

MS-LS4-6 Biological Evolution: Unity and Diversity

California Alternate Assessment for Science—Item Content Specifications

# MS-LS4-6 Biological Evolution: Unity and Diversity

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
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| Use numerical data sets or graphical representations through observation that represent a proportional relationship between some change in the environment and corresponding changes in a population’s genetic variation over time. | 1. Ability to use numerical data sets or graphical representations that show a proportional relationship between a change in the environment and a corresponding change in genetic variation over time to identify the genetic change that is related to the environmental change. | Recognize that characteristics that allow an individual to survive lead to changes in genetic traits in populations over time. |

## **CA NGSS Performance Expectation**

Students who demonstrate understanding can:

**Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.** [Clarification Statement: Emphasis is on using mathematical models, probability statements, and proportional reasoning to support explanations of trends in changes to populations over time.] *[Assessment Boundary*: *Assessment does not include Hardy Weinberg calculations.]*

## Mastery Statements

Students will be able to:

* Identify the organism most likely to survive in a changed environment based on the traits of the organism and the characteristics of the new environment
* Identify a change in a population of organisms that would make them more likely to survive in a changed environment
* Use data in tables or graphs to match a change in an environment to a change in the traits of a population that would make them more likely to survive in the changed environment

## California Environmental Principles and Concepts

Principle 2—The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

## Possible Phenomena or Contexts

*Note that the list in this section is not exhaustive or prescriptive.*

**Possible contexts include the following:**

* Changes in food sources
* Changes in environmental conditions
* Changes in competition with other species for resources
* Presence of different traits in the population

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for MS-LS4-6

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-ms-ls4-6.docx>

California Environmental Principles and Concepts <http://californiaeei.org/abouteei/epc/>

The *2016 Science Framework for California Public Schools Kindergarten through Grade Twelve* <https://www.cde.ca.gov/ci/sc/cf/cascienceframework2016.asp>

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade Twelve

<https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix1.pdf>

Appendix 2: Connections to Environmental Principles and Concepts  
<https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix2.pdf>

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