How mathematics is used to describe or model the crisis

Having seen some of the ways that mathematics has helped to shape the crisis of species loss, it is worth standing back and reflecting on potential difficulties with measuring biodiversity. This is a question that could potentially be a stimulus for work in school.

Students could be challenged to compare the biodiversity of three areas of the school campus or surrounding area (they can choose the size of area to compare and the location, but perhaps need to compare at least *three* sites). As part of their work, they would need to decide how to measure the biodiversity and explain their approach. Students may be able to collect data over time with the aim of making some recommendations for supporting biodiversity in the area.

To engage in this task, students would first need to decide how to define biodiversity (they could choose to look at animal or plant life, or both). Can they come up with a method for giving a *value* to the biodiversity of each of the three areas? (The simplest idea would be to simply count the number of species in a given area; or biodiversity values could be based on an estimate of how many individuals from each species there are in an area, or an estimate of the total weights of each species). Students may want to try out a range of possible ideas. Having made these decisions, they should be in a position to decide what data they need to collect in each area. Once they have some data, they should be able to rank their areas in terms of diversity.

A task such as the one above would involve decisions about data collection over time and then a consideration of how to make sense of that data. A starting point for collecting any information about biodiversity must be some kind of animal or plant count. This data, collected over time or in different areas, may give an interesting picture of the state of wildlife around the school. It might be particularly interesting if there is a more wild area of the school grounds.