

How biodiverse are our school grounds and how can we improve this?

1. Project overview

Through this project students will be able to investigate the different ecosystems found throughout their school grounds. They will discover and gain a greater understanding of some of the most common mammal, plant, insect and bird species found there, learning about their basic needs and the habitats that support them. Working with their STEM partner, the students will be able to explore different ways to increase biodiversity, implementing and evaluating the most popular ideas and communicating their findings with the wider school community. Linking strongly to the curriculum, this project will enable teachers to inspire the next generation of wildlife conservationists. Details of the investigative work required to support this project can be found in section 4.

Duration of project
3 terms minimum to cover seasonal variation. Easily repeatable year-on-year
Can be considered as part of the Tomorrow's Climate scientists programme

2. Student involvement

This project is aimed at primary school students aged between 5 – 11, however, it could be adapted to suit other age groups and abilities. This project can be adapted to suit large groups, from clubs to whole year groups or larger, and we encourage projects to be as inclusive as possible. The project can be used to engage a wide variety of students in the school. For example:

- 1) older students mentoring younger years to engage with the observation and monitoring sections of the investigation
- 2) students with an interest in art and design helping to communicate the findings of the project to the wider school community via media such as video, posters etc.
- 3) students with an interest in design helping to build any of the bird boxes, hedgehog houses or flower beds suggested as interventions to test.

3. STEM partner involvement

Funding will only be offered to schools that can demonstrate a strong partnership. The partnership can either be with one individual STEM partner or a team of STEM partners. If there is a team of STEM partners, one must be identified as the lead STEM partner for the application process and must have sustained and meaningful engagement (in-person or online) with the students and teacher throughout the duration of the project. Other STEM partners in the team can support the project, if needed, to provide specialist knowledge or to help spread the time commitment and ensure the students have regular STEM partner engagement. For a year-long project such as described here, we would expect a **minimum of 10 in-person visits over the course of the project**, undertaken by any of the STEM partners involved. The STEM partner(s) will provide the students with relevant guidance and knowledge to help them with their investigations, as well as an insight into potential careers.

The main role of the STEM partner(s) is to support the planning, design and implementation of the investigation that the students will carry out. Examples of how the STEM partner(s) could support the implementation of the investigations include (but are not limited to):

- supporting students to form their own hypotheses
- supporting students to set up their investigations following the scientific method

- helping provide secondary research sources and support the understanding of technical information
- helping with data collection and identification
- helping the development and implementation of student plans to increase biodiversity
- helping with any building or design elements

Other activities that the STEM partner(s) could get involved with are:

- arranging a visit to their place of work
- providing an introductory talk to the project group, or whole school, regarding their career and the relevance of this to the project being undertaken; and
- supporting the students end of project presentations.

Examples of STEM partners that could support this project are university or industry-based researchers, with a degree or equivalent background in a subject such as ecology, environmental biology, sustainability or management, plant sciences and biodiversity. Professionals who are working in woodland or park management, wildlife conservation and recording, or council environment managers.

For more information about the STEM partner eligibility requirements and guidance on how to find a STEM partner, please read the [What is the partnership](#) page on our website.

4. Investigation options

The following investigations described in the plan below will underpin this project and help the students answer the project title question. Please note some of the investigations may need to take place in parallel rather than sequentially throughout the year. The individual investigations suggested may need to be adapted or altered, dependant on the school grounds and habitats available locally. Teachers can also add in additional investigations and other project elements as required.

Project plan	Equipment suggestions
<p>Initial survey: Identify the different habitats in the school / local area, such as woodland, grasslands, meadows, scrub and ponds etc., using research and visual observations.</p>	<p>Habitat guides (could be internet based)</p>
<p>Baseline data collection: Using the findings from the initial survey, plan where and how to collect data about the species that might be present within the habitats identified. Data capture should be conducted on at least two of the following areas:</p> <ul style="list-style-type: none"> • Plants • Insects • Birds • Mammals <p>Before the data is collected, make predictions on what is expected to be observed. As results are collected, the collection process might need to be adapted and improved to get the best results. From the data</p>	<p>Camera traps (including mounting straps, weather protection and memory cards) Footprint tunnels Magnifying lenses ID books/cards A parabolic microphone Binoculars Insect pots (pooters) and viewers Quadrat frames</p>

collected, identify the various species captured and see if the data confirms or disproves the original predictions.	
<p>Secondary research: Carry out secondary research to learn about the ecosystem of each habitat and the food chains/webs linking the species observed.</p>	<p>Lifecycle resources Ecosystem resources</p>
<p>Main Investigation:</p> <ol style="list-style-type: none"> 1. Based on the secondary research and baseline observations, compare the species results for different habitats and suggest reasons for any differences observed. 2. Consider what variables may affect the variety and number of species they observe. Choose as many variables as possible to explore, making predictions on what might be observed before repeating the data collection for their adapted chosen variable(s) to see if the evidence confirms or disproves their predictions. Common variables include: species found at different times of day/night, different seasons, different weather conditions, different food sources available, different areas of planting, different levels of water and different levels of shade. 3. Propose interventions that could improve the biodiversity further. Decide on which you are going to design/build and then test and evaluate versions of these to find out which work best. Common interventions include: growing different plants to provide shelter and/or food, providing different shape/size bird/animal shelters (bird boxes, hedgehog houses, bat boxes) or placing them in different locations to best suit their species behaviours, providing feeding stations and testing what food attracts the birds/animals/insects best, or what design of feeder best attracts either a specific species or multiple species based on behaviour/feeding style. 	<p>Reuse equipment from original data collection.</p> <p>You may wish to purchase extra equipment to help monitor your variables, such as a weather station, light meter, or infra-red camera to observe at night.</p> <p>Purchase supplies as needed for the interventions such as seeds, plants, bird boxes (or material to build), hedgehog houses or food.</p>
<p>Wider communication: Communicate the results to the wider school community; methods could include information leaflets/posters, school assemblies, getting other years practically involved in the project, or a short film.</p>	<p>Please note: additional film grants towards a camera / software / microphones etc. are available to grant holders.</p>

A suggestion of essential equipment and supplies needed to undertake each of the parts of the project has been listed to assist you when putting together your budget. Please also consider any relevant additional costs permitted within the scheme, such as teacher cover, essential teacher CPD and/or

travel costs for project related visits. For more guidance please read the [eligibility and judging criteria](#) page on our website.

5. Benefits and skills

Involvement in a long-term investigative project should enable students to have an in-depth experience of working scientifically as well as developing their general team working and communication skills.

Through this project the students will specifically learn about habitats and living things in a real-world context, gaining detailed knowledge about a specific set of plants and animals as well as a broader understanding of biodiversity and the impact they can have on ecosystems. They will learn skills in research, observation and monitoring, identification, data capture, data analysis and problem solving. Dependant on the exact investigations and activities you propose to undertake, there may be additional benefits and skills you can identify in your application.

6. Legacy activities

It is important that Partnership Grant projects are sustainable, providing long-term benefits to your students and wider school community in terms of the teaching and learning of STEM subjects.

Your legacy activities could include (but are not limited to):

- repeating the project with successive year groups
- re-using the equipment to monitor and identify other species or to gather evidence on the long-term impact of the student's biodiversity interventions
- testing out new interventions and monitor their success
- expanding the project to include other schools in the area, loaning out the cameras to collate more evidence to compare with your own.

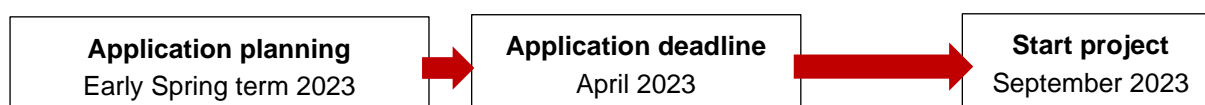
7. Next steps

1 - Securing your STEM partner

Using the information about STEM partners above, search for universities and businesses within reasonable travelling distance to you that might have suitable contacts to approach. A good route to finding these contacts is often your own school's Governors and student's parents, another is the national [STEM Ambassador](#) scheme. Once you have a few contacts in mind, write an email/letter inviting them to be involved in the project, providing clear and concise information about areas you need support with, the time commitment you are expecting, and the duration of the project. If you need further advice as to how to find a STEM partner, please contact the Schools Engagement team directly via education@royalsociety.org.

2 - How to start an application

This project is ideally started in the autumn term to allow the project to run the full academic year. To get the funding secured and paid in time, you will need to submit the full grant application for the April deadline in the academic year before. An example timeline is given below, and more information about [The application process](#) and timelines can be found on our website.



You can access the application form via the Royal Society's grant management system called Flexi Grant: <https://grants.royalsociety.org/>. When you first create your log-in and access Flexi Grant several

grants will be visible on the screen. Please make sure you choose the **Partnership Grants stage 1** form to start.

3 - Where to get more information

You can find full information about the Partnership Grants scheme, including eligibility and judging criteria, application guidance and exemplar forms via our website: www.royalsociety.org/partnership

If you have specific questions about your project idea, STEM partner or application, please either attend one of our [online training sessions](#) or please contact the Schools Engagement team directly via education@royalsociety.org .