

NHSG Key Stage 3 Unit Overview for 6.1 monitoring the environment



| Scheme of Learning Year 9 Monitoring the environment | | |
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| Learning outcomes | Subject content: | Skill set: |
| | <ul style="list-style-type: none"> Explain how to carry out field investigation into the distribution and abundance of organisms in a habitat and how to determine their numbers in a given area. Describe both positive and negative human interactions within the ecosystems and explain their impact on biodiversity. Explain some of the benefits and challenges of maintaining local and global biodiversity. Evaluate the evidence for the impact of environmental changes on the distribution of organisms with the reference to water and atmospheric gases. | <ul style="list-style-type: none"> Sampling techniques using quadrats, (random and transects) pooter, nets, keys. The conservation of individual species and selected habitats and threats from land use and hunting. The difficulty in gaining agreements for the monitoring of conservation schemes along with the benefits of ecotourism. |
| Key Question | How biotic and abiotic factors influence communities and all the organisms living within . | |
| Knowledge | Key concepts and skills | Key terminology |
| | <ul style="list-style-type: none"> Using sampling equipment effectively to gain accurate data. Explaining how humans have impacted on ecosystems and the affect on plant and animal biodiversity and extinction. Understand and develop the argument for the impact of environmental changes linked to changes in the changer in atmospheric gases egCO2 /global warming /greenhouse effect. | <ul style="list-style-type: none"> ➤ Ecosystem ➤ Habitat ➤ Populations ➤ Community ➤ Niche ➤ Biodiversity ➤ Zonation ➤ Biotic factors ➤ Abiotic factors ➤ Sampling ➤ Quadrat ➤ Conservation |

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| <p>Ongoing Assessment What key misconceptions will you include? Homework? Revision checklists?</p> | <p>Retrieval questions at the start of every lesson. These questions refer to previous knowledge of enzymes and reactions from Y7 and 8 which will help them develop further knowledge in Y9.</p> <p>Assessment in the form of gap fill, questions and tasks in the topic book, including</p> <ul style="list-style-type: none"> ➤ Practice questions on sampling ➤ Table completion for conservation ➤ Critical evaluation so conservation methods ➤ Practice questions on sampling methods <p>Key misconception:</p> <ul style="list-style-type: none"> ➤ Random sampling is throwing a quadrat! <p>Homework:</p> <ul style="list-style-type: none"> ➤ Conservation project <p>Revision checklist: Specification used as revision checklist in front of topic booklet.</p> |
| <p>Key assessment</p> | <ul style="list-style-type: none"> • End of topic test in September of Y10. • End of topic test combined with the topic of enzymes. Closed book 35 minutes. • Test will assess key skills and content from specification of this unit: • This is an in-class assessment which will be marked by teachers • Data is analysed and a colour or grade is given based on the spread of grades outlined in the T&L policy. |
| <p>Clear sequencing of content</p> | <p>Sampling: Students are introduced to plant and simple animal data collection including calculation of estimating a population using random sampling. Y8</p> <p>In Year 9 they build on this and look at all sampling techniques in more detail including various animal sampling techniques and when and where they would be used as well as transects for plant sampling and relationships with abiotic factors. They learn and use the mark capture recapture calculation for sampling animals.</p> <p>This links to further modules such as ecology B4.1 covered in Y10.</p> <p>Conservation In Y8 students touch upon ecological problems and explore some ideas to conserve species such as forest management which a focus on plants.</p> |

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| | In Y9 they learn about the term biodiversity, its importance, threats to it as well as reasons to conserve it. They then look at multiple in situ and ex situ conservation techniques with a focus on critical and evaluative thinking to look at advantages and disadvantages. |
| Links to Careers | <p>Ecologist https://nationalcareers.service.gov.uk/job-profiles/ecologist https://nationalcareers.service.gov.uk/job-profiles/environmental-consultant https://nationalcareers.service.gov.uk/job-profiles/climate-scientist</p> <p>Conservationist https://galapagosconservation.org.uk/our-work/ https://news.nationalgeographic.org/how-to-be-a-conservationist/ https://www.prospects.ac.uk/job-profiles/nature-conservation-officer</p> <p>Environmental scientist https://usic.sheffield.ac.uk/blog/10-careers-in-environmental-science</p> <p>Marine biologist overview given in B4.1 & 6.1 Biodiversity topic booklet https://www.prospects.ac.uk/job-profiles/marine-biologist</p> |
| Diversity and Inclusion | <p>Stretch and challenge article and questions in the booklet which looks at conservation Mara North conservancy Kenya, Pirasan marine protected area in the Philippines, Singchung Bugun Village community reserve India.</p> <p>Variety of examples of Ecosystems used, not just UK.</p> <p>Organisms from different areas in the world considered when doing conservation card sort.</p> |
| Support | <p>Every student receives handout packs including specification</p> <p>PowerPoints for each lesson are on SharePoint to help catch up with missed lessons or for students to review content.</p> <p>Online revision GCSE Biology (Single Science) - OCR Gateway - BBC Bitesize</p> <p>Amoeba sisters' videos</p> |
| Challenge | <p>Various science challenges-</p> <p>RSB Biology challenge for Y9/10</p> <p>The Homerton college Cambridge challenge</p> <p>The imperial college Faculty of Natural Sciences: Science and innovation competition</p> <p>BioArtAttack 3D</p> <p>BioArtAttack 2D</p> <p>2 stretch and challenge articles with questions to go alongside are provided at the back of the topic booklet.</p> |

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