



Biogeography

The Lineage of the Wolf

Levelled Assessment ____/4

Name: _____

Section: _____

Score: ____/5

Directions: Map out the current and historic ranges of the wolf and use them to figure out whether the wolf's distribution is a result of dispersal or vicariance.

Step 1: Map the Current Ranges

Directions: Map out the Current Ranges of the following *Canis* sub-species: **Side-Striped Jackal, Golden (common) Jackal, Coyote, Gray Wolf, Black-backed Jackal, Ethiopian Wolf, Red Wolf**. Search "*Canis*" in the IUCN Red List to find the species and then click on each one to bring up their data sheets which will include their ranges. Use a different color for each member of the wolf species and draw out their ranges as outline maps on the blank map below

IUCN Redlist Website: <https://newredlist.iucnredlist.org/>



Legend:

Wolf Evolution Articles:

Illinois State Museum: "Wolves, Coyotes, and Dogs (Genus *Canis*)"

<http://exhibits.museum.state.il.us/exhibits/larson/canis.html>

Wolf Country: "Wolf Origins"

<http://www.wolfcountry.net/information/WolfOrigins.html>

Step 2: Map the historical Ranges

Directions: Read the two wolf evolution articles and map out the movements (with labels and approximate dates) of the subspecies of wolves and their ancestors as lines with arrows to signify direction on the same map above. The articles will use terms for geological periods and landforms that no longer exist that will require some additional internet research.

Step 3: Connecting to Dispersal or Vicariance

Directions: For each of the vocabulary words below describe how the term can be applied to the evolutionary history of the *Canis* species and their ancestors. If you believe the term does not apply to the wolf or its ancestors then explain your reasoning.

Vicariance: The division of the range (through processes such as plate tectonics, sea level rise, or biome changes due to climactic variations as a result of climate change) of a taxon leading to divergences resulting in the development of new species than those in the original range.

Explanation:

Dispersal: The physical movement of a species as a result of ecological dispersal (individuals move due to competition within existing range) or Biogeographic dispersal (species moving ranges over time across long distances and spaces).

Explanation:

Active Dispersal: The voluntary movement of a taxa from one place to another under its own force.

Explanation:

Passive Dispersal: The movement of a taxa from one place to other under the force of some other physical or organic force (ie. Being blown by the wind with inability to change course or attached to the fir/feathers of another organism).

Explanation:

Jump Dispersal: An infrequent, but long-distance movement of an organism in a short period of time. (ie. Most seen in colonization of newly formed islands).

Explanation:

Human-Aided Jump Dispersal: The rapid diffusion (spread) of an organism from one area to another aided through the deliberate or non-deliberate actions of humans.

Explanation:

Secular Migration: Gradual diffusion of species from one area to another over a long period of time. Often taking place over the course of many generations (sometimes hundreds), species adaptations along the way will lead to the diversion of individuals along the way who adapt and develop into genetically unique species.

Explanation:

Barriers: Abiotic or biotic factors that limit the diffusion of species from one area to another.

Explanation:

Corridor: Route through which a species may use to move from one area to another. Allows the movement due to environmental consistency which limits extreme events that may lead to mass die-offs.

Explanation:

Filters: Semi-permeable barrier that will prevent many from a specific taxon from diffusion, but not all leading to small groups of individuals diffusing out and forming new colonies.

Explanation:

Thought Question:

1. Based on your maps and readings would you say the current distribution of the wild *Canis* species is a result of vicariance or dispersal? Make a clear assertion of which you believe it is, explain your reasoning using content specific vocabulary, and provide evidence in the form of specific geographic data (species, dates, locations) to support your reasoning.