

Teaching Material on Biodiversity Conservation (TMBC)

Titel: „Nuka“ – the Polar Bear Game

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Level: secondary school, Year 5-6

Type of material: information game with activities and knowledge tasks

Aim: emotional relationship to an animal (polar bear); knowledge about habitat, appearance, threats and protection measures, enjoying learning

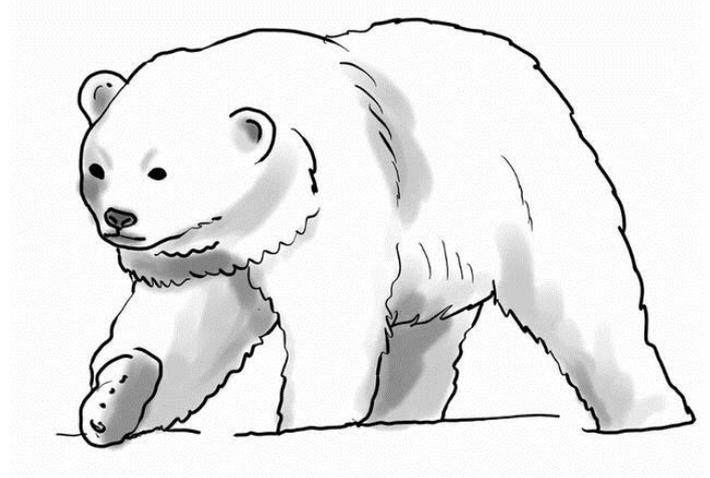
Process:

1. Introduction:
 - possibly show the first scene with polar bears in the film „Earth“ by director Mark Linfield
2. Processing:
 - Divide class into groups of 1-5 pupils and play „Nuka“ - the Polar Bear game
3. Consolidation:
 - compare the results in class and discuss

Nuka“– the Polar Bear Game

for two groups of 1-5 players

The little polar bear „Nuka“(Greenlandic= little brother) wants to present his environment. He wants to show you what he looks like, where and how he lives, what threats his species faces and how they can be protected.



Materials:

- instructions
- dice with numbers 1-6
- stopwatch
- teampoints
- red question-answer-cards
- green concept-cards
- blue pantomime-cards
- yellow drawing-cards + paper + pencil
- orange information sheet: appearance-habitat-protection/threats
- white puzzle: Threats to polar bears and how to protect them
- Profile sheet(polar bear characteristics)

Object of the game

The object of the game is to get to know polar bears by doing special tasks. To win, you have to earn more points than the other team.

Preparation

Put the red, green, blue and yellow cards in the middle of the table. Each player gets an orange information sheet appearance-habitat-protection/threat and a profile sheet about polar bears. Put these in front of you. Shuffle the white pieces of the puzzle and put them in the middle of the table, too.

Game instructions

Form two groups of 1-5 persons. Calculate how old you are together. The youngest group begins.

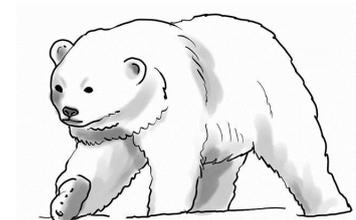
Cast the dice once. The number determines the activity:

- **Number 1:** Take a red card and answer the question with your team. You can check the answer by turning the card over. You get one point if the answer is right.
- **Number 2:** Take a green card and explain the term without using the word. You get a point if your team guesses the concept within one minute.
- **Number 3:** Take a blue card and mime the term without speaking. You get a point if your team guesses the concept within one minute.
- **Number 4:** Take a yellow card and draw the term on a piece of paper without speaking. You get a point if your team guesses the concept within one minute.
- **Number 5:** Go through the alphabet silently in your head. One player from the other team says "STOP". The letter you reached is the initial letter for words you have to find describing the appearance, habitat and protection/threats. The first person to find three terms, says "STOP" again. Compare the terms. The team with the most correct terms gets a point.
- **Number 6:** Take a piece of the puzzle and try to join it up. You get a point, if you join it up correctly. When the last piece of the puzzle has been joined up all teams have to read the information text carefully (Take as long as you need to do this!) Afterwards each team asks a question about the text. You get a point for a correct answer.

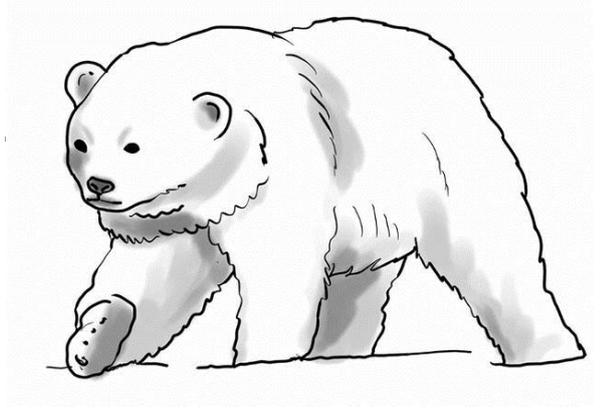
Number 2, 3 and 4: Think about what the terms have to do with Polar Bears. If all the cards for one number have been used up, the team can't earn any points and it is the next team's turn.

Note down all the information you find out about polar bears on your profile sheets.

Have fun!



The Polar Bear



Scientific name:

Appearance:

Occurrence and reproduction:

Food:

Threats and protection:

Questions, red

<p>How much do fully grown male polar bears weigh?</p> <p>a. ca. 200-400 kg b. ca. 400-600 kg c. ca. 600-800 kg</p>	<p>How much do fully grown female polar bears weigh?</p> <p>a. ca. 100-200 kg b. ca. 200-300 kg c. ca. 300-400 kg</p>	<p>What colour is a polar bear's tongue?</p> <p>a. pink-red b. grey-blue c. black-brown</p>
<p>Polar bears are classified as belonging to the family of bears. Guess what the scientific name of the polar bear is.</p> <p>a. Ursus maritimus b. Ursus baeritimus c. Ursus kristallimus</p>	<p>What do polar bears eat?</p>	<p>What enemies do polar bears have?</p> <p>a. orcas b. polar foxes c. humans</p>
<p>Polar bears mate between April and June. The female Polar Bear is pregnant for 8 months. When the Polar Bear cubs are born, they are...</p> <p>a. the size of a fully grown fox and they jump on their mothers. b. the size of a fully grown rabbit and they do not have any fur c. the size of a guinea</p>	<p>Which one of these senses is particularly well developed in polar bears?</p> <p>a. smell (olfactory) b. sight (visual) c. taste (gustatory)</p>	<p>How old can Polar Bears become?</p> <p>a. 10-15 years b. 15-25 years c. 25-30 years</p>

<p>pig and they are blind and deaf .</p>		
<p>To which bears are the polar bears closely related?</p> <ul style="list-style-type: none"> a. giant pandas b. brown bears c. spectacled bears 	<p>Polar Bears are ...</p> <ul style="list-style-type: none"> a. loners b. gregarious animals c. draft animals 	<p>Polar bears have a yellow-white and dense coat. Why is that useful? Name two arguments!</p>
<p>Why do polar bears have black skin?</p> <ul style="list-style-type: none"> a. to reflect the warmth of the sun b. to absorb and save the warmth of the sun c. to have a different color of the skin and a different color of the coat 	<p>Why do polar bears hide their nose underneath their paw?</p> <ul style="list-style-type: none"> a. to nurse their nose b. as camouflage c. to keep warm 	<p>Both teams can play! Take the task sheet which shows the occurrence of polar bears and mark the areas on the card. You get one point if the areas are marked in the right position!</p>

Answers, red

<p>Answer b is right. The weight of polar bears depends on their nutritional condition. During the summer polar bears weigh less because they do not eat. In the winter time they go seal hunting so they weigh much more. In addition, regional differences in height are important. Small polar bears live in Spitsbergen and tall ones live close to the Bering Strait.</p>	<p>Answer c is right. The weight of polar bears depends on their nutritional condition. During the summer polar bears weigh less because they do not eat. In the winter time they go seal hunting so they weigh much more. In addition, regional differences in height are important. Small polar bears live in Spitsbergen and tall ones live close to the Bering Strait.</p>	<p>Answer b is right.</p>
<p>Answer a is right. Ursus = bear, maritimus = located close to the ocean</p>	<p>Answer: Polar bears are omnivores. They prefer seals (high body fat percentage), but also fish, polar foxes, rabbits, birds' eggs, walruses, reindeers and the bodies of dead animals (carrion). In the summer time polar bears leave the pack ice and move to the mainland where they cannot find much food. As a result they have to eat herbage, berries and smaller animals.</p>	<p>Answer c is right. Polar bears are alpha predators, which means that they do not have any natural enemies. Therefore, they are at the top of the ecological pyramid. Only humans can be seen as enemies of polar bears because they hunt them for their fur.</p>
<p>Answer c is right. Polar bear cubs are the same size as guinea pigs, they are also blind and deaf. They are defined as altricial animals, which means that they still live with their mother after they are born. During that time their mother provides them with food.</p>	<p>Answer a is right. The polar bears have a great olfactory sense (sense of smell). So they can smell caves of the seals even though they are located two meters deep in the ocean. That is very important for their foraging.</p>	<p>Answer c is right. Polar bears can live to be 25-30 years old.</p>

<p>Answer b is right. Polar bears and brown bears are closely related. But the polar bear developed into a different species.</p>	<p>Answer a is right. Polar bears live on their own. They only have a partner at the time of their mating.</p>	<p>Answer: The white hairs of the coat transmit solar heat to the black skin of the polar bear. Also, they use their coat as camouflage in the winter. That way it is easier to catch their prey. In addition, their coat protects them from the cold. The hairs of their coat have a high fat content. So they have a fatty layer of 5-10 cm underneath their skin, which is used as a heat reservoir but also to help keep them afloat when swimming on the other side. Their coat is also water-repellent.</p>
<p>Answer b is right. In contrast to lightish skin, black skin absorbs all wavelengths of visible light, which means that the skin heats up much better and saves more heat. polar bears can use the sun's warmth perfectly. That is essential for their survival in their cold habitat, which is called the Arctic.</p>	<p>Answer b is right. The black nose of the polar bear is conspicuous for prey in the white snow. That's why the polar bear hides his nose beneath his paw.</p>	



Habitat of polar bears (solution)

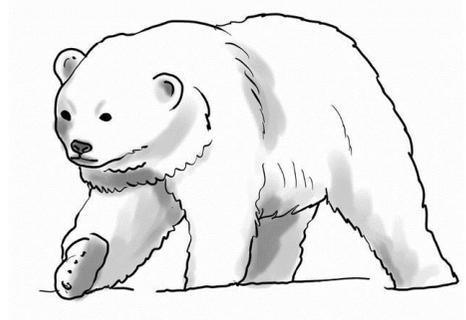
Maplab(2011): Range of Polar bear(*Ursus maritimus*)(http://commons.wikimedia.org/wiki/File:Cypron-Range_Ursus_maritimus.svg, 20.01.2014)

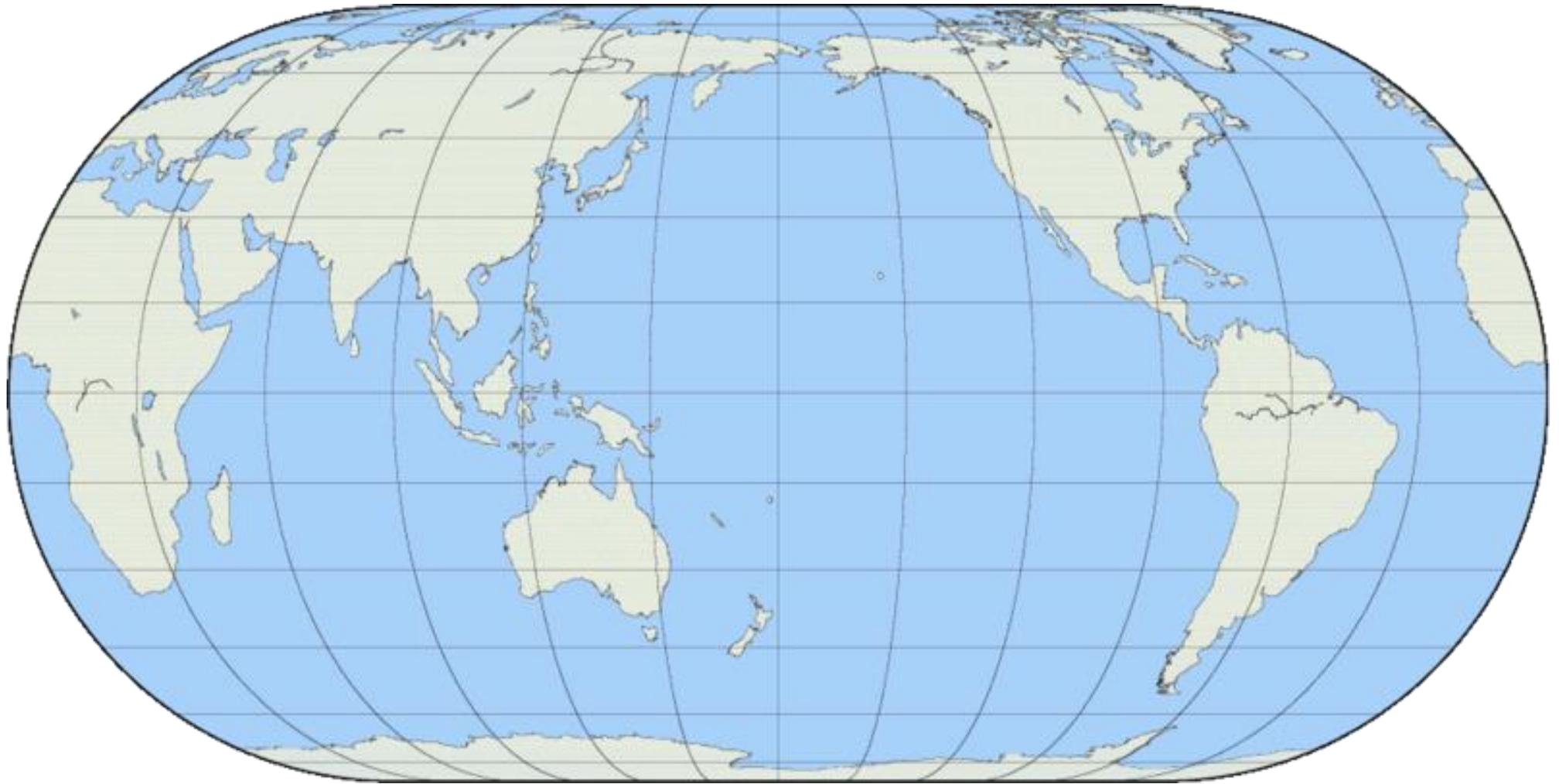
Habitat of polar bears

Polar bears are only found in the Arctic. They live around the North Pole in the polar regions. Many of the Arctic polar bears are located on the sea coasts or on the Arctic sea-ice to hunt seals. The Arctic sea-ice is crushed by the wind and by the ocean currents. As a result, holes in the ice arise, which are perfect for hunting. In the summer polar bears are mainly found at the southern borders of drift ice. At the onset of winter, they migrate southward and follow the holes in the ice. Also some animals remigrate to the hinterland in summer (Hudson Bay, Canada).

Polar bears are found in the following areas:

- at Spitsbergen and in Franz-Josef-Land
- in North-Siberia
- at Wrangel Island and in West Alaska
- in North Alaska
- in Canada, especially of the Arctic Islands, along the Hudson Bay and on the North coast of Labrador
- in Greenland





n.A.(2006):Vertikaler Schnitt am Nullmeridian(http://commons.wikimedia.org/wiki/File:Map_projection-Eckert_IV.png, 20.01.14)

Explain, green

the Arctic	marine ice	sealing
fatty layer	Canada	Greenland
diurnal	alpha predator	Arctic Fox
Altricial animal	ice cave	water-repellent
paw	camouflage	pack-ice
mating	Protection agreement	threat

Pantomime, blue

flat head	long neck	webbed feet
butt tail	winter rest	loner
seal	diving	snow
prey animal	Polar bear	paw
coldness	hunting	fish
fleece	summer	deaf

Painting, yellow

deglaciation	coat	plantigrade
claw	omnivore	olfactory sense
temperature rise	swimming	drift ice
Eskimo	tongue	northern hemisphere
Polar bear cub	ice cave	migration
hobby-hunter	herbage	winter

Information sheet: appearance-habitat-protection/threat (orange)



appearance	habitat	protection/threat	points



Threats to polar bears and how to protect them

The indigenous peoples of North Asia and North America hunted polar bears because they wanted to use their fur and fat. In the 20th century there was a huge increase in hunting. On the one hand, all the body parts were used, but on the other hand, there were also many hunters who were hunting just for fun. This meant that in the 1950s to 1960s the number of polar bears worldwide fell to approximately 5,000 to 10,000 animals.

As a result, Canada, The United States, Denmark (Greenland), Norway and the Soviet Union established an agreement. The agreement declared that hunting had to be reduced, habitats protected and more research done. However, trophy hunting is allowed, within official hunting quota limits, in Canada and Greenland (since 2005).

In 2009, Canada and Greenland signed a new agreement, which aims to limit hunting to a sustainable level. With the help of these protective measures the number of polar bears increased worldwide. The IUCN estimates that the number of polar bears has increased to about 20,000 to 25,000 animals worldwide. A ban on trade outside of the five named countries was rejected at conferences of the Washington Species Protection Agreement in Doha in 2010 and in Bangkok in 2013. As a result, 700 animals are hunted legally per year in Canada, Greenland, Russia and USA.

Today, it is thought that two further aspects represent a threat to polar bears. On the one hand, their habitat can be in danger because of the oil and natural gas production in the Arctic. Polar bears use these areas especially for the rearing of their offspring. On the other hand, people are concerned that the habitat of polar bears will be reduced by global warming and the melting of the polar ice caps. Scientists think that this may cause the death of 66 percent of polar bears by the middle of the century.