatswain's Mate Seaman Alden Fenton discusses some of the training he has received to help him spot and identify marine mammals with a journalist from Reuters. Secretary of the Navy (SECNAV) The Honorable Dr. Donald Winter visited Momsen with members of the press to observe protective measures Navy employs to protect marine mammals during joint task force exercise. Momsen and other members of the Abraham Lincoln Strike Group are participating in a joint task force exercise off the coast of Southern California. U.S. Navy photo by Mass Communication Specialist 2nd Class James R. Evans (Released)

MATERIALS:

Navy Sonar and Environmental Stewardship Video Questions (below)

Video (<http://www.youtube.com/watch?v=BXcAglCyrF0&feature=youtu.be>)
(Navy Sonar and Environmental Stewardship)

INSTRUCTIONS: Watch the video linked above, then answer the following questions. Discuss the answers to the questions with your team or class, then complete the writing assignment below.

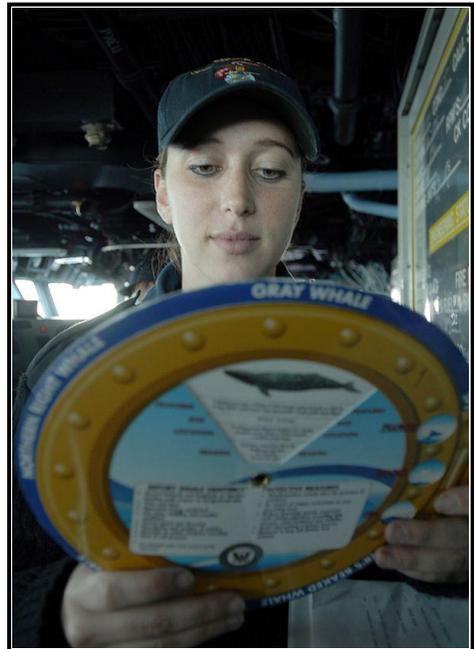
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Navy Sonar and Environmental Stewardship Video Questions

1. In what ways do marine animals rely on acoustics?
2. Why might the Navy be especially interested in coastal water?
3. What is the Navy's most effective means for identifying and detecting submerged enemy vessels?
4. What is the difference between active and passive sonar?
5. Why doesn't the Navy just use passive sonar?
6. Why has the Navy's use of active sonar been controversial?
7. What are some protective measures taken by the Navy to avoid or minimize the impact of sonar on marine mammals?
8. What does Dr. Darlene Ketten from the Woods Hole Oceanographic Institution do?
9. What conclusion does Dr. Ketten make and what evidence does she use to support it?
10. Does Dr. Ketten's conclusion mean that the Navy should stop researching the effect of sonar on marine mammals?

Writing Prompt

You are a naval marine scientist working with the Marine Mammal Protection group. The Navy has commissioned you to write a short report describing the niche of dolphins or whales in a coastal marine environment. Discuss the abiotic and biotic factors that affect the marine mammals. Create a coastal oceanic food web and explain the effect on the food web if the dolphins or whales are harmed by the use of active sonar. Lastly, develop a plan to monitor and train in this area using active sonar while minimizing the effect on the marine mammals.



CORAL SEA (July 13, 2009) Boatswain's Mate 3rd Class Morgan Baker, assigned to the forward-deployed amphibious assault ship USS Essex (LHD 2), looks over the marine mammal recognizer while standing boatswain mate of the watch on the bridge. (U.S. Navy photo by Mass Communication Specialist Seaman