
Life in a Pond



Fourth-Grade Teacher Resource Guide

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Life in a Pond: Lesson Summary and Vocabulary

Lesson Summary: YSI's *Life in a Pond* program allows students to touch and examine aquatic animals and acquire a greater understanding of the pond's unique ecology. The presentation focuses on both instructor-led discussion and hands-on activities. Students will first work as a group to put together a model of a pond. They will discuss the role of each plant, animal, and object in forming an interactive system, and come to understand how the food chain is sustained. Discussion will continue as the instructor presents live examples, touching on the physical adaptations, diets, roles, and growth of different aquatic organisms. Throughout the program, students will be challenged to use their critical thinking skills to answer a wide range of open-ended questions and construct a comprehensive picture of life within our local ponds.

Vocabulary: Below are words and concepts that relate to the *Life in a Pond* program.

Amphibian: a cold-blooded animal that starts its life in water or a very wet environment but when mature can live on land

Consumer: an organism that receives energy to live by consuming other organisms

Decomposer: an animal that feeds on dead matter and breaks it down into simpler compounds

Ecosystem: a community of living things, together with their environment

Fresh Water: inland water that does not contain large quantities of salt like the ocean

Larva (Entomology): the wingless, feeding stage of an insect that undergoes complete metamorphosis

Metamorphosis (Biology): major changes in form from one stage to the next in the life cycle of an organism

Nymph (Entomology): the young of an insect that does not undergo complete metamorphosis, usually differs from the adult in that it is smaller and does not have wings

Pond: a still body of fresh water that is smaller, and shallower than a **lake**. Ponds and lakes form in natural or man-made depressions or from building banks or dams around an area.

Producer: an organism that takes energy from light to produce living compounds

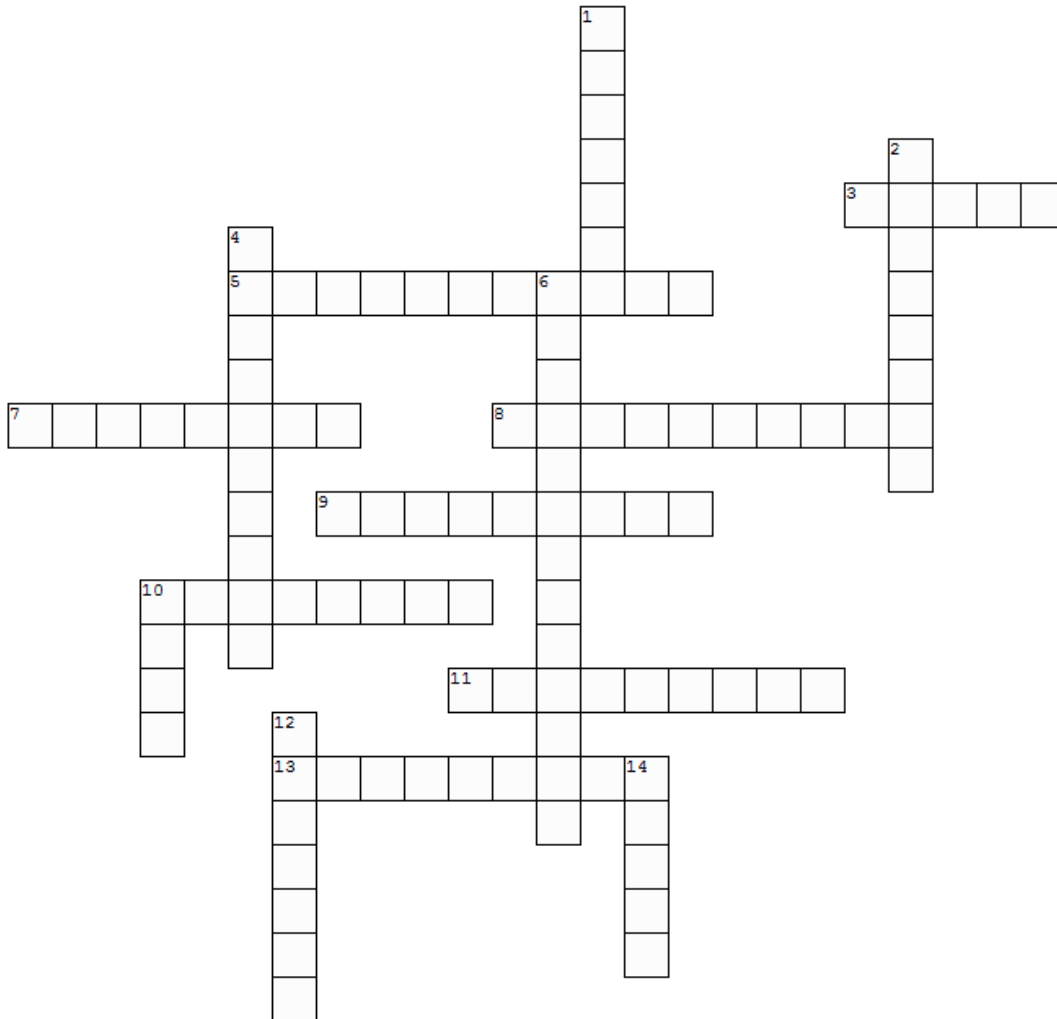
Reptile: a cold-blooded animal with dry scaly skin that typically lays soft-shelled eggs on land

River: a large flowing body of fresh water; smaller flowing bodies of water are called **creeks** or **streams**

Water Cycle: the circulation of the earth's water, in which water **evaporates** from the oceans into the atmosphere, **condenses** to form clouds, falls as **precipitation** (rain, snow, sleet), and returns to the oceans via fresh water bodies on land

Definitions based on www.dictionary.reference.com

Life in a Pond Language Arts Crossword Puzzle



- | | | | | | | |
|-------------|----------|---------------|----------|------------|-----------|------------|
| TRAIT | NICHE | ARTHROPOD | HABITAT | AMPHIBIAN | ECOSYSTEM | CAMOUFLAGE |
| ENVIRONMENT | PRODUCER | INHERITANCE | PREDATOR | DECOMPOSER | REPTILE | PREY |
| | | METAMORPHOSIS | | CONSUMER | | |

Down

1. A cold-blooded animal with scales.
2. An organism that converts energy from light..
4. An animal that feeds on dead matter and breaks it down into simpler compounds.
6. Rapid changes in an animal's form after it is born or hatched.
10. The object of a hunt or pursuit, usually one animal caught and eaten by another.
12. The natural environment of a plant or animal.
14. The part of an ecological system occupied by a particular organism, or the functions of that organism in the system.

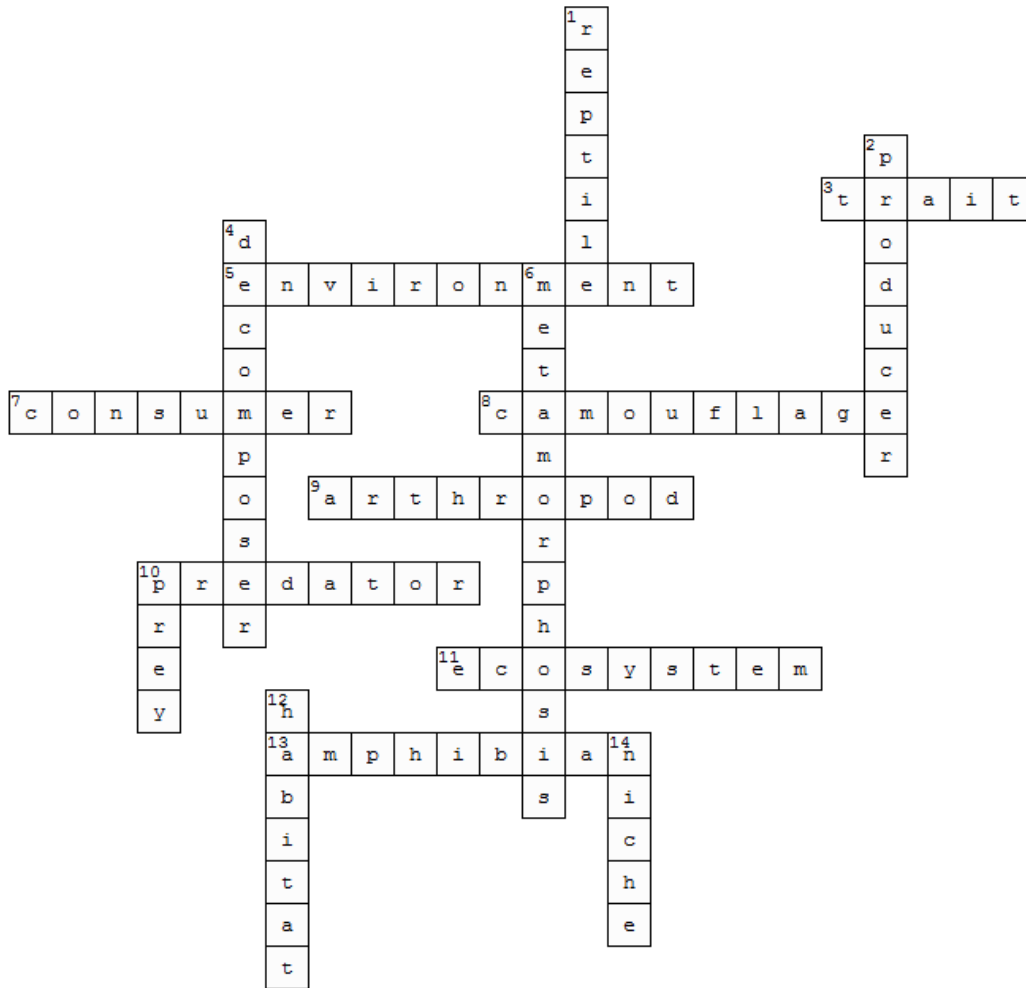
Across

3. A distinguishing feature or characteristic, as of one's appearance, personality, or nature.
5. The sum of everything that surrounds animals and humans in the natural world.
7. An organism that receives energy to live by consuming other organisms.
8. Blending in with an environment.
9. An animal with an exoskeleton and jointed legs.
10. An animal that hunts and eats other animals.
11. A community of living things, together with their environment.
13. An animal that lives both in the water and on land.

Answer Key

Life in a Pond

Language Arts Crossword Puzzle



Down

1. A cold-blooded animal with scales (**reptile**).
2. An organism that converts energy from light (**producer**).
4. An animal that feeds on dead matter and breaks it down into simpler compounds (**decomposer**).
6. Rapid changes in an animal's form after it is born or hatched (**metamorphosis**).
10. The object of a hunt or pursuit, usually one animal caught and eaten by another (**prey**).
12. The natural environment of a plant or animal (**habitat**).
14. The part of an ecological system occupied by a particular organism, or the functions of that organism in the system (**niche**).

Across

3. A distinguishing feature or characteristic, as of one's appearance, personality, or nature (**trait**).
5. The sum of everything that surrounds animals and humans in the natural world (**environment**).
7. An organism that receives energy to live by consuming other organisms (**consumer**).
8. Blending in with an environment (**camouflage**).
9. An animal with an exoskeleton and jointed legs (**arthropod**).
10. An animal that hunts and eats other animals (**predator**).
11. A community of living things, together with their environment (**ecosystem**).
13. An animal that lives both in the water and on land (**amphibian**).

Life in a Pond Language Arts Word Search

Circle the vocabulary in the word search below. Can you find all the animal-related words?

V	J	Q	R	Z	S	E	U	J	H	R	B	M	B	S	W
O	K	C	O	N	S	U	M	E	R	R	C	E	W	N	R
H	B	D	S	B	N	F	M	N	N	E	A	T	B	A	E
H	R	E	D	A	D	Q	E	L	W	P	M	S	O	I	C
O	F	C	Z	Q	E	D	T	M	U	T	O	Y	H	B	U
G	D	O	B	D	C	G	A	F	T	I	U	S	P	I	D
T	Z	M	R	O	Z	E	M	Y	N	L	F	O	T	H	O
A	D	P	H	P	O	H	O	Q	E	E	L	C	F	P	R
T	A	O	T	O	V	C	R	J	M	R	A	E	F	M	P
I	K	S	R	R	R	I	P	C	N	O	G	F	F	A	H
B	P	E	A	H	B	N	H	R	O	T	E	P	H	Q	C
A	V	R	I	T	O	H	O	Y	R	A	K	R	Y	T	P
H	I	E	T	R	X	M	S	X	I	D	U	E	F	P	Q
M	R	H	N	A	K	V	I	I	V	E	J	Y	F	M	J
X	S	X	Q	I	L	A	S	B	N	R	T	T	I	N	L
N	M	N	W	D	K	J	B	L	E	P	H	S	G	S	K

Word Bank

AMPHIBIAN
ARTHROPOD
CAMOUFLAGE
CONSUMER
DECOMPOSER

ECOSYSTEM
ENVIRONMENT
HABITAT
METAMORPHOSIS
INHERITANCE

PREDATOR
PREY
PRODUCER
REPTILE
TRAIT

Life in a Pond: Extension Activities

The extension activities listed below are from RAFT (Resource Area For Teaching). RAFT educational content is available online (www.raftbayarea.org) at no cost and is aligned to California Science Standards and Next Generation Science Standards. Below is a selection of post-visit activities from RAFT to extend student learning about life in a pond.

[RAFT Idea: Evolution by Natural Selection - Resource Area For Teaching - RAFT Bay Area](#)

Grades Covered: 3 through 12

Subjects Covered: Life Science

Curriculum topics: Adaptation, Evolution, Fitness, Natural Selection, Predator-Prey Interactions, Variation

Description: Simulate evolution with critters and beaky birds...

<http://www.raftbayarea.org/ideas/Evolution%20by%20Natural%20Selection.pdf>

[RAFT Idea Ocean in a Box – Resource Area For Teaching – RAFT Bay Area](#)

Grades Covered: K through 6

Subjects Covered: Life Science, Earth/Space Science, Art

Curriculum topics: Oceanography, Environments, Ecology Our oceans have an entire world of aquatic life, and provide a home to thousands of species...

<http://www.raftbayarea.org/ideas/Ocean%20in%20a%20Box.pdf>

[RAFT Idea: Bug Pooter - Resource Area For Teaching - RAFT Bay Area](#)

Grades Covered: K through 10.

Subjects Covered: Life Science.

Curriculum topics: Arthropods; Observation; Classification; Insects.

A safe, humane way to collect and observe small creatures...

<http://www.raftbayarea.org/ideas/Bug%20Pooter.pdf>

Life in a Pond: Education Standards

The following pages cite California Science Content Standards, Common Core and Next Generation Science Standards which students will be exposed to during the program.

California Science Content Standards Fourth Grade:

Life Sciences: 2. All organisms need energy and matter to live and grow. As a basis for understanding this concept:

- a. *Students know* plants are the primary source of matter and energy entering most food chains.
- b. *Students know* producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.
- c. *Students know* decomposers, including many fungi, insects, and microorganisms, recycle matter from dead plants and animals.

3. Living organisms depend on one another and on their environment for survival. As a basis for understanding this concept:

- a. *Students know* ecosystems can be characterized by their living and nonliving components.
- b. *Students know* that in any particular environment, some kinds of plants and animals survive well, some survive less well, and some cannot survive at all.
- c. *Students know* many plants depend on animals for pollination and seed dispersal, and animals depend on plants for food and shelter.

Excerpted from CA State Standards: <http://www.cde.ca.gov/>

Common Core Fourth Grade:

Speaking and Listening Standards: Students will...

1. Engage effectively in a range of collaborative discussions with diverse partners on *grade four topics*, building on each others' ideas and expressing their own clearly.
- b. Follow agreed-upon rules for discussions and carry out assigned roles.
- c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.
- d. Review key ideas expressed and explain their own ideas and understanding in light of the discussion.
- e. Paraphrase portions of information presented orally.
- f. Identify the reasons and evidence a speaker provides to support particular points.

Excerpted from Common Core Standards: <http://www.corestandards.org/>

Next Generation Science Standards Fourth Grade:

Energy

- **4-LS1-1:** Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
 - **Science and Engineering Practices**
 - **Engaging in Argument from Evidence:** builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed worlds
 - Construct an argument with evidence, data, and/or a model. (4-LS1-1)
 - **Disciplinary Core Ideas**

Life in a Pond: Education Standards

- **LS1.A: Structure and Function:** Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. (4-LS1-1)
- **Crosscutting Concepts**
 - **Systems and System Models:** A system can be described in terms of its components and their interactions. (4-LS1-1)

Excerpted from NGSS: <http://www.nextgenscience.org/>