

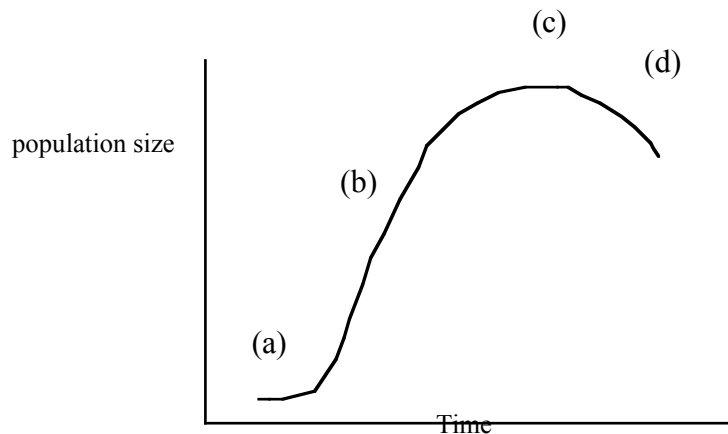
BIOSPHERE *Checklist*

How it Works (*Credit level)

1. An ecosystem consists of all the living things (the **community**) together with their non-living surrounding (**habitats**). **Populations** of plants and animals together make up the community.
2. All the parts of an ecosystem are **inter-related**.
3. One thing which connects organisms in an ecosystem is a **food chain**.
4. The **energy** which flows into a food chain comes from the **sun**.
5. **Producers** are **green plants** which turn the sun's energy into food by **photosynthesis**.
6. Producers are fed upon by **primary consumers** (these are plant-eating animals or **herbivores**)
7. Primary consumers are fed upon by **secondary consumers** (these are animals which eat other animals or **carnivores**.) All these animals are **predators**.
8. The arrows in a food chain show the direction of **energy flow**
9. As energy flows along a food chain some is **lost** at each stage. This may pass out as undigested food or is used by the organism for movement, heat etc.
10. Only around **10%** of the energy taken in by an organism is **passed on**. (ie. 90% is lost). This is why food chains are limited in length.
11. Most food chains exist as part of a branching **food web**. Something happening to one organism can have a knock-on effect on all the others.
- 12*. As you move along a food chain the numbers of each organism decrease (and their size usually increases). This can be shown in a **pyramid of numbers**.
- 13*. A **pyramid of biomass** is similar but shows the total mass of a population rather than just numbers. This can be a more accurate representation in a food chain where one of the organisms is particularly large (eg elephant) or small (eg ants) with a corresponding distortion in numbers.
14. **Population sizes** stay quite stable if the **birth rate** is equal to the **death rate**
15. Population sizes are held in check by **limiting factors** such as predation, food

supply, disease, lack of space and build up of toxic waste materials.

16. A population growing without control increases rapidly - a **population explosion**.
- 17*. A population growing under **ideal** conditions produces an **S-shaped** growth curve on a graph of population size against time.



Explanation

- (a) too few cells or organisms to breed
 - (b) rapid growth as reproduction increases
 - (c) birth rate = death rate as wastes build up or resources decrease
 - (d) death rate is greater than birth rate as wastes become toxic or resources run out
18. If two populations of different organisms have a need for the same resource (eg light, nutrients, space in plants or food or shelter in animals) they are in **competition**.
19. The numbers of a prey animals mirrors and lags behind the numbers of their prey - called a **predator-prey relationship**
20. Nutrients used by plants and animals show **nutrient cycles**. An example of this is the **Nitrogen Cycle**. **Decomposers** (mostly microorganisms) are responsible for releasing nutrients from the remains of plants and animals.
- 21*. **Nitrifying bacteria** fix nitrogen gas into **nitrates** which plants can absorb to convert into plant protein. **Denitrifying bacteria** convert nitrates into nitrogen gas.