Biol mod4 Q&A - Q&A from lectures

From Molecules to Ecosystems (University of Sydney)

BIOL1007 Module 4 Q & A

Q1 The carrying capacity of a population can be defined as:

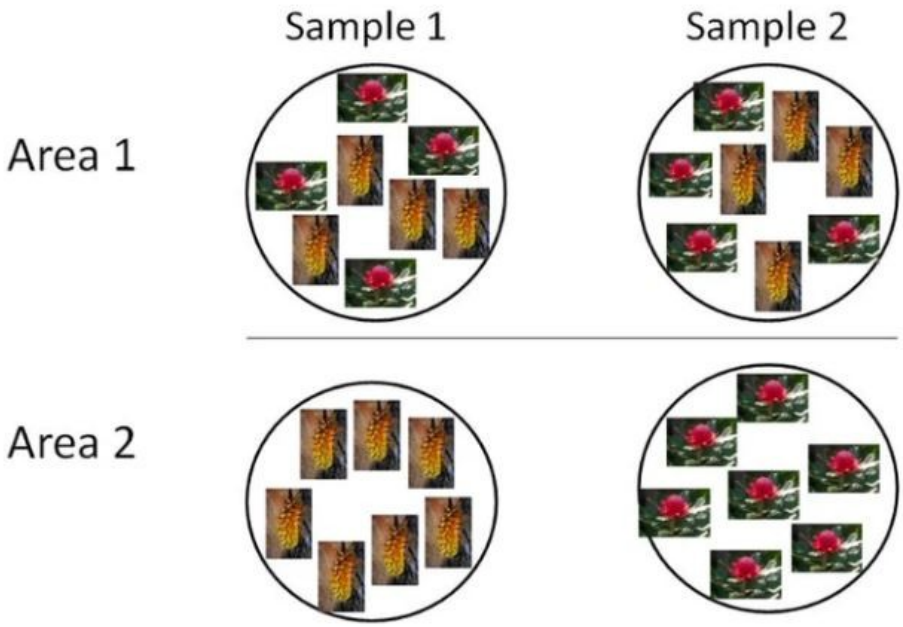
A. The ability of a population to recover from periods of resource shortage
B. The equilibrium reached when the number of births equals deaths
C. The theoretical maximum number of individuals the environment can support
D. The number of individuals that a population can lose before it crashes

Q2 Question in picture:

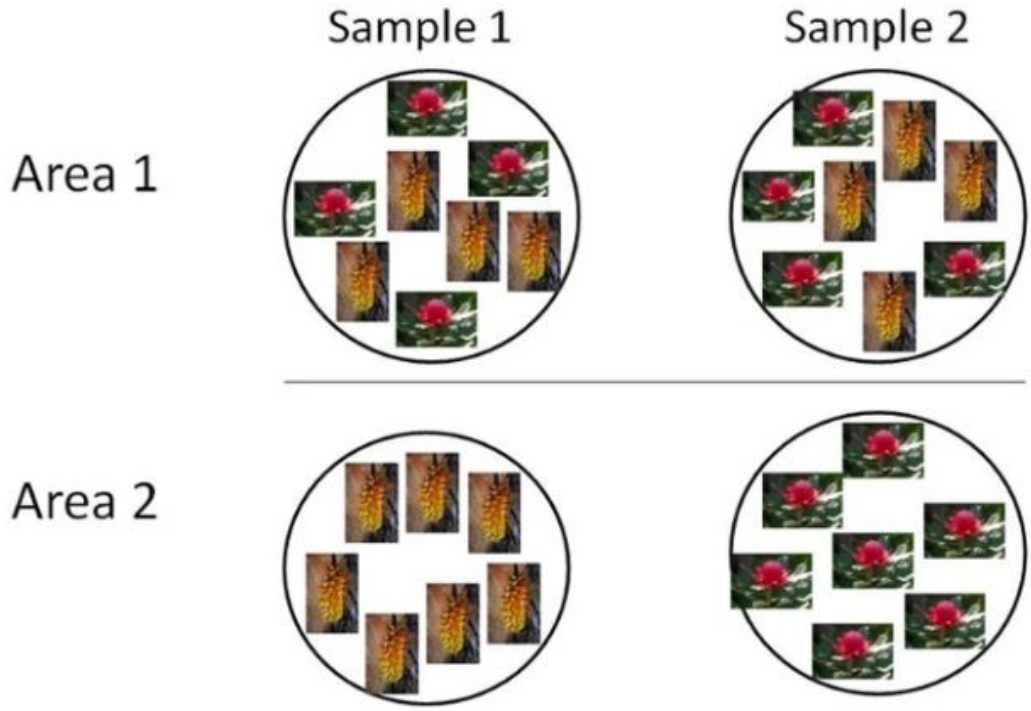
You have just discovered a new site that contains the fossilised remains of what appear to be several new species of dinosaur - congratulations! Which of the following species concepts would be most useful to understand how many species are represented:

A. Phylogenetic species concept
B. Biological species concept
C. Morphological species concept
D. Ecological species concept

Q3 Interpreting the figurine

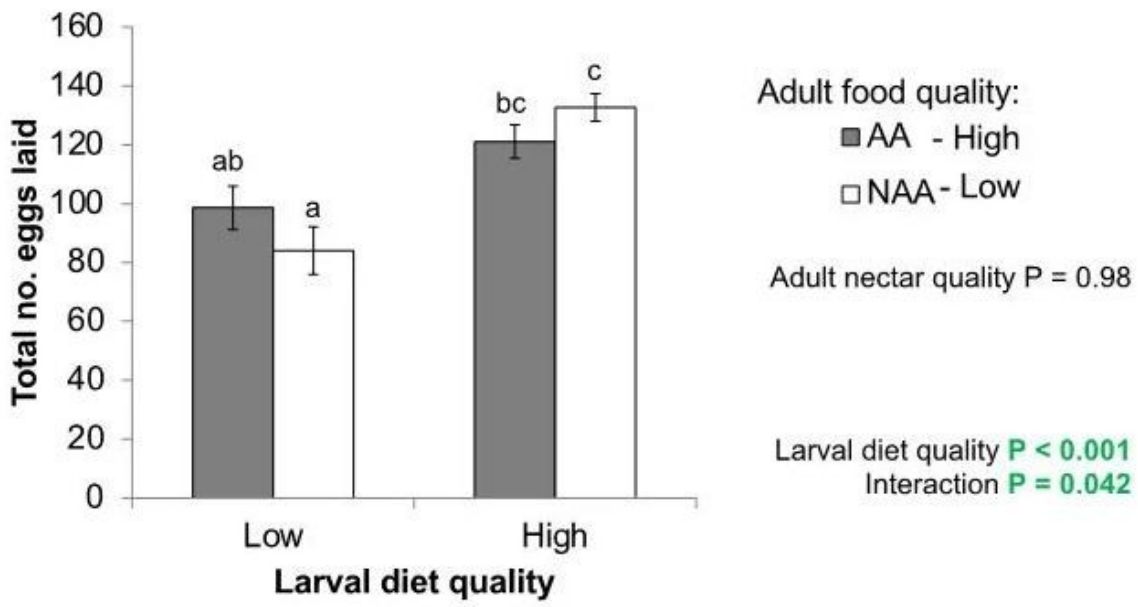


Q4 After looking at the figure below, which one of the following statements do you consider to be correct:



A. Alpha diversity is higher in Area 1 than in Area 2
B. Beta diversity is higher in Area 1 than in Area 2
C. Gamma diversity is higher in Area 1 than in Area 2
D. Alpha and beta diversity are identical in both areas

Q5 Explain how you would interpret the experimental results in the figure below



A. Both larval and adult food quality always affected reproductive output
B. Larval food quality significantly affected reproductive output
C. Adult food quality significantly affected reproductive output
D. Food quality had no affect on reproductive output

Q6 IMAGE ONLY

Q7 Question in picture

A marine biologist is studying a population of dolphins that frequent several feeding sites equally distanced from their primary habitat. Each site differs in the type of fish available and the effort required to catch these fish.

According to Optimal Foraging Theory, which strategy would you expect the dolphins to employ to maximise their net energy intake?

A. The dolphins choose the site with the fastest fish, providing a challenging hunt
B. The dolphins select the site with the highest density of fish, regardless of the species or ease of capture
C. The dolphins prefer the site with fish that are easier to catch and handle, providing the most energy for the least effort
D. The dolphins visit each site equally to vary their diet and avoid depleting any single fish population

Q8 The amount of energy passing through an ecosystem is determined by the:

A. Number of trophic levels in the ecosystem
B. Total number of plants and animals in the ecosystem
C. Biomass of producers in the ecosystem
D. Net primary productivity of the ecosystem

Q9 Question in picture

A plant species releases spiky seeds that cling to the fur of animals, the plant relies on this for seed dispersal and reproduction; the animal is unaffected. This is an example of what type of ecological interaction?

A. Amensalism
B. Commensalism
C. Mutualism
D. Competition

Q10 Which of the following is the most important driver of succession?

A. The species assemblage that is present at any one time
B. The composition of the 'climax community'
C. The capacity for new arrivals to establish
D. The composition and availability of nutrients in soil

Q11 Which is correct regarding population growth?

A. N(t)=N(t+1) + Births - Deaths
B. N(t+1) = N(t) + Births - Deaths + immigrants - emigrants
C. N(t+1) = N(t) - Births + Deaths
D. N(t+1) = N(t) - Births + Deaths - immigrants + emigrants

Q12 The concept of a trophic cascade can be best understood as:

A. Effects on predators through food webs on lower trophic levels
B. Effects of predators through food webs on higher trophic levels
C. The effects of predators in driving down populations of their prey
D. The effects of predators in marine and freshwater systems

Q13 Which interaction does NOT benefit any organism involved?

A. Predation
B. Competition
C. Mutualism
D. Commensalism

Q14 What is the use of Population Viability Analysis (PVA)?

A. To model the diversity of a population.
B. To model the richness of the species in a population.
C. To model the probability of a population surviving over time
D. To estimate the number of individuals in a population

Q15 In order to demonstrate successful habitat restoration, what do you need?

A. Seed dispersal by ants to be restored
B. A well-defined reference state that you want to use as a comparison
C. To support the 'Field of Dreams' hypothesis
D. For a vegetation community to reach a climax state

Q16 Most of Australia's threatened and extinct mammals weigh between 35 g and 5.5 kg. The most likely driver of this is:

A. Loss of forest habitat
B. Predation from introduced foxes and feral cats
C. Competition with introduced rabbits and hares
D. Overhunting by people

Q17 Question in picture

A conservation biologist is monitoring a tropical rainforest following a mild hurricane that caused partial damage to the canopy but did not lead to extensive deforestation. According to the intermediate disturbance hypothesis, what is the most likely outcome for the biodiversity of the forest in the areas affected by the hurricane?

A. Biodiversity will decrease significantly due to the destruction
B. Biodiversity will increase temporarily due to new colonisations
C. The biodiversity will remain unchanged as the ecosystem is resilient
D. The biodiversity will permanently increase due to creating new niches

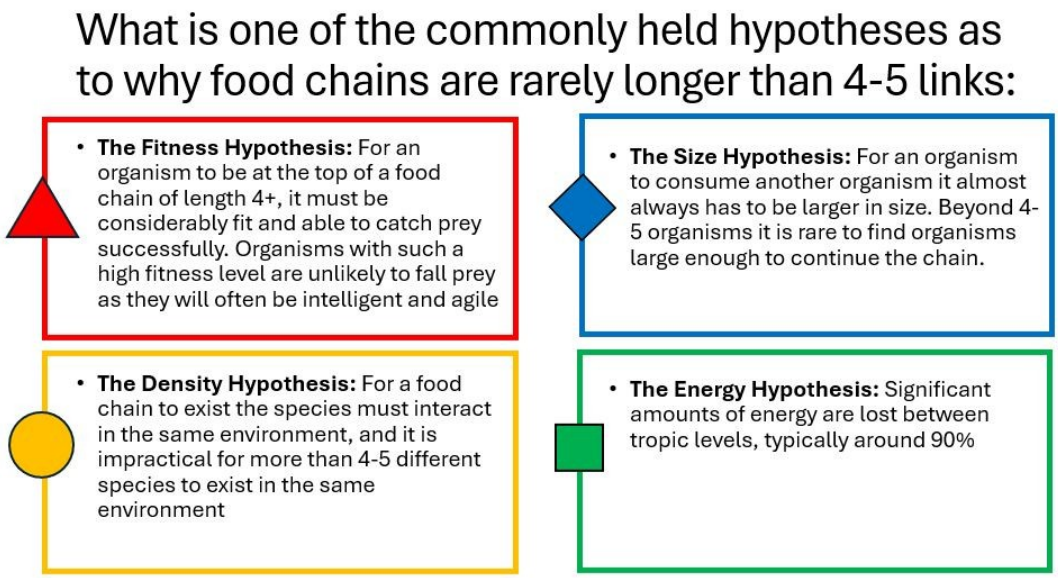
Q18 Which of the following is NOT correct about pioneer plant species? They:

A. can contribute to the nitrogen cycle
B. are shade-intolerant (e.g. like light)
C. are important for primary succession
D. produce large numbers of big seeds

Q19 Which of the following is an example of mutualism?

A. Penicillium secreting penicillin, killing bacteria
B. Ticks living in dog fur
C. Bees pollinating flowers
D. Barnacles living on whales

Q20 IMAGE FOR NEXT QUESTION



Q21 What is one of the commonly held hypotheses as to why food chains are rarely longer than 4-5 links:

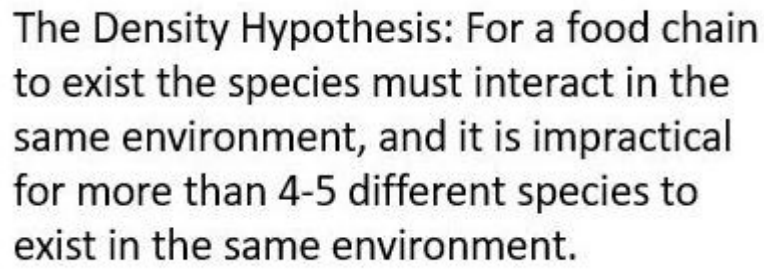
A.

The Fitness Hypothesis: For an organism to be at the top of a food chain of length 4+, it must be considerably fit and able to catch prey to a successful extent. Organisms with such a high fitness level are unlikely to fall prey as they will often be intelligent and agile

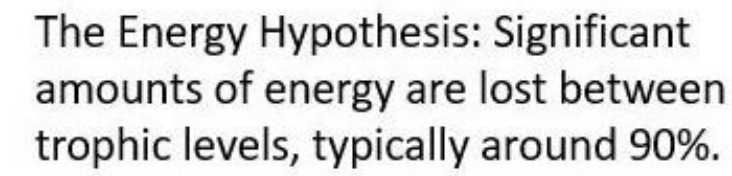
B.

The Size Hypothesis: For an organism to consume another organism it almost always has to be larger in size. Beyond 4-5 organisms it is rare to find organisms large enough to continue the chain.

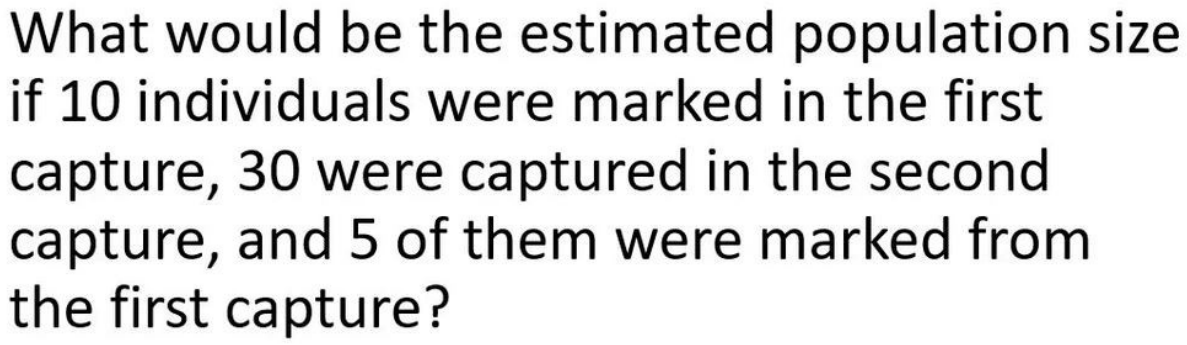
C.



D.



Q22 Question in picture:



A. 45
B. 150
C. 15
D. 60

Q23 Ecological meltdowns can occur in habitat fragments when the:

A. An area experiences a large disturbance event
B. Loss of predators allow animals lower trophic levels to increase in numbers
C. Exterior area of a fragment endures harsher wind and microclimatic factors
D. Rare plant species go extinct due to co-extinction

BIOL1007 Module 4 Q & A

ANSWERS:

Q1. C
Q2. C
Q3. PICTURE ONLY
Q4. A
Q5. B
Q6. PICTURE ONLY
Q7. C
Q8. D
Q9. B
Q10. C
Q11. B
Q12. A
Q13. B
Q14. C
Q15. B
Q16. B
Q17. B
Q18. D
Q19. C
Q20. PICTURE ONLY
Q21. D
Q22. D
Q23. B