

WHAT'S THE IMPACT? RESEARCH AND TOURISM IN ANTARCTICA

SNAPSHOT OF ANTARCTICA

Plants Team

- Research and list information about the types of plants found in Antarctica.
- Explain how plants survived the harsh conditions.
- Make a food chain or food web that includes at least one of your plants
- Sketch or find pictures of the plants

Animals Team

- Research and list information about animals that live in Antarctica.
- Explain animal adaptations that allow for survival.
- Sketch or find pictures of the animals
- Make a food chain or food web that includes at least one of your animals.

Climate/Weather Team

- Research climate and in Antarctica
- Use charts and graphs to show climate change over time in Antarctica.
- Uses statistics to show average temperatures throughout the year.
- Location information about how weather stations in Antarctica operate.
- Prepare a 5-day weather forecast. Include hours of sunlight.

Environmental Threat Assessment Team

- Research environmental threats to Antarctica.
- Show pictures of environmental damage that has occurred.
- Research the threat of climate change to Antarctica
- Show pictures of changes in ice/glacier formations

RESOURCES:

The Online NewsHour: Polar Discoveries

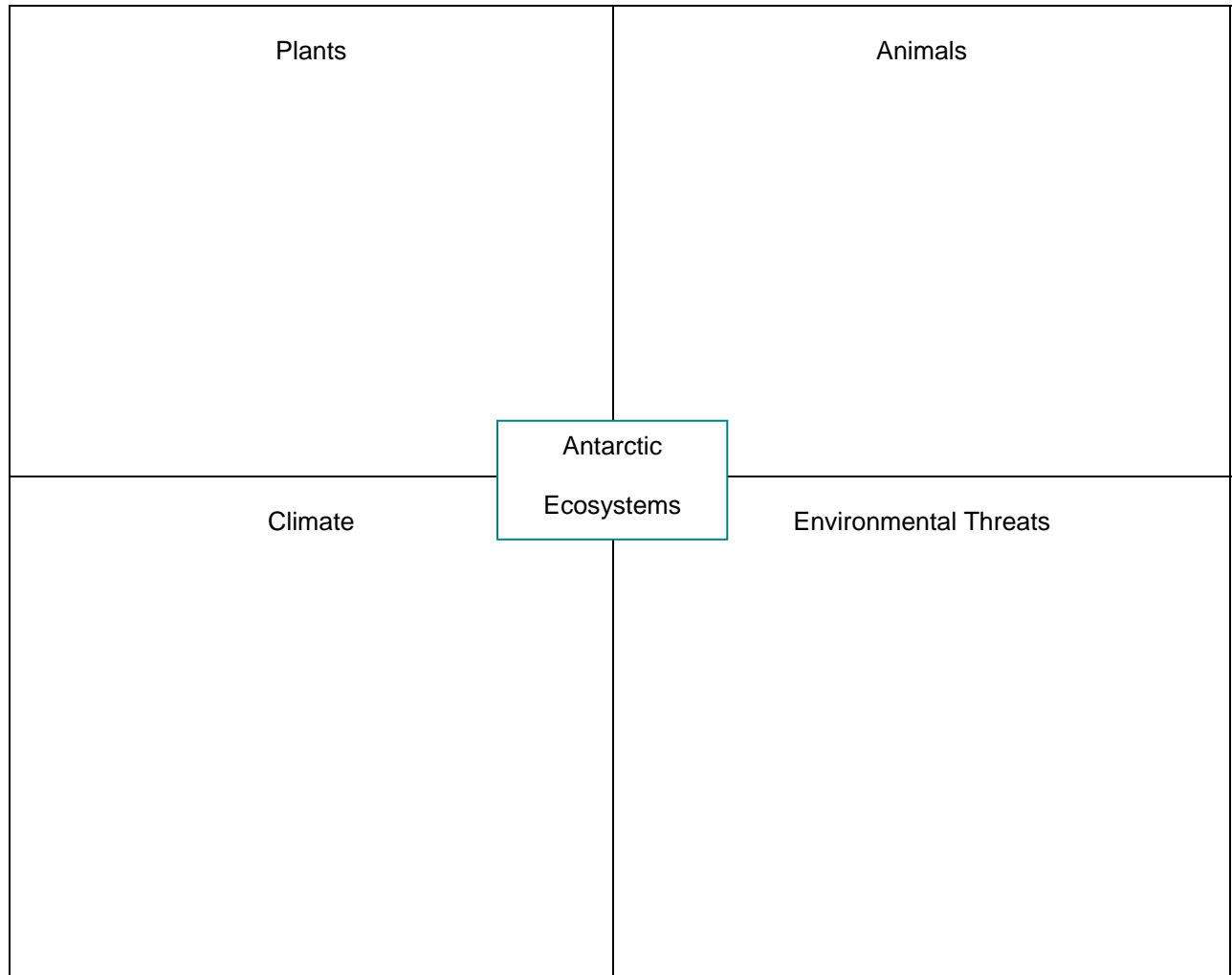
http://www.pbs.org/newshour/indepth_coverage/science/poles/index.html

More links to Antarctica resources:

- <http://www.southpolestation.com/links.html>
- <http://terraweb.wr.usgs.gov/projects/Antarctica/>
- <http://www.antarctic-circle.org/website.htm>
- <http://www.antarcticconnection.com/antarctic/sitelinks/index.shtml>
- <http://www.ssec.wisc.edu/~beckys/antpg.html>
- <http://www.stemnet.nf.ca/CITE/antarctica.htm>
- <http://www.teachercenter.org/antarc.html>

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ANTARCTIC ECOSYSTEMS ORGANIZER



WHAT'S THE IMPACT? RESEARCH AND TOURISM IN ANTARCTICA

SNAPSHOT OF ANTARCTICA - RUBRIC

CATEGORY	4	3	2	1
Required Elements	The poster/PowerPoint includes all required elements as well as additional information.	All required elements are included on the poster/PowerPoint.	All but 1 of the required elements is included on the poster/PowerPoint.	Several required elements were missing.
Content - Accuracy	At least 7 accurate facts are displayed on the poster/PowerPoint	5-6 accurate facts are displayed on the poster/PowerPoint	3-4 accurate facts are displayed on the poster/PowerPoint	Less than 3 accurate facts are displayed on the poster/PowerPoint
Graphics - Clarity	Graphics are all in focus and the content easily viewed and identified from 6 ft. away.	Most graphics are in focus and the content easily viewed and identified from 6 ft. away.	Most graphics are in focus and the content is easily viewed and identified from 4 ft. away.	Many graphics are not clear or are too small.
Attractiveness	The poster/PowerPoint is exceptionally attractive in terms of design, layout, and neatness.	The poster/PowerPoint is attractive in terms of design, layout and neatness.	The poster/PowerPoint is acceptably attractive though it may be a bit messy.	The poster/PowerPoint is distractingly messy or very poorly designed. It is not attractive.
Mechanics	Capitalization and punctuation are correct throughout the poster/PowerPoint.	There is 1 error in capitalization or punctuation.	There are 2 errors in capitalization or punctuation.	There are more than 2 errors in capitalization or punctuation

WHAT'S THE IMPACT? RESEARCH AND TOURISM IN ANTARCTICA

LAB: WASTE AND ANTARCTIC ICE

Where there are people, there is waste. How might that waste affect Antarctic ice?

Materials

5 -100 ml beakers (per group)
Coffee Grounds
Salt
Tissue paper (cut into small pieces)
Motor Oil
Thermometers

1. Observation

Waste materials like coffee grounds, salt, tissue, and motor oil can affect polar ice.

2. Hypothesis/Prediction

How will the presence of waste materials affect polar ice? Write a prediction statement.

3. Procedure

Before you begin, remember that the results of your experiment will be more reliable if you develop a consistent procedure.

- Place 50 ml of water into each beaker.
- Place one teaspoon of each type of waste material into each beaker, stir thoroughly.
- Record the starting temperature of each beaker onto the data table.
- Place the beakers into the freezer.
- Record the temperature change for each beaker every 15 minutes

4. Data Analysis

- Construct one line graph for all data. (5 lines on one graph)

5. Conclusion/Discussion

- Which beaker of water took the longest to freeze? Which took the shortest amount of time to freeze?
- Does your hypothesis match the conclusion? How would you change your prediction statement if you were to conduct the experiment again?
- List three sources of error for this experiment.
- How might these particular waste materials end up in polar ecosystems?
- How does this lab help you to understand the potential impact of humans on polar ecosystems?

Extension Reading:

Antarctic Explorers: Erich von Drygalski: <http://www.south-pole.com/p0000085.htm>

In 1902, a German polar exploration ship was actually freed from polar ice in Antarctica using trash and waste!

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LAB: WASTE AND ANTARCTIC ICE

Data Table

Waste Material → Time ↓	Plain Water	Coffee Grounds	Salt	Motor Oil	Tissue
Starting Temp					
15 minutes					
30 minutes					
45 minutes					
60 minutes					
75 minutes					
90 minutes					
105 minutes					
120 minutes					

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RESEARCH AND TOURISM IN ANTARCTICA

Research Operations Group

Assign each member of the group a question to ask.

1. Find and list all research operations currently in progress in Antarctica.
 - Which countries are represented?
 - How many researchers are there?
 - When is research conducted in Antarctica?
2. List the nature of the research being conducted
3. Using email, interview a local scientist who has conducted research in Antarctica, or read about an Antarctic researcher online. Try to find the following:
 - What is a day in the life of a researcher like?
 - How are biological wastes disposed of?
 - How is research waste disposed?
 - What kinds of vehicles are used for transportation? What is the environmental "footprint" of those vehicles.
4. Try to find a blog from a researcher in Antarctica. Read excerpts to the class.
5. Produce a poster that outlines your findings.
6. Present your findings to the entire class when finished.

Resources:

The Online NewsHour: Profiles in Science

http://www.pbs.org/newshour/indepth_coverage/science/poles/profiles/index.html

Slide Show: Dry Valley Organisms

http://www.pbs.org/newshour/indepth_coverage/science/poles/slideshow_audio/index_flash.html

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Tourism Group

1. Research several travel agencies that specialize in trips to Antarctica.
2. Using email or information from travel agent Web sites; find the following:
 - Cost
 - Length of trip
 - Itinerary
 - Special Training
 - Travel attire
 - Food
 - Transportation methods
 - Capacity of trip and number of people taken yearly
 - Emergency rescue options
3. Produce a poster comparing the travel packages.
4. Try to find a blog from a traveler that has recently returned from Antarctica. Read excerpts to the class.
5. Present your findings to the entire class when finished.

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