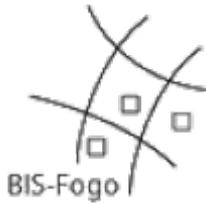


Activity 17: Evolution of species

The gene-balance of the Darwin finches



Objective: This unit shows the learners which natural factors can affect populations, especially on islands. The factors dealt with in this unit are: mutation, migration, selection & founder principles.

Learning outcomes: The learners are able to transfer their knowledge of the previous learning units to the tasks. In addition, they will get to know every important step on the ladder of the development of the Darwin finches.

Previous knowledge: first contact & advanced learning activities from the same topic

Duration: 45min.

Materials / Conditions: Internet access

Methods / Techniques: transfer task, textual work

Learning subject: Biodiversity / Module I: Introduction to biodiversity / Level: expert learning

Introduction:

The Darwin finches are a good example for creatures with a high rate of biodiversity. In the following tasks, you are going to learn something about their gene-balance.

Instruction:

1. Read text 1 that is listed in the resources. Justify how the single factors of the gene-balance apply on the Darwin finches.

If you chose the English link, then research the following keywords in the source and answer the previous question: natural selection, genetic drift, mutation, migration and genetic drift.

2. Have a look at the diagram in the resources. There are 4 types of speciation. Discuss in which situation are there allopatric and sympatric speciation related to the Darwin finches.

(Teamwork possible)

Read text 2 if you need a hint.

3. Read text 3. Verify which type of selection worked on the evolution of the finches (several answers possible). Justify your answer/s.

Resources:

Text 1(Portuguese): <http://www.sobiologia.com.br/conteudos/Evolucao/evolucao22.php> (retrieved: 08/26/2015)

Text 1 (English): <https://en.wikipedia.org/wiki/Evolution>

Text 2 (English): https://en.wikipedia.org/wiki/Allopatric_speciation (retrieved: 08/26/2015)

Text 3 (English):

<http://www.sparknotes.com/biology/evolution/naturalselection/section1.rhtml>(retrieved: 08/26/2015)

Possible results / Results:

1. Mutation: The 14 subspecies could have developed during the course of mutation; Migration: All Darwin finches evolved from one finch that immigrated to the island; Selection: Genetic drift: It

isobvious that a genetic drift took place in the history of the Darwin finches. It is very important for the evolution and the biodiversity of a species; Grounder principle: It applies to the Darwin finches because they are immigrants.

2. Allopatric speciation: When the finches chose a new island on the Galapagos archipelago as their habitat.

Sympatric speciation: When the finches chose the sexual partners by phenotype (the appearance of the individual). Every phenotypical variation is a result of mutation and recombination.

3. Directional and/or disruptive selection first → high rate of biodiversity
Stabilizing selection for the stabilization of the 14 subspecies.

Related activities:

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