

## Scheme of work for Option G, *Ecology and conservation*

Syllabus section	Content	Time required	Outline of lessons	Coursebook resources	Worksheets	Teacher's resources / Teaching ideas
G1	Community ecology	5 lessons	<ul style="list-style-type: none"> <li>Consider the distribution of species; outline factors, such as pH and light, that affect the distribution of plants, and factors, such as temperature and availability of breeding sites, that affect the distribution of animals</li> <li>Sampling techniques – describe a random sampling technique used to compare two plant population sizes, and the use of a transect to correlate the distribution of a species with an abiotic factor</li> <li>Explain the concept of the niche, including fundamental and realised niches</li> <li>Outline competition, herbivory, predation, parasitism and mutualism between species and explain the concept of competitive exclusion</li> <li>Describe a method of measurement of biomass of trophic levels in an ecosystem</li> </ul>	<p>p471–481</p> <p>Short-answer Qs p480–481</p> <p>End-of-chapter Qs p510–514: Q1, Q2, Q3, Q4, Q13, Q14, Q16</p>	<p>Extension: Q1, Q3</p> <p>Support: Q1, Q3</p>	<p>Practical activities: investigation of abiotic factors and species distribution; investigation using transects and quadrats to sample two habitats</p> <p>Link to Chapter 1</p>
G2	Ecosystems and biomes	4 lessons	<ul style="list-style-type: none"> <li>Define and calculate values for gross and net production</li> <li>Discuss the difficulties of allocating species to a trophic level and explain the low numbers and biomass at higher trophic levels; construct a pyramid of energy from appropriate data</li> <li>Outline the changes in species diversity and production during a primary succession and explain the effects of living organisms on the abiotic environment; distinguish between primary and secondary succession</li> <li>Explain how biomes are defined by rainfall and temperature and outline the characteristics of six biomes</li> </ul>	<p>p481–489</p> <p>Short-answer Qs p484, p489</p> <p>End-of-chapter Qs p510–514: Q5, Q6, Q15</p>	<p>Support: Q2, Q3</p>	<p>Practical activities: investigation of trophic levels from data collected by students; observation of succession where possible</p>

G3	Impacts of humans on ecosystems	5–6 lessons	<ul style="list-style-type: none"> <li>Calculate and analyse the biodiversity of two local communities using the Simpson index</li> <li>Discuss the reasons for conserving the biodiversity of the rainforest</li> <li>Using three examples, discuss the impacts of introduced alien species on ecosystems; outline a biological method of controlling an invasive species</li> <li>Explain the cause and consequences of biomagnification (for example, mercury in fish or DDT in ecosystems)</li> <li>Outline the effect of UV light on tissues and productivity and the effect of CFCs on the ozone layer which absorbs UV radiation</li> </ul>	p490–497 Short-answer Qs p497 End-of-chapter Qs p510–514: Q7, Q8	Extension: Q2, Q3	Practical activities: research of local invasive species; opportunity for assessed practical investigating the effect of UV light on algae; personal research project on the history and use of DDT
G4 (HL)	Conservation of biodiversity	3–4 lessons	<ul style="list-style-type: none"> <li>Explain how indicator species and biotic indices are used to monitor environments</li> <li>Outline factors that contributed to the extinction of a named animal; outline the features of nature reserves that promote conservation</li> <li>Discuss active management in conservation</li> <li>Consider the advantages of <i>in situ</i> and <i>ex situ</i> conservation measures for endangered species</li> </ul>	p497–504 Worked example p500 Short-answer Qs p504 End-of-chapter Qs p510–514: Q9, Q10	Extension: Q2	Practical activity: investigation of local indicator species if possible
G5 (HL)	Population ecology	3–4 lessons	<ul style="list-style-type: none"> <li>Discuss r-strategies and K-strategies of producing offspring and the environmental conditions that favour each</li> <li>Describe the ‘capture-mark-release-recapture’ method of estimating a population size and the methods used to estimate fish stocks</li> <li>Discuss international action to promote the conservation of fish stocks and the concept of sustainable yields</li> </ul>	p505–510 TOK p510 Short-answer Qs p509 End-of-chapter Qs p510–514: Q11, Q12		Practical activity: use of ‘capture-mark-release-recapture’ method or a simulation of it Link to TOK: international cooperation in conservation programmes Link to ICT: obtaining data on fish stocks; databases

**Note:** 1 lesson = approximately 40 minutes