

Survive the five!
 The person that raises their hand first and answers the question correctly sits down. The others go again.

Evolution, Biodiversity, Invasive Species, Endangered Species

Draw disruptive, stabilizing, and directional selection on the board.

Evolution, Biodiversity, Invasive Species, Endangered Species

Explain disruptive selection using an example.

Disruptive selection is when the average physical characteristic of a population is not beneficial. Example: A population of plants evolve to be either tall or short with very few middle sized individuals.

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What effects speciation most?

Climate changes
 Continental Drift
 Humans

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What can clear cutting cause?

Erosion
 Water pollution
 Flooding
 Habitat fragmentation
 Loss of biodiversity

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What is the cheapest and best way to protect trees from disease?

Maintain biodiversity in the forest

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What is a genetic bottleneck?

Low biodiversity and small population

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Explain how/ why the pepper moth is a good example for evolution

It shows microevolution through the color changes it experienced in response to the changes in the environment.

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What is coevolution?

Evolution that occurs when species exert pressures on each other, plays a role in the evolution of camouflage

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What can increase biodiversity?

Habitat restoration, protection, and conservation.
Removal of invasive species

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What can we assess biodiversity?

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What is the driving force behind the destruction of the rain forest?

poverty

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Explain adaptive radiation using an example.

When there is a large amount of adaptation happening due to open niches.
Example: When the dinosaurs went extinct they left behind many niches. The mammals moved in and adapted to fill these niches.

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What is a niche?

An organisms job, role, or way of life.

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What is the difference between mass extinction and background extinction

Background extinction is the normal rate that species go extinct.
 Mass extinctions happen when a lot of species go extinct at the same time.

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Explain Stabilizing selection using an example.

Stabilizing selection is when the physical characteristics of a population favor the average and not the extremes.
Example: blue, green, and red worms. Green worms were better adapted to the environment so the other colors die off.

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What are the major causes of mass extinctions?

Climate Change
 Meteor Impact
 Continental Drift
 Human Expansion/Needs

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How many mass extinctions?

6

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Acid deposition is another way of saying.....

Acid Rain

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What makes a species endangered?

The species is in danger of going extinct. Disappearing from the face of the earth.

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What is the greatest immediate threat to endangered species?

Habitat loss/ degradation

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What are some of the causes for the decline in of elephant numbers.

Habitat loss, poaching, limited range, low rate of reproduction

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What is species richness?

The number of different species in an area.

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What do monoculture forestry cause?

**Loss of soil nutrients
Draining of wetlands
Suppression of ecologically important fires**

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How might a hunter be considered a conservationist?

If they were focused on preservation of organisms in their native habitat.

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What are ecosystem services?

Benefits gained by ecosystem services.

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CITES is...

A treaty controlling the international trade of endanger species.

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How might one assess the biodiversity in an area?

Measure the number of species present and their genetic diversity

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What makes a good invasive species?

Generalists
Reproduce fast
Outcompete native species

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Another name for a moderate sized, old growth forest refuge is...

Late successional species.

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What are captive breeding programs used for?

Replenishing the most critically endangered species.

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Transporting live or dead wild animals was outlawed by....

The Lacey Act

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Explain Microevolution AND give an example.

Microevolution is small changes in a population that happen in a short time frame.
Example: Pepper moth habitat changes color from light to dark. Dark color is now the most beneficial adaptation.

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List 3 causes of extinction.

Habitat Loss
 Low Reproduction Rate
 Specialized Niche
 Large area needed
 High Trophic Level
 Fixed Migratory Path
 Narrow Distribution
 Commercially Valuable
 Rare

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What is the difference between weather and climate?

Weather is short term – today
 Climate is a long term (30 year +) average

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What is speciation (also known as divergent evolution)

One species evolving into two different species.
Example – one kind of finch adapting to different islands and changing into two different finches that can no longer interbreed.

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Explain “survival of the fittest”

The best adapted will survive and reproduce.

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What are two characteristics of an Old Growth Forest?

1. Trees have never been cut down OR were cut down over 300 years ago.
2. Old, Large trees.
3. Complex, diverse webs of life.

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Explain Clear Cutting.

Cutting down all of the trees in an area.

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Explain primary v secondary forests

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What effects the patterns of speciation?

Human activity
Climate change
Continental drift

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What is habitat fragmentation?

an isolated area that is no longer connected to the original habitat.
Example: The National Wildlife Refuges in the valley are fragments of the original habitat.



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What does it mean to be “pesticide resistant”?

The individuals in a population that are not killed by a pesticide. They will survive and reproduce to make more resistant offspring.

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Why is human population growth a major factor of deforestation?

People need wood for houses and cities, space for farms, space to graze cattle, build roads, and other products that come from the forest.

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Why is logging a secondary cause of deforestation?

We log because there are so many needs of so many people. Logging is the result of higher population Not the cause.

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What is the problem with people in cities using charcoal?

When Charcoal is made it loses half of the heat contained in the wood so it is much less efficient. This causes more wood to be cut down.

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Explain macroevolution and provide an example.

Macroevolution is large genetic changes in a species over a long time scale.
Example: A land mammal evolving into a whale.

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Explain coevolution and provide an example.

Coevolution is when two species evolve in response to the other.
Example: Cactus spines and hard mouths of the organisms that eat them, Hummingbird beaks and flowers.

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Explain directional selection using an example.

Directional selection is when the physical characteristics of a population shift away from the average.
Example: A population of beetles becomes smaller over time.

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What is a low population density? Give an example

Not a large amount of organisms living in a area.
Example: Elephants have a low population density in the savannah whereas rats have a high population density in cities.

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What is an ecosystem service?

A service provided by natural processes such as purifying the air and cleaning the soil.

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Draw directional selection on the board

Shifting to one extreme

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Give two characteristics of an invasive species.

- Reproduce Quickly
- Produce many offspring
- Generalists – will eat many different foods.
- Can live in many different areas
- Outcompete native species for food, space.

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What is the function if CITES (1973)?

To stop the trade of endangered species internationally

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Explain the precautionary principle. Provide an example.

The precautionary principle says that we should think about the future consequences of our actions. For example: When they released the cane toad they did not use the precautionary principle and think about the possible effects.

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What is the function of the Endangered Species Act of (1973)?

To prevent any endangered species trade (living or dead) and to protect habitat to help the species survive.

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What are two goals of captive breeding programs in zoos?

1. Increase the genetic diversity of a population (by breeding them with another population)
2. Produce more of the species to reintroduce into the wild.

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Differentiate between early, mid, and late successional species?

A post fire example:
 1. early successional species will show up first ex: grass.
 2. Mid will show up second. Ex: Shrubs
 3. Late will show up last: Ex: slow growing hardwood trees like an Oak.

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What is the Function of the Lacey Act (1900)?

To prevent illegally harvested or collected wildlife from being bought, sold, or transferred across state borders.

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What are two solutions for endangered species?

- Preserve Habitat
- Pass Protective Laws – CITES, ESA, Lacey Act
- Stop international trade.
- Wildlife Reserves
- Captive Breeding Programs
- Exclusive Economic Zones – control 200 miles of our coastline.

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What types of animals greatly benefit from National Wildlife Refuges?

Typically game animals like ducks, deer, elk.

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How is the Migratory bird stamp act of 1934 still helping to conserve habitat?

Bird hunters have to buy a \$15 dollar stamp to hunt. This money is used to buy and protect bird habitat.

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What is a fixed migratory pattern?

A bird flies along the same path every time it migrates. It knows no other way.

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Put these in order based on their energy.

Fuel wood
Charcoal
Uranium
Electricity

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What is an Exclusive Economic Zone (EEZ)?

A country controls 200 miles off of its shores. Other countries cannot fish or extract any oil, gas etc. From that 200 miles.

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Explain why Evolution is like a tree.

Each branch of the tree is the lineage of a major group of organisms. Plants have a branch, animals have a branch, fungi have a branch.

Evolution, Biodiversity, Invasive
Species, Endangered Species

**Why is some
type of
isolation
important
for
evolution?**

When a population is isolated it only leaves those individuals to survive and reproduce. The best adapted of the group reproduce and the population shifts away from the original group.

Evolution, Biodiversity, Invasive
Species, Endangered Species

**Name two
types of old
growth
forests.**

- Douglas Fir
- Loblolly Pine
- Tropical Rain Forest
- Pacific Redwoods
- Giant Sequoia

Evolution, Biodiversity, Invasive
Species, Endangered Species

**Deforested
Amazon
rain forest
is mostly
used for?**

Cattle Ranching

Evolution, Biodiversity, Invasive
Species, Endangered Species

**What is a
biodiversity
“hot spot”**

A “hot spot” is an area with a large biodiversity that is targeted to be protected.

Evolution, Biodiversity, Invasive
Species, Endangered Species

**What is an
“extractive”
reserve?**

An extractive reserve does not cut down the trees but resources are “extracted” (taken out) of the forest. Example: Rubber tree plantations – the trees are tapped for the rubber but not cut down.

Evolution, Biodiversity, Invasive
Species, Endangered Species

**What are two
different
ways invasive
species were
introduced?**

- Ornamental
- Slow erosion
- Fishing Bait
- Clean Algae From Ponds
- Ballast water
- Attached to boats that move from one pond to another.

Evolution, Biodiversity, Invasive Species, Endangered Species

Explain how an organism changes its physical characteristics.

IT CANT!!!!!!

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What are two different ways invasive species can be managed?

- Scraping boat hulls and draining water out of boats
- Pesticides/herbicides
- Trapping/hunting
- Introduce a Virus
- Introduce another organism to eat the invasive one

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What is the source of new genetic diversity?

Mutations in the DNA of offspring

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Why do new pesticides continuously need to be in development.

Some pest individuals are naturally resistant to a pesticide. They survive and reproduce making the new population more resistant overall. A new pesticide is needed to kill off the majority again.

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How does continental drift change the climate?

Continental Drift can change the flow patterns of the ocean which can redistribute heat to other parts of the earth.

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List 3 characteristics of invasive species

- Large number of offspring
- Wide range of tolerance
- Can eat many different food resources
- Generalist
- Outcompete native species