

Speciation Organizer

Instructions

1. Fill in the populations and the name of the evidence document you'll be analyzing.
2. Analyze your evidence document, then use it to fill in the questions below. *Your document may not address all of the questions.*
3. Add evidence from the other groups (or evidence documents) to each question, as applicable.
4. Consider all of the evidence under each question. Circle the number on each scale that best fits.
5. Consider the answers to questions 1-4. Circle where you think these populations fit on the speciation continuum. Summarize the evidence that supports your choice.

Populations being evaluated _____

Evidence document(s) _____

Questions

When evaluating whether populations are the same or different species, scientists often ask the questions listed below.

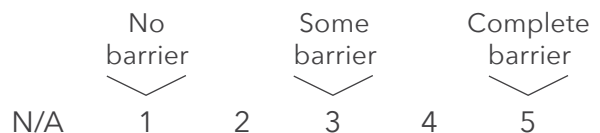
1. **Are there barriers to reproduction?** Is there evidence that something (geography, differences in habitat, inherited physical or behavioral traits) is preventing individuals from the two populations from interbreeding?

Example: Stickleback populations in the ocean and in Loberg Lake are physically separated from one another, so they cannot interbreed.

Barrier

Evidence

Consider the evidence together. Do you think there are barriers to reproduction?

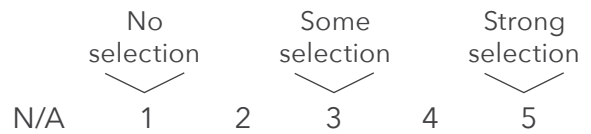


2. Are different heritable traits being selected for? Is there evidence that natural selection has caused different heritable traits to become more or less common in the different populations?

Example: Eurasian blackcap birds that overwinter in Britain have trait differences from the birds that overwinter in Spain. Because they fly less, eat different food, and live in colder weather, the British population's average wing shape, beak thickness, and body size have changed over time.

Evidence:

Consider the evidence together. Do you think different heritable traits are being selected for?

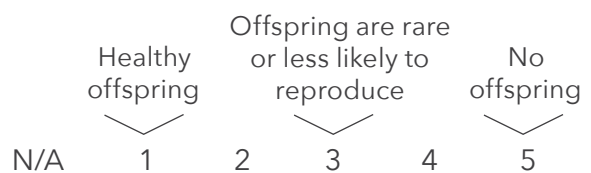


3. Can the populations make hybrid offspring? Is there evidence that individuals from the populations interbreed to make hybrid offspring? If so, are the offspring plentiful, healthy, and able to reproduce?

Example: Lions and tigers don't normally mate in nature, but in captivity they sometimes produce hybrid offspring. These offspring are rare, short-lived, and unable to reproduce.

Evidence:

Consider the evidence together. Do you think the populations make healthy hybrid offspring?

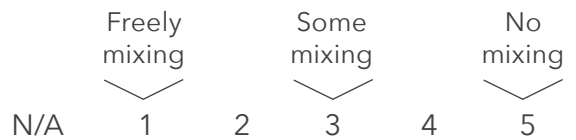


4. Are alleles mixing between the populations? Is there evidence from DNA that alleles (variations of the same genes) are not freely mixing between the populations? Are some alleles more or less common in one population than another?

Example: DNA analysis has shown that Australian blacktip sharks have variations in their DNA that are very rare in common blacktips, and vice versa.

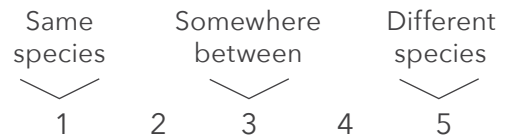
Evidence:

Consider the evidence together. Do you think alleles are mixing between the populations?



Is it Speciation?

Consider all of the available evidence. Where do you think these populations best fit on the speciation continuum?



Summarize the evidence that supports your choice: