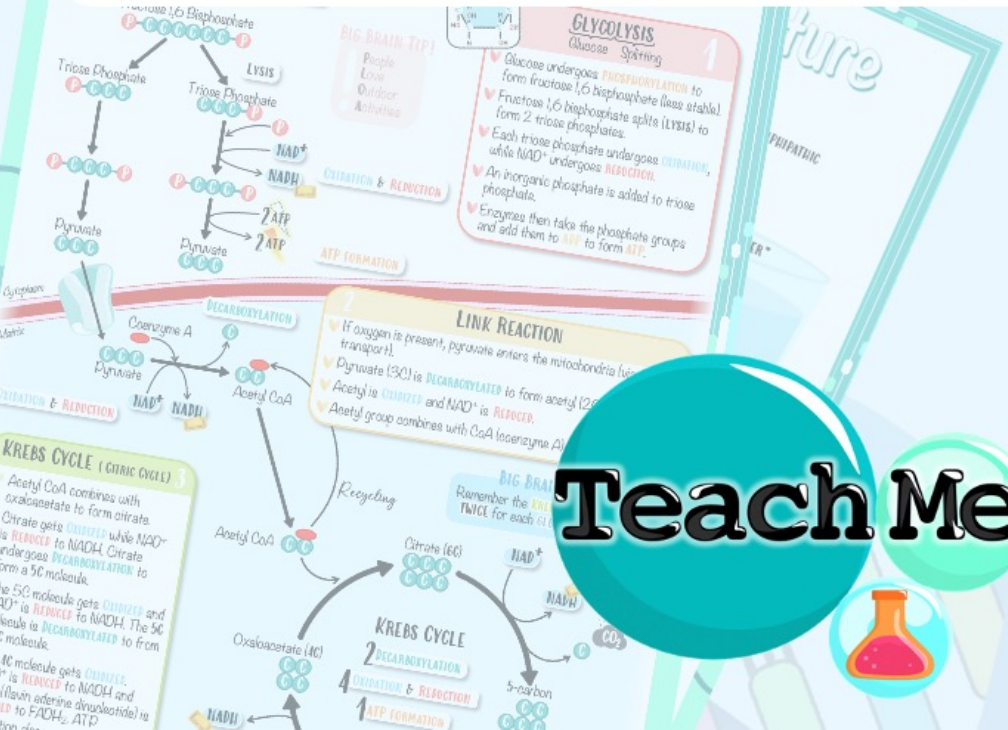
TeachMe

STUDY NOTES

C4.1 POPULATIONS & COMMUNITIES



C4.1

Populations & Communities

Species
A group of organisms that can interbreed and produce fertile offspring.

Population
A group of organisms of the same species who live in the same area at the same time.

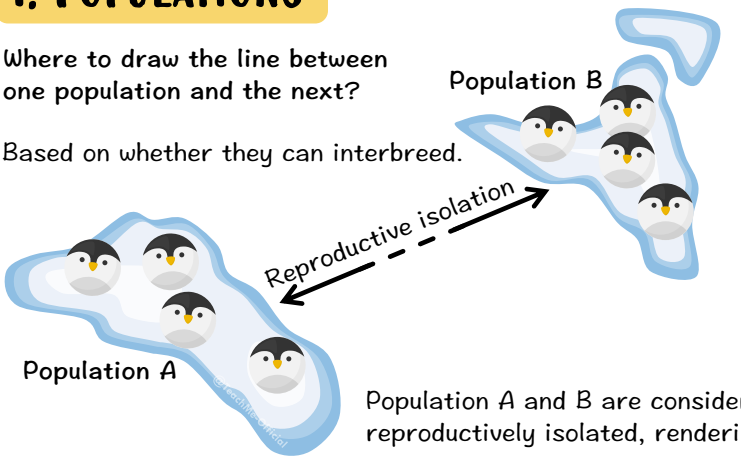
Community
A group of populations living and interacting with each other in an area.

Ecosystem
A community and its abiotic environment.

I. Populations

Where to draw the line between one population and the next?

Based on whether they can interbreed.



Population A and B are considered different populations as they are reproductively isolated, rendering them very unlikely to interbreed.

Abiotic (non-living) factors:

Sunlight intensity and duration
Water availability
Soil composition
Temperature range
Salinity
pH range

[These factors can limit the survival of organisms]

A. Carrying capacity (K)

NO HABITAT can accommodate an **unlimited** number of organisms: growth of a population eventually stops or plateaus.

What: The maximum number of individuals that a particular habitat can support. It is represented by the letter K.

Limiting factor: A factor that LIMITS the survival of an organism. They define the carrying capacity of a habitat.

Example: We can split these factors into two categories:

Population growth → Higher density

Density Dependent Factors

Ones that affect a population more as the population number increases.

Predators

Availability of recources
- Shelter
- Water
- Space
- Sunlight
- Oxygen

Nutrient supply (food)

Disease spread

Accumulation of waste
- Urine & feces
- Dead organisms

P A N D A P A W

Density Independent Factors

Ones that affect the population no matter how big or how small the population is.

Phenomena (natural disasters)
- Forest fires
- Volcanic eruptions
- Earthquakes

Abiotic factors
- Temperature
- Carbon dioxide levels (ocean acidity)

Weather conditions
- Climate Change
- Storms, hurricanes
- Floods

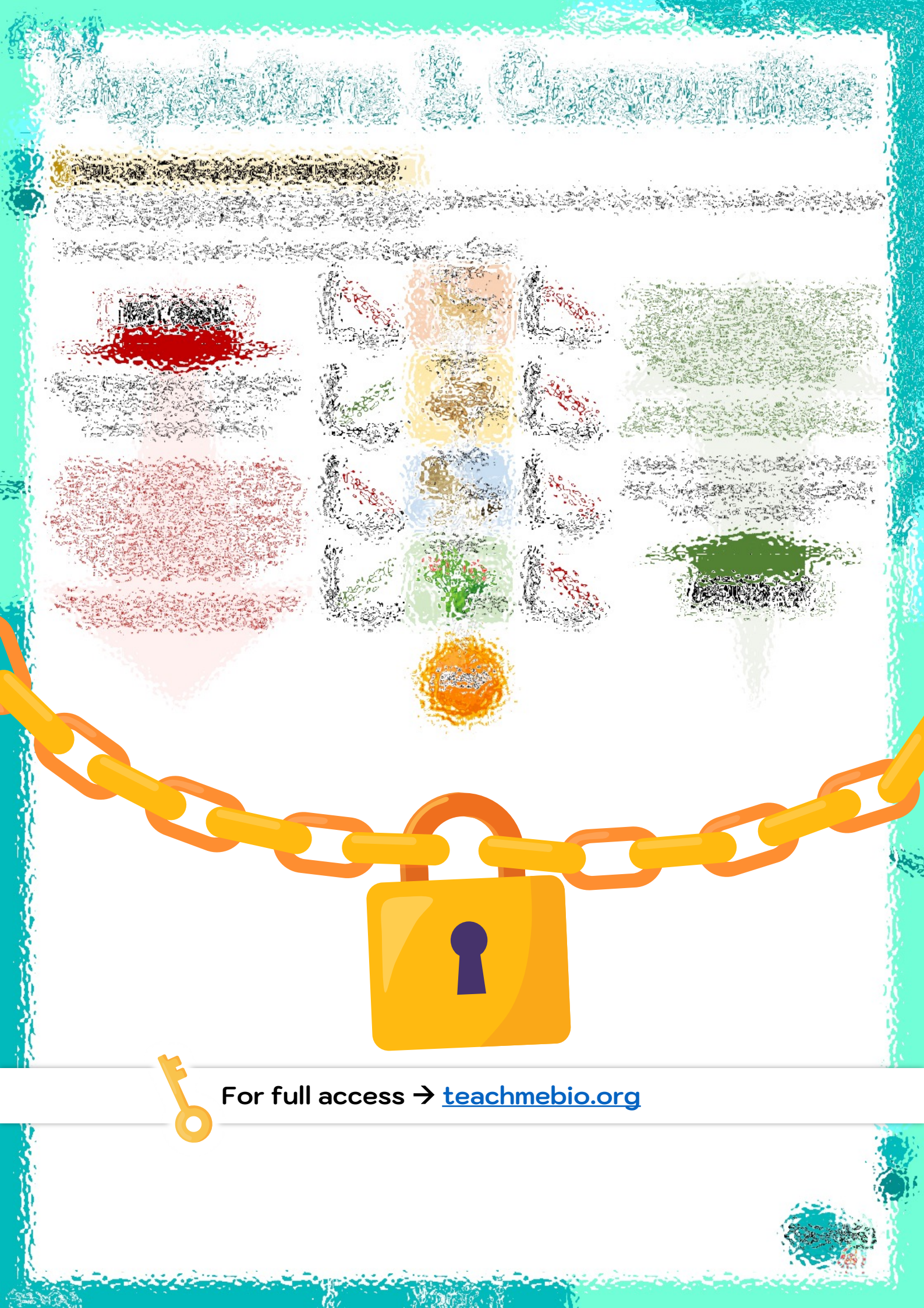
Keep population at carrying capacity

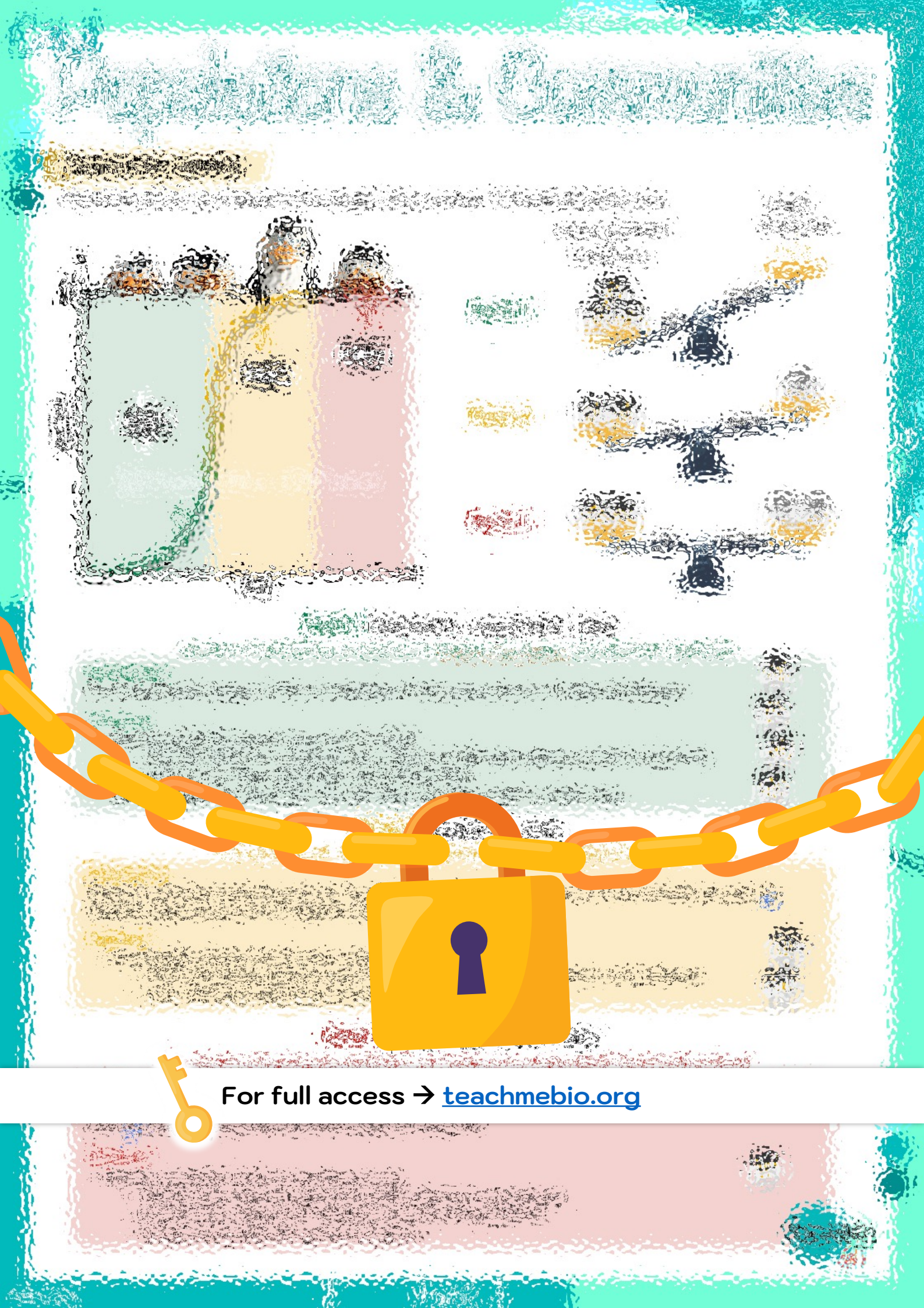
Help or hinder the population

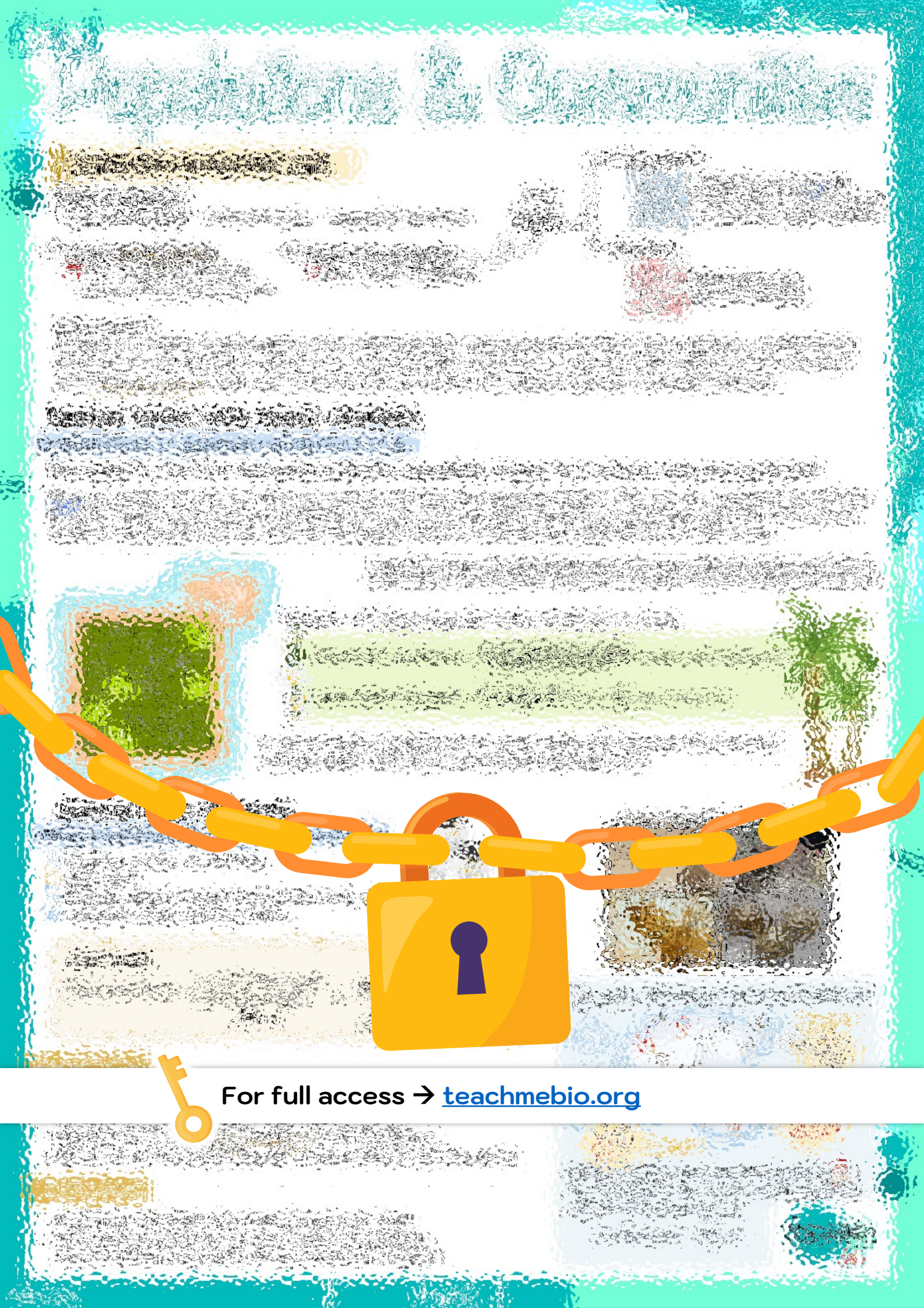
Using the example of predation: As a population number increases, the organisms become more densely populated in their habitat. This means it will get easier and easier for predators to target and kill the organisms. Therefor we consider predation a density dependent factor as it affects a population more as the population number increases. Remember these factors serve as examples of negative feedback as they prevent a population from getting too big.

Negative feedback Feedback system that works to return a condition back to its normal range.

Positive feedback Feedback system that reinforces a response or change in a condition.







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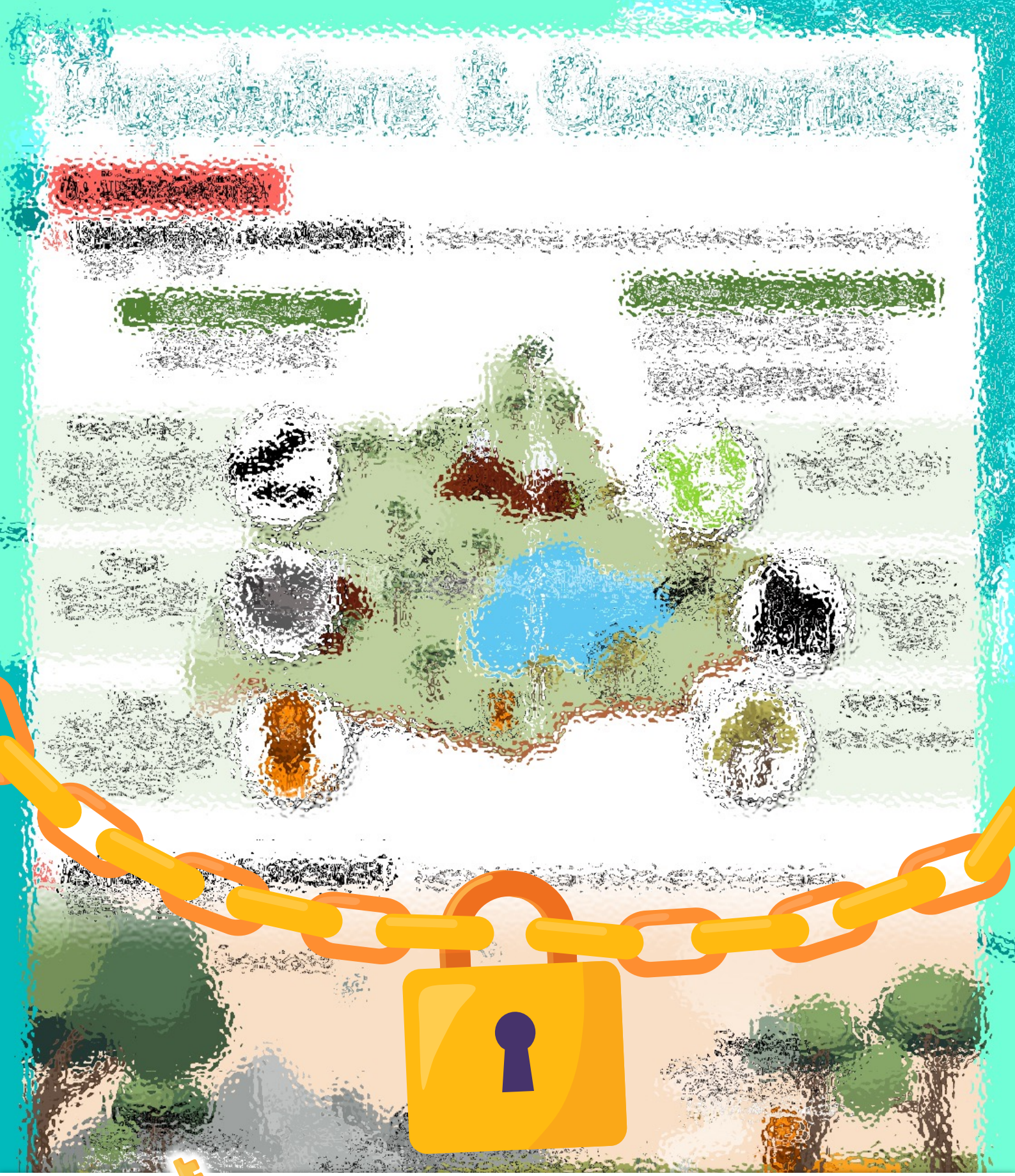

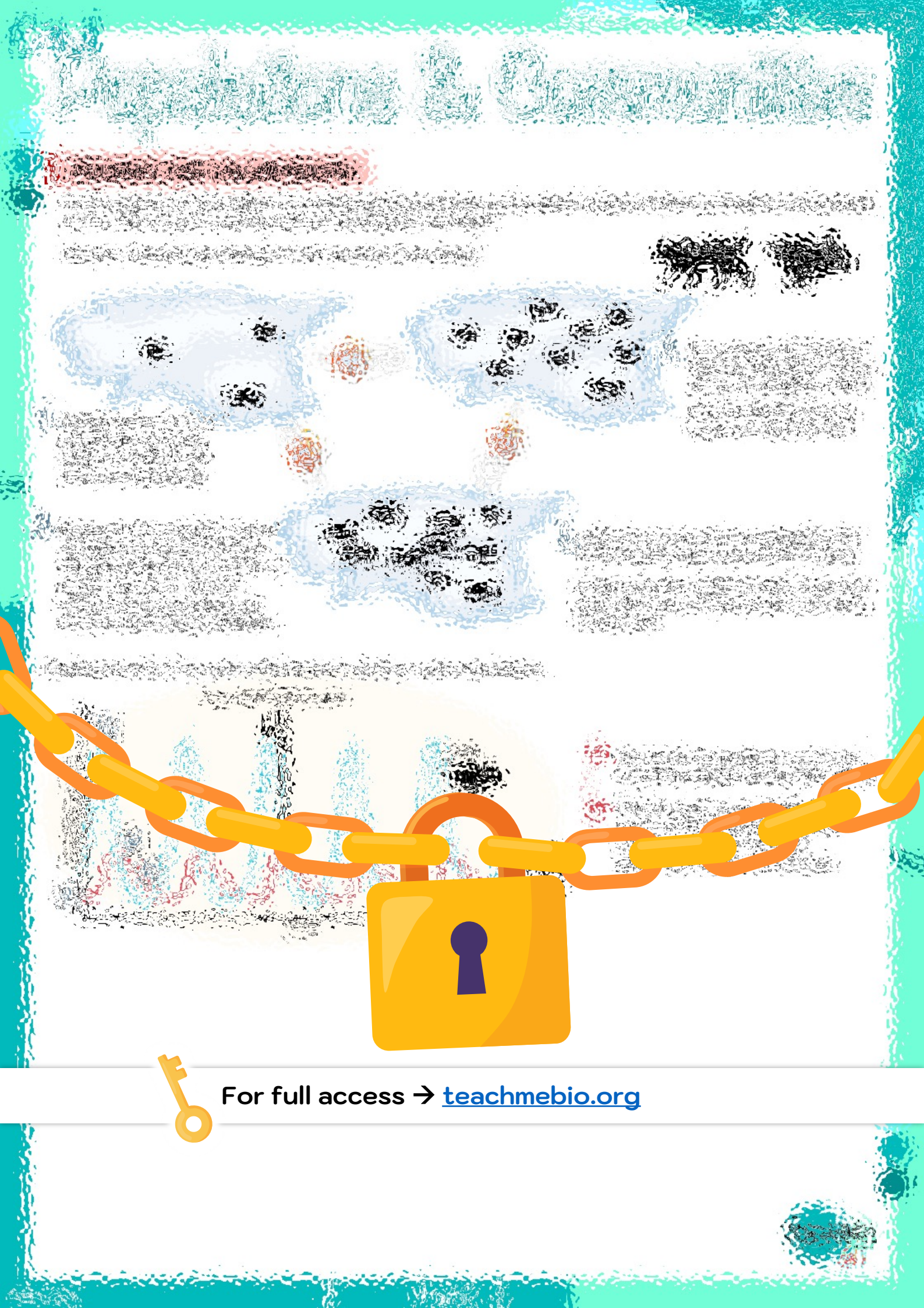

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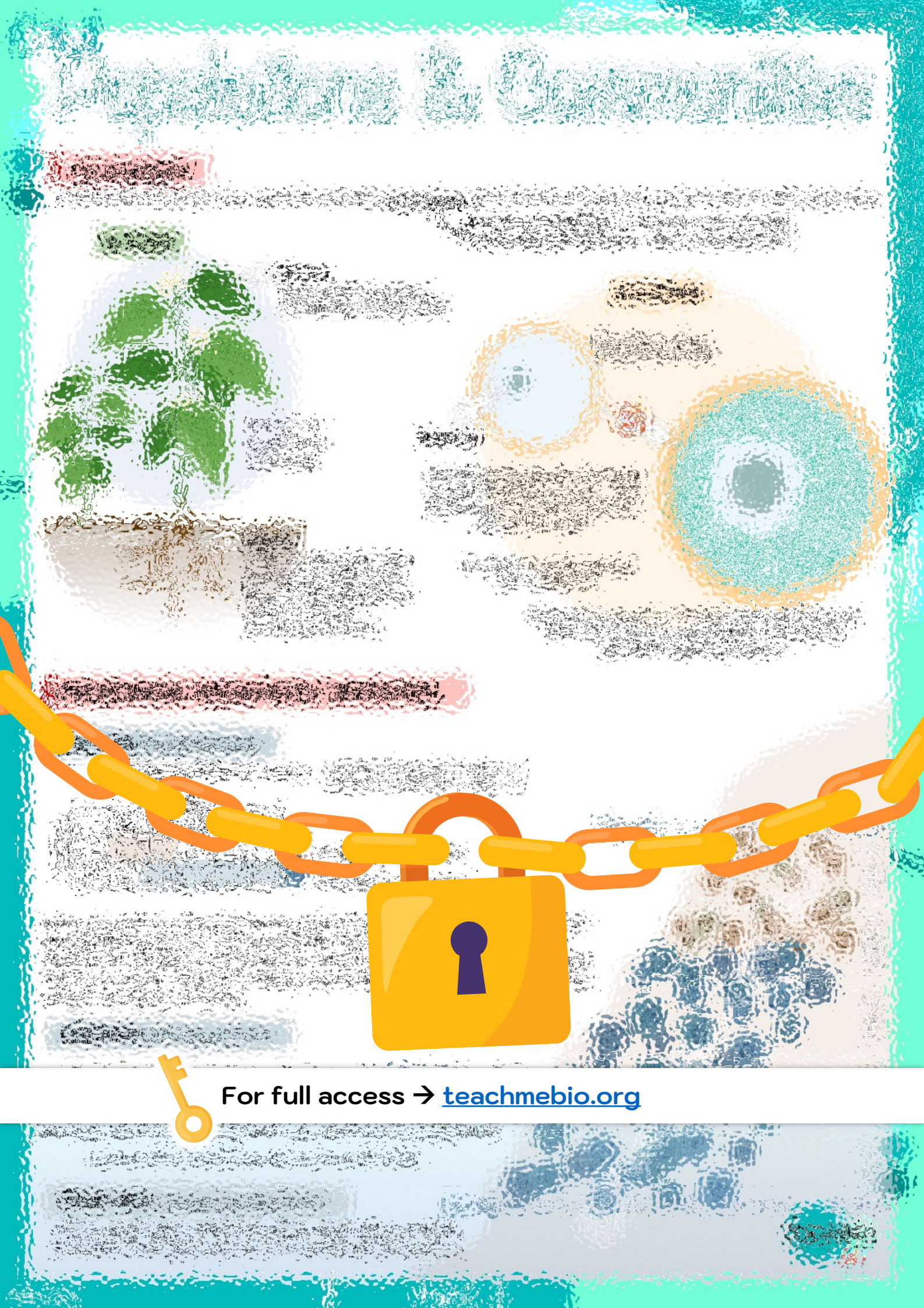

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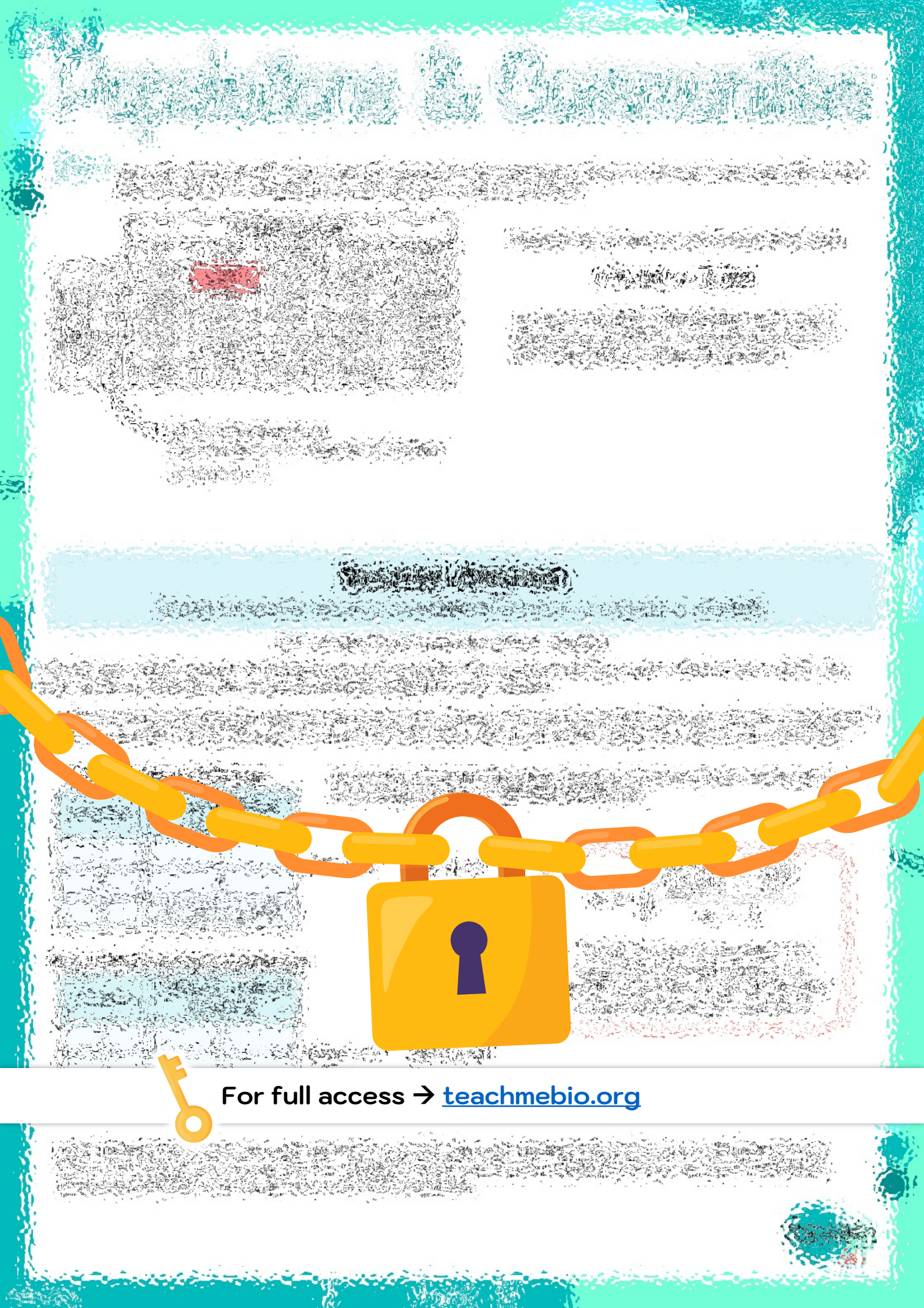

Limits