

Lesson 5: Data Detectives – Teacher’s Key

Question 1. List the 3 top oil consuming countries (darker colors represent more consumption) and millions of barrels consumed per day.

United States (20.7), China (7.6) and Japan (5.0).

Question 2. List the 3 top oil producing countries or regions of the world and the number of millions of barrels of oil produced per day. Saudia Arabia (10.2), Russia (9.9) and United States (8.5).

Question 3. List 4 areas of the United States where whales could be found that are identified as Proved Reserves in 2006.

Northern shore of Alaska, West Coast of California, Gulf of Mexico (central) and Western Coast of Florida.

Question 4. Which of the coastal areas on the Proven Reserves map are located near the whales locations?

Northern shore of Alaska and Bowheads, West Coast of California and Blue Whales.

Question 5. Do any of the whale species travel outside the United States’ Exclusive Economic Zone? Yes, the bowhead whale.

Question 6. List the 6 different types of seabed grains.

Rock, gravel, gravel-sand, sand, sand-mud, and mud.

Question 7. Choose a subsample of the data set representing the bowhead and blue whales. For each point you select, mark down the Seafloor Sediment characteristics in the chart below.

	Sediment Texture		Sediment Texture
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	
<i>Blue Whale</i>		<i>Bowhead Whale</i>	

Answers will vary.
Choices of texture include rock, gravel, gravel-sand, sand, sand-mud, and mud.

Surficial Seabed Grain and Clast Sizes
Rock Gravel Gravel-Sand Sand Sand-Mud Mud

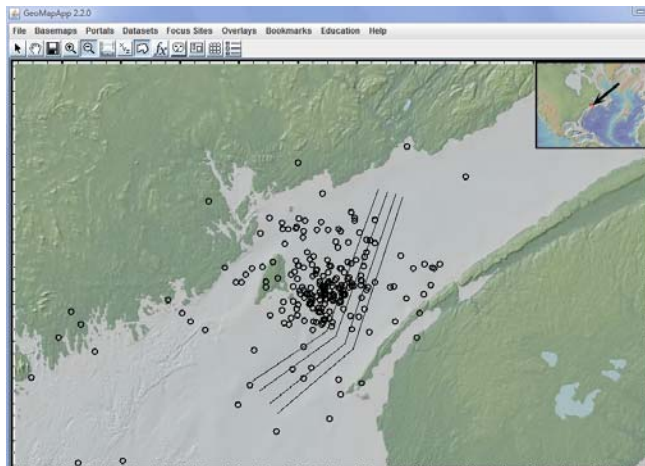
Question 8. Was there a predominant sediment texture type correlated with the blue whale locations? Answers will vary, high variability in whale locations. All responses rock, gravel, gravel-sand, sand, sand-mud, and mud, are possible.

Question 9. Was there a predominant sediment texture type correlated with the bowhead whale locations? Answers will vary. Sand, sand-mud and mud are possible.

Question 10. If the US adds new oil drilling or mineral mining operations, what geographic location are they most likely to choose, considering substrate type, earthquake activity and the EEZ? Which species is most likely to be directly affected? Off the coast of Alaska -Mostly sand-mud substrate, no major earthquake activity and within the EEZ; Bowhead whales.

Question 11. Research the time of year the whales were found in the areas identified as potential areas for oil mining or mineral extraction. What time of year would the whales most likely be found in these areas (based on the dates listed in the data tables)? September

Question 12. Are there areas where the whales were found that overlap with areas of high ship traffic? Yes, see diagram below.



Question 13. What are the approximate ranges of whale locations and shipping lane overlap?

44.2° - 44.9°N to 66.2° - 66.7°W

Question 14. Count the number of whale locations that are located directly in the shipping lanes. How many satellite locations were in these areas of high ship traffic? Approximately 45.

Question 15. Which whales (based on your 3 data sets, blue, bowhead or right, are most likely affected by coastal water pollution? Blue whales off the coast of California, as they are closest to the most major cities.

Summary Activity: Based on what you have learned in this lesson, fill in the chart below on the potential threat for each species of whales. Rate the threat by including more check marks √ to indicate more serious threats.

√ = Potential Threat

√√ = Moderate to Severe Threat (Impact has been documented)

√√√ = Major Threat (Impact is currently threatening the population)

Threat	Blue Whale	Bowhead Whale	North Atlantic Right Whale
Oil and Gas Exploration	√√	√√√	not likely
Mineral Extraction and Mining	√√	√√√	not likely
Coastal Water Pollution	√√√	√	√√
Fishing Gear/Nets, Traps	√	√	√√√
Shipping Traffic	√√	√	√√√