Chapter 3 review questions

Remembering

1 Terrestrial environments are classified mainly on vegetation type, topography, soil type and climatic variation such as temperature, water, light and wind. Aquatic environments are classified on salinity, size and permanency of the body of water.

2 Type of symbiosis Species 1 Species 2 Parasitism + – Mutualism + + Commensalism + 0 Abiotic factors Terrestrial Aquatic Pressure Lower Higher, particularly at lower depths Temperature Wider range Narrower range Gas availability Freely available Limited availability

3 Competitors compete for the same resources whereas collaborators are species that work together to benefit each other.

Understanding

4 a Biosphere: the layer on Earth where the land, atmosphere and water interact in ways that sustain life. Biome: sections of the biosphere. b Environment: the biotic and abiotic factors in an area. Ecosystem: the biotic and abiotic factors in an area, plus the interactions between them. c Ecosystem: the biotic and abiotic factors in an area, plus the interactions between them. Habitat: area where organisms live within an ecosystem. d Community: the sum of all the living organisms in a habitat. Population: group of individuals belonging to the same species, living in the same habitat at the same time. e Environment: the biotic and abiotic factors in an area. Habitat: area where organisms live in the environment.

5 Biodiversity is increased when species benefit from their symbiotic relationships. It could be that they gain more food or shelter, or are distributed more widely. Any advantage to a species increases their chances of survival.

Applying

6 Relationship or interaction Description Example Ecosystem Different species living together and sharing the same resources Forest, pool, swamp etc. Commensalism One organism benefits and the other neither benefits nor is harmed Shark and remora Intraspecific interactions (competition) Rivalry between species for particular resources Many throughout the text Mutualism Both species in the relationship benefit and neither is harmed Pistol shrimp and the goby fish Pollinators Transfers pollen between flowers Birds, insects, small mammals Predator An animal that kills for food Purple sea star Seed disperser An organism that feeds on fruits and seeds for nutrition and, when the animal defecates, it deposits the seeds in a new location where they can germinate and grow Cassowary

8 If the species introduced was a predator, it could reduce the biodiversity. If it was a species that benefited other species, the biodiversity would increase. It may also be that there is no change to the biodiversity.

Analysing

9 Mutualism: Both partners benefit and neither is harmed. The elephant obtains food and the seeds are dispersed.

10 a The dominant species is A. b The total surface area covered by species A is 120 m2 . The percentage cover is 37%. c The environment is classified as a eucalypt forest. d The sample plot may not be representative of the whole area. A number of sample plots would be needed, to gain more accurate results, with the data collated (aggregated). e Differences in light intensity, slope, availability of water due to different soil conditions, and so on. Some species may grow more rapidly than others and affect the survival of other species by competing more successfully for requirements.

11 a b Grassland c Boreal forest

12 a The prey population is usually more numerous than the predator population because one predator usually depends on more than one member of the prey population for its food. b There could be a time during a period of adverse conditions that the prey population decreases to have lower numbers than its

predators. When this occurs, predators turn to alternative prey species and this allows the original prey population to grow in number Relationship or interaction Description Example A Dry sclerophyll forest Mild wet winters, hot summers, low rainfall B Woodland Constantly hot, very wet and humid C Desert Hot and dry, low rainfall D Wet sclerophyll forest Temperate, high rainfall all year round Ecosystem Temperature range (°C) Precipitation range (mm) Boreal forest –17 to 15 25 to 205 Desert 3 to 31 0 to 24 Grassland –10 to 31 0 to 78 Permanent ice –20 to –5 0 to 125 Temperate deciduous forest 0 to 22 37 to 175 Temperate rainforest 5 to 23 198 to 263 Tropical rainforest 13 to 32 150 to 320 Tundra –18 to 12 0 to 37

Alternatively, predator populations may decline due to an increase in intraspecific competition for food.

Evaluating

13 Students' own responses

Creating

14 Students' own responses.

Reflecting

15 Students' own responses