

# MarineLab Programs and the Indiana Science Assessment Standards

Grades: 11, 12

STANDARD	IN.B.1.	Biology I: Principles of Biology: Students work with the concepts, principles, and theories that enable them to understand the living environment. They recognize that living organisms are made of cells or cell products that consist of the same components as all other matter, involve the same kinds of transformations of energy, and move using the same kinds of basic forces. Students investigate, through laboratories and fieldwork, how living things function and how they interact with one another and their environment.	
PROFICIENCY STATEMENT	B.1.1.	Molecules and Cells: Recognize that and explain how the many cells in an individual can be very different from one another, even though they are all descended from a single cell and thus have essentially identical genetic instructions. Understand that different parts of the genetic instructions are used in different types of cells and are influenced by the cell's environment and past history.	
		Coral Reef Ecology Everglades Hydrology Field Identification of Reef Fish Invertebrate Diversity Keys Habitats Intro & Summary	Mangrove Ecology Plankton Tow Rodriguez Key Zonation Sea Turtle Stranding Activity Seagrass Ecology Sponge Spicule Identification
PROFICIENCY STATEMENT	B.1.12.	Developmental and Organismal Biology: Compare and contrast the form and function of prokaryotic and eukaryotic cells.	
		Cassiopeia Culturing Coral Reef Ecology Everglades Hydrology Field Identification of Reef Fish Invertebrate Diversity Keys Habitats Intro & Summary Mangrove Ecology	Plankton Tow Rodriguez Key Zonation Sea Turtle Stranding Activity Seagrass Ecology Sponge Spicule Identification Water Quality
PROFICIENCY STATEMENT	B.1.15.	Developmental and Organismal Biology: Understand and explain that, in biological systems, structure and function must be considered together.	
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PROFICIENCY STATEMENT	B.1.16.	Developmental and Organismal Biology: Explain how higher levels of organization result from specific complexing and interactions of smaller units and that their maintenance requires a constant input of energy as well as new material.	
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PROFICIENCY STATEMENT	B.1.19.	Developmental and Organismal Biology: Recognize and describe that metabolism consists of the production, modification, transport, and exchange of materials that are required for the maintenance of life.	
		Cassiopeia Culturing Coral Reef Ecology Keys Habitats Intro & Summary Mangrove Ecology	Sea Turtle Stranding Activity Seagrass Ecology Water Quality
PROFICIENCY STATEMENT	B.1.31.	Evolution: Describe how natural selection provides the following mechanism for evolution: Some variation in heritable characteristics exists within every species, and some of these characteristics give individuals an advantage over others in surviving and reproducing. Understand that the advantaged offspring, in turn, are more likely than others to survive and reproduce. Also understand that the proportion of individuals in the population that have advantageous characteristics will increase.	
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PROFICIENCY STATEMENT	B.1.32.	Evolution: Explain how natural selection leads to organisms that are well suited for survival in particular environments, and discuss how natural selection provides scientific explanation for the history of life on earth as depicted in the fossil record and in the similarities evident within the diversity of existing organisms.	
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PROFICIENCY STATEMENT	B.1.34.	Evolution: Explain that evolution builds on what already exists, so the more variety there is, the more there can be in the future. Recognize, however, that evolution does not necessitate long-term progress in some set direction.	
		Coral Reef Ecology Everglades Hydrology Field Identification of Reef Fish	Keys Habitats Intro & Summary Rodriguez Key Zonation
PROFICIENCY STATEMENT	B.1.37.	Ecology: Explain that the amount of life any environment can support is limited by the available energy, water, oxygen, and minerals, and by the ability of ecosystems to recycle the residue of dead organic materials. Recognize, therefore, that human activities and technology can change the flow and reduce the fertility of the land.	
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PROFICIENCY STATEMENT	B.1.38.	Ecology: Understand and explain the significance of the introduction of species, such as zebra mussels, into American waterways, and describe the consequent harm to native species and the environment in general.	
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PROFICIENCY STATEMENT	B.1.39.	Ecology: Describe how ecosystems can be reasonably stable over hundreds or thousands of years. Understand that if a disaster such as flood or fire occurs, the damaged ecosystem is likely to recover in stages that eventually result in a system similar to the original one.	
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PROFICIENCY STATEMENT	B.1.40.	Ecology: Understand and explain that like many complex systems, ecosystems tend to have cyclic fluctuations around a state of rough equilibrium. However, also understand that ecosystems can always change with climate changes or when one or more new species appear as a result of migration or local evolution.	
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PROFICIENCY STATEMENT	B.1.41.	Ecology: Recognize that and describe how human beings are part of the earth's ecosystems. Note that human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems.	
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PROFICIENCY STATEMENT	B.1.42.	Ecology: Realize and explain that at times, the environmental conditions are such that plants and marine organisms grow faster than decomposers can recycle them back to the environment. Understand that layers of energy-rich organic material thus laid down have been gradually turned into great coal beds and oil pools by the pressure of the overlying earth. Further understand that by burning these fossil fuels, people are passing most of the stored energy back into the environment as heat and releasing large amounts of carbon dioxide.	
		Mangrove Ecology	
PROFICIENCY STATEMENT	B.1.43.	Ecology: Understand that and describe how organisms are influenced by a particular combination of living and non-living components of the environment.	
		Seagrass Ecology	

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PROFICIENCY STATEMENT	B.1.44.	Ecology: Describe the flow of matter, nutrients, and energy within ecosystems.	
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PROFICIENCY STATEMENT	B.1.45.	Ecology: Recognize that and describe how the physical or chemical environment may influence the rate, extent, and nature of the way organisms develop within ecosystems.	
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PROFICIENCY STATEMENT	B.1.46.	Ecology: Recognize and describe that a great diversity of species increases the chance that at least some living things will survive in the face of large changes in the environment.	
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PROFICIENCY STATEMENT	B.1.47.	Ecology: Explain, with examples, that ecology studies the varieties and interactions of living things across space while evolution studies the varieties and interactions of living things across time.	
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