



climate change initiative

Education Group Game

HABITAT PUZZLE GAME

Biodiversity habitat and climate change



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climate change initiative education group games– HABITAT PUZZLE GAME
<https://climate.esa.int/educate/climate-for-the-public/>

Activity concepts developed by University of Twente (NL)

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HABITAT PUZZLE GAME: Overview

Biodiversity habitat and climate change

Fast facts

Subjects: Biodiversity habitat and climate change

Age range: all

Type: group game

Number of players: (multiple) groups of 6 players

Time required: 15-30 minutes

Cost: Low (0–20 euros)

Location: indoors

Includes the use of: 6 cards provided in Appendix 4, paper and pen, and dice

Keywords: biodiversity, species, adaptations

Brief description

Species need each other for survival, but it can be hard to imagine that a seemingly little creature or a creature that sleeps all day is so very important to our existence. Biodiversity is all about teamwork. This game brings the story of “how group needs are more important than individual needs” to life and enables participants experience the harsh reality of interdependence. This game can be used as supporting material for the Education Resource Pack ‘*Biodiversity and Habitat Loss*’.

Intended learning outcomes

Having worked through this game, participants will be able to:

explain why, and experience how, biodiversity is important.

Game's goal

To achieve all essential connections and have the maximum number of connections with the other groups “species”. This is expressed in a scoring point system. The winner is the group with the highest score.

Health and safety

In all activities, we have assumed you will continue to follow your usual procedures relating to the use of common equipment (including electrical devices such as computers), movement within the learning environment, trips and spills, first aid, and so on. Since the need for these is universal but the details of their implementation vary considerably, we have not itemised them every time. Instead, we have highlighted hazards particular to a given practical activity to inform your risk assessment.

Some of these activities use the Climate from Space online resource. It is possible to navigate from here to other parts of the ESA Climate Change Initiative site and thence to external websites. If you are not able – or do not wish – to limit the pages participants can view, do remind them of your local Internet safety rules.

Facilitator Guide

Background information

All living things rely on each other and humans are no exception. We depend on plants, animals and other organisms for food, of course, but also for the balance of our environment. At the same time, we would not be having these plants if we had no healthy soils. And we would not be having healthy soils if our water cycle was not performing to their advantage. We need this biodiversity and the interaction between communities of species and their habitats in ways that we do not fully understand until something goes wrong. A small, seemingly unimportant change may affect the entire chain of interactions in a detrimental way. Today, more than ever, we are endangering biodiversity and habitats. More information on this subject can be found in the educational resource pack [Biodiversity and Habitat Loss](#).

Overview

In the habitat puzzle game, groups of participants will mimic, in a simplified way, how species are dependent on each other for their own survival. The game starts with several groups, each with individual skills, that all try to reach their specific goal.

All groups get cards with the goals of their allocated species, but they cannot see each other's goals. The goal is to connect to other species, some connections are required for the survival of the species, while other connections are beneficial yet not necessary for the species. All species have a limited number of connections they are allowed to make. They, hence, have to think carefully about the choices they make. Certain connections give the group more points than other connections and the species with the most points 'wins'. This is a turn-based game, in one turn every species can break down one connection and build up one connection.

There is a catch: if all species get their required connections the whole group will get a bonus. The group that collects the most points is the winner of all groups.

It is recommended to play this game after the participants have been introduced to the concepts of biodiversity and habitat loss.

Materials needed

- Introductory story
- 6 group-based storybooks
- Paper and pen (or digital)
- Dice (1-6 range)

Setup

1. Split the participants into groups of exactly 6 people, each participant of each group represents one of these species:
 - a. Horses
 - b. Cows
 - c. Flies
 - d. Frogs
 - e. Butterflies
 - f. Storks
2. The moderator needs to hand out the introductory story to set the scene (see Appendix 1).
3. Hand each group their species-based storybook (see Appendix 2).

Steps

1. Make sure the participants in each group understand what species they represent. Say this:
In this Habitat game, you are all playing a species. Within the group, there are 6 species (Horses, Cows, Flies, Frogs, Butterflies and Storks). If it is unclear what group you are playing with, please speak up.
2. Let them read the introductory text about setting the scene (see Appendix 1).
3. Hand all participants the cards of their species. Make sure they read their goals individually and do not share their own goals with other species. You can cut these cards from Appendix 4.
4. The species with the first turn is determined by throwing a dice. The species throwing the highest number gets the first turn to start making connections, then the species with the second highest, *etc.*
5. The species connect by writing down the connections on paper or on a laptop/tablet. Connections can be both incoming or outgoing. A connection can be a one-way agreement.
6. After several turns or when the moderator calls time, the groups must cease their discussions, add up their points and identify which species did not get their required connections, which then become(s) extinct.
7. The groups that have no casualties can survive best in the long term and get 15 bonus points added to their total 'connection points'.
8. The correct answer is shown in Appendix 3.
9. Move to the debriefing session and lessons learned from the game.

Game's goal

To achieve all essential connections and have the maximum number of connections with the other groups "species". This is expressed in a scoring point system. The winner is the group with the highest score.

Debriefing

In the debriefing, students reflect on the game. Example questions are:

- How did you feel? What did you experience? What made you feel good? What made you feel uncomfortable?
- How did the choices made by other groups of species influence your options?
- Did some species go for individual goals, rather than collective ones? What could you do about this?
- How did what you experienced relate to your context?
- Is there anything from this game that you would like to take forward?

Variations

- The moderator can determine the order of turns differently.
- The number of turns can be set beforehand.

Appendix 1: Setting the scene

You are all dependent on the wellbeing of other species for your food or protection. In this game, you need to survive by connecting to other species. Some connections are more important for you than others. There are two types of connections: essential and non-essential. Without establishing the essential connections in the game, your species will become extinct. Non-essential connections are beneficial to the survival of the species and you will gain additional points.

All six species will get a card, on this card the goals of your species can be found. The points to be gained per connection after the last round are shown on this card. You cannot connect to all species, you have a limited number of connections that can be made with you. Your goal is to get the most points and to always end with the essential connections. The species are not allowed to communicate their goals with other species.

Let's give an example of how the game is played:

This is a turn-based game, so one species starts and can make a single connection with another species. When it is the turn of, e.g. the storks, storks connect to the flies, this counts as a connection for both the storks and the flies. All species must share the maximum number of connections they can make, but not how many points per connection. If the flies have used their maximum number of connections, the storks have to either skip their turn or connect with another species. In their turn, flies can decide to break the connection with storks and make a new connection with, for example, frogs. In one turn you can break an existing connection and make a new one.

If all species are connected to the required species, the whole group will receive a bonus. This bonus can be crucial to becoming victorious among all groups.

Appendix 2: Storybooks

Horses

Hello horses! Day in, day out you are standing in a meadow. On the meadow next to yours you have cows grazing the whole day. They are quite good listeners. Cows are great company when you want to gossip about other horses. Also, cows can alert you when danger is near.

Essential connections You must connect to cows (5 points).

Storks bring the horse babies, quite useful!

Non-essential connections You can connect to storks (2 points)

Limitation Horses can only connect 1 time.

Cows

Hello cows! You are relaxing in the meadows, comfortably eating some grass. Humans also need to make sure to take care of the grass. It would be a pity if cows miss out on their food, nah? Next to your meadow are horses, they are of no use, always neighing. These horses are not even aware you can understand them when complaining about other horses. Storks are good friends as they notify you of approaching danger from the air!

Essential connections You must connect to storks (5 points).

When you are bored in the meadow it is nice to look at those beautiful butterflies.

Non-essential connections You can connect to butterflies (2 points)

Limitation Cows can only connect 3 times.

Flies

Hello flies! Flying around, pollinating plants, cleaning up waste and annoying other species are your specialties. There is just one thing you can't help. You love cow poop. Yuk! Without cows, there is no poop to sit on. You would be very sad if you couldn't sit on and eat this poop.

Essential connections You must connect to cows (5 points).

When you are done with sitting on cow poop, horse poop is also a nice alternative.

Non-essential connections You can connect to horses (2 points)

Limitation Flies can only connect 3 times.

Frogs

Hello frogs! You croak when it is raining or when the sun is shining. Humans like to investigate you, especially the younger ones. What you like are some flies. They are absolutely delicious! It would be an absolute pity if there were no flies left for you.

Essential connections You must connect to flies (5 points).

Being around cows is great company, they can see farther away and warn you for approaching storks, who want to eat you!

Non-essential connections You can connect to cows (2 points)

Limitation Frogs can only connect 2 times.

Butterflies

Hello butterflies! Being beautiful and pollinating, you are very important for biodiversity. It seems everyone likes you. Except for toads and birds - they want to eat you. You like some flies for breakfast.

Essential connections You must connect to flies (5 points).

Being around those horses is nice, they are very kind to you.

Non-essential connections You can connect to horses (2 points)

Limitation Butterflies can only connect 1 time.

Storks

Hello storks! You like to sit in high places and make your nest there. Not only is the view from here great, but also you can see your predators from far away without needing to fly. That's great!

Besides delivering babies for other species you do need to provide food for yourselves. Frogs are delicious! Without frogs, there would be no food for you.

Essential connections You must connect to frogs (5 points).

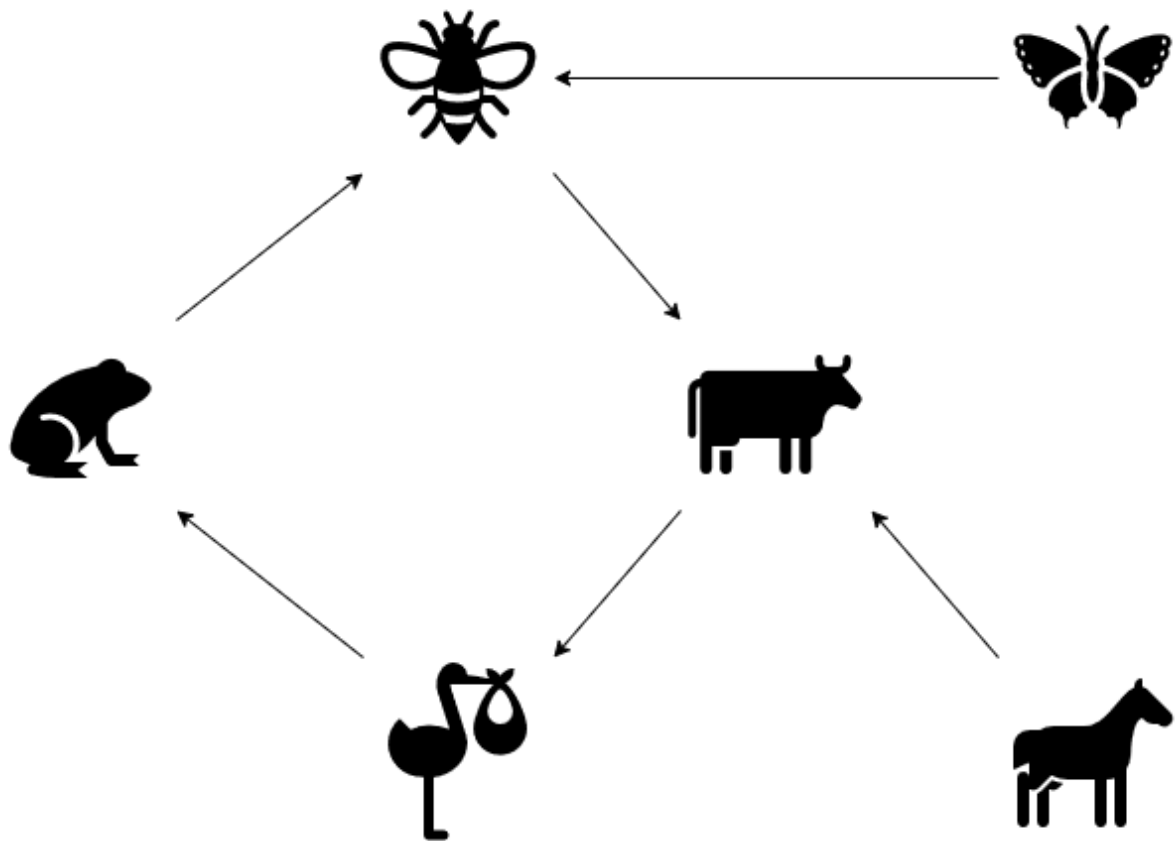
These flies are some pollinators and can help grow flowers, which are great to watch from your nest in the tower.

Non-essential connections You can connect to flies (2 points)

Limitation Storks can only connect 2 times.

Appendix 3: Solution

The solution to how all species get the required connection is as follows



Overview of all required connections and bonus connections

Species	Required	Bonus	#connections
Horses	Cows	Storks	1
Cows	Storks	Butterflies	3
Flies	Cows	Horses	3
Storks	Frogs	Flies	2
Butterflies	Flies	Horses	1
Frogs	Flies	Cows	2

Appendix 4: Cards for the Storybooks

Horses:

Connections: 1

Hello horses! Day in, day out you are standing in a meadow. On the meadow next to yours you have cows grazing the whole day. They are quite good listeners. Cows are great company when you want to gossip about other horses. Also, cows can alert you when danger is near.

Required: You must connect to cows (5 points).

Storks bring the horse babies, quite useful!

Bonus: You can connect to storks (2 points)



Cows:

Connections: 3

Hello cows! You are relaxing in the meadows, comfortably eating some grass. Humans also need to make sure to take care of the grass. It would be a pity if cows miss out on their food, nah? Next to your meadow are horses, they are of no use, always neighing. These horses are not even aware you can understand them when complaining about other horses. Storks are good friends as they notify you of approaching danger from the air!

Required: You must connect to storks (5 points).

When you are bored in the meadow it is nice to look at those beautiful butterflies.

Bonus: You can connect to butterflies (2 points)



Flies:

Connections: 3

Hello flies! Flying around, pollinating plants, cleaning up waste and annoying other species are your specialties. There is just one thing you can't help. You love cow poop. Yuk! Without cows, there is no poop to sit on. You would be very sad if you couldn't sit on and eat this poop.

Required: You must connect to cows (5 points).

When you are done with sitting on cow poop, horse poop is also a nice alternative.

Bonus: You can connect to horses (2 points)



Frogs:

Connections: 2

Hello frogs! You croak when it is raining or when the sun is shining. Humans like to investigate you, especially the younger ones. What you like are some flies. They are absolutely delicious! It would be an absolute pity if there were no flies left for you.

Required: You must connect to flies (5 points).

Being around cows is great company, they can see farther away and warn you for approaching storks, who want to eat you!

Bonus: You can connect to cows (2 points)



Butterflies:

Connections: 1

Hello butterflies! Being beautiful and pollinating, we you are very important for biodiversity. It seems everyone likes you. Except for toads and birds - they want to eat you. You like some flies for breakfast.

Required: You must connect to flies (5 points).

Being around those horses is nice, they are very kind to you.

Bonus: You can connect to horses (2 points)



Storks:

Connections: 2

Hello storks! You like to sit in high places and make your nest there. Not only is the view from here great, but also you can see your predators from far away without needing to fly. That's great!

Besides delivering babies for other species you do need to provide food for yourselves. Frogs are delicious! Without frogs, there would be no food for you.

Required: You must connect to frogs (5 points).

These flies are some pollinators and can help grow flowers, which are great to watch from your nest in the tower.

Bonus: You can connect to flies (2 points)