Wilmette Public Schools, District 39 **Unit:** Ecosystems
Science Curriculum, Grade 4
Essential Question: Are changes predictable? **Time Frame (in weeks):** 6 or 12 weeks

VOCABULARY: Food chain, food web, producer, consumer, decomposer, scavenger, herbivore, carnivore, omnivore, adaptation (structural, behavioral), energy flow, independence, diversity, reptile, amphibian, bird, mammal, fish, fungi, bacteria, evidence, claim, ecosystem, biotic, abiotic, inherited, ecology, environment, germinate, sprout, system

National Standards or Core Standards

Organisms have structures and functions that facilitate their life processes.
Organisms and populations of organisms obtain necessary resources from their environment which include other organisms and physical factors.

	Guiding Questions	Big Ideas of Science	Assessments of Knowledge and Skills	Teaching Resources & Technology
Core Ideas	What are the functions of structures? How do structures help organisms function in their environments. What are the roles of organisms within diverse ecosystems? How does energy flow through an ecosystem? How do organisms obtain their characteristics? What happens to organisms when their environments change? What evidence of cycles can we find in ecosystems? How can we classify living things?	The external structures of plants and animals serve various functions in growth, survival, and reproduction. Organisms within an ecosystem serve different roles (producer, consumer, decomposer) (herbivore, carnivore, omnivore). Organisms interact with one another in complex feeding relationships, and must obtain the necessary resources for life from their environment. Almost all kinds of animals' food can be traced back to plants. Characteristics of organisms are either inherited or develop from an organisms' interaction with the environment. Changes in an organisms' habitat can be beneficial or harmful. For any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all. Organisms can survive only in environments where their needs are met. Organisms within ecosystems have cycles of life. The details of life cycles vary for different organisms. Living thing can be sorted into groups many ways.	**Summative Assessment** Interpret scientific data to determine the impact on an ecosystem given several scenarios of change. Support response with evidence and explanation. (Lessons 15-17) **Formative Assessment** Relate unique structures of plants and animals to their functions and explain their roles in growth, survival, and reproduction. Compare roles of organisms within diverse ecosystems. Identify producers, consumers, an decomposers within diverse ecosystems. Build food webs within diverse ecosystems. Compare characteristics if parents and offspring within diverse ecosystems. Distinguish between inherited and learned behaviors. Compare and contrast adaptations of organisms within diverse ecosystems. Describe how humans and the environment impact diverse ecosystems in positive and negative ways. Compare and contrast life cycles within an ecosystem. Describe the system of classification for living things. Sort organisms according to scientific classification. *Utilize the STC Planner, Teacher Guide, and Assessment Handbook to choose assessments appropriate for your students	**CORE MATERIALS:** STC Ecosystems Kit (1 per classroom) Kids Discover: Ecosystems (2 packs of 8 per classroom) STC Book: Ecosystems (2 packs of 8 per classroom) STC Planner: Ecosystems (1 per classroom) STC Assessment Guide Literacy Enhancement: Ecosystems (1 pack per classroom) Suggested Garden Lessons Decomposition Ecosystems Ideas for using the garden http://www.kidsgardening.org/

	Guiding Questions	Big Ideas of Science	CONNECTED/ 21st Century Learning
Scientific and Engineering Practices	What is the nature of scientific inquiry? How to scientists go about their work? How do theories become accepted or refuted? What is the relationship of scientific claims to evidence?	Scientific inquiry is a dynamic process that is not limited to one scientific method. Inquiry engages learners in asking scientifically oriented questions, gathering and prioritizing evidence, formulating explanations, making connections to scientific knowledge and communicating and justifying explanations. Inquiry leads to new questions. Science is an imaginative endeavor that is subject to modification as new information challenges current theories. It involves the collection of data, the use of logical reasoning, argumentation and the devising of hypotheses and explanations informed by evidence. Scientists keep honest/unbiased, clear and accurate records, value hypotheses and understand that more than one explanation can be given for the same evidence. Scientists use a variety of tools to inform their observations. Scientists organize information using tables, graphs, diagrams and symbols. Scientists question claims based on vague attributions and are skeptical of arguments based on small data samples. Scientists embrace unexpected results.	Opening minds to a **global perspective**: -possible guest speakers as suggested in lesson 9 Nurturing the **characteristics of successful learners**: -problem solving in lessons 15-17 Nourishing a sense of **social responsibility**: awareness of human impact on environment Empowering **communication** skills: -presentation of findings, science notebook writing Cultivating **collaboration**: -group work - sharing data and observations among groups in lessons across unit especially lessons 12 and 14 Transforming **technology**: -using technology to compile data and share ideas with group members Evolving our **teaching styles**: -hands-on, inquiry-based learning