Science In Action 9

Unit 1 — Biological Diversity

Section 1.0 — Biological Diversity reflects life on Earth

- Millions of species live on the Earth
- Biodiversity - three main components: **ecosystem diversity**, **community and species diversity** and **genetic diversity**
- Variation between and among species
- Species co-existing in a habitat are interdependent – **predator-prey**, **commensalism**, **parasitism** and **mutualism**
- Different species share resources by having different **niches**
- **Natural Selection** - selection of desirable traits by the environment

Section 2.0 — Reproduction: Traits are passed on

- **Heritable Traits** vary, as variations can be **discrete** or **continuous**
- The environment can also affect some heritable traits (height)
- **Asexual Reproduction** (only 1 parent) - the offspring identical to the parent – allowing a species to reproduce quickly
- **Sexual reproduction** (2 parents) - the offspring is different from the parents and results in variation among individuals within a species
- Sexual – a male **gamete** fuses with a female **gamete** to produce a **zygote**, which develops into an **embryo** and grows into an individual

Section 3.0 — DNA – Inheritable Material

- **Chromosomes** (alleles arranged in pairs), **genes** (instructions for a particular trait) **DNA** (**genetic code**) for making a particular individual) are passed on from generation to generation within a species
- Asexual Reproduction (**mitosis**) – Sexual Reproduction (**meiosis**)
- **Dominant** traits are always seen in offspring, **recessive** traits occur when both parents have the **recessive alleles** of that trait

Section 4.0 — Biodiversity is Affected by Humans

- **Extinction** is a loss of a species from the entire planet
- **Extirpation** is a loss of a species from a particular area
- Human actions or natural events can cause extinction and extirpation
- **Artificial Selection** - human selection & breeding for desirable traits
- Technologies affecting biodiversity – artificial selection, artificial reproductive technologies and genetic engineering