

Plant and Animal Life Cycles

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About **Plant and Animal Life Cycles**

DeltaScienceModules, THIRD EDITION

Students explore *Plant and Animal Life Cycles* with twelve hands-on activities and the Delta Science Reader. In this research-based unit, students are fully responsible for the maintenance of two populations—pea plants and fruit flies—through their life cycles. Parallel activities with the plants and animals introduce students to the concept of progression through developmental stages. They trace the growth of peas from germination to flowering plants that produce new seeds. Simultaneously, they observe fruit fly larvae become pupae and see emerging adults lay the eggs of a new generation. They use their own charted data to compare the life cycles of plants and animals, and analyze one plant’s biotic potential versus its reproductive activity.

In the Delta Science Reader *Plant and Animal Life Cycles*, students read about the life cycles of a variety of plants, animals, and fungi. They learn how some living things grow, change, and reproduce. They also read about a famous wildlife biologist—Jane Goodall—and her unique, long-term study of chimpanzees in Africa. Finally, students learn about emperor penguins and compare the sizes and weights of some newborn animals.

Overview Chart for Hands-on Activities

Hands-on Activity	Student Objectives
1 Living and Nonliving <i>page 15</i>	<ul style="list-style-type: none"> • observe an assortment of objects • determine the characteristics of living, nonliving, and dead things • classify various things as living, nonliving, or dead
2 Plant Life Cycle Begins <i>page 23</i>	<ul style="list-style-type: none"> • plant their own pea seeds • predict when the seeds will germinate • observe the emerging plants • begin a class Pea Life Cycle chart
3 Germinating Seeds <i>page 33</i>	<ul style="list-style-type: none"> • plant pea seeds in germinator bags • identify and label parts of a seed • observe germination over time and record their observations • discuss the functions of emerging roots, stems, and leaves
4 Meet the Fruit Fly <i>page 43</i>	<ul style="list-style-type: none"> • identify and observe fruit flies • record the characteristics of fruit flies • begin their observations of the fruit fly life cycle
5 Observing the Fruit Fly <i>page 49</i>	<ul style="list-style-type: none"> • observe the egg, larval, and pupal life stages of fruit flies • summarize the changes that occur at each stage • speculate on the progression of steps in the complete life cycle
6 Plant Growth <i>page 57</i>	<ul style="list-style-type: none"> • observe and record the growth and development of their pea plants • transplant the plants to facilitate root growth • identify and discuss signs of growth in the plants
7 Biotic Potential <i>page 65</i>	<ul style="list-style-type: none"> • define <i>biotic potential</i> • calculate the biotic potential of an ear of corn • observe and record the number of corn kernels that actually sprout • infer reasons why many offspring do not survive to maturity
8 Inside a Flower <i>page 75</i>	<ul style="list-style-type: none"> • observe pea plant blossoms • dissect a flower and identify its parts • discuss the functions of various male and female parts of a flower • add mature and flowering pea plants to the Pea Life Cycle chart
9 Plant Life Cycle <i>page 83</i>	<ul style="list-style-type: none"> • calculate and record data on seed production of their original plants • complete the Pea Life Cycle chart • describe the stages in the life cycle of a pea plant • plant second-generation pea seeds
10 Fruit Fly Life Cycle <i>page 91</i>	<ul style="list-style-type: none"> • define <i>metamorphosis</i> • describe and compare characteristics of the fruit fly at each of the four stages in its life cycle • complete a class chart of the life cycle of the fruit fly
11 Plants and Animals <i>page 97</i>	<ul style="list-style-type: none"> • list identifying characteristics of plants • list identifying characteristics of animals • observe plants and animals, and compare the life cycle stages of each
12 Death of Organisms <i>page 105</i>	<ul style="list-style-type: none"> • predict what will happen as organisms decay • observe the decomposition of dead organisms • infer that in nature the decomposition of dead organisms enriches the soil
Assessment <i>page 115</i>	<ul style="list-style-type: none"> • See page 115.

Plant and Animal Life Cycles

Process Skills	Vocabulary	Delta Science Reader
observe, classify	characteristic, dead, life cycle, living, nonliving	page 2
predict, observe	seed, seedling	pages 2–3
collect, record, display, or interpret data; observe; communicate	leaves, root, seed coat, seed halves, sprout, stem, tiny plant	pages 2–3, 6
collect, record, display, or interpret data; observe	adult, fruit fly	pages 2, 9
observe, communicate, predict	egg, larva, pupa	page 9
observe; measure; collect, record, display, or interpret data; communicate	growth	pages 2–3
communicate, use numbers, observe, infer, predict	biotic potential, population	page 6
observe, communicate	flower, petal, pistil, pollen, stamen	pages 4, 5
use numbers, communicate	seed pod	page 2
communicate, compare	generation, metamorphosis	pages 2, 9–10
collect, record, display, or interpret data; observe; compare	animal, plant	pages 2–3, 7–12
predict, observe, infer	bacteria, decay, mold, nutrients	page 13

See the following page for the Delta Science Reader Overview Chart.

Overview Chart for Delta Science Reader

Plant and Animal Life Cycles

Selections	Vocabulary	Related Activity
Think About...		
What Is a Life Cycle? <i>page 2</i>	life cycle, life span, reproduce	Activity 1
Plant Life Cycles <i>pages 3–6</i> <ul style="list-style-type: none"> • Plants from Seeds • Inside a Flower • Plants from Spores • Other Ways Plants Reproduce 	conifer, dormant, flowering plant, fruit, germinate, ovary, pistil, pollen, pollination, root, seed coat, seed food, spore, stamen, tiny plant	Activities 2, 3, 6, 7, 8, 9, 11, 12
Animal Life Cycles <i>pages 7–12</i> <ul style="list-style-type: none"> • Birds • Mammals • Insects • Amphibians • Fish • Reptiles 	amphibian, bird, fish, hibernate, insect, larva, mammal, metamorphosis, migrate, nymph, pupa, reptile <i>optional: endoskeleton, exoskeleton; invertebrate, vertebrate; cold-blooded, warm-blooded</i>	Activities 4, 5, 7, 10, 11, 12
Fungus Life Cycles <i>page 13</i>	decompose, fungus, yeast	Activity 12
People in Science		
Jane Goodall <i>page 14</i>		Activity 11
Did You Know?		
About Emperor Penguins <i>page 15</i>		

See pages 123–132 for teaching suggestions for the Delta Science Reader.

MATERIALS LIST

Plant and Animal Life Cycles

Quantity	Description	Quantity	Description
2	bags, disposal kit*	TEACHER-PROVIDED ITEMS	
16	bags, reclosable, 15 cm × 15 cm*	1	animal, toy, stuffed
16	bags, reclosable, 25 cm × 28 cm*	–	animals, live
32	bases, for planter cups	1	calendar, wall
1	chart, Characteristics and Life Cycles of Plants and Animals*	16	cotton swabs
1	chart, Characteristics of Living, Nonliving, and Dead Things*	1	container, 0.5-liter
1	chart, Fruit Fly Life Cycle*	16	file folders
1	chart, Pea Life Cycle*	17	flowers*
8	corn, dried, ear*	–	food samples, bread, cheese, etc.
16	cups, paper, 8-oz	–	glue or paste*
32	cups, paper, 16-oz*	1	light source
9	gravel, 2 lb*†	–	markers, felt-tipped
16	magnifiers	–	newspaper*
16	petri dishes*	–	objects, nonliving, various
1	pictures, Fruit Fly Life Cycle (4)	32	paper, plain*
1	pictures, Pea Life Cycle (7)	–	paper towels*
32	planter cups	–	parts, dead plant and animal
1	plastic sheet, 1 m × 1.25 m	16	pea pods, fresh*
1	plastic wrap, roll*	–	pencils, sharpened
1	rubber bands, p/100	–	plant, artificial
3	seeds, pea, p/100*	–	plants, living
7	soil, potting, 4 lbs.*†	1	razor, single-edged
64	sticks, planter	16	rulers, metric
3	tape, masking*	16	scissors
2	tape, transparent*	–	soil, local*
96	ties, wire	1	stapler
16	trays, plastic	–	thumbtacks
16	tweezers	–	water, tap*
6	water sprinklers		
1	Living Material Order Card*		
	Shipment includes: 20 vials of fruit flies		
1	Teacher's Guide		
8	Delta Science Readers		
		* = consumable item	† = in separate box

ACTIVITY SUMMARY

In this Delta Science Module, students are introduced to the life cycles of the pea plant and the fruit fly.

ACTIVITY 1 To introduce the concept of the life cycles of living things, students first explore the differences among living, nonliving, and dead things. They identify characteristics of members of each category, and use those characteristics to classify specific items as living, nonliving, or dead.

ACTIVITY 2 Students begin their investigation of the life cycle of the pea plant. They plant seeds and observe them until they are seedlings. They also begin a class Pea Life Cycle chart, by identifying the first two stages as seed and seedling.

ACTIVITY 3 Students investigate the germination of pea seeds. First, they “plant” seeds in transparent plastic bags which allow them to observe clearly the development of the root structure, as well as the splitting of the seed coat and the emergence of the stem. They then dissect seeds to examine and identify the various parts, including the tiny embryonic plant.

ACTIVITY 4 Students begin their exploration of the life cycle of the fruit fly. They observe a population of adult fruit flies and note their characteristics. Working with partners, they also begin scientific notation files in order to record their observations as they continue, in further activities, to track the stages of the fruit fly’s life cycle.

ACTIVITY 5 Students continue their observations of the fruit fly by observing the egg, larval, and pupal forms and inferring the progression of stages in the life cycle.

ACTIVITY 6 Students continue the observations of the pea life cycle. Students monitor the growth and development of the pea seedlings planted in Activity 2. They record the height and any developmental changes.

ACTIVITY 7 Students are introduced to the concept of biotic potential, which is the maximum reproductive ability of a living thing. To compare an organism’s biotic potential to its actual reproductive activity, students experiment with ears of dried corn. Working in teams, they count the number of kernels on a single ear of corn, and use that figure to calculate the corn’s biotic potential. Then, they set up germinator trays and observe how many kernels actually germinate.

ACTIVITY 8 The students observe the flowers on their pea plants and dissect a large complete flower. They identify the parts of a flower and discover the roles of the petals, stamens, pollen, and pistil. Based on their observations, they continue their construction of the Pea Life Cycle chart.

ACTIVITY 9 Students conclude their observations of the pea plants by examining seed pods containing a new generation of plants. They then plant the second-generation seeds to begin the life cycle once more. They also review and identify all the stages in the life cycle of the pea plant, and complete the Pea Life Cycle chart.

ACTIVITY 10 Students conclude the study of the fruit fly. Based on their observations, students create a classroom Fruit Fly Life Cycle chart, showing the egg, larval, pupal, and adult stages as a repeating circle from generation to generation.

ACTIVITY 11 Based on their study of fruit flies and pea plants, students create a chart on which to list and compare the characteristics and the life cycles of plants and animals.

ACTIVITY 12 Students observe the role of dead organisms in enriching the soil and determine that even dead organisms have a valuable role in the cycles of life.