



CURRICULUM CONNECTIONS

Secret Ocean 3D

(<http://www.secretocean-thefilm.com/>)

IMAX film.

FILM - After viewing *Secret Ocean* and with some guidance from teachers, students should be able to:

Next Generation Science Standards

Grade 1

1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

Grade 2

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

Grade 3

3-LS2-1. Construct an argument that some animals form groups that help members survive.

Grade 4

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

Grade 5

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Middle School

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

High School

- HS-LS2-8. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
- HS-LS4-5. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

Common Core State Standards in English Language Arts

Grade 1

- SL.1.2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

Grade 2

- SL.2.2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.

Grade 3

- SL.3.2. Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 4

- SL.4.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 5

- SL.5.2. Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Grade 6

- SL.6.2. Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study.

Grade 7

- SL.7.2. Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.

Michigan Science Grade Level Content Expectations

Grade 1

- S.IP.01.11. Make purposeful observation of the natural world using the appropriate senses.

Grade 2

- S.IP.02.11. Make purposeful observation of the natural world using the appropriate senses.

Grade 3

- S.IP.03.11. Make purposeful observation of the natural world using the appropriate senses.
- S.RS.03.18. Describe the effect humans and other organisms have on the balance of the natural world.

- L.EV.03.12. Relate characteristics and functions of observable body parts to the ability of animals to live in their environment (sharp teeth, claws, color, body coverings).

- L.OL.03.32. Identify and compare structures in animals used for controlling body temperature, support, movement, food-getting, and protection (for example: fur, wings, teeth, scales).

E.ES.03.52 Describe helpful or harmful effects of humans on the environment (garbage, habitat destruction, land management, renewable, and non-renewable resources).

Grade 4

S.IP.04.11 Make purposeful observation of the natural world using the appropriate senses.

L.EC.04.11 Identify organisms as part of a food chain or food web.

L.EC.04.21 Explain how environmental changes can produce a change in the food web.

S.RS.04.18 Describe the effect humans and other organisms have on the balance of the natural world.

Grade 5

S.RS.05.17 Describe the effect humans and other organisms have on the balance in the natural world.

L.EV.05.11 Explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment.

L.EV.05.12 Describe the physical characteristics (traits) of organisms that help them survive in their environment.

Grade 6

S.RS.06.17 Describe the effect humans and other organisms have on the balance of the natural world.

L.EC.06.11 Identify and describe examples of populations, communities, and ecosystems including the Great Lakes region.

L.EC.06.21 Describe common patterns of relationships between and among populations (competition, parasitism, symbiosis, predator/prey).

L.EC.06.22 Explain how two populations of organisms can be mutually beneficial and how that can lead to interdependency.

L.EC.06.23 Predict how changes in one population might affect other populations based upon their relationships in the food web.

L.EC.06.32 Identify the factors in an ecosystem that influence changes in population size.

L.EC.06.41 Describe how human beings are part of the ecosystem of the Earth and that human activity can purposefully, or accidentally, alter the balance in ecosystems.

Grade 7

S.RS.07.17 Describe the effect humans and other organisms have on the balance of the natural world.

E.ES.07.42 Describe the origins of pollution in the atmosphere, geosphere, and hydrosphere, (car exhaust, industrial emissions, acid rain, and natural sources), and how pollution impacts habitats, climatic change, threatens or endangers species.

High School

L3.p1A Provide examples of a population, community, and ecosystem.

L3.p2A Describe common relationships among organisms and provide examples of producer/consumer, predator/prey, or parasite/host relationship.

L3.p2B Describe common ecological relationships between and among species and their environments (competition, territory, carrying capacity, natural balance, population, dependence, survival, and other biotic and abiotic factors).

L3.p2D Explain how two organisms can be mutually beneficial and how that can lead to interdependency.

L3.p3A Identify the factors in an ecosystem that influence fluctuations in population size.

L3.p3D Predict how changes in one population might affect other populations based upon their relationships in a food web.

L3.p4A Recognize that, and describe how, human beings are part of Earth's ecosystems. Note that human activities can deliberately or inadvertently alter the equilibrium in ecosystems.

Michigan Social Studies Grade Level Content Expectations

Grade 6

G5.1.1 Describe the environmental effects of human action on the atmosphere (air), biosphere (people, animals, and plants), lithosphere (soil), and hydrosphere (water) (e.g., changes in the tropical forest environments in Brazil, Peru, and Costa Rica).

Grade 7

G5.1.1 Describe the environmental effects of human action on the atmosphere (air), biosphere (people, animals, and plants), lithosphere (soil), and hydrosphere (water) (e.g., desertification in the Sahel Region of North Africa, deforestation in the Congo Basin, air pollution in urban center, and chemical spills in European Rivers).