



Antarctica

Antarctica is a continent. It is the fifth largest continent. It is the southernmost land mass on Earth. The Geographic South Pole is in Antarctica. 98% of the continent is covered in ice. Its size changes with the seasons. It is smaller in the summer when much of its ice has melted. The continent can double in size in winter as its ice expands into the ocean. The polar biome is the only biome in Antarctica. Climate change is threatening its delicate ecosystem.

Antarctica Biome Cards Elementary Guide to Presentation

2020 edition

Antarctica Biome Cards - Elementary

(suitable for children 8 to 12 years of age)

Contents of Antarctica Biome Cards - Elementary:

There are 13 three-part cards in the Antarctica Biome Cards - Elementary set. The three-part cards of the Antarctica Biome Cards - Elementary include a picture card, a text card, and a label for each of the following:

- the continent
- 1 biome (polar region)
- a plant, invertebrate, fish, bird, and mammal card (there are no reptiles or amphibians in Antarctica)
- 6 people cards (one card each for the people, food, clothing, shelter, transportation, and culture)

A set of paper Biomes of the Continent Labels is also included with the the Antarctica Biome Cards - Elementary. The blackline masters for Antarctica Biome Cards - Elementary can be downloaded from the Antarctica Materials section of the A - Z PDF library on our website (wasecabiomes.org).

Additional Related Products:

- *Introduction to the Biomes with Curriculum - Primary*
- *Introduction to the Biomes with Curriculum - Elementary*
- *Antarctica Biome Cards - Primary*
- *Antarctica Biome Puzzle*
- *Antarctica Biome Readers*
- *Biomes of the World Mat*
- *Antarctica Biome Mat*
- *Antarctica Stencil*
- *Antarctica Portfolio*
- *Biome Stamps*
- *Animals of the World Measuring Tape*
- *Complete Set of Companion Journals for the Continents*
- *Biomes of the Continent Labels (vneer)*
- *Three-Part Card Tray Cabinet - Elementary*
- *Cabinet of the Continents*

Guide to Presentation

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Introduction

Continent Biome Cards - Elementary provide a structure for the exploration of continents by biomes. They offer a unique approach to geography and continent study by inviting you and your students to learn about each continent by investigating the plants, animals, and humans that live there and how they have adapted to meet their basic needs within their biome. This approach encourages an integration of various disciplines (such as geography, botany, zoology, and cultural studies) that are traditionally isolated. The relationships and adaptations of botanical and zoological species to the conditions of their biome are emphasized. So too are the relationships and adaptations of human cultures to their biospheres. This approach departs from the traditional anthropocentric view of political geography and encourages young learners to view relationships in the world in a new way. We strongly recommend that the children have completed study of our *Introduction to the Biomes* before they work with these materials.

As the children study the continents and their biomes, they will develop a strong understanding of how life adapts to different conditions. This is an indirect aim of these materials. The direct aims are to develop critical thinking skills and a motivation to read, write, and communicate information. Please keep in mind that while learning the names of plants and animals (and information about them) is fun and empowering, something more lasting and momentous is in process. These materials will, hopefully, generate enthusiasm for learning. Be careful not to use them in a rote fashion by having children copy the cards or do any repetitive task in connection with it.

Continent Biome Cards - Elementary are designed for children 8 to 12 years of age who are reading on a third or fourth grade level. They serve as a structure for independent research. Only one example of a plant, an invertebrate, and each class of vertebrate are presented for each biome. After the initial presentation, children work independently to find examples of other plants and animals that live in a particular biome of the continent being studied. In addition, they might find another group of people, indigenous or otherwise, who inhabit a biome and research how they meet their needs in that biome.


This Guide to Presentation gives you some ideas of how to open up the possibilities of these materials and create a dynamic learning experience. The lesson presentations are the first period of a three-period lesson. They are short, impressionistic lessons intended to capture the children's attention and plant a seed that will flourish into a second period of self-motivated activity where the child does the real learning on their own with guidance and support from adults. The third period will be the mastery the students gain through their accumulated experience with the materials. At this point, their understanding will lead them to use the information in higher levels of learning such as application and synthesis.

Continent Biome Cards - Elementary can be read to younger children by an adult, however, we recommend that younger children work with the *Continent Biome Cards - Primary* so that they can work more independently. Children in a mixed age group setting of 6 to 9 year olds may need both sets of materials to meet their various needs.

Please note that the icons on the back of each of the cards serve as a control of error and help keep the materials organized. For example, the following set of icons would be found on the back of a card for a bird that lives in the polar regions of Antarctica.



These are all of the icons that can be found in Continent Biome Cards - Elementary:

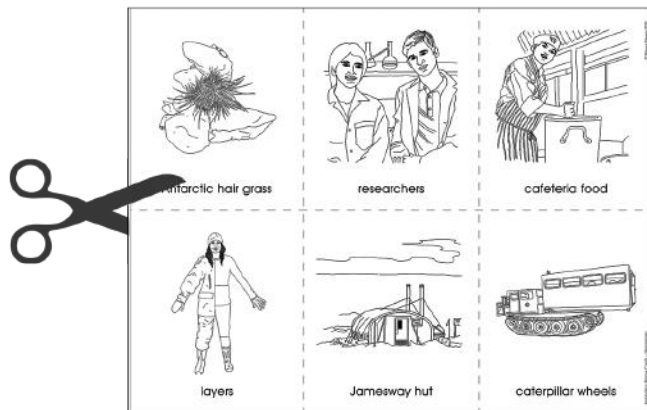
continents	biomes	plants & animals	people
 Africa	 desert	 plant	 people
 Antarctica	 grassland	 amphibian	 food
 Asia	 mountain	 bird	 clothing
 Europe	 polar	 fish	 shelter
 North America	 temperate forest	 invertebrate	 transportation
 Oceania	 tropical forest	 mammal	 culture
 South America	 wetland	 reptile	

Planning Your Continent Studies

Montessori classrooms have the benefit of a mixed-age grouping with a three-year cycle. This arrangement affords a Montessori guide the luxury of not having to cover all 7 continents every year. We strongly recommend that you begin every year with your home biome in your home continent. Each year, children will use the skills they have acquired to dig deeper into the materials and further their research. They will also be able to share their knowledge base with the first year students. If you give yourself three years to circle the globe by continent, you can study your home continent and two other continents each year. As your home biome will not be in Antarctica, we do not recommend that it be the first continent that you introduce to your students.

Blackline Masters

The blackline masters for Antarctica Biome Cards - Elementary can be downloaded from the Antarctica Materials section of the A - Z PDF library on our website (wasecabiomes.org). The first page is a biome map of the continent. The pages that follow are labeled blackline illustrations of each of the cards in Antarctica Biome Cards - Elementary. They may be printed and copied for the children to use to make their own cards and serve as an aid in their research. Each page should be cut down to card size along the dashed lines.



Lesson One: Introducing the Biome

You will need: the three-part continent card, the three-part biome card, Antarctica blackline master map (page 1 of the Antarctica Biome Cards - Primary Masters), the blackline master card for the continent and the biome, colored pencils, pictures of the biome from magazines, books, or the internet, a notebook or journal for each student's research (such as our Big Antarctica Companion Journal), and one of the following: an Antarctica Puzzle Map, Antarctica Biome Mat, Antarctica Stencil, or Biomes of the World Mat as reference

Purpose: To introduce the polar biome of Antarctica and discuss its attributes. To assess what the children already know about plant and animal life in this biome. To encourage independent research about the biome.

1. Introduce the continent by laying out its picture card. Name the continent as you place its label beneath the picture card. Read, or have a child read, the continent text card and lay it below the label.
2. Bring out the appropriate puzzle map, stencil, or mat. Note the compass rose for orientation. Discuss the map legend to highlight what color or textures identify the biome.
3. Show the children the picture card for the biome and place it next to the continent card. Name the biome as you place its label below the picture card. Read, or have a child read, the text card for the biome and place it below the label.



4. Initiate a discussion to discover what the children already know about the biome:
 - What climate zone is this biome found in?
 - What is the temperature like?
 - Are there seasons?
 - How much rain falls in this biome?
 - What is the soil like?
 - What is the most common kind of plant?
 - How do plants adapt to this biome?
 - What kind of animals live in this biome?
 - How do the animals that live in this biome adapt?

You can use pictures of the biome from magazines, books, or the internet to help stimulate the discussion.

5. Have the children color in the biome on the blackline master map. They may want to draw in the mountain ranges.

6. The children can also color the blackline master cards for the continent and biome. They may want to write a brief description from their extension research on the back of the card. If you are using the Biome Stamps in your classroom, the child can stamp their work with the continent and biome on the back. There are also templates for cards that can be downloaded from the Biome Stamps section of our A - Z PDF library that the children can use to illustrate, label, and write their own cards.
7. As the children work through the extensions for this lesson, you may want to read them, or have them read, any relevant pieces of literature you have gathered that describe the biome and create a sense of place. If there are stories that are set in this biome, read them aloud making sure to emphasize the setting.

Extensions and ideas for student exploration:

- The children can, as a small group or individually, research a specific place in the biome to write a travel guide for the location that describes the place and how to get there.
- The children can research temperature for the biome and create charts or graphs.
- What are seasons like in this biome? The children can research seasonal conditions to make charts or graphs.
- Discuss the land: What kind of soil does this biome have? How do they think that soil may affect plant life there? How does the temperature, moisture, and ice affect life on this continent?
- Create a poster board chart where the children can list adjectives that describe the biome.
- The children can, as a small group or individually, create a presentation about the biome for the class by cutting pictures from magazines and making a poster or finding pictures on the web to create a digital slide show.
- *Discuss how this biome compares to your home biome. You can create a chart with the children to compare your home biome to this one. You can create your own categories or use the ones from the Biomes Questions & Answers cards in the Introduction to the Biomes Curriculum - Elementary:*
 - *Moisture*
 - *Temperature*
 - *Soil*
 - *Plants*
 - *Animals*
 - *Human Impact*

Lesson Two: Plant Life in the Biome

You will need: the three-part biome card, the three-part plant card, the plant label from the Biomes of the Continent labels, the blackline masters card for that plant, colored pencils, a notebook or journal for each student's research (such as our Big Antarctica Companion Journal)

Purpose: To introduce the plant life of Antarctica. To discuss how plants adapt to their biomes. To research and write about the plants of this biome.

1. Present the picture card for the biome and lay it on a mat. Name it as you place the label beneath the picture card. Have a child read the text card and place it below the label.
2. Explain that the animals of a biome depend on the plants: Animals either eat plants or eat animals that eat plants. Place the plant label from the Biomes of the Continent Labels to the right and above the biome card.
3. Introduce the plant by laying its picture card down below the plant label. Name the plant as you place the label beneath the picture card. Have a child read the text card and place it under the label.



4. Discuss plant life in Antarctica. Are there a lot of plants? Is this plant a type that would be most common? If not, what plants do they think are more common?
5. How do the conditions in this biome affect plant life? Ask questions about how temperature, rainfall, soil, and the seasons might affect plant life in this biome. What kind of adaptations do they think would be helpful for plants in this biome?
6. The children may color in the blackline master for this plant card and write a description on the back or illustrate, label, and write about the plant in their notebook or journal. Encourage them to color "like scientists," paying close attention to the colorings and markings of the plant.

Please note that student research can be guided to find the diversity in the predominant plant life of a biome or to find different kinds of plants in different layers of a biome.

Extensions and ideas for student exploration:

- Print multiple copies of the blackline master card for the plant so that students can create nomenclature cards for the parts of the plant. On the first copy, they color the whole plant and write about it on the back in their own words. Then, they use the other copies to color in the isolated parts (a card with just the leaves colored, a card with just the stems colored, etc.) and write a description on the back of each card for that part and how it is adapted to the biome.

- The child can research another plant. They can illustrate, label, and write about the plant on a blank card from the blackline master (or the Biome Stamps template) or in their journal. They may make nomenclature cards for the parts of the plant they have researched.
- The child can update their travel guide about the biome to include information about the plants that grow there.
- *Discuss how this biome's plant life to your home biome's plant life. Are the biomes similar? Do they have similar plant life? What are key factors behind these differences?*







Lesson Three: Animal Life in the Biome

The animal cards should be introduced after the plants of Antarctica have been explored.

You will need: the Biomes of the Continents Labels for the plant and all of the classes of animals, the three-part card for the biome, the three-part cards for the plant and all of the classes of animals, the blackline masters cards for the animals, colored pencils, a notebook or journal for each student's research (such as our Big Antarctica Companion Journal)

Purpose: To introduce the animal life of Antarctica. To learn to differentiate animals. To discuss an animal's adaptations to its biome. To explore the interdependence of plants and animals in a biome. To research and write about animals of a biome.

1. Reintroduce the three-part cards for the biome. Lay them down on the left side of a mat with the picture card at the top, the label beneath the picture card, and the description underneath the label.
2. Place the labels for plant, invertebrate, fish, amphibian, reptile, bird, and mammal across the mat above and to the right of the biome cards.
3. Lay the picture card for the plant beneath the plant label. Name it as you place its label beneath the picture card. Read, or have a child, read the text card and place it below the label.
4. Discuss whether the plant provides food, shelter, or both for animal life in the biome.
5. Have the children sort the animal picture cards by class and place them under the appropriate label on the mat. Note that there are no reptiles or amphibians. Discuss why these classes of animals do not live in Antarctica.
6. Look at the labels for the animals and have the children guess which animal each label names. (They can use the icons on the back of the cards at any point during this lesson for self-check.)
7. Have the students take turns reading the text cards. After a card is read, have the students guess which animal it describes and lay the text card below the appropriate label.

	plant	invertebrate	fish		amphibian	reptile	bird	mammal
								
<p style="font-size: small;">The whole continent is a polar desert. In the coastal areas, the average annual precipitation is 200 mm. The average annual temperature is -12°C. The average annual wind speed is 15 km/h. The average annual wind direction is from the west. The average annual wind speed is 15 km/h. The average annual wind direction is from the west. The average annual wind speed is 15 km/h. The average annual wind direction is from the west.</p>	<p style="font-size: small;">This is one of the few flowering plants that grows in Antarctica. It is a small, green, tufted plant that grows in the coastal areas. It is a member of the grass family. It is a member of the grass family. It is a member of the grass family. It is a member of the grass family.</p>	<p style="font-size: small;">This animal is an insect. It is a small, yellow, six-legged insect that lives in the coastal areas. It is a member of the springtail family. It is a member of the springtail family. It is a member of the springtail family. It is a member of the springtail family.</p>	<p style="font-size: small;">This is one of the few flowering animals that live in Antarctica. It is a small, green, tufted animal that lives in the coastal areas. It is a member of the rockcod family. It is a member of the rockcod family. It is a member of the rockcod family. It is a member of the rockcod family.</p>				<p style="font-size: small;">This animal is a bird. It is a large, black and white bird that lives in the coastal areas. It is a member of the penguin family. It is a member of the penguin family. It is a member of the penguin family. It is a member of the penguin family.</p>	<p style="font-size: small;">This animal is a mammal. It is a large, black and white mammal that lives in the coastal areas. It is a member of the seal family. It is a member of the seal family. It is a member of the seal family. It is a member of the seal family.</p>

8. Discuss any interdependence that might occur between the animals and the plant. Is there any interdependence between the animals?
9. Discuss how many animals in Antarctica live on land and how many live in the sea. Are there animals that split their time between land and sea? Do the animals that live in the sea stay near Antarctica year-round or do they migrate to other places? Do all of the birds that can be found in Antarctica live there year-round or do they migrate?
10. The children may color in the blackline masters for these animal cards and write descriptions on the back or illustrate, label, and write about them in their notebook or journal or on cards from the Biome Stamps templates. Encourage them to color "like scientists," paying close attention to

the colorings and markings of the animals. If you are using the Biome Stamps, they can stamp their work with the continent, biome, and class.

Extensions and ideas for student exploration:

- The child can find another animal that lives in the biome to research:
 - Is it a vertebrate or invertebrate? If it is a vertebrate, what class does it belong to?
 - What does it eat? Where does it live in the biome? What special adaptations does it have?
 - What size is it? After finding its dimensions, have them draw a life-size picture. Older students may want to create a grid on a small picture of the animal and a grid on the larger paper they are using for their drawing to transfer the image one square at a time.
- The child can update their travel guide about the biome to include information about the animals that live there.
- As a class, create a large chart with six columns. Use the Biome Stamps, or draw the icons, to label invertebrate, fish, amphibian, reptile, bird, and mammal at the top of the columns. Block out the amphibian and reptile columns to highlight that no animals from those classes live in Antarctica. Find examples of animals that live in Antarctica, or its waters, and list them in the columns. Have the students choose an animal to do a "research" about.
- The children can use the picture cards or pictures from their research to create a food chain for the biome.
- The children can write a play about the food chain. Guide them to focus on how the energy can be traced through the food chain back to the energy from the Sun. Once complete, put on a performance of the play at circle.
- Print multiple copies of the blackline masters card for one of the animals so that students can create nomenclature cards for the parts of that animal. On the first copy, they color the whole animal and write about it on the back in their own words. Then, they use the other copies to color in the isolated parts (a card with just the eyes colored, a card with just the limbs colored, etc.) and write a description on the back of each card for that part and how it is adapted to the biome.
- As a class or individually, the children can create a chart to show the complete classification of one of the animals. They start with its scientific name and, then, expand it to include all the levels of classification: kingdom, phylum, class, order, family, genus, and species. Expand the chart to include other animals from the cards or student research.
- With a fine black marker, make a large drawing of the biome featuring plants and animals. Make seven copies per student so that they can create nomenclature for the parts of the biome. Have the students color in a copy for each part of the biome: the whole biome, the air, the water, the soil, the plants, and the animals. They can write descriptions on the back for each part of the biome. On the seventh copy, the students can use arrows to track the transfer of energy through the biome. They can write about these energy transfers on the back.
- As a class project, create a mural of the biome highlighting its plant and animal life.
- *Discuss how this biome's life compares to your home biome's life. Are the biomes similar? Do they have similar plant life? Do they have similar animal life? What are the keys factors behind these differences?*

- As a class, you can use the “Storyline Scotland” approach (written about at length in the Waseca Biomes Curriculum Guide) to research what living in the biome is like and develop a storyline of a day to act out in the classroom.
- The children can pick an early explorer of the continent to research. What was that explorer’s purpose? What did the explorer “discover?” What were his perceptions of the continent and the conditions he encountered?
- *Discuss how the researchers in Antarctica compare to the people of your home biome. Are there things that are similar about your lifestyles? What are some of the differences? What factors influence the similarities and differences?*

Extensions and ideas for student exploration:

- The children can create comparison charts using their own categories or the ones from the Biomes Questions & Answers cards in the Introduction to the Biomes Curriculum - Elementary:
 - Moisture
 - Temperature
 - Soil
 - Plants
 - Animals
 - Human Impact
- The children can research flightless birds on different continents, such as Spheniscidae (the penguin family). Do they live in the same biome? Are they related? What traits do they share?
- The children can research birds that migrate to polar regions of different continents. What traits do these birds have in common?
- The child can choose any card for a plant or animal of a continent. Then, the child can do research to find similar species that live in the same biome on different continents. Scientific classification will aid the search.
- The child can use the Animals of the World Measuring Tape to compare the size of some of the different animals featured in the card materials. They can find the dimensions of other animals they have studied to compare to the animals featured on the tape. (Please note that the animals on this tape are pulled from both the Continent Biome Cards - Primary and Continent Biome Cards - Elementary.)