

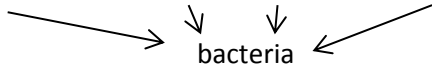
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2. water availability, temperature, space for home, or inclement weather.

3. A food chain shows the flow of energy through a single feeding path in an ecosystem. A food web is made up of many interconnected food chains.

4. (a) grass => grasshoppers => frogs => snapping turtles

(b) grass => grasshoppers => frogs => snapping turtles



(c) Sun => grass => grasshoppers => frogs => snapping turtles

5. Bacteria involved in the nitrogen cycle include: nitrogen-fixing bacteria that convert atmospheric nitrogen gas into ammonia; nitrifying bacteria that convert ammonia into nitrates; denitrifying bacteria that convert nitrates back into nitrogen gas; decomposing bacteria that break down the tissues of dead or decaying organisms and release nitrogen compounds into the ecosystem.

6. Three types of symbiosis include:

Commensalism - where one organism benefits from another's actions and the second organism neither benefits nor is harmed, such as a bird building a nest on a tree

Mutualism - where both organisms benefit from interacting with one another, such as leaf-cutter ants and fungus

Parasitism - where one organism benefits at the expense of another, such as ticks living on mammals.

7. Genetic diversity is a specific type of biodiversity that focusses on the differences among individuals of the same species.

8. Five major factors that affect biodiversity include habitat change, overexploitation, pollution, invasive species, and climate change.

9. Elements that make up the soil include litter, topsoil, humus, organic matter, rock particles, subsoil, and bedrock.

14. Modern pesticides are designed to last one growing season and then break down into less harmful substances.

15. Special concern, threatened, endangered, extirpated, and extinct.

16. Practising soil conservation and reducing farming practices that remove or damage the topsoil can reduce soil erosion.

17. by-laws that prevent the movement of materials that may carry invasive species, or laws against bringing foreign food, produce, and animals into the country.

19. A community describes several interacting populations. The biosphere is defined as the area on the planet where all life exists. Since this involves all the biotic components interacting with abiotic factors, ecosystem would be a better description than community.

20. Energy and nutrients would be trapped in the tissues of all the organisms that ever existed in the ecosystem. There would likely be a shortage of nutrients and energy available for the environment.

22. (a) Pyramid A best represents a sustainable ecosystem.

(b) Pyramid B does not follow the 10 percent rule as you move up the feeding levels. Not enough energy is available to support the top two feeding levels. Pyramid C does not make sense, as the bottom level has to have the most energy.

(c) Assuming that scenario B survives past the next couple of generations, it would likely look like Pyramid A in 10 years' time. The second level would outstrip the energy in the bottom level and eventually most of these animals would die out. However, the producers would likely recover and a sustainable number of consumers would follow.

23. (a) From 1990 to 1997, the mink population is growing the fastest.

(b) close to 8000.

(c) Limiting factors would prevent the mink population from going higher than the ecosystem could support.

(d) human intervention. Humans may have enacted conservation measures, stopped hunting, or controlled the level of mink predation.

24. (a) Habitat change

(b) Climate change

(c) Overexploitation

27. The most likely cause is runoff of fertilizer from farms that has entered the lake, causing eutrophication.

28. Many pollutants bioaccumulate in the tissues of animals. The pollutants biomagnify through the food chain and eventually collect in very high concentrations in top consumers, where negative effects can be observed.

29. plan that outlines how to increase and protect current populations of black-footed ferrets and protect their habitat. Also, designing some method to control the spread of plague by the fleas would be important.