

Biodiversity

| Specification reference | Checklist questions | |
|-------------------------|---|--------------------------|
| 3.4.5 | Can you explain that two organisms belong to the same species if they are able to produce fertile offspring? | <input type="checkbox"/> |
| 3.4.5 | Can you describe courtship behaviour as a necessary precursor to successful mating? | <input type="checkbox"/> |
| 3.4.5 | Can you explain the role of courtship in species recognition? | <input type="checkbox"/> |
| 3.4.5 | Can you describe how a phylogenetic classification system attempts to arrange species into groups based on their evolutionary origins and relationships? | <input type="checkbox"/> |
| 3.4.5 | Can you describe how a phylogenetic classification system uses a hierarchy in which smaller groups are placed within larger groups, with no overlap between groups? | <input type="checkbox"/> |
| 3.4.5 | Can you explain that each group in a phylogenetic classification system is called a taxon (plural <i>taxa</i>)? | <input type="checkbox"/> |
| 3.4.5 | Can you describe how one hierarchy comprises the taxa: domain, kingdom, phylum, class, order, family, genus, and species? | <input type="checkbox"/> |
| 3.4.5 | Can you describe how each species is universally identified by a binomial consisting of the name of its genus and species, for example, <i>Homo sapiens</i> ? | <input type="checkbox"/> |
| 3.4.5 | Can you explain how advances in immunology and genome sequencing help to clarify evolutionary relationships between organisms? | <input type="checkbox"/> |
| 3.4.6 | Can you explain how biodiversity can relate to a range of habitats, from a small local habitat to the Earth? | <input type="checkbox"/> |

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| 3.4.6 | Can you explain that species richness is a measure of the number of different species in a community? | <input type="checkbox"/> |
| 3.4.6 | Can you explain how an index of diversity describes the relationship between the number of species in a community and the number of individuals in each species? | <input type="checkbox"/> |
| 3.4.6 | Can you calculate an index of diversity (d) from the formula $d = \frac{N(N - 1)}{\sum n(n - 1)}$ where N = total number of organisms of all species and n = total number of organisms of each species? | <input type="checkbox"/> |
| 3.4.6 | Can you explain how farming techniques reduce biodiversity? | <input type="checkbox"/> |
| 3.4.6 | Can you explain the balance between conservation and farming? | <input type="checkbox"/> |
| 3.4.7 | Can you identify the genetic diversity within, or between species, in reference to: <ul style="list-style-type: none"> • the frequency of measurable or observable characteristics • the base sequence of DNA • the base sequence of mRNA • the amino acid sequence of the proteins encoded by DNA and mRNA? | <input type="checkbox"/> |
| 3.4.7 | Can you suggest relationships between different organisms within a species and between species by interpreting data relating to similarities and differences in the base sequences of DNA and in the amino acid sequences of proteins? | <input type="checkbox"/> |
| 3.4.7 | Can you describe how gene technology has caused a change in the methods of investigating genetic diversity; inferring DNA differences from measurable or observable characteristics has been replaced by direct investigation of DNA sequences? | <input type="checkbox"/> |

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| 3.4.7 | <p>Can you undertake quantitative investigations of variations within a species, including:</p> <ul style="list-style-type: none">• collecting data from random samples• calculating a mean value of the collected data and the standard deviation of that mean• interpreting mean values and their standard deviations? | <input type="checkbox"/> |