

#6 CITIZEN SCIENCE PROJECT

TREE BODYGUARDS

MAIN SUBJECTS

Biodiversity, citizen science, research protocols

AGE GROUP

8 - 18 years

STAKEHOLDERS

Researchers, teachers



Climate science is always changing as new discoveries are made every year on the causes, impacts and mechanisms of the climate systems. Some scientific studies need large sample sizes of observations in order to have a good comprehension of the phenomenon. This is the case when exploring the impact of climate change on biodiversity. With species that we can find in cities and around schools, why not ask school students to be scientists and to collect data? Thus, citizen science projects conducted in schools are a good way to collect new data to study the impact of climate change on biodiversity and, at the same time, work on science protocols, teach about climate and employ project-based education.

The Tree bodyguards project evaluates how our current climate is influencing interactions between trees, herbivores (caterpillars), and their enemies in order to try and anticipate what might be **the consequences of climate change on a tree's ability to defend itself and be defended against herbivores.** This particular citizen science project invites teachers to collaborate with scientists. Since the project started in 2018, it has led to the collaboration of about 53 scientists and 96 teachers in 17 countries. In total, we have reached more than 90 classes.

Both professional scientists and school children apply the very same protocol (see next page) that was developed to **assess predator ability to reduce the amount of damage herbivores can cause to trees.** The study is carried out on a single tree species, the pedunculate oak *Quercus robur*, which is widespread from Spain to Finland, and the UK to Russia.

Training material is available to help teachers become familiar with observations made in the field, and we are currently working with education scientists to provide teachers with hands-on pedagogical material to help them incorporate the project into the curriculum.

TESTIMONY

ANJA NEUDÖRFLER, TEACHER

It is very important for students to realize that one can be part of something big, one can make a change in the world. That's one of the skills this project teaches the kids – noticing that everyone can be part of shaping our future. It gives my students the opportunity to be part of scientific research, at quite a young age.

The project has currently been running for a few years and there has been good feedback from both teachers and pupils (through their teachers). The project is seen as “authentic”, as both teachers and their pupils appreciate carrying out real research. Even so, this may be an uncomfortable area because there is no definitive right or wrong answer to the research question that is asked. With good reason, because the only answer we have is: **“we don't know as yet, but we are working on it!”**. This is part of the excitement of doing the research.

Scientists must also communicate about how they know what's going on out there, and how they can use current knowledge and uncertainty to make predictions. We need people to be able to trust science. Otherwise, any action taken against mitigating the effects of climate change may be misunderstood, or worse, questioned. Research takes time, energy, and has a cost. There is no immediate and easy answer to hugely complex ecological problems. **Giving schoolchildren a first-hand taste of what research is like will help them understand what science is,** and why trusting science is a good strategy in their everyday life.

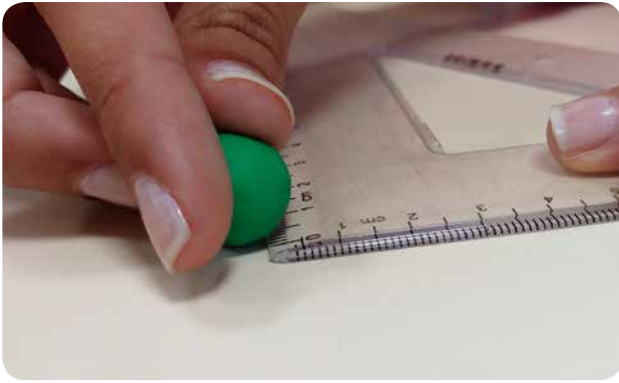
In the tree bodyguards project, teachers are essential mediators between schoolchildren and scientists: to help collect data efficiently, and to provide relevant feedback on learning outcomes.



PROTOCOL

In the spring, we make fake caterpillars with green modelling clay that we attach to low-hanging oak branches. Predators are fooled: they attack these fake caterpillars as if they were real food, and by doing so they leave beak, tooth and mandible marks on the clay surface. We simply count the number of fake caterpillars with predation marks: this tells us how efficiently predators can protect oaks against real herbivores. We then collect oak leaves and estimate the surface that has been removed or impacted by the caterpillars.

Data collection is carried out between May and early July. During the summer, while schoolchildren and teachers are on well-deserved holidays, scientists work on the data to correlate herbivore damage with predator activity and map this relationship on a European scale.



Building a fake caterpillar

TESTIMONY

BASTIEN CASTAGNEYROL, RESEARCHER

I am often upset that people only see ecology as a kind of philosophy or commercial argument. This is not wrong, but this is only part of the story. I wanted to show schoolchildren – and their teachers – that ecology is also a science, and that you do not require massive and hugely expensive machines to do good science: a piece of modelling clay and a network of motivated collaborators is sometimes enough.

TO GO FURTHER

See [the Oakbodygards website](#).



This fake caterpillar has been attacked by predators



Student and researcher setting up fake caterpillars on trees.