

3-LS4-3 Biological Evolution: Unity and Diversity

California Science Test—Item Content Specifications

# 3-LS4-3 Biological Evolution: Unity and Diversity

Students who demonstrate understanding can:

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

[Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]

| Science and Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
| --- | --- | --- |
| Engaging in Argument from Evidence  Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).  Construct an argument with evidence. | LS4.C: Adaptation   1. For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. | Cause and Effect  Cause and effect relationships are routinely identified and used to explain change. |

## Assessment Targets

Assessment targets describe the focal knowledge, skills, and abilities for a given three-dimensional Performance Expectation. Please refer to the Introduction for a complete description of assessment targets.

### Science and Engineering Subpractice(s)

Please refer to appendix A for a complete list of Science and Engineering Practices (SEP) subpractices. Note that the list in this section is not exhaustive.

7.1 Ability to construct scientific arguments

### Science and Engineering Subpractice Assessment Targets

Please refer to appendix A for a complete list of SEP subpractice assessment targets. Note that the list in this section is not exhaustive.

7.1.1 Ability to identify evidence/data that supports a claim

7.1.2 Ability to develop scientific arguments that are supported by evidence/data

7.1.3 Ability to use reasoning to explain how relevant evidence/data supports or refutes the claim; the reasoning should reflect application of scientific concepts, principles, ideas, and models

### Disciplinary Core Idea Assessment Targets

#### LS4.C.1

* Identify characteristics of a given particular environment that permit the survival of some organisms but not others
* Identify characteristics of a particular organism that might affect survival in an environment
* Evaluate the degree to which a habitat meets or does not meet the needs of an organism
* Describe that how well an organism can survive in an environment depends on how well the environment meets the needs of an organism

### Crosscutting Concept Assessment Target(s)

CCC2 Identify cause and effect relationships, using them to explain change

## Examples of Integration of Assessment Targets and Evidence

Note that the list in this section is not exhaustive.

Task provides a real-world scenario involving an organism and its habitat:

* Constructs an argument, containing a claim, evidence/data, and reasoning, about how the characteristics of the organism and its habitat affect survival (7.1.1, LS4.C.1, and CCC2)

Task describes a real-world scenario with evidence/data and reasoning:

* Completes the argument by selecting the appropriate claim about how the characteristics of an organism and a habitat affect survival (7.1.1, LS4.C.1, and CCC2)

Task provides evidence or data to support a claim that the characteristics of an organism and its habitat in a real-world scenario affect survival:

* Explains why the evidence/data is or is not relevant and sufficient to justify the claim (7.1.2, LS4.C.1, and CCC2)
* Identifies relevant, valid, and/or reliable pieces of evidence/data from the list provided to support the claim (7.1.2, LS4.C.1, and CCC2)

Task provides multiple pieces of evidence/data from different sources (such as science journals, news reports, fiction books) to support claim(s) about how the characteristics of an organism and its habitat in a real-world scenario affect survival:

* Identifies which arguments are best supported by evaluating whether the evidence/data is sufficient and reliable or not (7.1.2, LS4.C.1, and CCC2)

Task provides claim(s) about a real-world scenario involving an organism and its habitat and various arguments based on different numbers of pieces of relevant evidence/data:

* Identifies which arguments are best supported by evaluating the differing strengths of the arguments based on the number of sources (of similar strength and reliability) of relevant evidence/data (7.1.2, LS4.C.1, and CCC2)

Task provides a claim about a real-world scenario involving an organism and its habitat and a piece of evidence/data about how the characteristics of the organism and habitat affect survival:

* Provides reasoning to explain how the evidence/data supports the claim (7.1.3, LS4.C.1, and CCC2)

Task provides a list of arguments with the same claim but different justifications about how the characteristics of an organism and its habitat in a real-world scenario affect survival:

* Applies scientific concepts to select the argument with the most convincing and appropriate justifications in support of the claim (7.1.3, LS4.C.1, and CCC2)

## California Environmental Principles and Concepts

* EP2: 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.

* Presence of competitors or predators
* Presence of animals which help with reproduction (e.g., pollination)
* Behavioral adaptations, like living in groups and hibernation
* Physical adaptations, like camouflage to avoid detection by prey or predators, webbed feet, fur, or roots in plants that block salt from entering the plant
* Basic needs for air, water, nutrients, heat/light, shelter, etc.

## Common Misconceptions

Note that the list in this section is not exhaustive.

* Living organisms can alter their characteristics to survive in any particular habitat.
* Living organisms can change their needs in response to a change in habitat.
* Characteristics of organisms are random and unrelated to function, habitat, or survivability.

## Additional Assessment Boundaries

None listed at this time.

## Additional References

[3-LS4-3 Evidence Statement](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS4-3%20Evidence%20Statements%20June%202015%20asterisks.pdf) <https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/3-LS4-3%20Evidence%20Statements%20June%202015%20asterisks.pdf>

[Environmental Principles and Concepts](http://californiaeei.org/abouteei/epc/) <http://californiaeei.org/abouteei/epc/>

[California Education and the Environment Initiative](http://californiaeei.org/) [http://californiaeei.org/](http://californiaeei.org/" \o "California Education and the Environment Initiative web page)

The *2016 Science Framework for California Public Schools Kindergarten through Grade 12*

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade 12 <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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