Campbell's Biology, 9e **(Reece et al.)**
Chapter 56 Conservation Biology and Global Change

Chapter 56 highlights the new field of conservation biology. The chapter explores restorations, remediations, the establishment of preserves, and other strategies to minimize the impact of humans on the world's ecosystems. A new section on human actions that cause rapid changes on Earth and impact all of Earth's ecosystems has been added to the ninth edition. A substantial number of new questions have been added on this new material in Concept 56.4.

Multiple-Choice Questions

1) Which of the following ecological locations has the greatest species diversity?
A) tundra
B) deciduous forests
C) tropics
D) grasslands
E) islands
Answer: C
Topic: Concept 56.1
Skill: Knowledge/Comprehension

2) What is the estimated number of extant species on Earth?
A) 1,000 to 50,000
B) 50,000 to 150,000
C) 500,000 to 1,000,000
D) 10,000,000 to 100,000,000
E) 5 billion to 10 billion
Answer: D
Topic: Concept 56.1
Skill: Knowledge/Comprehension

3) Estimates of current rates of extinction
A) indicate that we have reached a state of stable equilibrium in which speciation rates equal extinction rates.
B) suggest that one-half of all animal and plant species may be gone by the year 2100.
C) indicate that rates may be greater than the mass extinctions at the close of the Cretaceous period.
D) indicate that only 1% of all of the species that have ever lived on Earth are still alive.
E) suggest that rates of extinction have decreased globally.
Answer: C
Topic: Concept 56.1
Skill: Knowledge/Comprehension

4) Extinction is a natural phenomenon. It is estimated that 99% of all species that ever lived are now extinct. Why then do we say that we are now experiencing an extinction (loss of biodiversity) crisis?
A) Humans are ethically responsible for protecting endangered species.
B) Scientists have finally identified most of the species on Earth and are thus able to quantify the number of species becoming extinct.
C) The current rate of extinction is high and human activities threaten biodiversity at all levels.
D) Humans have greater medical needs than at any other time in history, and many potential medicinal compounds are being lost as plant species become extinct.
E) Most biodiversity hot spots have been destroyed by recent ecological disasters.
Answer: C
Topic: Concept 56.1
Skill: Synthesis/Evaluation

5) Which of the following provides the best evidence of a biodiversity crisis?
A) the incursion of a non-native species
B) increasing pollution levels
C) decrease in regional productivity
D) high rate of extinction
E) climate change
Answer: D
Topic: Concept 56.1
Skill: Knowledge/Comprehension

6) Although extinction is a natural process, current extinctions are of concern to environmentalists because
A) more animals than ever before are going extinct.
B) most current extinctions are caused by introduced species.
C) the rate of extinction is unusually high.
D) current extinction is primarily affecting plant diversity.
E) None of the options are correct.
Answer: C
Topic: Concept 56.1
Skill: Knowledge/Comprehension

7) Which of the following terms includes all of the others?
A) species diversity
B) biodiversity
C) genetic diversity
D) ecosystem diversity
E) species richness
Answer: B
Topic: Concept 56.1
Skill: Knowledge/Comprehension

8) According to the U.S. Endangered Species Act (ESA), the difference between an endangered species and a threatened one is that
A) an endangered species is closer to extinction.
B) a threatened species is closer to extinction.
C) threatened species are endangered species outside the U.S. borders.
D) endangered species are mainly tropical.
E) only endangered species are vertebrates.
Answer: A
Topic: Concept 56.1
Skill: Knowledge/Comprehension

9) Which of the following groups is most threatened by global extinctions?
A) mammals
B) birds
C) fish
D) amphibians
E) plants
Answer: D
Topic: Concept 56.1
Skill: Knowledge/Comprehension

10) To better comprehend the magnitude of current extinctions, it will be necessary to
A) monitor atmospheric carbon dioxide levels more closely.
B) differentiate between plant extinction and animal extinction numbers.
C) focus on identifying more species of mammals and birds.
D) identify more of the yet unknown species of organisms on Earth.
E) use the average extinction rates of vertebrates as a baseline.
Answer: D
Topic: Concept 56.1
Skill: Application/Analysis

11) What term did E. O. Wilson coin for our innate appreciation of wild environments and living organisms?
A) bioremediation
B) bioethics
C) biophilia
D) biophobia
E) landscape ecology
Answer: C
Topic: Concept 56.1
Skill: Synthesis/Evaluation

12) We should care about loss in biodiversity in the populations of other species because of
A) *biophilia.*
B) potential loss of medicines and other products yet undiscovered from threatened species.
C) potential loss of genes, some of which may code for proteins useful to humans.
D) the risk to global ecological stability.
E) All of the options are correct.
Answer: E
Topic: Concept 56.1
Skill: Synthesis/Evaluation

13) The most serious consequence of a decrease in global biodiversity would be the
A) increase in global warming and thinning of the ozone layer.
B) potential loss of ecosystem services on which people depend.
C) increase in the abundance and diversity of edge-adapted species.
D) loss of source of genetic diversity to preserve endangered species.
E) loss of species for "bioprospecting."
Answer: B
Topic: Concept 56.1
Skill: Application/Analysis

14) Which of the following is the most direct threat to biodiversity?
A) increased levels of atmospheric carbon dioxide
B) the depletion of the ozone layer
C) overexploitation of selected species
D) habitat destruction
E) zoned reserves
Answer: D
Topic: Concept 56.1
Skill: Synthesis/Evaluation

15) According to most conservation biologists, the single greatest threat to global biodiversity is
A) chemical pollution of water and air.
B) stratospheric ozone depletion.
C) overexploitation of certain species.
D) alteration or destruction of the physical habitat.
E) global climate change resulting from a variety of human activities.
Answer: D
Topic: Concept 56.1
Skill: Synthesis/Evaluation

16) What is the biological significance of genetic diversity between populations?
A) Genes for adaptive traits to local conditions make microevolution possible.
B) The population that is most fit would survive by competitive exclusion.
C) Genetic diversity allows for species stability by preventing speciation.
D) Isolated populations become more fit.
E) Diseases and parasites are not spread between separated populations.
Answer: A
Topic: Concept 56.1
Skill: Application/Analysis

17) Introduced species can have deleterious effects on biological communities by
A) preying on native species.
B) competing with native species for food or light.
C) displacing native species.
D) competing with native species for space or breeding/nesting habitat.
E) All of the options are correct.
Answer: E
Topic: Concept 56.1
Skill: Synthesis/Evaluation

18) Overexploitation encourages extinction and is most likely to affect
A) animals that occupy a broad ecological niche.
B) large animals with low intrinsic reproductive rates.
C) most organisms that live in the oceans.
D) terrestrial organisms more than aquatic organisms.
E) edge-adapted species.
Answer: B
Topic: Concept 56.1
Skill: Application/Analysis

19) How might the extinction of some Pacific Island bats called "flying foxes" threaten the survival of over 75% of the tree species in those islands?
A) The bats eat the insects that harm competitor plants.
B) The bats consume the fruit including the seeds that would disrupt the trees' reproductive cycle.
C) The bats roost in the trees and fertilize soil around the trees with their nitrogen-rich droppings.
D) The bats pollinate the trees and disperse seeds.
E) The bats pierce the fruit, which allows the seeds to germinate.
Answer: D
Topic: Concept 56.1
Skill: Synthesis/Evaluation

20) The greatest cause of the biodiversity crisis, the one which includes all of the others, is
A) pollution.
B) global warming.
C) habitat destruction.
D) introduced species.
E) human overpopulation.
Answer: E
Topic: Concept 56.1
Skill: Application/Analysis

21) Of the following ecosystem types, which have been impacted the most by humans?
A) wetland and riparian
B) open and benthic ocean
C) desert and high alpine
D) taiga and second-growth forests
E) tundra and arctic
Answer: A
Topic: Concept 56.1
Skill: Application/Analysis

22) The introduction of the brown tree snake in the 1940s to the island of Guam has resulted in
A) eradication of non-native rats and other undesirable/pest species.
B) the extirpation of many of the island's bird and reptile species.
C) a good lesson in biological control.
D) a new species of hybrids from crossbreeding with a native snake species.
E) its failure to compete with native species and its quick elimination from the island.
Answer: B
Topic: Concept 56.1
Skill: Application/Analysis

23) Which of the following examples poses the greatest potential threat to biodiversity?
A) replanting, after a clear cut, a monoculture of Douglas fir trees on land that consisted of old-growth Douglas fir, western cedar, and western hemlock
B) allowing previously used farmland to go fallow and begin to fill in with weeds and then shrubs and saplings
C) trapping and relocating large predators, such as mountain lions, that pose a threat as they move into areas of relatively dense human populations
D) importing an Asian insect into the United States to control a weed that competes with staple crops
E) releasing sterilized rainbow trout to boost the sport fishing of a river system that contains native brook trout
Answer: D
Topic: Concept 56.1
Skill: Application/Analysis

24) Which of the following is a type of research in which a *conservation* biologist would be involved?
A) reestablishing whooping cranes in their former breeding grounds in North Dakota
B) studying species diversity and interaction in the Florida Everglades, past and present
C) studying population ecology of grizzly bears in Yellowstone National Park
D) determining the effects of hunting white-tailed deer in Vermont
E) determining the effect of protection programs on the recovery of the North Atlantic cod fishery
Answer: A
Topic: Concept 56.1
Skill: Synthesis/Evaluation

25) Which of the following conditions is the most likely indicator of a population in an extinction vortex?
A) The population is geographically divided into smaller populations.
B) The species in question is found only in small pockets of its former range.
C) The effective population size of the species falls below 500.
D) Genetic measurements indicate a loss of genetic variation over time.
E) The population is no longer connected by corridors.
Answer: D
Topic: Concept 56.2
Skill: Application/Analysis

26) According to the small-population approach, what would be the best strategy for saving a population that is in an extinction vortex?
A) determining the minimum viable population size by taking into account the effective population size
B) establishing a nature reserve to protect its habitat
C) introducing individuals from other populations to increase genetic variation
D) determining and remedying the cause of its decline
E) reducing the population size of its predators and competitors
Answer: C
Topic: Concept 56.2
Skill: Application/Analysis

27) Review the formula for effective population size. Imagine a population of 1,000 small rodents. Of these, 300 are breeding females, 300 are breeding males, and 400 are nonbreeding juveniles. What is the effective population size?
A) 1,000
B) 1,200
C) 600
D) 400
E) 300
Answer: C
Topic: Concept 56.2
Skill: Application/Analysis

28) If the sex ratio in a population is significantly different from 50:50, then which of the following will always be *true*?
A) The population will enter the extinction vortex.
B) The genetic variation in the population will increase over time.
C) The genetic variation in the population will decrease over time.
D) The effective population size will be greater than the actual population size.
E) The effective population size will be less than the actual population size.
Answer: E
Topic: Concept 56.2
Skill: Application/Analysis

29) Which of the following life history traits can potentially influence effective population size (Ne)?
A) maturation age
B) genetic relatedness among individuals in a population
C) family and population size
D) gene flow between geographically separated populations
E) All of the options are correct.
Answer: E
Topic: Concept 56.2
Skill: Synthesis/Evaluation

30) Modern conservation biology increasingly aims at
A) protecting federally listed endangered species.
B) lobbying for strict enforcement of the U.S. Endangered Species Act.
C) sustaining biodiversity of entire ecosystems and communities.
D) maintaining genetic diversity in all species.
E) saving as much habitat as possible from development and exploitation.
Answer: C
Topic: Concept 56.2
Skill: Synthesis/Evaluation

31) The word *triage* originated during World War I and was first used by French doctors in prioritizing patients based on the severity of their wounds, because there were more wounded soldiers in need of urgent care than there were resources to treat them. Conservation biologists have to make similar determinations with degraded ecosystems. Which of the following is the most important consideration when it comes to managing for maintenance of biodiversity?
A) identifying large, high-profile vertebrates first, because steps to saving them would be most recognized by the public
B) determining which species is most important for conserving biodiversity as a whole
C) replanting suitable habitat for fauna
D) assessing the economic costs and the gains for society
E) maintaining optimum size of all populations in the ecosystem
Answer: B
Topic: Concept 56.2
Skill: Synthesis/Evaluation

32) Which of the following species was driven to extinction by overexploitation by hunters/fishermen?
A) African elephant
B) the great auk
C) North American bluefin tuna
D) flying foxes
E) American bison
Answer: B
Topic: Concept 56.2
Skill: Synthesis/Evaluation

33) The primary difference between the small-population approach (S-PA) and the declining-population approach (D-PA) to biodiversity recovery is
A) S-PA is interested in bolstering the genetic diversity of a threatened population rather than the environmental factors that caused the population's decline.
B) S-PA kicks in for conservation biologists when population numbers fall below 500.
C) D-PA would likely involve bringing together individuals from scattered small populations to interbreed in order to promote genetic diversity.
D) S-PA would investigate and eliminate all of the human impacts on the habitat of the species being studied for recovery.
E) D-PA would use recently collected population data to calculate an extinction vortex.
Answer: A
Topic: Concept 56.2
Skill: Application/Analysis

34) The long-term problem with red-cockaded woodpecker habitat intervention in the southwest United States is
A) the only habitat that can support their recovery is large tracts of mature southern pine forest.
B) the mature pine forests in which they live cannot ever be subjected to forest fire.
C) all of the appropriate red-cockaded woodpecker habitat has already been logged or converted to agricultural land.
D) the social organization of the red-cockaded woodpecker precludes the dispersal of reproductive individuals.
E) what habitat remains for the red-cockaded woodpecker does not contain trees suitable for nest-cavity construction.
Answer: D
Topic: Concept 56.2
Skill: Application/Analysis

35) Managing southwestern forests specifically for the red-cockaded woodpecker
A) was wholeheartedly supported by the timber extraction industry.
B) contributed to greater abundance and diversity of other forest bird species.
C) caused other species of songbird to decline.
D) involved strict fire suppression measures.
E) involved the creation of fragmented forest habitat.
Answer: B
Topic: Concept 56.2
Skill: Application/Analysis

36) Which of the following is true about the current research regarding forest fragmentation?
A) Fragmented forests support a greater biodiversity because they result in the combination of forest-edge species and forest-interior species.
B) Fragmented forests support a lesser biodiversity because the forested-adapted species leave, and only the edge and open-field species can occupy fragmented forests.
C) Fragmented forests are the goal of conservation biologists who design wildlife preserves.
D) Harvesting timber that results in forest fragmentation results in less soil erosion.
E) The disturbance of timber extraction causes the species diversity to increase because of the new habitats created.
Answer: B
Topic: Concept 56.2
Skill: Application/Analysis

37) Relatively small geographic areas with high concentrations of endemic species and a large number of endangered and threatened species are known as
A) endemic sinks.
B) critical communities.
C) biodiversity hot spots.
D) endemic metapopulations.
E) bottlenecks.
Answer: C
Topic: Concept 56.3
Skill: Synthesis/Evaluation

38) How is habitat fragmentation related to biodiversity loss?
A) Less carbon dioxide is absorbed by plants in fragmented habitats.
B) In fragmented habitats, more soil erosion takes place.
C) Populations of organisms in fragments are smaller and, thus, more susceptible to extinction.
D) Animals are forced out of smaller habitat fragments.
E) Fragments generate silt that negatively affects sensitive river and stream organisms.
Answer: C
Topic: Concept 56.3
Skill: Application/Analysis

39) Cowbirds utilize fragmented forests effectively by
A) feeding on the fruits of shrubs that tend to grow at the forest/open-field interface.
B) parasitizing the nests of forest birds, and feeding on open-field insects.
C) roosting in forest trees, and nesting in grassy fields.
D) outcompeting other songbird species in fragmented communities.
E) using forest cover to escape from predators in their normal grassland habitat.
Answer: B
Topic: Concept 56.3
Skill: Application/Analysis

40) Which of the following is consistent with forest fragmentation research?
A) Productivity is the same in both fragmented forests and forest interiors.
B) Edge communities consistently have low species diversity.
C) Forest-interior species show declines in small patch communities.
D) New-edge species that migrate in do not seem to compete with forest species and often increase biodiversity in fragmented forests.
E) Species diversity is always lower in fragmented forests when compared to forest interiors in the same region.
Answer: C
Topic: Concept 56.3
Skill: Application/Analysis

41) How are movement corridors potentially harmful to certain species?
A) They increase inbreeding.
B) They promote dispersion.
C) They spread disease and parasites.
D) They increase genetic diversity.
E) They allow seasonal migration.
Answer: C
Topic: Concept 56.3
Skill: Knowledge/Comprehension

42) Biodiversity hot spots are not necessarily the best choice for nature preserves because
A) hot spots are situated in remote areas not accessible to wildlife viewers.
B) their ecological importance makes land purchase very expensive.
C) a hot spot for one group of organisms may not be a hot spot for another group.
D) hot spots are designated by abiotic factors present, not biotic factors.
E) designated hot spots change on a daily basis.
Answer: C
Topic: Concept 56.3
Skill: Synthesis/Evaluation

43) What is the biggest problem with selecting a site for a preserve?
A) There is always a conflict about use of land set aside for preservation.
B) Making a proper selection is difficult because currently the environmental conditions of almost any site change so quickly.
C) Keystone species are difficult to identify in potential preserve sites.
D) Only lands that are not useful to human activities are available for preserves.
E) Most of the best sites are inaccessible by land transportation, so making roads to them is often prohibitively expensive.
Answer: B
Topic: Concept 56.4
Skill: Application/Analysis

44) Which of the following is true about "hot spots"?
A) One-third of all species on Earth occupy less than 1.5% of Earth's land area (hot spots).
B) All of the plants and animals containing genes that may be useful to humankind are located in Earth's hot spots.
C) Around 75% of all of the undiscovered species of organisms live in ecological hot spots.
D) As conservation measures improve over the next ten years, hot spots will likely disappear.
E) The hot spots that are in most dire need of remediation are located in the tundra.
Answer: A
Topic: Concept 56.4
Skill: Application/Analysis

45) What is a critical load?
A) the amount of nutrient augmentation necessary to bring a depleted habitat back to its former level
B) the level of a given toxin in an ecosystem that is lethal to 50% of the species present
C) the maximum abundance level of a particular species, beyond which additional numbers will degrade a habitat
D) the amount of added nutrient that can be absorbed by plants without damaging ecosystem integrity
E) the number of predators an ecosystem can support that effectively culls prey populations to healthy levels
Answer: D
Topic: Concept 56.4
Skill: Knowledge/Comprehension

46) The use of DDT as an insecticide in the United States has been outlawed since 1971, yet is still a problem for certain top-level carnivores in the United States. Which of the following choices best explains this apparent incongruity?
A) DDT is still used for mosquito control in tropical countries, and certain migratory predators can be affected by a seasonal biomagnification.
B) DDT is persistent in the environment and all of the pre-1971 DDT is still available in toxic form to poison top-level carnivores.
C) Pre-1971 DDT has been deposited in certain habitats, particularly wetlands and estuaries, so predators in these ecosystems are vulnerable to biomagnifications of DDT.
D) Whereas most DDT-susceptible species have become resistant to persistent DDT, others are still vulnerable.
E) All of the options are correct.
Answer: A
Topic: Concept 56.4
Skill: Synthesis/Evaluation

47) Agricultural lands frequently require nutrient augmentation because
A) nitrogen-fixing bacteria are not as plentiful in agricultural soils because of the use of pesticides.
B) the nutrients that become the biomass of plants are not cycled back to the soil on lands where they are harvested.
C) land that is available for agriculture tends to be nutrient-poor.
D) grains raised for feeding livestock must be fortified, and thus require additional nutrients.
E) cultivation of agricultural land inhibits the decomposition of organic matter.
Answer: B
Topic: Concept 56.4
Skill: Knowledge/Comprehension

48) Burning fossil fuels releases oxides of sulfur and nitrogen. These air pollutants can be responsible for
A) the death of fish in lakes.
B) precipitation with a pH as low as 3.0.
C) calcium deficiency in soils.
D) direct damage to plants by leaching nutrients from the leaves.
E) All of the options are correct.
Answer: E
Topic: Concept 56.4
Skill: Knowledge/Comprehension

For the following questions, match the statement with the appropriate term/phrase.

49) This causes an increase in the intensity of UV radiation reaching Earth.
A) depletion of ozone layer
B) acid precipitation
C) biological magnification
D) greenhouse effect
E) eutrophication
Answer: A
Topic: Concept 56.4
Skill: Knowledge/Comprehension

50) This term refers to the reflecting and absorption of infrared radiation by atmospheric methane, carbon dioxide, and water.
A) depletion of ozone layer
B) acid precipitation
C) biological magnification
D) greenhouse effect
E) eutrophication
Answer: D
Topic: Concept 56.4
Skill: Knowledge/Comprehension

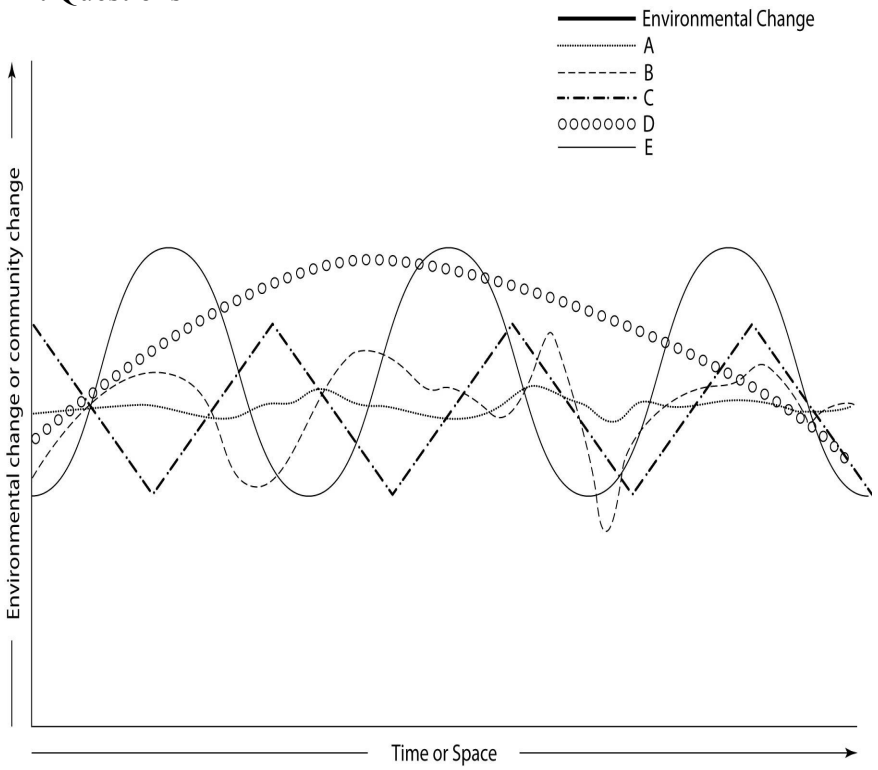
51) This is caused by excessive nutrient runoff into aquatic ecosystems.
A) depletion of ozone layer
B) acid precipitation
C) biological magnification
D) greenhouse effect
E) eutrophication
Answer: E
Topic: Concept 56.4
Skill: Knowledge/Comprehension

52) This causes extremely high levels of toxic chemicals in fish-eating birds.
A) depletion of ozone layer
B) acid precipitation
C) biological magnification
D) greenhouse effect
E) eutrophication
Answer: C
Topic: Concept 56.4
Skill: Knowledge/Comprehension

53) The biggest challenge that Costa Rica will likely face in its dedication to conservation and restoration in the future is
A) the pressures of its growing population.
B) its small size (as a country), which may not be able to maintain large enough reserves.
C) the potential for disturbance of sensitive species in reserves by ecotourists.
D) spread of disease and parasites via corridors from neighboring countries.
E) the large number of Costa Rican species already in the extinction vortex.
Answer: A
Topic: Concept 56.5
Skill: Application/Analysis

54) Which of the following nations has become a world leader in the establishment of zoned reserves?
A) Costa Rica
B) Canada
C) China
D) United States
E) Mexico
Answer: A
Topic: Concept 56.5
Skill: Synthesis/Evaluation

Art Questions



55) Based on what you know about ecosystem stability and the information provided in the graph, which community (A-E) would likely support the most biodiversity?
A) A
B) B
C) C
D) D
E) E
Answer: A
Topic: Concept 56.1
Skill: Application/Analysis

A = feeding cover C = loafing cover
B = escape cover D = roosting cover

A D A C	B B A A	A B C D	C B B D	A B C D
B A B B	B B A A	C D A B	A A C C	D A B C
C B C A	C C D D	A B C D	D D B A	C D A B
D C D D	C C D D	C D A B	A B C D	B C D A
(A)	(B)	(C)	(D)	(E)

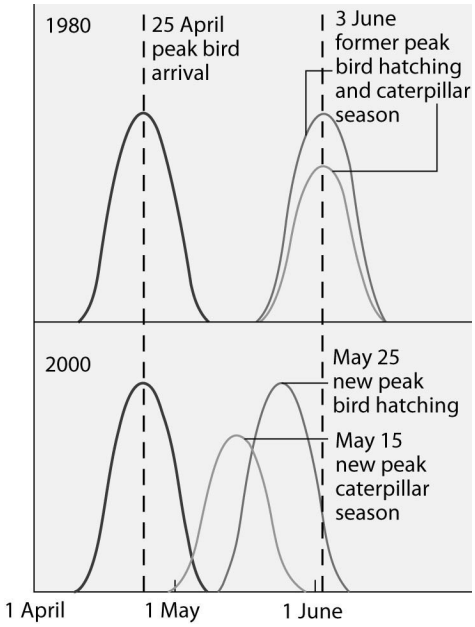
25% of each = maximum population size of quail

56) Study the information above about quail habitats. Which of these represents the best quail habitat in terms of fragmentation and edge?
A) A
B) B
C) C
D) D
E) E
Answer: C
Topic: Concept 56.3
Skill: Synthesis/Evaluation

57) Study the information above about quail habitats. Assuming that only one quail can occupy a habitat where all cover requirements are met, what is the maximum number of quail that could inhabit any of the hypothetical plots shown?
A) 1
B) 2
C) 4
D) 6
E) 9
Answer: E
Topic: Concept 56.3
Skill: Synthesis/Evaluation

Use the graph and information provided in the paragraph below to answer the following questions.

Flycatcher birds that migrate from Africa to Europe feed their nestlings a diet that is almost exclusively moth caterpillars. The graph below shows the mean dates of arrival, bird hatching, and peak caterpillar season for the years 1980 and 2000.



58) The shift in the peak of caterpillar season is most likely due to
A) pesticide use.
B) earlier migration returns of flycatchers.
C) an innate change in the biological clock of the caterpillars.
D) global warming.
E) acid precipitation in Europe.
Answer: D
Topic: Concept 56.4
Skill: Application/Analysis

59) Why were ecologists concerned about the shift in the peak caterpillar season from June 3, 1980, to May 15, 2000?
A) The caterpillars would have eaten much of the foliage of the trees where flycatchers would have nested, rendering their nests more open to predation.
B) The earlier hatching of caterpillars would compete with other insect larval forms which the flycatchers would also use to feed their young.
C) The 2000 flycatcher nestlings would miss the peak caterpillar season and might not be as well fed.
D) The flycatchers would have to migrate sooner to match their brood-rearing to the time of peak caterpillar season.
E) Pesticides, which have a negative effect on the ecosystem, would have to be used to control the earlier outbreak of caterpillar hatching.
Answer: C
Topic: Concept 56.4
Skill: Application/Analysis

Scenario Questions

60) Suppose you attend a town meeting at which some experts tell the audience that they have performed a cost-benefit analysis of a proposed transit system that would probably reduce overall air pollution and fossil fuel consumption. The analysis, however, reveals that ticket prices will not cover the cost of operating the system when fuel, wages, and equipment are taken into account. As a biologist, you know that if ecosystem services had been included in the analysis the experts might have arrived at a different answer. Why are ecosystem services rarely included in economic analyses?
A) Their cost is difficult to estimate and people take them for granted.
B) They are not worth much and are usually not considered.
C) There are no laws that require investigation of ecosystem services in environmental planning.
D) There are too many variables to ecosystem services, making their calculation impossible.
E) Ecosystem services only take into account abiotic factors that affect local environments.
Answer: A
Topic: Concept 56.1
Skill: Application/Analysis

61) Your friend is wary of environmentalists' claims that global warming could lead to major biological change on Earth. Which of the following statements can you use in response to your friend's suspicions?
A) We know that atmospheric carbon dioxide has increased over the past 150 years.
B) Through measurements and observations, we know that CO_2 levels and temperature fluctuations are directly correlated, even in prehistoric times.
C) Global warming could have significant effects on agriculture in the United States.
D) Sea levels will likely rise, displacing as much as 50% of the world's human population.
E) All statements listed could be used.
Answer: E
Topic: Concept 56.4
Skill: Synthesis/Evaluation

End-of-Chapter Questions

The following questions are from the end-of-chapter "Test Your Understanding" section in Chapter 56 of the textbook.

62) One characteristic that distinguishes a population in an extinction vortex from most other populations is that
A) its habitat is fragmented.
B) it is a rare, top-level predator.
C) its effective population size is much lower than its total population size.
D) its genetic diversity is very low.
E) it is not well adapted to edge conditions.
Answer: D
Topic: End-of-Chapter Questions
Skill: Knowledge/Comprehension

63) The main cause of the increase in the amount of CO_2 in Earth's atmosphere over the past 150 years is
A) increased worldwide primary production.
B) increased worldwide standing crop.
C) an increase in the amount of infrared radiation absorbed by the atmosphere.
D) the burning of larger amounts of wood and fossil fuels.
E) additional respiration by the rapidly growing human population.
Answer: D
Topic: End-of-Chapter Questions
Skill: Knowledge/Comprehension

64) What is the single greatest threat to biodiversity?
A) overharvesting of commercially important species
B) introduced species that compete with native species
C) pollution of Earth's air, water, and soil
D) disruption of trophic relationships as more and more prey species become extinct
E) habitat alteration, fragmentation, and destruction
Answer: E
Topic: End-of-Chapter Questions
Skill: Knowledge/Comprehension

65) Which of the following is a consequence of biological magnification?
A) Toxic chemicals in the environment pose greater risk to top-level predators than to primary consumers.
B) Populations of top-level predators are generally smaller than populations of primary consumers.
C) The biomass of producers in an ecosystem is generally higher than the biomass of primary consumers.
D) Only a small portion of the energy captured by producers is transferred to consumers.
E) The amount of biomass in the producer level of an ecosystem decreases if the producer turnover time increases.
Answer: A
Topic: End-of-Chapter Questions
Skill: Application/Analysis

66) Which of the following strategies would most rapidly increase the genetic diversity of a population in an extinction vortex?
A) Capture all remaining individuals in the population for captive breeding followed by reintroduction to the wild.
B) Establish a reserve that protects the population's habitat.
C) Introduce new individuals transported from other populations of the same species.
D) Sterilize the least fit individuals in the population.
E) Control populations of the endangered population's predators and competitors.
Answer: C
Topic: End-of-Chapter Questions
Skill: Application/Analysis

67) Of the following statements about protected areas that have been established to preserve biodiversity, which one is *not* correct?
A) About 25% of Earth's land area is now protected.
B) National parks are one of many types of protected areas.
C) Most protected areas are too small to protect species.
D) Management of a protected area should be coordinated with management of the land surrounding the area.
E) It is especially important to protect biodiversity hot spots.
Answer: A
Topic: End-of-Chapter Questions
Skill: Application/Analysis