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How Nature Works in Harmony

Keep the curiosity alive

1. Refer to the given diagram (Fig. 12.19) and select the wrong statement.

- (i) A community is larger than a population.
- (ii) A community is smaller than an ecosystem.
- (iii) An ecosystem is part of a community.

Ans: The wrong statement is: iii.

An ecosystem is part of a community. (An ecosystem is larger and includes several communities.)

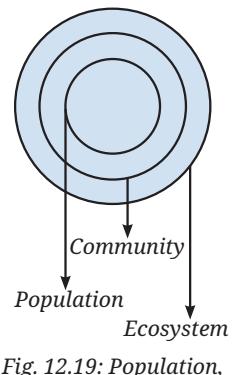
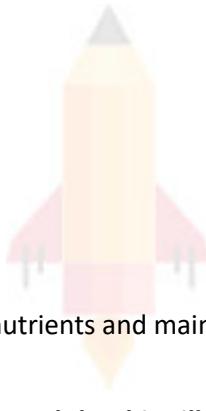


Fig. 12.19: Population, community, and ecosystem

2. A population is part of a community. If all decomposers suddenly disappear from a forest ecosystem, what changes do you think would occur? Explain why decomposers are essential.

Ans: If decomposers vanish:

- Dead plants & animals will accumulate
- Nutrient recycling will stop
- Soil fertility will decrease
- Plants will not get nutrients
- Herbivores will decline
- Carnivores will decline



Decomposers are essential because they recycle nutrients and maintain soil health.

3. Selvam from Cuddalore district, Tamil Nadu, shared that his village was less affected by the 2004 Tsunami compared to nearby villages due to the presence of mangrove forests. This surprised Sarita, Shabnam, and Shijo. They wondered if mangroves were protecting the village. Can you help them understand this?

Ans: Mangroves have dense, intertwined roots which act as natural barriers, reducing the impact of strong winds, waves, and floods, thus protecting coastal villages like those in Tamil Nadu during the 2004 Tsunami.

4. Look at this food chain:

Grass → Grasshopper → Frog → Snake

If frogs disappear from this ecosystem, what will happen to the population of grasshoppers and snakes? Why?

Ans: Grasshopper population would increase due to lack of predation, and snake population would decrease as their food source (frogs) declines. This creates imbalance in the ecosystem.

5. In a school garden, students noticed fewer butterflies the previous season. What could be the possible reasons? What steps can students take to have more butterflies on campus?

Ans: Possible reasons:

- Fewer flowering plants
- Pesticide use
- Habitat destruction
- Lack of nectar sources
- Climatic changes

Steps to increase butterflies:

- Plant more flowering plants
- Avoid pesticides
- Create butterfly-friendly gardens
- Provide water and mud patches

6. Why is it not possible to have an ecosystem with only producers and no consumers or decomposers?

Ans: Without consumers, producers would grow uncontrollably, and without decomposers, organic waste would build up, depriving the soil of nutrients.

- Producers need decomposers to recycle nutrients
- Consumers control plant population
- Without decomposers, nutrient cycle stops
- Without consumers, plants overgrow → imbalance

Therefore, all three groups are essential.

7. Observe two different places near your home or school (e.g., a park and a roadside). List the living and non-living components you see. How are the two ecosystems different?

Ans:

- Park: More plants, birds, insects, clean soil.
- Roadside: Fewer plants, more pollution, less wildlife.
- They differ in living and non-living factors.

8. 'Human-made ecosystems like agricultural fields are necessary, but they must be made sustainable.' Comment on the statement.

Ans: Human-made ecosystems—farms, parks—depend on human care.

If unsustainable practices (pesticides, monoculture) are used:

- Soil health declines
- Biodiversity decreases
- Water pollution increases

Thus, they must adopt sustainable methods like organic farming, crop rotation, natural pest control.

9. If the Indian hare population (Fig. 12.20) drops because of a disease, how would it affect the number of other organisms?

Ans: Predators of hares (like foxes and eagles) would struggle for food, leading to a decrease in their numbers; prey species (plants eaten by hares) could increase.

