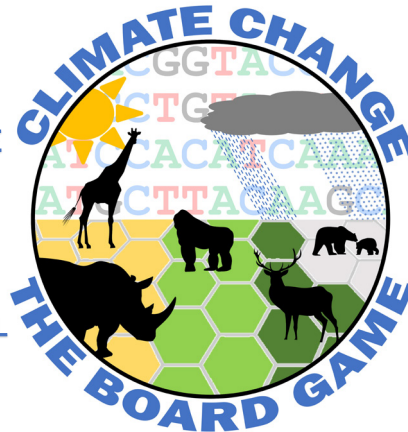


A BOARD GAME ABOUT  
CLIMATE CHANGE AND THE  
EVOLUTION OF ANIMAL  
SPECIES

WHICH TYPE OF ANIMAL WILL  
YOU BE IN 10 MILLION  
YEARS?



For 2 to 5 players  
Age: 8 - adults  
Duration: approx. 30 minutes

## INTRODUCTION

Everything starts in the savannah. It's pleasantly warm and it does not rain very often. Different species are living in there, perfectly adapted to their habitat. Life is easy. Temperature and rainfall are not the same everywhere, so the world is divided in four habitats based on the climate in each area. Each round covers approximately one million years, in which the species can move and evolve, by adapting to new habitats.

Every now and then the climate changes globally. When the temperature increases the savannah expands; when it drops it shrinks and the ice grows, while the other habitats move accordingly. In order to survive, species should either move to follow their habitats or adapt quickly to new ones, if they are not able to do so they will go extinct. And, after a while, humans may arrive and start changing things...

Does your species have what it takes to survive? How will your species have changed by the end of the game in nearly 10 million years' time?

## CONTENT

- 5 habitat boards showing how the habitats are distributed with different climate scenarios, numbered from 1 (coldest) to 5 (warmest).
- 5 species figurines
- 20 habitat tokens (5 for each habitat)
- 38 mutation cards (5 "+1" and 5 "-1" for each gene, 6 neutral, 2 deleterious)
- 5 Genomes board
- 15 tiles to track the adaptation level on the genome board.
- 1 die

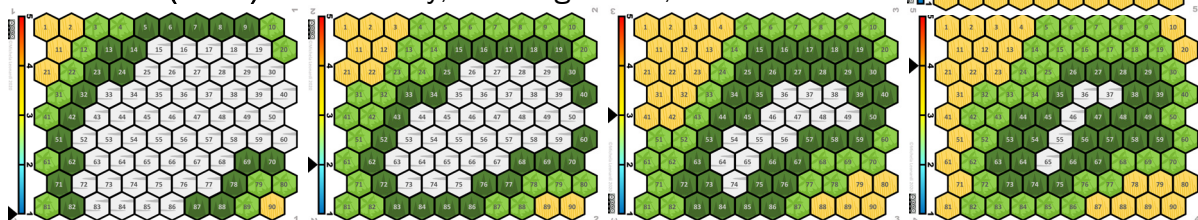
For 2 or 3 players use 4 neutral cards in total

For 4 or 5 players use all neutral cards.

## BOARDS

There are 4 type of habitat:

- **Savannah (yellow):** warm and seasonally humid, not many trees
- **Tropical forest (light green):** warm and humid, tropical trees
- **Temperate forest (dark green):** cold and humid, temperate trees
- **Tundra (white):** cold and dry, little vegetation, no trees



Habitat boards



There are 5 levels of temperature (bar on the left) each one associated with different proportions of the 4 habitats.

Every now and then the climate changes, and the species may find themselves in a new habitat.

### GENOME BOARD AND MUTATION CARDS

GENOME BOARD			
	BODY	COLOUR	METABOLISM
SAV	1	1	1
TROP	2	2	2
TEMP	3	3	3
TUN	4	4	4

MUTATION CARD +1 BODY 1 UP FOR THE BODY GENE	MUTATION CARD +1 COLOUR 1 UP FOR THE COLOUR GENE	MUTATION CARD +1 METABOLISM 1 UP FOR THE METAB. GENE	MUTATION CARD X DELETERIOUS DISCARD 2 RANDOM CARDS
MUTATION CARD -1 BODY 1 DOWN FOR THE BODY GENE	MUTATION CARD -1 COLOUR 1 DOWN FOR THE COLOUR GENE	MUTATION CARD -1 METABOLISM 1 DOWN FOR THE METAB. GENE	MUTATION CARD NEUTRAL NOTHING HAPPENS

Genome board and mutation cards

Can species live everywhere? No!

Their DNA (genome board) contains three genes, coding for three characters: shape/size of the body, fur colour and type, and metabolism. Each of them has four variants (represented here by four different values) each allowing adaptation to a specific habitat: from 1 (adapted to savannah) to 4 (adapted to tundra). The level of adaptation is indicated using the tiles.

At the beginning, while the species lives in the savannah, each gene is present in the variant that allows them to be adapted to such habitat.

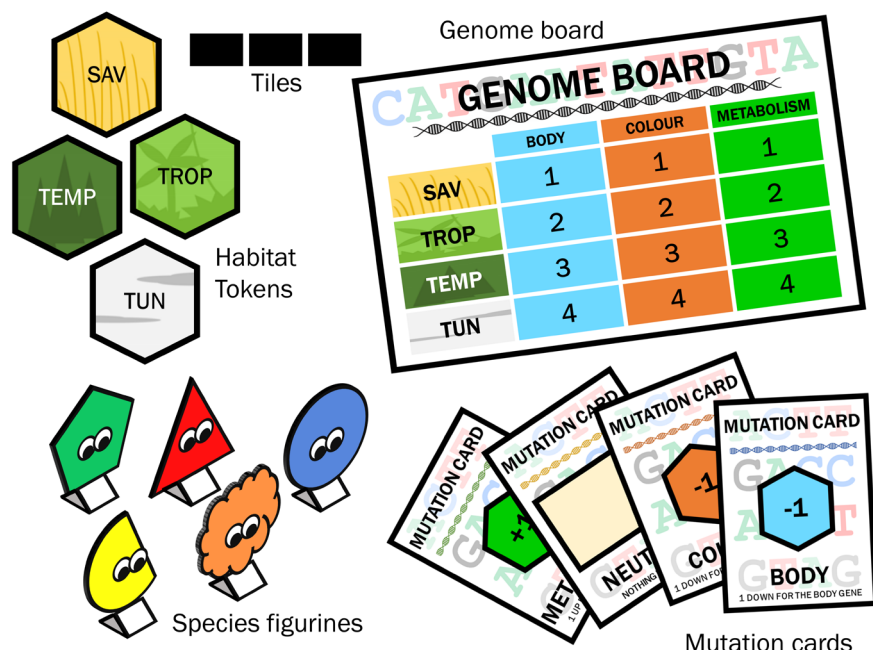
Luckily, as time passes during the game each species collect mutations (mutation cards). These cards allow the player to change the gene value (+/-1) in order to adapt to other habitats and survive in them. Some cards are neutral, *i.e.* do not change the value of any gene, other are deleterious.

In order to survive in any given environment the species must possess at least two of the gene variants associated to the habitat itself.

### PREPARATION

Each player gets:

- a species figurine,
- a savannah token,
- 2 mutation cards,
- a genome board
- three tiles





## START

The deck of mutation cards is shuffled and placed face down on the table to form the draw pile. The deleterious mutation cards are put at random in the deck facing up. Some space must also be left for a discard pile.

The game starts from Habitat Board 3, each player puts its figurine in a cell of choice within the savannah and places the three tiles on value 1 for all genes in the genome board.

Each cell can contain only one species.

The youngest player starts, the game goes clockwise.

## AT EACH TURN

The player picks a mutation card (to be kept covered) from the draw pile.

If the player picks a deleterious mutation card (which is visible to everyone as it was placed facing up), they must discard it together with two random cards (ask your neighbour to choose them).

The player then rolls the die, if the value is:

1, 2, 3: the species cannot move, and the turn goes to the next player.

4, 5, 6: the species has to move to a neighbouring unoccupied cell of choice.

If the player has more than 5 cards at the end of their turn, one at random (ask your neighbour to choose it) must be put in the discard pile, facing up. An option to avoid this is to preadapt (see section on preadaptation).

## ADAPTATION

When the species want to move to a different habitat it needs to adapt, i.e. having the value associated to the new habitat in at least two genes. Such values are changed using mutation cards (specific for each gene) giving +1 or -1 as needed. As many cards as needed can be used in each turn.

Each time a card is used it is put in the discard pile. When there are no more cards available from the draw pile, the discard pile is shuffled and put back as the draw pile.

Each time a new habitat type is occupied, a token is given to the player. Each player can only have one token per habitat, so in case the species re-adapt to a habitat it adapted before it is not given a new token.

**Preadaptation:** If the player has too many cards or wants to prepare the species for adapting to a new habitat, they can change (as much as they want) the value of one of the three genes, as long as two genes remain adapted to the habitat occupied.

## CLIMATE CHANGE

At the end of each round, when all the players have had their turn, the die must be rolled to determine what happens to the climate. If a 4, 5, or 6 is rolled then the climate changes. A second roll of the die tells if the climate goes one step down (1-3) or up (4-6). Then the habitat board is changed to the relevant new one, and the species figurines are placed in the same numbered cells they were before.

If the climate is already 1 or 5 it can only go respectively up and down.

In the round after a climate change, each player that rolls a 1-3 (a value that doesn't allow their species to move) will either find their species adapted to the cell it is in, or should adapt to it with the mutation cards. If it is not possible to adapt the species go extinct.

If the player rolls 4-6 they can move up to two steps (without passing through a cell that is occupied by another species), but still need to be adapted or to adapt to the new location to not go extinct.

## HUMAN-INDUCED CLIMATE CHANGE

It is also possible to add human activities (and the associated climate changes, the ones



we are experiencing right now) to the game. To do so, it is sufficient to define a point of choice in the game when human activity starts. After this moment, the climate should be changed at every round (i.e. the die should be rolled just once to decide if the climate goes up or down).

## EXTINCTION

If the species find itself in a habitat to which it is not possible to adapt (e.g. no mutation cards are available to allow correct adaptation) it becomes extinct.

Once a species is extinct, the player must give back all cards and tokens they have collected, except for the yellow one. The player can then move their species figurines to a savannah (yellow) cell of choice and they get two new mutation cards from the top of the draw pile.

## END OF THE GAME

The player that collect all 4 habitat tokens wins the game.

## CREDITS

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Website of the board game: <https://michelaleonardi.netsons.org/climate-change-board-game/>



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