

Eco-Schools Curricular Maps - Biodiversity Topic

The series of 'Outcome Maps' in this document suggest how Curriculum for Excellence (CfE) Experiences and Outcomes may be delivered through the Eco-Schools Biodiversity Topic

Eco-Schools Scotland commissioned experienced teachers to select outcomes they felt appropriate for each topic.

Please note:

- The selected outcomes for each Map are advisory – teachers may reject or add outcomes which they consider more appropriate to the context in which they plan to teach.
- Eco-Schools 'Outcome Maps' are for guidance purposes only, are not exhaustive and should not be viewed as limiting.
- The first map illustrates how closely the Seven Elements of the Eco-Schools Programme match core outcomes from CfE
- Each subsequent topic map is accompanied by a header which suggests possible 'lead curricular areas'. Again these are open to debate and amendment by teachers.
- While similar in format not all Maps are identical – topics such as Health and Wellbeing are so closely related to Eco-Schools topics that almost all outcomes are relevant.
- Each outcome is normally quoted in full along with its relevant CfE code.
- Following piloting with teachers we have added a commentary in italics to some outcomes to explain their inclusion within an outcome map or suggest a possible teaching context. Linking 'arrows' on some topic maps highlight the opportunities for interdisciplinary learning across curricular areas.



Biodiversity Topic: Early Level

Sciences (Planet Earth)

I have observed living things in the environment over time and am becoming aware of how they depend on each other. **SCN 0-01a** *Observe a class pet over a period of time / observe bees feed from flowers / caterpillars eating leaves / birds eating seed*

I have helped to grow plants and can name their basic parts. I can talk about how they grow and what I need to do to look after them. **SCN 0-03a**

Sciences (Biological systems)

I can identify my senses and use them to explore the world around me. **SCN 0-12a** *Outdoor learning – listening to birds sing, smelling flowers, feeling tree bark*

Social Studies (People, place and environment)

I explore and discover the interesting features of my local environment to develop an awareness of the world around me. **SOC 0-07a**

I explore and appreciate the wonder of nature within different environments and have played a part in caring for the environment. **SOC 0-08a** *Litter picks, make habitats for hedgehogs/bees/birds, butterfly farms, wormeries*

Social Studies (People in society, economy and business)

In real-life settings and imaginary play, I explore how local shops and services provide us with what we need in our daily lives. **SOC 0-20a** *Visit a local farm/market garden/garden centre/plant nursery*

Literacy (Listening and Talking)

I listen or watch for useful or interesting information and I use this to make choices or learn new things. **LIT 0-04a**

Literacy (Writing)

I enjoy exploring and playing with the patterns and sounds of language and can use what I learn. **LIT 0-20a** *Listen to info. on plants, animals and record by drawings*

Numeracy and Mathematics (Shape, position and movement)

I have had fun creating a range of symmetrical pictures and patterns using a range of media. **MTH 0-19a** *Symmetry in butterflies, snowflakes, flower petals and animal prints or tracks.*

Expressive Arts (Art and Design)

Inspired by a range of stimuli, I can express and communicate my ideas, thoughts and feelings through activities within art and design. **EXA 0-05a** *Biodiversity/being outdoors as inspiration*



Biodiversity Topic: First Level

Sciences (Planet Earth)

I can distinguish between living and non living things. I can sort living things into groups and explain my decisions. **SCN 1-01a** *Sorting activity*

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food. **SCN 1-02a** *Internet research, animals spreading seeds, observe bees feed from flowers / caterpillars eating leaves / birds eating seed*

I can help to design experiments to find out what plants need in order to grow and develop. I can observe and record my findings and from what I have learned I can grow healthy plants in school. **SCN 1-03a** *Grow plants in a cupboard versus light/in fridge versus room temperature, measurements of length, observe colour of leaves*

Sciences (Biological systems)

I have explored my senses and can discuss their reliability and limitations in responding to the environment. **SCN 1-12b** *Outdoor learning: smelling flowers, feeling tree bark. Identify trees and bird calls.*

By comparing generations of families of humans, plants and animals, I can begin to understand how characteristics are inherited. **SCN 1-14a** *Grow pea plants from smooth and wrinkly peas and see whether offspring's peas are also smooth/wrinkly, family trees, dog family trees – pedigree and mongrel*

Social Studies (People, place and environment)

I can describe and recreate the characteristics of my local environment by exploring the features of the landscape. **SOC 1-07a** *Draw photograph the organisms, discuss green spaces, pictorial graphs of numbers of plants/animals, mark organisms on school map*

I can consider ways of looking after my school or community and can encourage others to care for their environment. **SOC 1-08a** *Make habitats, discuss, interview, make posters/blogs/social media posts, give assemblies*

By exploring climate zones around the world, I can compare and describe how climate affects living things. **SOC 1-12b** *Research animals and plants in extreme climates*

Social Studies (People in society, economy and business)

I have developed an understanding of the importance of local organisations in providing for the needs of my local community. **SOC 1-20a** *Visits to businesses utilising local flora/fauna e.g. farm, dairy farm, garden centre*

Health and Wellbeing (Mental, emotional, social and physical wellbeing)

Through contributing my views, time and talents, I play a part in bringing about positive change in my school and wider community. **HWB 1-13a** *Schools grounds improvements, membership of Eco Committee.*

Literacy (Listening and talking)

I can communicate clearly when engaging with others within and beyond my place of learning, using selected resources as required. **LIT 1-10a**

Literacy (Writing)

I enjoy creating texts of my choice and I regularly select subject, purpose, format and resources to suit the needs of my audience. **LIT 1-20a**

Numeracy and Mathematics (Shape, position and movement)

I have explored symmetry in my own and the wider environment and can create and recognise symmetrical pictures, patterns and shapes. **MTH 1-19a** *Symmetry in butterflies, snowflakes, flower petals etc*

Expressive Arts (Dance)

Inspired by a range of stimuli, I can express my ideas, thoughts and feelings through creative work in dance. **EXA 0-09a** *Inspiration from growing plants/nature*



Biodiversity Topic: Second Level

Sciences (Planet Earth)

I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction. **SCN 2-01a** *Use keys from OPAL to classify organisms on school grounds*

I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area. **SCN 2-02a**

Through carrying out practical activities and investigations, I can show how plants have benefited society. **SCN 2-02b** *Make dyes from plants, construction activities, investigate food labels and list the ingredients from plants*

I have collaborated in the design of an investigation into the effects of fertilisers on the growth of plants. I can express an informed view of the risks and benefits of their use. **SCN 2-03a** *Grow plants +/- baby bio, look at photos of eutrophication*

Sciences (Biological systems)

I have contributed to investigations into the role of microorganisms in producing and breaking down some materials. **SCN 2-13a** *Make bread using yeast to produce the gas (carbon dioxide) to make it rise*

By investigating the lifecycles of plants and animals, I can recognise the different stages of their development. **SCN 2-14a** *Use a butterfly kit to watch metamorphosis, purchase mealworm from the pet shop and watch transform into beetles, plant peas/cress seeds/potatoes/carrot tops*

By exploring the characteristics offspring inherit when living things reproduce, I can distinguish between inherited and non- inherited characteristics. **SCN 2-14b** *Grow pea plants from smooth and wrinkly peas and see whether offspring's peas are also smooth/wrinkly, family trees, dog family trees – pedigree and mongrel. Why are flamingos pink? Why are some hydrangeas blue/lavender/pink?*

Social Studies (People, place and environment)

I can discuss the environmental impact of human activity and suggest ways in which we can live in a more environmentally- responsible way. **SOC 2-08a** *Saving water, habitat destruction, pollution, effect of farming on biodiversity*

By comparing my local area with a contrasting area outwith Britain, I can investigate the main features of weather and climate, discussing the impact on living things. **SOC 2-12a** *Compare and contrast plants and animals in Scotland with elsewhere eg Amazon Rainforest*

Health and Wellbeing (Mental, emotional, social and physical wellbeing)

Through contributing my views, time and talents, I play a part in bringing about positive change in my school and wider community. **HWB 2-13a** *Membership of Eco-Committee*

Literacy (Listening and talking)

When listening and talking with others for different purposes, I can: share information, experiences & opinions/ explain processes & ideas/ identify issues raised and summarise main points or findings/ clarify points by asking questions or by asking others to say more. **LIT 2-09a**

Numeracy and Mathematics (Number, money and measure)

I can manage money, compare costs from different retailers, and determine what I can afford to buy. **MNU 2-09a**

Numeracy and Mathematics (Shape, position and movement)

I can illustrate the lines of symmetry for a range of 2D shapes and apply my understanding to create and complete symmetrical pictures and patterns. **MTH 2-19a** *Symmetry in nature can be used as a teaching tool e.g. butterflies, ladybirds, leaves. Snowflakes, people's faces.*

Numeracy and Mathematics (Information handling)

I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology. **MTH 2-21a**



Biodiversity Topic: Third Level

Sciences (Planet Earth)

I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. **SCN 3-01a**

I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. **SCN 3-02a**

Through investigations and based on experimental evidence, I can explain the use of different types of chemicals in agriculture and their alternatives and can evaluate their potential impact on the world's food production. **SCN 3-03a**

I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. **SCN 3-05b** *Investigate the causes and impact of ocean acidification*

Sciences (Biological systems)

Using a microscope, I have developed my understanding of the structure and variety of cells and of their functions. **SCN 3-13a**

I have contributed to investigations into the different types of microorganisms and can explain how their growth can be controlled. **SCN 3-13b**

Sciences (Topical Science)

Through research and discussion, I have contributed to evaluations of media items with regard to scientific content and ethical implications. **SCN 3-20b** *Investigate the topic 'Reintroduction of the Lynx'*

Social Studies (People, place and environment)

Having investigated processes which form and shape landscapes, I can explain their impact on selected landscapes in Scotland, Europe and beyond. **SOC 3-07a**

I can identify the possible consequences of an environmental issue and make informed suggestions about ways to manage the impact. **SOC 3-08a**

I can investigate the climate, physical features and living things of a natural environment different from my own and explain their interrelationship. **SOC 3-10a**

Health and Wellbeing (Mental, emotional, social and physical wellbeing)

Through contributing my views, time and talents, I play a part in bringing about positive change in my school and wider community. **HWB 3-13a** *Schools grounds improvements, membership of Eco Committee etc*

Literacy (Listening & Talking)

I am developing confidence when engaging with others within and beyond my place of learning. I can communicate in a clear, expressive way and I am learning to select and organize resources independently. **LIT 3-10a** *Research/ Debates e.g. Global Footprints*

When listening and talking with others for different purposes, I can: communicate information, ideas or opinions / explain processes, concepts or ideas / identify issues raised, summarise findings or draw conclusions. **LIT 3-09a**

Literacy (Writing)

I can persuade, argue, evaluate, explore issues or express an opinion using a clear line of thought, relevant supporting detail and/or evidence. **LIT 3-29a** *Links with other school, countries to explore biodiversity issues, debates on rewilding V agriculture*

Maths (Information handling)

I can display data in a clear way using a suitable scale, by choosing appropriately from an extended range of tables, charts, diagrams and graphs, making effective use of technology. **MTH 3-21a** *Use of species survey data, water quality readings etc for calculations*



Biodiversity Topic: Fourth Level

Sciences (Planet Earth)

I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. **SCN 4-01a**

Through investigating the nitrogen cycle and evaluating results from practical experiments, I can suggest a design for a fertiliser, taking account of its environmental impact. **SCN 4-03a**

By contributing to an investigation on different ways of meeting society's energy needs, I can express an informed view on the risks and benefits of different energy sources, including those produced from plants. **SCN 4-04a**

Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance. **SCN 4-05b**

Sciences (Biological systems)

I can debate the moral and ethical issues associated with some controversial biological procedures. **SCN 4-13c** *GM crops and cloning*

Sciences (Topical Science)

I have researched new developments in science and can explain how their current or future applications might impact on modern life. *GM crops, cloning* **SCN 4-20a**

Having selected scientific themes of topical interest, I can critically analyse the issues, and use relevant information to develop an informed argument. *GM crops, cloning* **SCN 4-20b**

Social Studies (People, place and environment)

I can discuss the sustainability of key natural resources and analyse the possible implications for human activity. **SOC 4-08a**

I can develop my understanding of the interaction between humans and the environment by describing and assessing the impact of human activity on an area. **SOC 4-10a**

Having researched the globalisation of trade, I can explain the interdependence of different parts of the world and assess the impacts for providers, consumers and the environment. **SOC 4-11a** *Production of GM crops and dependence upon multinationals for seed*

I can carry out a geographical enquiry to assess the impact and possible outcomes of climate change on a selected region and can propose strategies to slow or reverse the impact. **SOC 4-12b**

Religious and moral education (Development of beliefs and values)

I can apply philosophical enquiry to explore questions or ethical issues. **RME 4-09e** *GM crops and cloning, the green revolution and inequalities*

Health and Wellbeing Mental, emotional, social and physical wellbeing

Through contributing my views, time and talents, I play a part in bringing about positive change in my school and wider community. **HWB 4-13a** *Share learning on biodiversity with younger pupils, increase biodiversity in school grounds or the local community*

Numeracy and Mathematics (Information handling)

I can select appropriately from a wide range of tables, charts, diagrams and graphs when displaying discrete, continuous or grouped data, clearly communicating the significant features of the data. **MTH 4-21a**