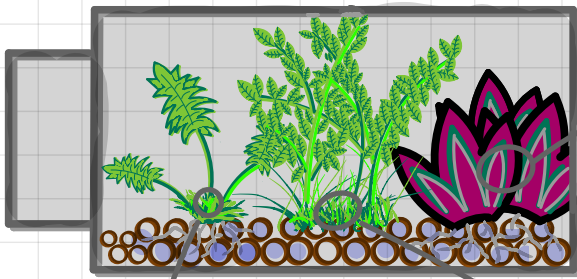




BIO JOURNAL

HERMETOSPHERE



Zebra
Tadeascandia

Zebra Herb is a very very easy to care plant but it still has a quite interesting (eare colour).



Black
Polystichum

This is a fern from the Dryopteridaceae so these kind of plants existed far beyond the dinosaurs.



Soleirolia
Bubikopf

The Bubikopf is a plant that comes from the Nettle-plants (Urticaceae). It originally comes from Sardinia and is also a easy to care plant.



How does a hermetosphere generally need to be constructed?

• Closed

↳ a hermetosphere should be constructed in a container which can be closed and also made out of a transparent material, that sunlight can come through.

This is important, so no gases or fluids can escape or come into the container → It should be air sealed

• Water storage

↳ cause there is no water exchange with the outside environment, there should be plenty of water available in the hermetosphere. Lava pellets or other things like that, can store plenty of water, that maintains that the plants always have good water excess.

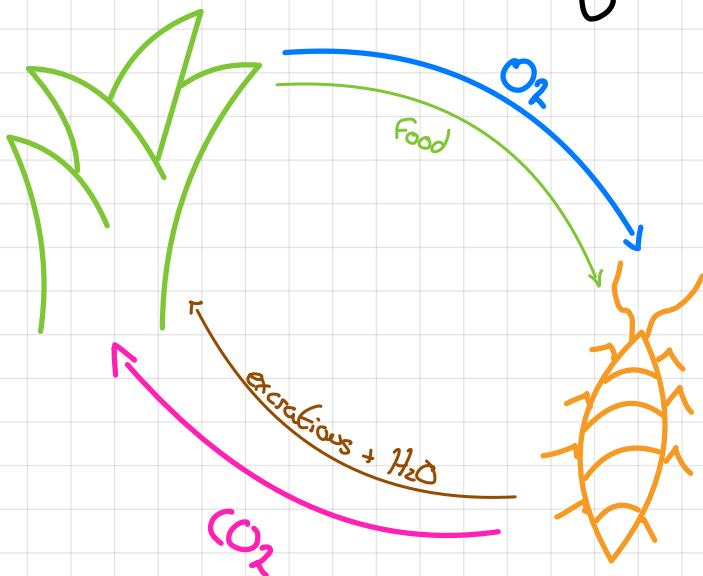
• Strong plants

↳ plants that are really sensitive to, for example a lack of water or a too high pH level in the soil, should not be chosen for the hermetosphere, only the strongest plants should be used to ensure a long life
→ Plants with a high tolerance region for humidity

• Animals

↳ the hermetosphere needs some kind of consumers or decomposers which clean the hermetosphere and also produce CO_2 and nutrients for the plants to process.

Interactions between organisms



cellular respiration



Light



Plants produce O_2 which is needed by the woodlice in order to survive.

They breathe in O_2 and excrete CO_2 which can be used by the plants to produce O_2 again.

secondly the woodlice eat decomposed leaves and with that they help that it decomposes quicker. Also their excretions that help to fertilise the ground, so plants can grow more easily.

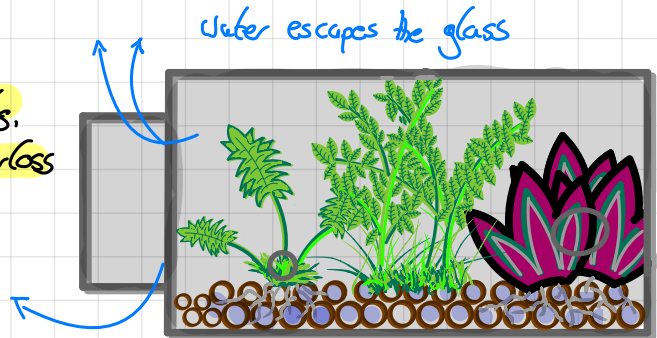
Why could the hermetosphere become instable?

Reason 1

The hermetosphere isn't completely shut, so the water evaporates and escapes

→ If there is not enough water, the plants will die eventually

→ the first ones that die are the weakest plants, stronger ones will steal the water, if the water loss still continues these plants will die too



Reason 2

The overpopulation of the woodlice



→ If there is an overpopulation of white larvae, they could eat most of the plants, which would damage them more than they could recover eventually they will die too.

Reason 3

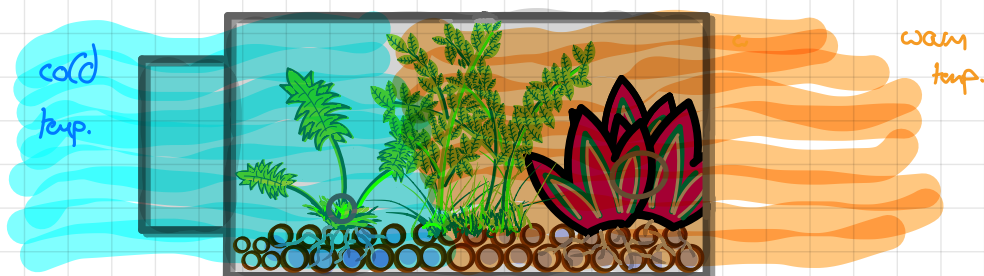
temperature and sunlight density

If the temperature increases or decreases over the maximum or minimum of ecological potency from the plants, they will also die

Secondly, if there is too less sunlight over a longer period of time, the plants also shut down

→ if there is no sunlight for a longer time, these plants will die

highly decreased sunlight



Comparison of the hemethosphere and the Biosphere

they are the same

Basically both are the same, as they are both "almost" closed systems

If we see the hemethosphere as a small earth it is also the sum up of all living spaces just smaller. → a simple model with just one ecosystem

The earth itself has more plants and animals but both of them are able to make life possible without any external influences. A biosphere is complex, with many connected ecosystems.

There was a huge scientific project called Biosphere 2, where humans survived in a big hemethosphere to prove that human life is possible without external influences. This big hemethosphere is basically the same like our hemethosphere just in small.



Biosphere 2

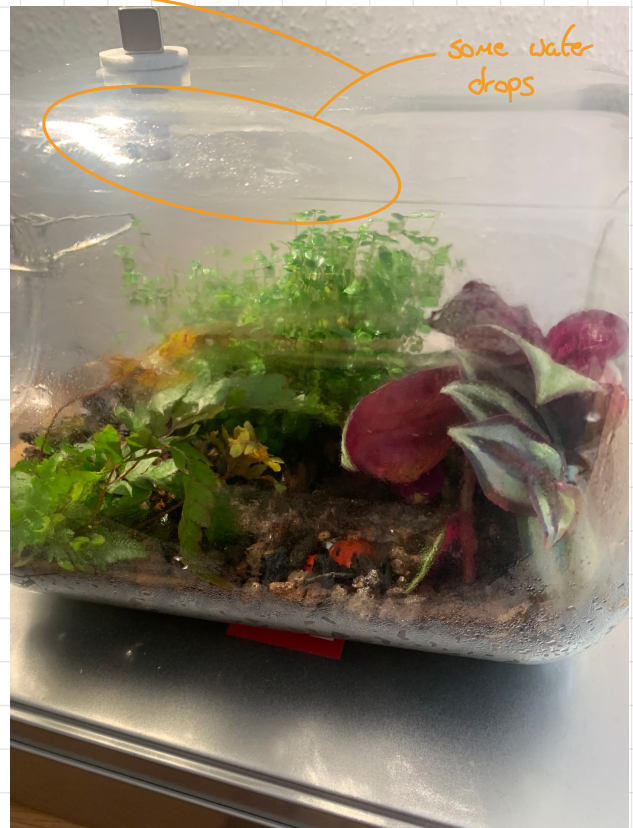


Week 1

6.10.21



The First week was not really exciting.
The plants didn't really grow, but you were able to see some little waterdrops inside of the hermetosphere.



Week II

16.10.21

This week, the plants didn't really grow either **but** you saw a small root coming out of the red plant. The concentration of waterdrops increased rapidly, it's now much higher than last week.



So many
Waterdrops



Week III

23.10.21

There are more and more waterdrops every day, also the small root grows rapidly stronger

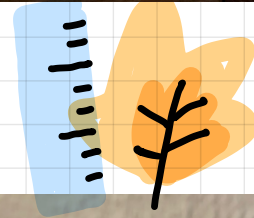
Seeing of the day

If nobody is there and the room is really quite, you are able to see wood lice!



https://youtu.be/_b93CqMAM7c

here is the video of the hole timeLaps I did.



Week IV

30.11.21

sun is coming
from here



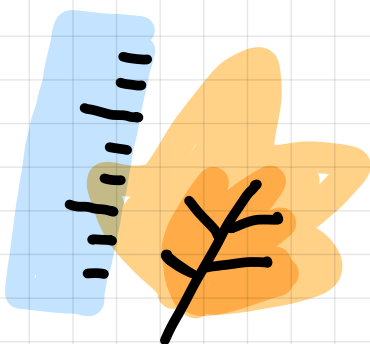
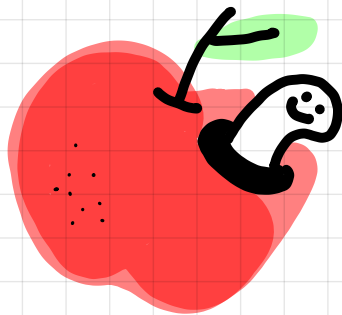
Some plants look generally better than others. The leaves of the Black Shield Fern for example has its leaves lying on the ground. I think its generally cause of the light source which is directly coming from the right side. The waterdrops have reached a constant level and are not increasing any more



The roots have exponentially grown and now reached the floor. I'm really surprised how fast they have grown this week



The other two leaves have more dead
or damaged leaves.
I assume some of them are eaten
by the woodlice



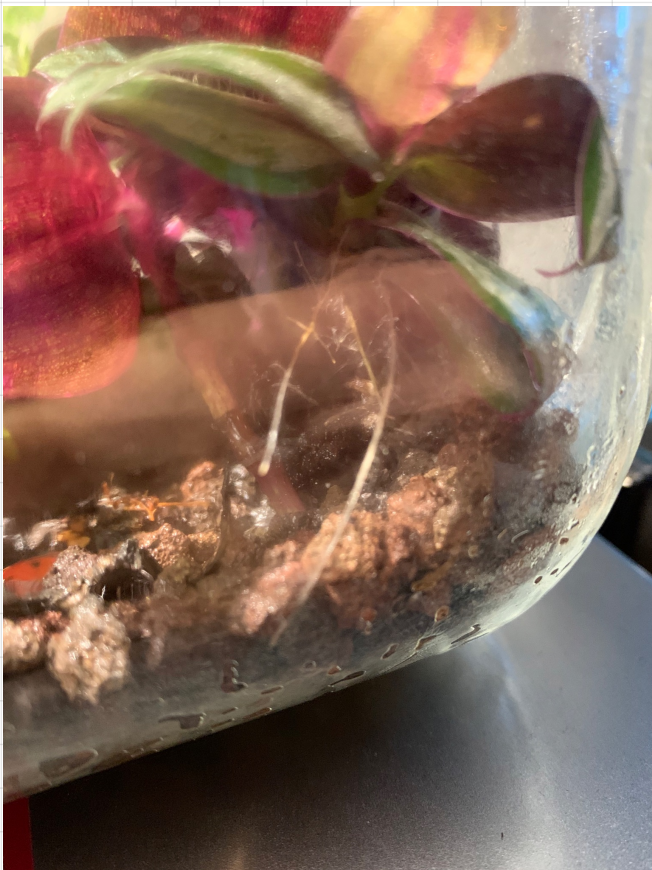
Week V

6.11.21

This week the plant look a little bit bigger than the last weeks.
There are still loads of waterdrops on the glass.

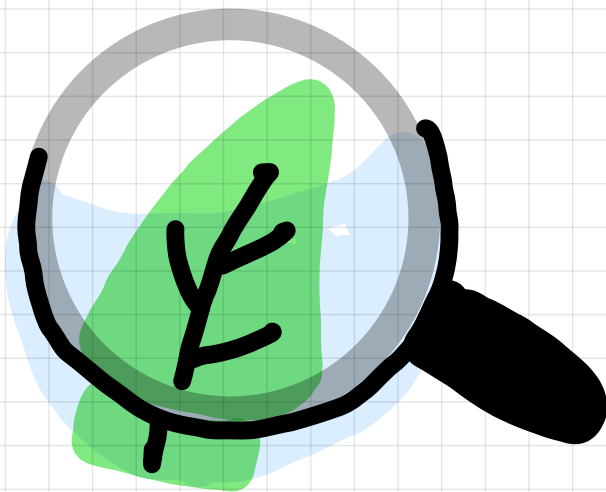


The roots are growing a lot recently.
Everyday they get bigger and bigger.





The other plants seem fine, in only a little bit worried about the discoloration and damage on the leaves



Week VI

13.11.21

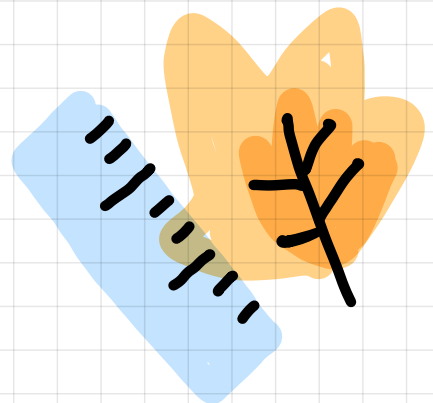
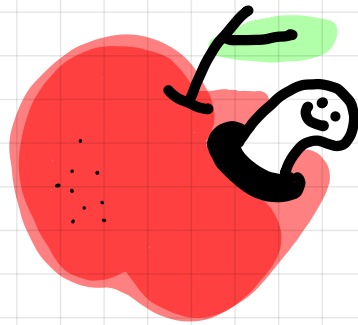
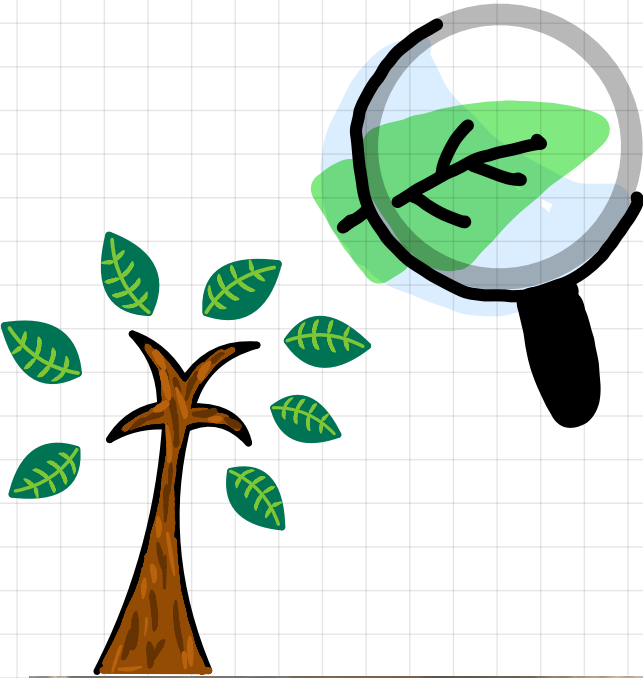


I don't know if it is imagination but I think the plants have grown a little bit. That was the only thing that was different from the last week.

The roots not only got bigger, two new roots are growing out of the plant. I really don't know why so many roots are growing there but it looks really cool.



The damaged leaves are getting "smaller".
I think the woodlice really like to eat them.
I think they have completely adapted to the new environment now.



Week VII

20.11.21

You could also see a little bit of growth this week, it's again funny to see that all of the leaves turn into the direction of the sun.



So many roots are now coming out of the plant, they start to grow in every direction. It is kind of looking really cool.



Week VIII

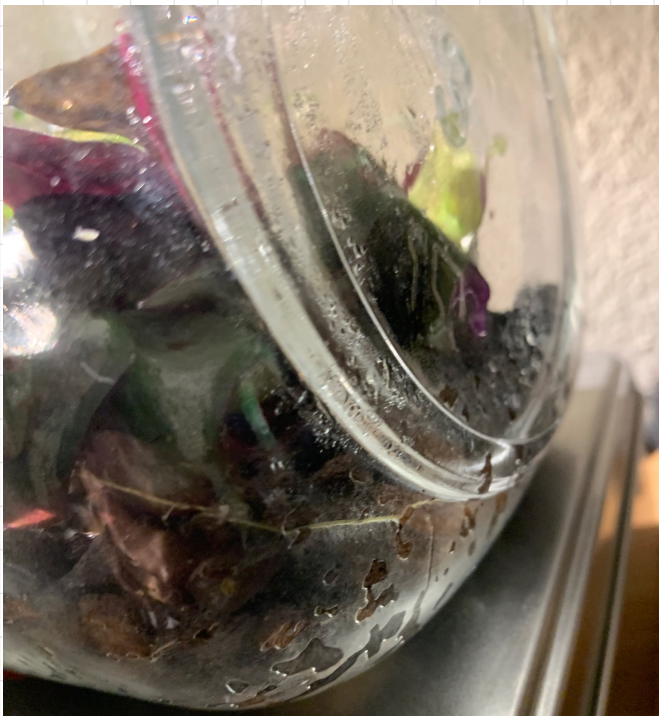
27.11.21



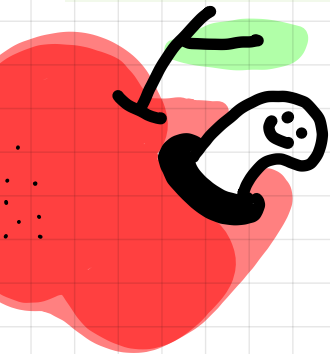
The plants in the hemetosphere seem to feel really good. I think they grow everyday, at least a little bit.



but the most active plant of all is the red one. its roots grow everyday, you can really see the fast grow process with just your eye. I still don't know why so many roots grow out of that point and not where it is connected to the floor.



I have made a second timeLaps today and the wood lice are not only there, they walk around everywhere and there are so many of them.



you can see it here

<https://youtu.be/v99kKTgNXAg>



Week IX

4.12.21

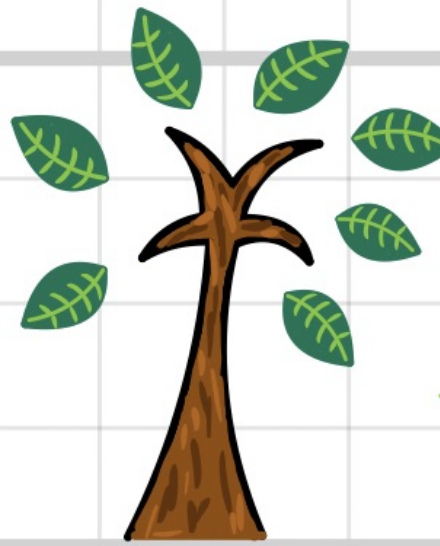
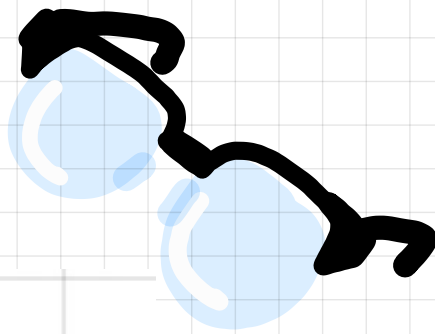
The plants didn't really change in comparison to the last week, but they look fine



The roots of our most happiest plant grew again. There are now multiple long roots growing in every direction



The other two plants look fine as well. but they don't quite change as much as the red plant



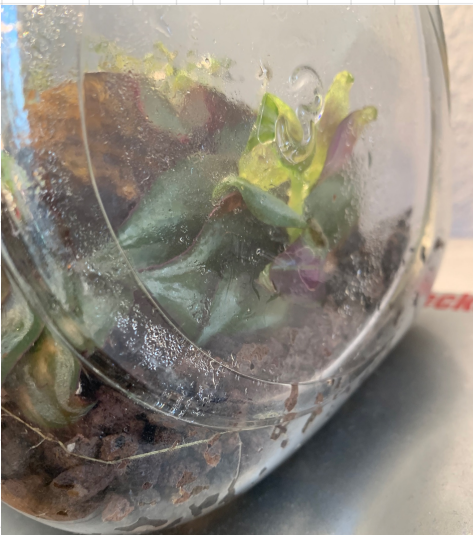
Week X

11.12.21

Everything is fine this week I saw a new
brom growing out !!!
how awesome is that.
It grows really really fast, you could see it last
week too, but this week it just exploded
Its again funny to see that most of the plants
bend to the right side cause the sun comes from
that direction



The roots didn't really change.
They grew a little bit again.



Week XI

18.12.21



The plants are doing well. The new one also seems nice, it grew a little bit but not as much as last week.
These small baby leaves look really cute

There is one big problem

The leaves of the red plant are getting dark and I really don't know why.
Maybe it's because of the high water concentration in the air?
Anyway, it's really sad.



that is not looking good



Week XII

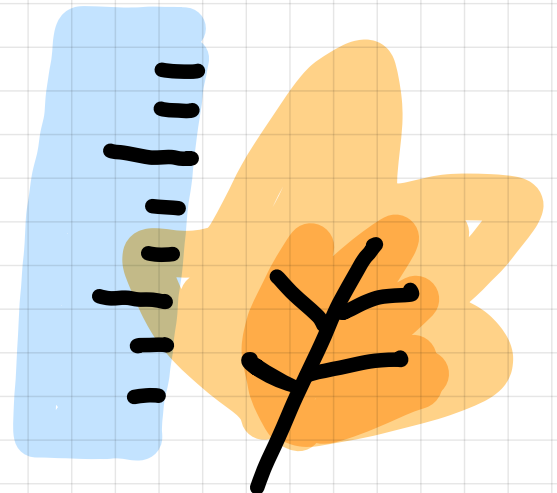
25.12.21



The small plant is looking sicker and sicker everyday.
its leaves started to colour in.



It is really bad, the big leaf is now completely dark.
Is that a disease?
I found no answer to why it is like that.
Seems like it's not the happiest anymore.



Week XIII

1.1.2022



Due to the christmas holidays the hermetosphere moved to another place.
you can see that the small new plant that comes out of the blackshield fern grew bigger



sadly the leaf of the Zebra herb is now completely black and decomposed, you can see some holes in it, I assume its from the woodlice.
Also I noticed that the leaf density of the bush decreased, maybe cause of the lower temperatures.

