

1. Write the Rabinowitz's seven forms of rarity with examples (only 5)

Rarity	Distribution	Habitat	Local population size
1	restricted	specialised	everywhere rare
2	restricted	specialised	somewhere common
3	restricted	generalised	everywhere rare
4	restricted	generalised	somewhere common
5	widespread	specialised	everywhere rare
6	widespread	specialised	somewhere common
7	widespread	generalised	everywhere rare

2. Differentiate between the followings:

A. Core subpopulation and Satellite subpopulation.

Core Subpopulation	Satellite Subpopulation
1) persist for relatively long periods	1. more likely to wink on and off
2) likely to be large	2. likely to be small
3) a net source of individuals	3. a net sink of individual

B. Alpha diversity and Beta diversity?

Alpha diversity is the diversity that exists within an ecosystem. While , beta diversity (among ecosystems diversity) by occurring in a nearby field.

3. A sharp decrease in the number of species on earth in a short period of time called -----.

- A. Planned Extinction B. **Mass Extinction** C. Extinction
4. Extinctions caused by ----- are generally considered to be a recent phenomenon.
 A. **Humans** B. Pollution C. Invasive species
5. ----- is the single greatest threat to species.
 A. **Loss of Habitat** B. Fragmentation C. Pollution
6. ----- a group of individuals of the same species occupying a defined area at the same time
 A. **Population** B. Metapopulation C. Subpopulations
7. Species that do not occur in small patches of habitat are called -----.
 A. **Area-Sensitive Species** B. Extinct Species C. Immigrant
8. The species–area relationship describe the relationship between the area of a habitat, and the number of species found within that area. Larger areas tend to contain:
 A. Lesser number of species B. Equal number of species C. **Larger number of species**
9. The ----- is a critical indicator of the health of the world’s biodiversity.
 A. **IUCN Red List** B. Biodiversity loss C. Pollution
10. ----- the grouping of objects or information based on similarities
 A. Taxonomy B. **Classification** C. Fragmentation
11. Extinctions caused by ----- are generally considered to be a recent phenomenon.
 B. **Humans** B. Biodiversity losses C. Invasive species
12. ----- converting some natural ecosystems into agricultural lands
 A. Dissection B. **Perforation** C. Attrition
- 13.** Count natural causes of extinction (only 5):
1. **Climatic Heating and Cooling**
 2. **Asteroids**
 3. **Cosmic Radiation**
 4. **Acid Rain**
 5. **Disease/Epidemics**
 6. **Spread of Invasive Species**

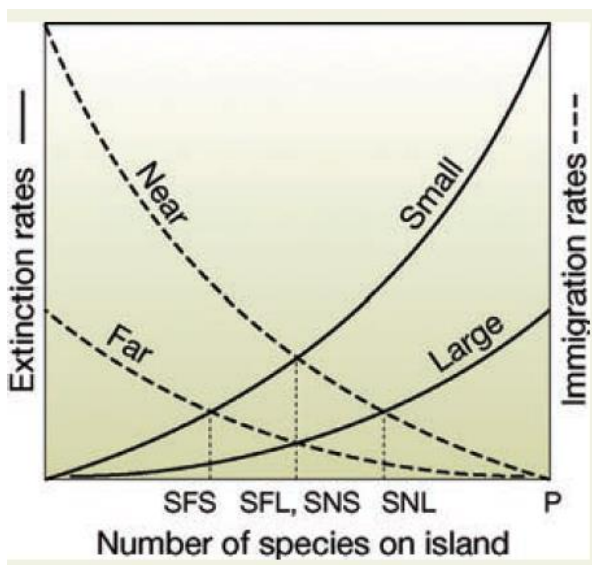
7. Genetics and Demographics

14. Draw and label the fundamental idea of MacArthur and Wilson's (1967) equilibrium theory of island biogeography?

The fundamental idea of MacArthur and Wilson's (1967) equilibrium theory of island biogeography is that the number of species on an island represents a balance between immigration and extinction.

The rate of immigration is determined largely by how isolated an island is; the more isolated, the lower its immigration rate. The curve for remote islands (far) being lower than the curve for islands that are near the mainland (near). Extinction rates are a function of island size; populations on large islands tend to be larger and thus less vulnerable to extinction. In the Figure, the extinction curve for large islands is lower than the curve for small islands.

For any given island there is an extinction rate and an immigration rate that will balance one another and keep the number of species relatively constant. In this example, the numbers of species for four equilibria are represented as follows: SFS, number of species on a far, small island; SFL, far, large island; SNS, near, small island; SNL, near, large island. P is the total number of species that could potentially immigrate to the island from a nearby landmass.



15. The ecologist Robert Whittaker (1960) devised a simple system for classifying the scales at which diversity occurs; he described three scales of diversity, mention and explain all.

he described three scales of diversity as alpha, beta, gamma (A, B, C in Greek).

Alpha diversity is the diversity that exists within an ecosystem (two hypothetical lizard species, spotted lizards and long-tailed lizards), illustrate alpha diversity by coexisting in the same forest, living at different heights within the forest.

A third species, banded lizards, illustrates beta diversity (among ecosystems diversity) by occurring in a nearby field. Finally, if you imagine spotted, long-tailed, and banded lizards living on one island, and a fourth species, speckled lizards, living a thousand kilometers away on another island, this would represent gamma diversity, or geographic-scale diversity.

16. Water pollution is less likely to cause global extinction of species in marine ecosystems than in freshwater ecosystems. Why? Because:

- i. marine ecosystems are often too large to pollute in their entirety
- ii. many marine species have large geographic ranges





17. Large fragments have more species than small fragments, why?

First, a large fragment will almost always have a greater variety of environments than a small fragment (e.g. different types of soil, a stream, an area recently disturbed by fire), and each of these will provide niches for some additional species.

Second, a large fragment is likely to have both common species and uncommon species (i.e. species that occur at low densities), but a small fragment is likely to have only common species.

Third, small fragments will, on average, have smaller populations of any given species than large islands, and a small population is more susceptible to becoming extinct than a large population.

18. Human Causes of Extinction

-  Increased human population
-  Destruction/Fragmentation of habitat
-  Pollution/ Toxicity
-  Climate change/Global warming

19. Write about levels of biodiversity

1. **Genetic diversity:** This refers to the variety of genes within a species of plant or animal. Healthy plant and animal populations have a genetic variety, that is, they are not all from the

same small number of parents. Genetic diversity serves as a way for populations to adapt to changing environments. Example of genetic variations in dogs is the difference in skin colour, ears, eyes and body shape.

2. **Species diversity:** This refers to the variety of types of plants, animals, and micro - organisms.
3. **Ecosystems diversity:** This refers to the variety of natural systems which provide the homes or habitats and services for all organisms. Examples of ecosystems diversity are forests, mountains, rivers, lakes, wetlands, oceans and deserts.

20. The ecologist Robert Whittaker (1960) devised a simple system for classifying the scales at which diversity occurs; he described three scales of diversity, mention and explain all.
21. Write only four (4) of Rabinowitz's seven forms of rarity with examples?
22. Marine organisms are used as an index of past biodiversity. Why?
23. Why are there more species in the tropics?
24. Define the following terms: 1. Endemic Species 2. Fragmentation 3. Metapopulation 4. Area-Sensitive Species
25. Draw and label the fundamental idea of MacArthur and Wilson's (1967) equilibrium theory of island biogeography?
26. Draw and label 'levels of organization'?
27. Differentiate between Alpha diversity and Beta diversity?
28. Explain Allopatric speciation?
29. Why the taxonomic knowledge is far from complete?
30. Differences between core subpopulation and satellite subpopulation.
31. Why water pollution is less likely to cause global extinction of species in marine ecosystems than in freshwater ecosystems?

Fill the following blanks with suitable words:

32. There are five major biodiversity mass extinction recorded in the history and the most notable extinction is
33. Species that do not occur in small patches of habitat are called
- 34 The consequence of fragmentation is based on a simple rule of geometry: the perimeter length of a patch changes as a, whereas its area changes as a
36. Ideally, it's usually prefer to define populations with respect to their or
37. is the proximate cause of most fragmentation.

38. Taxonomists identify, describe and arrange species into classifications, including those that are new to science, according to morphology, genetics, and

39. Despite the balancing effect of immigration and emigration, subpopulations sometimes appear and disappear, these are called There are three levels of biodiversity namely, and

40. is the proximate cause of most fragmentation.

41. Taxonomists identify, describe and arrange species into classification according to behavioral, biochemical observation, and

42. Despite the balancing effect of immigration and emigration, subpopulations sometimes appear and disappear, these appearance and disappearances are called

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