UNIT TWELVE HOMEWORK #2

1.The term for the population at which the number of individuals is just sufficient for the resources available to them:
  a)   logistic carrying capacity

  b)   maximum sustainable yield

  c)   minimum viable population

  d)   optimum sustainable population

  e)   maximum sustainable population

2.The first target in recovery programs for endangered species is:
  a)   logistic carrying capacity

  b)   maximum sustainable yield

  c)   minimum viable population

  d)   optimum sustainable population

  e)   maximum sustainable population

3.The term for the maximum population that can be sustained into the indefinite future without degrading the species' habitat or the viability of the species itself:
  a)   logistic carrying capacity

  b)   maximum sustainable yield

  c)   minimum viable population

  d)   optimum sustainable population

  e)   maximum sustainable population

4.If a population grows beyond its carrying capacity, deaths _____ births, and the population _____ back to the carrying capacity. If a population falls below its carrying capacity, births _____ deaths, and the population _____.
  a)   are exceeded by; increases; exceed; decline

  b)   exceed; increases; are exceeded by; decreases

  c)   exceed; decline; are exceeded by; increases

  d)   are exceeded by; decline; exceed; increases

  e)   none of these is the correct option

5.Characteristics of species likely to become endangered and extinct as a result of human activities include:
  a)   long-lived individuals

  b)   small body size

  c)   rapid rates of reproduction

  d)   rapid rates of population growth

  e)   invertebrates

6.Competition among individuals in a population:
  a)   increases the birth rate
  b)   increases the carrying capacity
  c)   keeps the population at a constant level and is beneficial to the population in the long run
  d)   slows the growth rate of the population
  e)   lets the population increase at nearly exponential rate

7.Some introduced species become abundant pests because they are:
  a)   parasites
  b)   superior competitors
  c)   predators
  d)   a density-independent population
 e)   a minimum viable population

8.As people clear land and modify the environment, species which _____ are especially vulnerable to extinction.
  a)   are generalists
  b)   have highly specific habitats
  c)   are mammals
  d)   can adapt to a different environment
  e)   live in diverse ecosystems

9.A key to successful wildlife management is monitoring a population's age structure. What does it suggest, if a shift in catch of commercial fish towards younger ages is observed?
  a)   this is an early sign of over-exploitation
  b)   that the fish stock has reached its carrying capacity
  c)   that the fishing is done according to the logistic growth curve
  d)   that the fish stock obtained its maximum sustainable yield
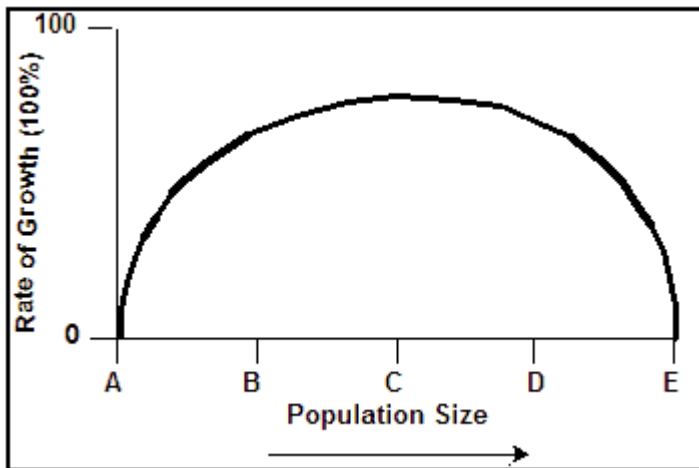 e)   that global warming is impacting the population

10. At what size is the population growth rate greater than 0?
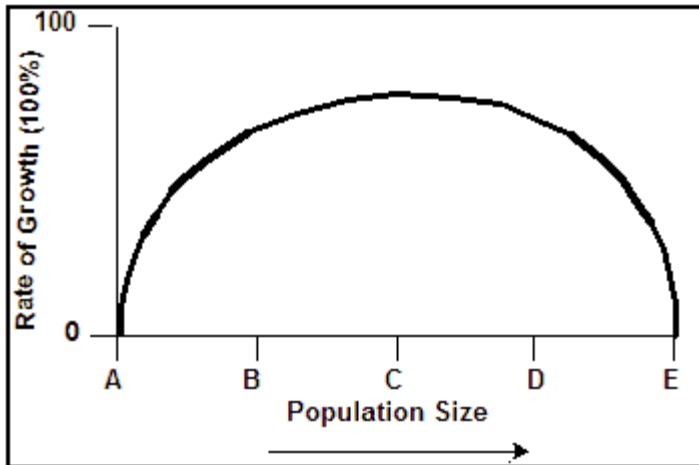
The graph above illustrates the rate of growth of a hypothetical fish population off the California coast (in each question, more than one answer may be correct).
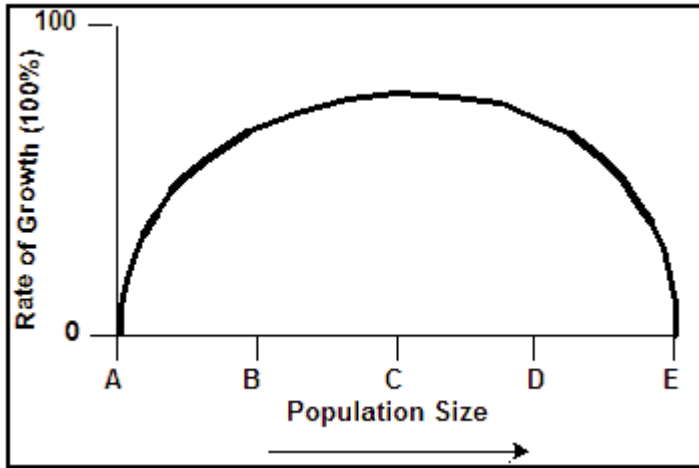
a)   A

b)   B

c)   C

d)   D

e)   E

11. At what size is the population growth rate zero in the figure above(more than one answer may be correct)?

The graph above illustrates the rate of growth of a hypothetical fish population off the California coast (in each question, more than one answer may be correct).

a)   A

b)   B

c)   C

d)   D

e)   E

12. What population size is the carrying capacity in the figure above? (only one correct answer)

The graph above illustrates the rate of growth of a hypothetical fish population off the California coast (in each question, more than one answer may be correct).

a)   A

b)   B

c)   C

d)   D

e)   E

13. If you were harvesting the population in the figure above, what size would be the maximum sustainable yield? (only one correct answer)
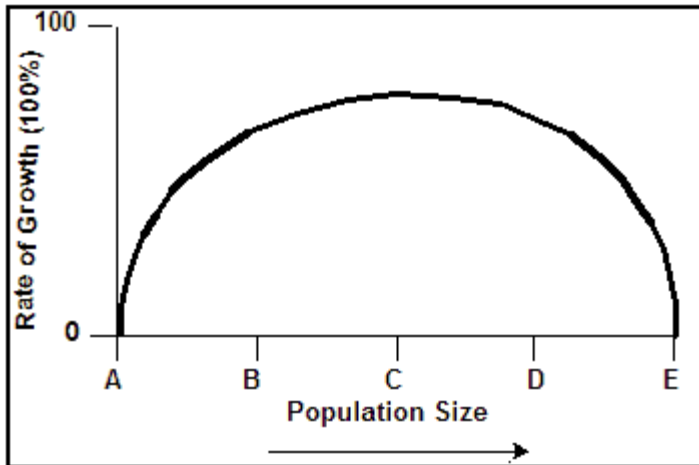
The graph above illustrates the rate of growth of a hypothetical fish population off the California coast (in each question, more than one answer may be correct).

a)   A

b)   B

c)   C

d)   D

e)   E

14. Fishery management has used the optimum sustainable population in order to avoid over-fishing. What exactly is the optimum sustainable population?
   a)   it is the largest number of fish that can be harvested
   b)   it is the fish harvest that generates the highest possible market price for the fish
   c)   it is the fish harvest that can be sustained through the lifetime of one fisherman
   d)   it is the population that equals the maximum sustainable yield
   e)   it is the largest fish harvest that can be sustained indefinitely

15. An ecological island is:
   a)   an island uninhabited by humans
   b)   the transition zone between two or more distinct ecosystems
   c)   an island managed for the preservation of specific natural features
   d)   an area that is biologically isolated
   e)   public land set aside to protect the habitats of endangered species

16. **Carrying capacity** is the:
   a)   largest-sized individual that can survive in a given ecosystem
   b)   maximum number of a species that an environment can support without degradation to the environment
   c)   maximum number of a species that can live in an environment without competition among individuals
   d)   maximum number of a species confined to a specific area
   e)   variety of species that can live in one habitat without going extinct

17. The survival of an endangered species depends strongly on the:
   a)   competition of male individuals within the species
   b)   size of the ecological island the species lives in
   c)   maximum sustainable yield of the habitat
   d)   succession stage of the ecosystem
   e)   the macronutrients available within the ecosystem

18. An early sign of the over-exploitation of a fish stock is:
   a)   an increase in the average size of fish caught

b)   a shift in the catch towards younger fish

c)   overall declining quantity of catch

d)   an unstable maximum sustainable yield (MSY)

e)   decline in the logistic growth curve

19. Traditional wildlife management was based on:

a)   sustainable yield

b)   exponential growth curve

c)   age structure of the population

d)   the logistic growth curve

e)   the minimum viable population

20. Which of the following would improve the food supply for a population of wild condors?

a)   people hunting mountain lions

b)   establishing large cattle ranches on fertile, undeveloped land

c)   planting trees on steep slopes

d)   suppressing all fires in chaparral environments

e)   improving soil conditions for trees

21. "Population risk" refers to:

a)   short-term changes in the habitat of a species

b)   a threat to species that consist of only a single population in one habitat

c)   the risk of changes in genetic characteristics

d)   the human population bomb

e)   catastrophes that change the environment

22. Species can be especially vulnerable to extinction when:

a)   the population has high genetic variability

b)   the population is small

c)   the population lives far from human activity

d)   the population is very widely distributed

e)   the population's ecosystem is productive and fertile

23. With the recent introduction of off-road vehicles to the Sahara desert, the Sahara goat has been subjected to an increase in hunting by Bedouins. Studies indicate that as the total population size is decreased by the hunting, the percentage of females that are pregnant is increasing. This is an example of:
    a)   competitive exclusion
    b)   density-dependent population regulation
    c)   succession
    d)   density-independent population regulation
   e)   prey and predator

24. Based only on the graphs below, which species (A or B) would be more likely to survive periodic disturbances?
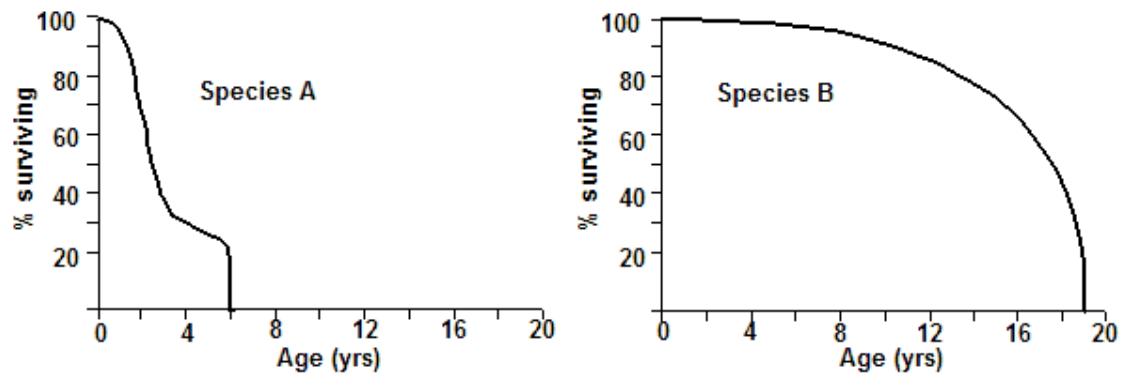
You are the manager of a reserve which contains two herbivorous species, A and B. The survivorship curves of the two species have been estimated in the graphs above.
    a)   A
    b)   B
    c)   C
    d)   D
    e)   E

25. In the figure below, which species (A or B) would better withstand sport hunting? (Assume that the hunters selectively shoot the largest [oldest] individuals.)
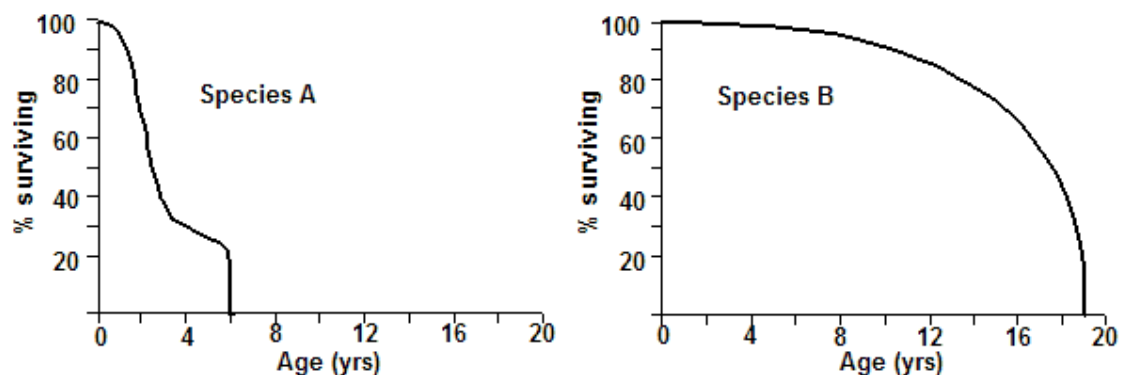

You are the manager of a reserve which contains two herbivorous species, A and B. The survivorship curves of the two species have been estimated in the graphs above.

a) A
b) B
c) C
d) D
e) E

26. European diseases caused fatal epidemics among native human populations in South and North America:
a) through natural selection
b) because Europeans introduced these diseases intentionally to reduce the native population
c) because the natives did not have antibodies to fight the new diseases
d) through parallel evolution
e) because Europeans withheld medicine from the natives

27. In the course of evolutionary history:
a) humans have been the primary agent of extinction
b) about half of the species which have existed have become extinct
c) all species alive today will eventually go extinct
d) only poorly adapted species will go extinct
e) extinction occurs only in connection with meteorite impacts

28. _____ involves variations in the physical or biological environment
a) Population risk
b) Genetic risk
c) Human induced risk

d)   Environmental risk

e)   A natural risk

29. A thorough population study of a fishery in 1940 led to the calculation of an "optimum sustainable yield" for that population. The same amount has been harvested every year since then. Judging by the data below, do you believe this yield is really sustainable? What may have happened to cause the pattern shown?
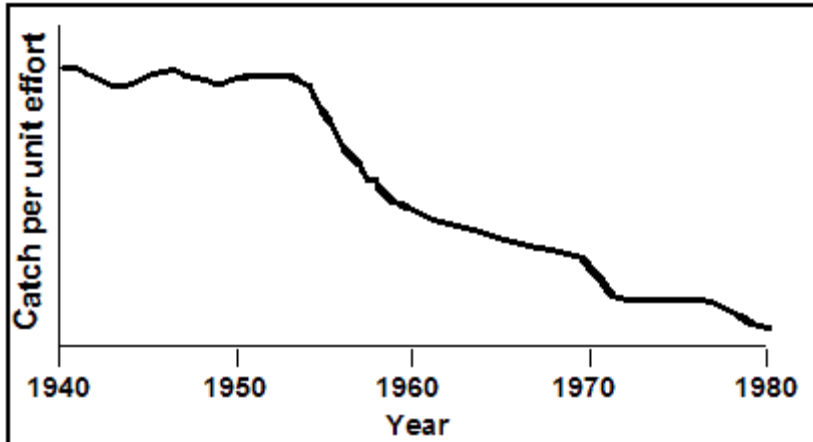
Ans: The yield between 1955 and 1980 evidently was not sustainable because the fish population declined rapidly. Between 1940 and 1955, the population was basically stable. Some environmental change around 1955 may have brought the population from equilibrium to rapid decline.

30. In what ways can illegal commercial trade of endangered animal species contribute to their extinction?

31. Why is the diversity of forests and of wildlife of great importance to many indigenous peoples of less developed countries?

32. List at least three human actions that cause extinction of animal species.

33. In terms of population, what is the ultimate practical goal in conservation of an endangered species?

34. France, Germany, and Portugal have high percentages of endangered species. Briefly explain why.

35. Why does modern agricultural production of crops depend on the continued introduction of fresh genetic characteristics from wild strains?

36. Maintaining forests protects natural diversity and ecological balance in a number of ways. Explain how forests work to the benefit of the environment.

37. The Marine Mammal Protection Act of 1972 defined an optimum sustainable population of marine mammals to mean "the number of animals which will result in a maximum productivity of the population." There are 3,000 bowhead whales today, and there were approximately 30,000 prior to the beginning of modern commercial whaling.

    A) Is the present population an optimum as defined by the law? If not, what is the optimum population as defined by that law?
    B) List three factors that make the legal definition unrealistic for whales.

38. Fisheries had been managed to achieve a maximum sustainable yield, as defined by the logistic growth curve. What is the major problem that results from this type of management?

39. List at least three of the assumptions of the logistic growth equation.

40. Why have humans been <u>un</u>successful in making mosquitoes into an endangered species?

41. Successful wild game management which is based on the maximum sustainable yield is based on three assumptions. Name them.

42. What are the major advantages of wild game ranching, compared with traditional goat, sheep, and cattle ranching?

43. List three reasons why it is useful to preserve endangered species.

44. Explain how steelhead trout are valued by people, in contrast to sea lions, and why the species are valued differently.

45. Name two biological factors which lead to the extinctions of species.