ZIENTZIA AZOKA
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WHICH INSECTS CAN BE FOUND NEAR OUR SCHOOL?

★ GROUP NAME: **Parakeets**

★ PARTICIPANTS:
- **Ane Elkoro**
- **Lucia Felipe**
- **Julen Urresti**
- **Sara Cadiñanos**

★ HYPOTHESIS:

Do the insects types change in each tree?
Are there any different insects in spring than in winter?
Does the amount of insects change in the second round?

★ SUMMARY:

With this experiment we are trying to know is if the insects change in different trees and seasons. For this, we are going to choose six different trees around our school and hang traps in them for a week.
After catching the insects and identifying them, we are going to do a second round.
This second time is going to be almost spring, so we are going to see if there are any changes compared to the first round (the amount of insects, the types, …).

★ ETHIC ISSUES IN THIS PROJECT:

In 1831, Marshall Hall proposed five principles that should govern animal experimentation:

1. Experimentation should not be carried out if observation can be substituted for it.
2. No experiment should be carried out without a clear objective.
3. Scientists should be well informed about the experiments of their colleagues in order to avoid unnecessary repetition.
4. Justifiable experiments should be carried out with as little pain as possible.
possible.
5. Each experiment should be conducted under circumstances that will produce the clearest results and avoid repetition of the experiments.

In the case of our experiment, it is not possible to observe the insects in situ for identification, so it is necessary to set traps for a long period of time and then carry out the identification in the laboratory.
We have therefore used beer as a sleeping aid for the insects to cause them as little harm as possible.
In the case of the number of experimental periods, we have only done two campaigns.

★ MATERIALS NEEDED:

- Magnifier - Recipients for the insects
- Nets - Petri dishes
- Alcohol - tweezers
- beer (for the traps) - plastic bottles
- ropes - stairs
- boxes - fridge
- mobile phone (to take the pictures of the insects) - tuppers
- strainer - binocular magnifying glasses

★ PROCEDURE:

hazel

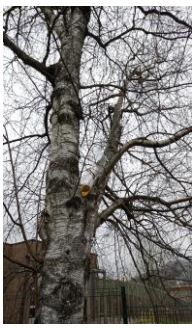
willow

cherry tree

magnolia

oak tree

birch tree

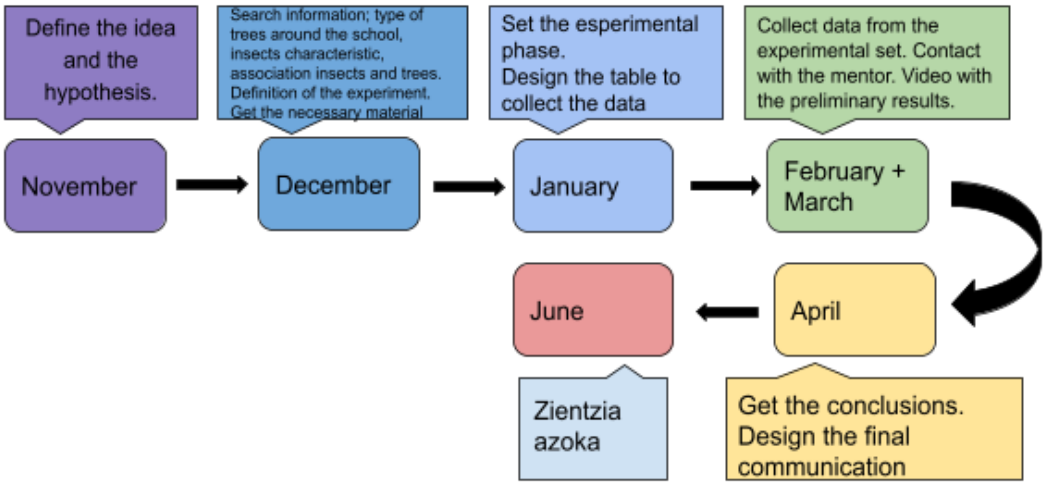


We made traps with beer and hanged them from the trees (six species of trees around the school: willow, cherry, hazel, birch, magnolia, oak).
A week later (January 22nd) we went back to collect them, so we could see if there were any trapped insects .
We then put them into recipients with water and alcohol and we counted how many of each type of insects they were in each tree.
After taking photos of them with the binocular magnifying glasses, we uploaded them to Drive.
Later, we tried to identify the insects by using the keys available on the internet.

We repeated the same procedure in February in the second insect trapping campaign on the same trees.

★ CHRONOGRAM:

Our work was organised according to the following timetable:



★ INSECT BODY PARTS AND LIFE CYCLE

Insects lay eggs, which hatch to produce a larva. These larvae shed their exoskeleton several times until they reach adulthood. Some insects change slightly between each moult and are called nymphs during the process. An insect that is not an adult or not mature is broadly called a juvenile.

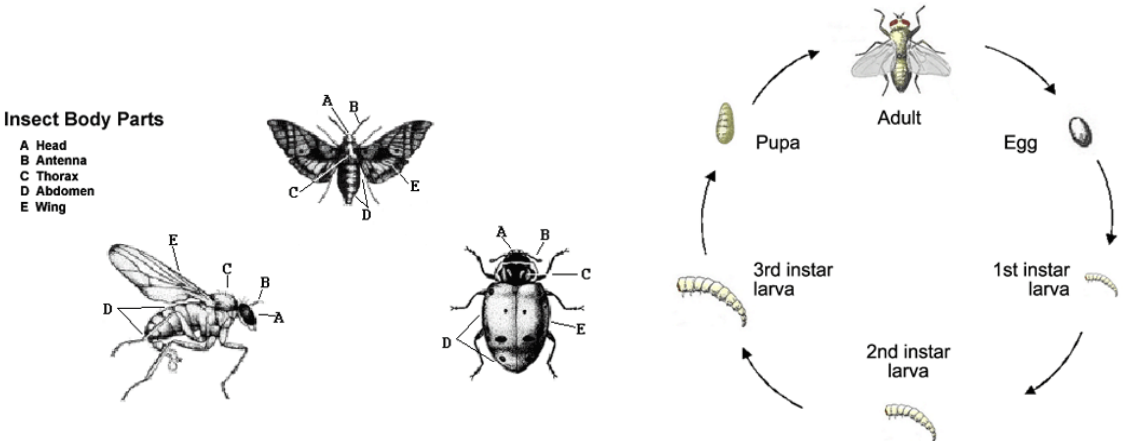


Image 1: insect body parts and life cycle

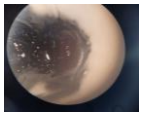
★ **RESULTS**

TREE 1: MAGNOLIA




Images 2-3-4-5: details of the tree, the leaves, the bark and the fruit

It is located at the back of the canteen, between the cemetery and the parking lot It can measure 27.5 metres.This tree has large and dark green leaves. Between them grows the flower. Insects that may be found there: bees, aphids,and pollinating insects,...

Species	**Number of insects**	**Description**	**Pictures**	**Scientific name (proposed)**
Species 1	10	It has big and brown eyes. Most part of the body is covered in tiny hairs.		Caliphoridae
Species 2	30	It has white abdomen. 6 legs, 2 wings, it has a push on the ass, it has a red head and yellow lines at the back.		Phoridae
Species 3	1	Is brown coloured and has 6 legs and 2 wings.		Drosophilidae
Second campaign: Failure				

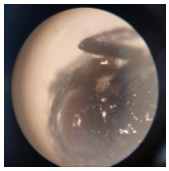
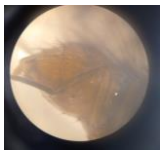
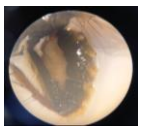
TREE 2: HAZEL

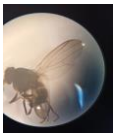


Images 6-7-8: details of the tree, the leaves and the bark

Located inside the school's vegetable garden, next to the shed, it can measure

between 8 and 10 metres. The trunk divides into branches at the beginning of it (near the floor).

Species	**Number of insects**	**Description**	**Pictures**	**Scientific Name (proposed)**
Species 1	5	It has big and brown eyes. Most part of the body is covered in tiny hairs. It has big and brown eyes. Most part of the body is covered in tiny hairs.		Caliphoridae
Species 2	67	It has white abdomen and 6 legs and 2 wings.The head is red and the back is yellow and it has stripes.		Syrphidae
Species 3	14	It has white abdomen and 6 legs and 2 wings.		muscidae
Species 4	12	It has two wings. It has the abdomen yellow. In the back it has black and yellow lines.		micetophilidae
Species 5	2	It has white abdomen and 6 legs and 2 wings. It is dark yellow		Muscidae
Species	**Number of insects**	**Description**	**Pictures**	**Scientific Name (proposed)**
Species 6	1	It has white abdomen and 6 legs and 2 wings. It is light yellow		Muscidae
Second campaign				
Species 1	3	It has big and brown eyes. Most part of the body is covered in tiny hairs. It has big and brown eyes. Most part of the body is covered in tiny hairs.		Caliphoridae
Species 2	3	it has a dark red back, and the legs have a lighter red color.These are made of tiny sections. It also has two small skewers		Trombidiidae

Species 3	7	It has two wings and in each one it has points. The head is black. It has four legs.		Micetophilidae
Species 4	13	It is yellowish transparent. It has yellow and large legs and dark red big eyes. It also has big wings.		Phoridae
Species 5	29	It has a black head and thorax. The abdomen is transparent with black lines.		Syrphidae

TREE 3: CHERRY TREE



Images 9-10-11: details of the tree, the flowers and the bark

It ois utside the vegetable garden, at the corner of the fence
It can measure between 2 and 5 metres. It's trunk and branches are thin and whitish. The flowers of this tree are pink and after they fall, cherries are grown.
insects that may found here: millipede, aphids and snails

Species	**Number of insects**	**Description**	**Pictures**	**Scientific Name (proposed)**
Species 1	9	It is brown, his head is full of hair, he has three parts of his body, his head is his back and his abdomen. It has wings on its back and a thorn in its abdomen.		Phoridae
Species 2	1	The whole body is black, the body is divided into three parts, the head, thorax and abdomen. It has six legs on each side.		Magdalis
Second campaign				

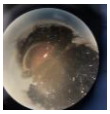
Species 3	9	It is black and the body is divided into three parts, the head, thorax and abdomen. It has wings on the thorax.		Muscidae

TREE 4: **WILLOW TREE**



Images 12-13-14: details of the tree, the flowers and the bark

Next to the stairs that led to the canteen. The trunk is short and it divides into branches at a low point from the floor. It's leaves are yellowish and before they turn into leaves, small green and white tiny blossoms are formed.

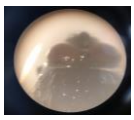
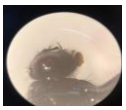
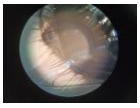
Species	**Number of insects**	**Description**	**Pictures**	**Scientific Name (proposed)**
Species 1	2	It has big and brown eyes. Most part of the body is covered in tiny hairs.		Caliphoridae
Species 2	9	High part of the thorax with yellow lines and lower white. It has small hairs on the head. The front legs are yellowish transparent and thicker than the other legs.		Syrphidae
Species 3	9	Black torax with dark yellow thin lines. it has a sting. It has tiny hairs in the head and half of the wing		Apidae

TREE 5: OAK TREE



Images 15-16-17: details of the tree, the leaves and the bark

It has a thick and high trunk. Oaks have spirally arranged leaves with lobate margins(some species have serrated leaves with smooth margins too).Before these are grown, they first are little brown peaks. The fruit is an oak nut that has a cup-like structure.

Species	**Number of insects**	**Description**	**Pictures**	**Scientific Name (proposed)**
Species 1	2	big brown eyes and tiny hairs through all the body		Caliphoridae
Species	**Number of insects**	**Description**	**Pictures**	**Scientific Name (proposed)**
Species 2	1	Big brown eyes with a mouth to suck out. It has tiny hairs through all the body, also in the legs		Moscidae
Species 3	7	It is yellowish with lines in its body. Before the head starts, it has a black hump. It has little hairs in the head.		Syrphidae
Species 4	1	It is pink coloured and transparent. Its antennas are divided into three sections and its head contains other smaller antennas too on each side**.**		Cerambycidae
Second campaign				
Species 1	3	Hairy head and big eyes		Caliphoridae
Species 2	2	Big red eyes with a beak to suck		Muscidae
Species 3	1	it has a dark red back, and the legs have a lighter red color.These are made of tiny sections. It also has two small skewers		Trombidiidae
Species 4	1	It is black and it is separated into two parts. The upper part is made of two shells, and the final part is made of scales.		Staphylinidae
Species 5	1	It is yellowish with lines in its body. Before the head starts, it has a black hump.		Syrphidae
Species 6	9	It has big red eyes with tiny hairs. The abdomen is transparent and the back is made of thick black lines.		Moscidae

Species 7	2	It has a small head and a transparent body with black lines at the back. Its legs are light brown with light yellowish tones.		phoridae
Species 8	1	It has a small head with large legs and a red light abdomen.		Syrphidae

TREE 6: BIRCH TREE



Images 18-19-20: details of the tree, the leaves and the bark

We find it at the back of the canteen
It can measure until 9 or 15 metres. It's trunk is thin and whitish and i't is marked with horizontal dark lines. Birch has green leaves that are oval or elliptical in shape.They are single or double serrated on the edges.
Here are shown some of the insects that are found in this tree:

Species	Number of insects	Description	Pictures	Scientific Name (proposed)
Species 1	3	It has 4 legs and hairs. It has big and brown eyes. Most part of the body is covered in tiny hairs. It has big and brown eyes.		Caliphoridae
Species 2	14	It has white abdomen and 6 legs and 2 wings.The head is red and the back is yellow and it has stripes.		Syrphidae
Second campaign				
Species 1	7	It has white abdomen and 6 legs and 2 wings.The head is red and the back is yellow and it has stripes.		Syrphidae
Species 2	1	It has 6 orange legs. Its body is black but the head and legs are orange. It is very long and has the wings attached to the body.		Cerambycidae

Species 3	1	It is very long and the six legs that it has too. The body is divided into three parts: the head, the thorax and the abdomen. On the thorax it has wings and on the abdomen it has stripes.		Culicidae

★ CONCLUSION

We have carried out 2 campaigns to capture insects in 6 trees located in the surroundings of the school.

In the case of the magnolia and willow trees, the second campaign did not work because our trap was destroyed.

Nevertheless, the results obtained are shown briefly below:

	1ST CAMPAIGN		2ND CAMPAIGN	
	Number of especies	Total number of insects	Number of especies	Total number of insects
TREE 1: **MAGNOLIA**	3	41	X	X
TREE 2: **HAZEL**	6	111	5	55
TREE 3: **CHERRY TREE**	2	10	1	9
TREE 4: **WILLOW**	3	20	X	X
TREE 5: **OAK TREE**	4	11	8	20
TREE 6: **BIRCH**	2	17	3	9

According to the results obtained, the tree with the most species was the hazel tree, which is located in the orchard.

On the other hand, the season variable (first campaign in winter and the second in spring) was not a determining factor.

To obtain more reliable results, the campaigns should be repeated, we should also have more reliable identification tools and more training for this purpose

★ BIBLIOGRAPHY (last seen 06/04/2021)

- https://www.bioeticacs.org/iceb/seleccion_temas/experimentacionAnimales/invest_animales.pdf
- https://entomologia.net/L_general/Claves_para_identificar_insectos.pdf
- https://wiki.bugwood.org/Archive:Knapweed/Chapter_2

★ ACKNOWLEDGEMENTS

We would like to thank Zientzia azoka for the opportunity to take part in this experience.

We must also not forget our school, which has provided us with all the necessary materials to carry out the experiments.

And finally, we are very grateful to Ibone Ametzaga, our mentor, for giving us ideas and for encouraging us to keep going through this difficult year.