

Who is a „climate refugee”?

1	Overall aims: <ul style="list-style-type: none"> • introducing the concept of "Climate refugee" • explaining the cause and effect relationships between Arctic ice melting and animal migration • explaining the relationship between global warming and the migration of biological species • testing the insulating properties of the fat layer • developing learning skills through research and experimentation
2	Vocabulary - keywords climate refugee, global warming, polar bear, brown bear, thermal insulation
3	Sustainable abilities developed <ul style="list-style-type: none"> • Anticipatory thinking competency • Integrated problem solving competency • Strategic competency
4	Pillars of sustainability included <ul style="list-style-type: none"> • environmental
5	STEAM domains S, M, A



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6

Teaching methodologies/activity outline**Introduction:**

Watching the film "Migrants" directed by the question - What happened to the main characters? <https://www.youtube.com/watch?v=ugPJi8kMK8Q> Conversation about content:

- Who is the main character in this movie?
- What happened to the bears?
- Why did they have to escape from the Arctic?
- How did the brown bears treat them, and why?
- How were the polar bears feeling?
- Who is a climate refugee?

Main part:

Experiment: Why doesn't the polar bear freeze?

Objective: Make children aware of the insulating properties of fat

Materials: vegetable oil, two string bags of the same size and one larger bag to hold the smaller ones, a bowl of ice water (preferably water with ice cubes)

Conducting the experiment:

Pour vegetable oil into two smaller string bags (it is enough to fill the bags halfway). Close the bags tightly and put them in the larger bag. This will create a "fat glove". Pour ice cold water into the bowl and ask the child to put his hand in it. Ask for your impressions, is it pleasant to hold your hand in such cold water? Now ask the child to put the other hand in the glove, i.e. between two bags filled with oil, and place the gloved hand in a bowl of water. Do you feel any difference? Ask your child a conclusion from this experience, why doesn't a polar bear freeze in ice water?

Discussion:

- What other animals use fat as a layer of fat as insulation against the cold?
- How else do animals protect themselves from the cold?

Closing part:**Bear paws - artistic and mathematical activity:**

Making a life-size polar bear's paws out of paper. The feet of an adult polar bear are more than 30 cm long and about 25 cm wide, with a membrane between the toes that makes it easier for the animal to swim. Rough pads on the underside of the paws prevent slipping on the surface of the ice, and sharp claws make hunting easier. Cut out the diagram contained in the materials: <https://www.ekokalendar.pl/wp-content/uploads/pakiet-02-27-Dzień-Niedźwiedzia-Polarnego.pdf>

Print both sides, stick together in the area shown by the dotted line, and cut. Attach the cushions and claws cut out of black paper. Children can trace their own feet or hands on the paws to compare the size. You can also check how many "feet" the bear would have to do to get:

- from the desk to the end of the room;
- from the front door of the kindergarten to the end of the garden, etc.



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7	Expected learning outcomes The child will be able to: <ul style="list-style-type: none"> • explain the term "climate refugee" • actively participate in the experiment • explain the role of fat as an insulating layer against the cold • make a paper bear's foot (cuts a diagram from paper) • measure selected distances with a paper "bear's foot"
8	Assessment A cartoon presentation of the causes of climate migration - drawing (the child explain with own words who is a climate refugee)
9	Equipment and materials to be used in learning unit (tools, ingredients etc) <ul style="list-style-type: none"> • educational movie "Migrants" • vegetable oil, two string bags of the same size and one larger bag to hold the smaller ones, a bowl of ice water (preferably water with ice cubes) • The scheme of a bear's paw - plastic materials (white cardboard, black felt, scissors)
10	Equipment and materials to be used in learning unit (tools, ingredients etc) preschool classroom, preschool garden
11	References - source: <ol style="list-style-type: none"> 1. https://www.ekokalendarz.pl/wp-content/uploads/pakiet-02-27-Dzień-Niedźwiedzia-Polarnego.pdf 2. Film edukacyjny „Migrants” https://www.youtube.com/watch?v=ugPJi8kMK8Q

