7.5 Ecosystem Dynamics and Biodiversity

Content Area: **Science**
Course(s): **Science 7**
Time Period: **Marking Period 3**
Length: **30 days**
Status: **Published**

Established Goals/Standards

SCI.MS-LS2	Ecosystems: Interactions, Energy, and Dynamics
SCI.MS-LS2-1	Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
SCI.MS.LS2.A	Interdependent Relationships in Ecosystems
SCI.MS-LS2-2	Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
SCI.MS-LS2-4	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
SCI.MS-LS2-5	Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
SCI.MS.LS2.C	Ecosystem Dynamics, Functioning, and Resilience
SCI.MS.LS4.D	Biodiversity and Humans

Technology Standards

TECH.8.1.8.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.1.8.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.1.8.B.CS2	Create original works as a means of personal or group expression.

NJ 21st Century Life and Careers/NJ Career Ready Practices

CAEP.9.2.8.B.2	Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

Interdisciplinary Connections

ELA/Literacy -

RST.6-8.8 Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. (MS-LS2-5)

RI.8.8 Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. (MS-LS2-5)

Mathematics -

MP.4 Model with mathematics. *(MS-LS2-5)*

6.RP.A.3 Use ratio and rate reasoning to solve real-world and mathematical problems. *(MS-LS2-5)*

Essential Questions

- How does changing an ecosystem affect what lives there?

Enduring Understanding

- An ecosystem includes all of the plant and animal populations and nonliving resources in a given area. Organisms interact with each other and with other components of an ecosystem.
- Earth's components form systems that have cycles and patterns that allow us to make predictions. These systems continually interact at different rates of time, affecting the Earth locally and globally.
- Human activities impact ecosystems both positively and negatively.

Content

- Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared.
- Growth of organisms and population increases are limited by access to resources.
- In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.
- Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival.
- Organisms and populations of organsims are dependent on their environmental interactions both with other living things and with nonliving factors.
- Predatory interactions my reduce the number of organisms or eliminate whole populations of organisms.
- Soil composition including biotic detris.

Assessment

Summative assessment:

- Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- Use cause-and-effect relationships to predict the effect of resource availability on organisms and populations in natural systems.
- Construct an explanation about interactions within ecosystems.
- Include qualitative or quantitative relationships between variables as part of explanations about interactions within ecosystems.

- Make predictions about the impact within and across ecosystems of competitive, predatory, or mutually beneficial relationships as abiotic (e.g., floods, habitat loss) or biotic (e.g., predation) components change.

- Formative Assessments

    - Participation/Observations
    - Questioning
    - Discussion Circles
    - Science Notebook
    - Exit Slips
    - Peer/Self Assessment
    - Rubrics
    - Teacher-created project-based assessment
    - Turn & Talk

  Alternate Assessments

    - Teacher-created project-based assessment
    - Alternate running records
    - Discussion Circles
    - Turn and Talks

  Benchmark Assessments

    - Teacher-created assessment

Accommodations and Modifications

Accommodations and Modifications according to student IEP, 504, I&RS goals, and/or gifted status.

Resources

- Amplify
- Discovery Education
- TuvaLabs