EcoCasting Learning Standards

Illinois Standards

• Compare physical, ecological and behavioral factors that influence interactions and interdependence of organisms.

• Simulate and analyze factors that influence the size and stability of populations within ecosystems (e.g., birth rate, death rate, predation, migration patterns).

• Formulate hypotheses referencing prior research and knowledge.

• Conduct systematic controlled experiments to test the selected hypotheses.

• Analyze the transmission of genetic traits disease, and defects.

College Readiness Standards

• Identify the central idea or main topic of a straightforward piece of writing.

• Draw reasonable conclusions about people and situations using evidence presented in a text.

• Explain in their own words the significance of specific information in written or nonprint sources.

• Identify details that clearly support the key point(s) of written or nonprint sources.

• Identify interrelationships between and among people, objects, events, or ideas in written or nonprint sources.

• Determine how the value of one variable changes as the value of another variable changes in a complex data presentation

• Use new information to make a prediction based on a model

• Select a simple hypothesis, prediction, or conclusion that is supported by a data presentation or a model

• Understand the methods and tools used in a experiment

• Determine experimental conditions that would produce a specified result.
National Research Council’s (NRC) National Science Education Standards for grades 9-12

- Organisms both cooperate and compete in ecosystems. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.

- Human activities can enhance potential for hazards. Acquisition of resources, urban growth, and waste disposal can accelerate rates of natural change.

- Humans have a major effect on other species. For example, the influence of humans on other organisms occurs through land use—which decreases space available to other species—and pollution—which changes the chemical composition of air, soil, and water.

- Abilities necessary to do scientific inquiry

- Understanding about scientific inquiry

- A population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.

- Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some microorganisms are producers—they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify the relationships among producers, consumers, and decomposers in an ecosystem.

- Energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers.

- Living organisms have the capacity to produce populations of infinite size, but environments and resources are finite. This fundamental tension has profound effects on the interactions between organisms.

- Scientists usually inquire about how physical, living, or design systems function