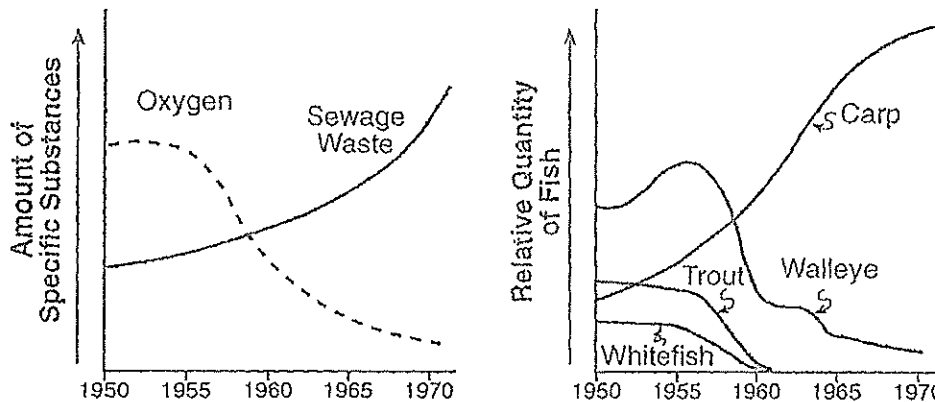


1. In lakes that are exposed to acid rain, fish populations are declining. This is primarily due to changes in which lake condition?
A) size B) temperature
 C) pH D) location
2. Water from nearby rivers or lakes is usually used to cool down the reactors in nuclear power plants. The release of this heated water back into the river or lake would most likely result in *change in avg. temp. ↑*
A) an increase in the sewage content in the water
 B) a change in the biodiversity in the water
C) a change in the number of mutations in plants growing near the water
D) a decrease in the amount of sunlight necessary for photosynthesis in the water
3. Which statement illustrates how human activities can most directly change the dynamic equilibrium of an ecosystem?
A) A hurricane causes a stream to overflow its banks.
B) Increased wind increases water evaporation from a plant.
 C) Water pollution causes a decrease in fish populations in a river.
D) The ozone shield helps prevent harmful radiation from reaching the surface of Earth.
4. Which human activity has probably contributed most to the acidification of lakes in the Adirondack region?
A) passing environmental protection laws
B) establishing reforestation projects in lumbered areas
 C) burning fossil fuels that produce air pollutants containing sulfur and nitrogen
D) using pesticides for the control of insects that feed on trees
5. Which human activity creates the *least* threat to global stability?
A) overuse of resources
B) pollution of water with heavy metals
C) pollution of air with sulfur gases
 D) reuse of plastic bags
6. The lower part of the Hudson River contains large amounts of polychlorinated biphenyls (PCB's) and heavy metals. Which statement best explains their presence in the river?
A) They are introduced by environmentalists to kill sewage bacteria.
B) They are the decomposition products of river organisms.
C) They were accidentally spilled into the river by fishermen.
 D) They were discharged into the river as manufacturing byproducts.
7. One reason why people should be aware of the impact of their actions on the environment is that
A) ecosystems are never able to recover once they have been adversely affected
 B) the depletion of finite resources cannot be reversed
C) there is a decreased need for new technology
D) there is a decreased need for substances produced by natural processes
8. The ivory-billed woodpecker, long thought to be extinct, was recently reported to be living in a southern swamp area. The most ecologically appropriate way to ensure the natural survival of this population of birds is to
A) feed them daily with corn and other types of grain
B) destroy their natural enemies and predators
C) move the population of birds to a zoo
 D) limit human activities in the habitat of the bird
9. Deforestation of areas considered to be rich sources of genetic material could limit future agricultural and medical advances due to
A) the improved quality of the atmosphere
B) the maintenance of dynamic equilibrium
C) an increase in the rate of evolutionary change
 D) the loss of biodiversity
10. Which human activity would most likely result in the addition of an organism to the endangered species list?
A) cover cropping
B) use of pollution controls
C) use of erosion controls
 D) habitat destruction

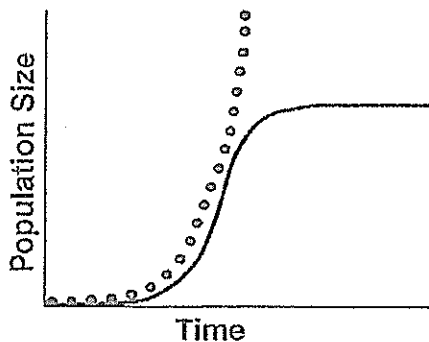
11. Which relationship can correctly be inferred from the data presented in the graphs below?

Oxygen Content and Fish Population in a Lake



- (A) As sewage waste increases, oxygen content decreases.
- B) As sewage waste increases, oxygen content increases.
- C) As oxygen content decreases, carp population decreases.
- D) As oxygen content decreases, trout population increases.

12. The dotted line on the graph below represents the potential size of a population based on its reproductive capacity. The solid line on this graph represents the actual size of the population.



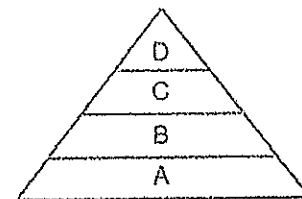
Which statement best explains why the actual population growth is *less* than the potential population growth?

- (A) Resources in the environment are limited.
- B) More organisms migrated into the population than out of the population.
- C) The birthrate gradually became greater than the death rate.
- D) The final population size is greater than the carrying capacity.

13. One practice that has successfully increased the number of bald eagles in the United States is the

- (A) protection of their natural habitat
- B) importation of food to their nesting sites
- C) preservation of other eagle species that occupy the same niche
- D) increased use of pesticides

14. The diagram below represents a food pyramid.

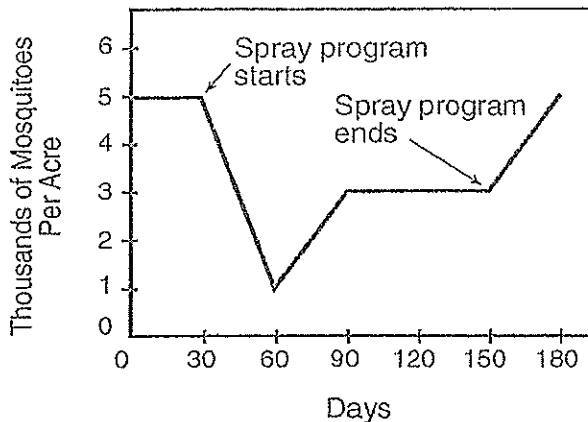


The concentration of the pesticide DDT in individual organisms at level D is higher than the concentration in individuals at level A because DDT is

- A) synthesized by organisms at level D
- B) excreted by organisms at level A as a toxic waste
- C) produced by organisms at level C which are eaten by organisms at level D
- (D) passed through levels A, B, and C to organisms at level D

15. Base your answer to the following question on the information below and on your knowledge of biology.

A small village was heavily infested with mosquitoes. The village was sprayed weekly with an insecticide for a period of several months. The results of daily counts of the mosquito population are shown in the graph below.



Which statement best explains the decreased effectiveness of the insecticide?

- A) The insecticide caused mutations that resulted in immunity in the mosquito.
- B) Mosquitoes resistant to the insecticide lived and produced offspring.**
- C) The insecticide reacted chemically with the DNA of the mosquitoes and was destroyed.
- D) All of the mosquitoes produced antibodies that activated the insecticide.
16. Which human activity would most likely have a positive impact on the environment?
- A) using pesticides to decrease populations of birds of prey
- B) increasing emissions into the atmosphere to decrease the pH of lakes
- C) using parasites for biological control of pests to increase crop yields**
- D) engaging in uncontrolled hunting and trapping to reduce populations of carnivores
17. Global warming has been linked to a *decrease* in the
- A) size of the polar ice caps**
- B) temperature of the Earth
- C) rate of species extinction
- D) rate of carbon dioxide production

18. Before it was banned, the insecticide DDT was used, to combat an organism called the red mite. An unexpected result of the use of DDT was that the population of the red mite increased rather than decreased, while the population of insect predators of the red mite declined. What is the most probable explanation of this phenomenon?

- A) Part of the red mite population was resistant to DDT and its predators were not.**
- B) DDT is highly general in the kinds of insects it affects, killing both beneficial and harmful species.
- C) The red mite population could use DDT as a nutrient, while the predators could not.
- D) DDT triggered a mutation in the red mite population, making it immune to the effects of the chemical.

19. What will the continued depletion of the ozone layer *most likely* cause?

- A) an increase in skin cancer among humans**
- B) a decrease in atmospheric pollutants
- C) an increase in marine ecosystem stability
- D) a decrease in climatic changes

20. Which factor is a major cause of global warming?

- A) increased burning of fuels**
- B) increased number of green plants
- C) decreased mineral availability
- D) decreased carbon dioxide in the atmosphere

21. Why do some factors have a harmful impact on the Earth's ecosystems?

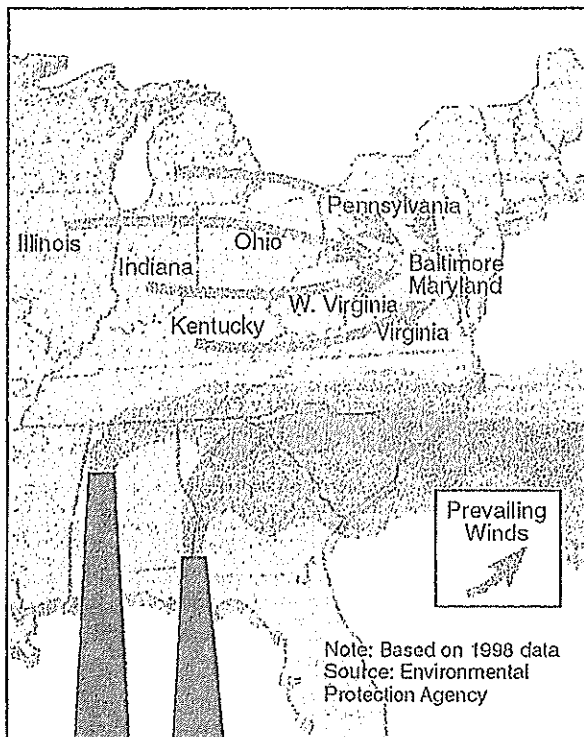
- A) They have high energy demands that require the use of fossil fuels and nuclear fuels.**
- B) They utilize agricultural technology that decreases soil erosion.
- C) They decrease the need for finite resources.
- D) They limit the amount of emissions produced each year.

22. Increased industrialization will most likely

- A) decrease available habitats**
- B) increase environmental carrying capacity for native species
- C) increase the stability of ecosystems
- D) decrease global warming

23. The map below shows the movement of some air pollution across part of the United States.

Movement of Air Pollution



Which statement is a correct inference that can be drawn from this information?

- A) Illinois produces more air pollution than the other states shown.
- B) The air pollution problem in Baltimore is increased by the addition of pollution from other areas.
- C) There are no air pollution problems in southern states.
- D) The air pollution problems in Virginia clear up quickly as the air moves toward the sea.
24. Which situation has had the most *negative* effect on the ecosystems of Earth?
- A) use of air pollution controls
- B) use of natural predators to control insect pests
- C) recycling glass, plastic, and metals
- D) increasing human population

25. Rabbits introduced into Australia over one hundred years ago have become a serious pest. Rabbit populations have increased so much that they have displaced many native species of herbivores. Which statement best explains the reason for their increased numbers?
- A) Rabbits have a high metabolic rate.
- B) There are few native predators of rabbits.
- C) Additional rabbit species have been introduced.
- D) There is an increase in rabbit competitors.
26. One way that humans could have a positive impact on local environments is to
- A) generate waste products as a result of technological advances
- B) use resources that are renewable
- C) increase planting large areas of one crop
- D) increase the use of pesticides
27. Which human activity is correctly paired with its likely future consequence?
- A) overfishing in the Atlantic — increase in supply of flounder and salmon as food for people
- B) development of electric cars or hybrid vehicles — increased rate of global warming
- C) use of fossil fuels — depletion of underground coal, oil, and natural gas supplies
- D) genetically engineering animals — less food available to feed the world's population
28. Humans are responsible for some of the *negative* changes that occur in nature because they
- A) have encouraged the development of wildlife refuges and parks
- B) have passed laws to preserve the environment
- C) are able to preserve scarce resources
- D) are able to modify habitats more than any other species
29. A greater stability of the biosphere would most likely result from
- A) decreased finite resources
- B) increased deforestation
- C) increased biodiversity
- D) decreased consumer populations

30. Which statement concerning ecosystems is correct?

- A) Stable ecosystems that are changed by natural disaster will slowly recover and may again become stable if left alone for a long period of time.
- B) Competition does not influence the number of organisms that live in ecosystems.
- C) Climatic change is the principal cause of habitat destruction in ecosystems in the last fifty years.
- D) Stable ecosystems, once changed by natural disaster, will never recover and become stable again, even if left alone for a long period of time.

31. One way to help provide suitable environments for future generations is to urge individuals to

- A) apply ecological principles when making decisions that will have an environmental impact
- B) control all aspects of natural environments
- C) agree that population controls have no impact on environmental matters
- D) work toward increasing global warming

32. Humans often have not given much thought to the long-term impacts of technological change. As the 20th century comes to a close, most scientists would agree that humans should

- A) use knowledge of ecology to consider the needs of future generations of humans and other species
- B) use new technology to expand human influence on all natural communities
- C) learn how to control every aspect of the environment so that damage due to technology will be spread evenly
- D) develop the uninhabited parts of Earth for the human population increase

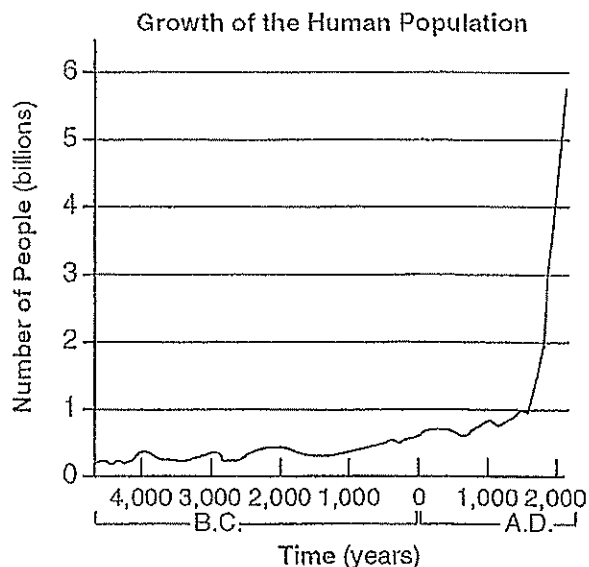
33. In Australia, farm pastures became so densely covered with prickly-pear cactus that very little grass for livestock could grow. To solve this problem, a South American cactus moth was introduced into Australia to feed on the cactus. This type of environmental solution often leads to

- A) overhunting of endangered species
- B) exploitation of domestic animals
- C) poor land-use management
- D) disruption of existing ecosystems

34. The rapid destruction of tropical rain forests may be harmful because

- A) removing trees will prevent scientists from studying ecological succession
- B) genetic material that may be useful for future medical discoveries will be lost
- C) energy cycling in the environment will stop
- D) the removal of trees will limit the construction of factories that will pollute the environment

35. The graph below shows how the human population has grown over the last several thousand years.



Which statement is a valid inference that can be made if the human population continues to grow at a rate similar to the rate shown between 1000 A.D. and 2000 A.D.?

- A) Future ecosystems will be stressed and many animal habitats may be destroyed.
- B) Global warming will decrease as a result of a lower demand for fossil fuels.
- C) One hundred years after all resources are used up, the human population will level off.
- D) All environmental problems can be solved without a reduction in the growth rate of the human population.

36. Base your answer to the following question on the information below and on your knowledge of biology.

Windmill farms are being developed as alternative energy sources in some areas of the United States. Windmill farms convert energy from the wind into electricity.

State one environmental reason why using windmills for energy might be preferred over using coal for energy.

• Renewable • No CO₂ emission (Does not burn fossil fuels)

37. The table below shows the abundance of some greenhouse gases in the atmosphere

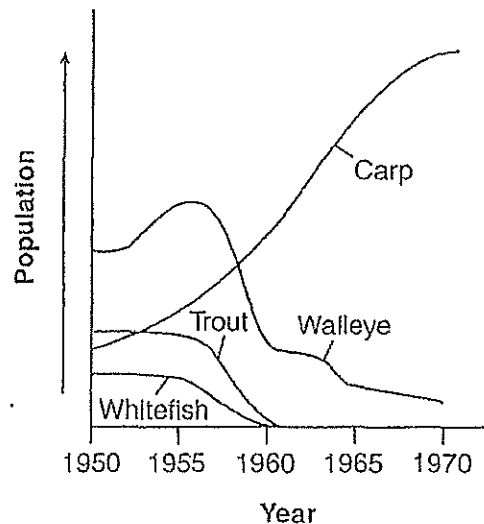
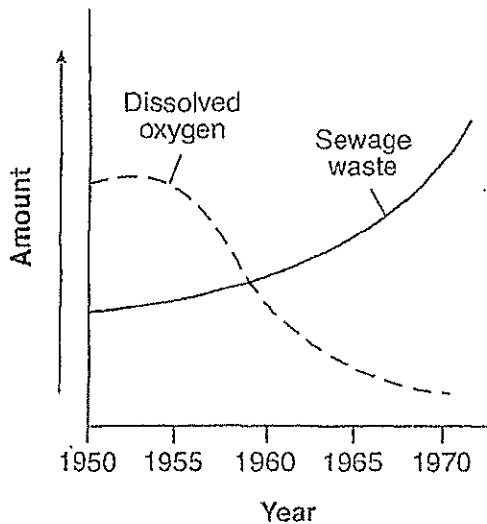
Abundance of Some Atmospheric Greenhouse Gases

Greenhouse Gases	Abundance (%)
carbon dioxide (CO ₂)	99.438
methane (CH ₄)	0.471
nitrous oxide (N ₂ O)	0.084
other gases (CFCs, etc.)	0.007
Total	100.000

Identify the most abundant greenhouse gas and state *one* human activity that is a source of this gas.

Greenhouse gas: CO₂ - burning of fossil fuels

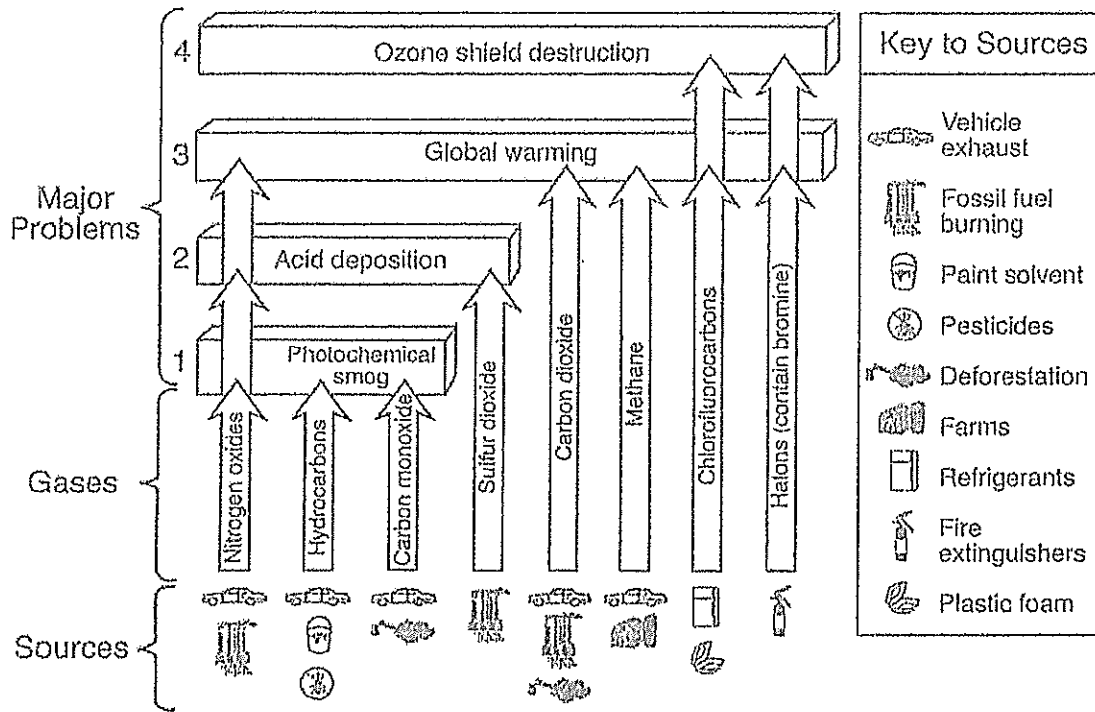
38. The graphs below show dissolved oxygen content, sewage waste content, and fish populations in a lake between 1950 and 1970.



State what happened to the amount of dissolved oxygen and the number of fish species as the amount of sewage waste increased.

As the amount of sewage waste increased, the amount of dissolved O₂ decreased and the amount of fish species also decreased.

Base your answers to questions 39 and 40 on the diagram below and on your knowledge of biology. The diagram shows some of the gases that, along with their sources, contribute to four major problems associated with air pollution.



39. Select *one* of the four major problems from the diagram and record the number of the problem on the line below. Identify a gas that contributes to the problem you selected and state *one* way in which the amount of this gas can be reduced.

Problem number: 3 - global warming

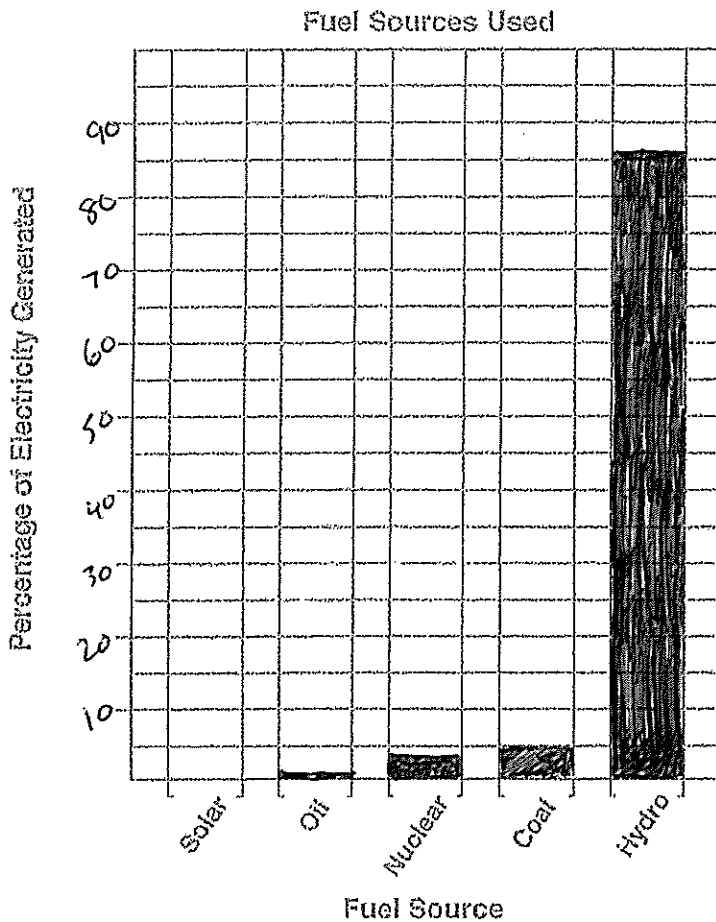
Gas: Carbon dioxide - reduce burning of fossil fuels, carpool

40. Explain why damage to the ozone shield is considered a threat to many organisms.

- ozone shields earth from UV radiation
- UV radiation is a mutagen & causes cancer
- skin cancer in humans.

Base your answers to questions 41 through 45 on the information below and on your knowledge of biology.

Each year, the state power agency provides its customers with information about some of the fuel sources used in generating electricity. The table below applies to the period of 2002—2003.



Fuel Source	Percentage of Electricity Generated
hydro (water)	86
coal	5
nuclear	4
oil	1
solar	0

41. Identify *one* fuel source in the table that is classified as a renewable resource. *solar*

42. Identify *one* fuel source in the table that is considered a fossil fuel. *coal/oil*

43. Construct vertical bars to represent the data. Shade in *each* bar.

44. Mark an appropriate scale on the axis labeled "Percentage of Electricity Generated"

45. State *one* specific environmental problem that can result from burning coal to generate electricity.

release of CO₂ causing climate change