Indoor Dunes

Developmental Modification: For younger students in grades 4-5, keep the focus on adaptations, and less on the concept of succession.

summary

Students study Creature Cards at sand dune ecosystem stations and determine what adaptations help the organisms to live in their environments.

GRADE LEVEL
4-8

60 minutes

objectives

- List organisms that live in the dunes.
- Describe the specialized adaptations of sand dune organisms.
- Explain the different habitats in sand dunes.

Note: Sand Dune Journey, another activity in *Great Lakes in My World*, provides helpful background for this activity.

vocabulary

Ecosystem: communities of interacting organisms and nonliving (abiotic) components; an ecosystem can be as small as a rotting log or as large as an ocean; ecosystems are nested inside of one another

Habitat: the place or environment where a plant or animal naturally or normally lives and grows, can describe a smaller ecosystem within a larger ecosystem

Succession: a series of changes in the ecological community that inhabits a region

Adaptation: change in an organism or its parts that fits it better for the conditions of its environment

subjects

Ecology, Biology

standards

IL
Science: 12.B.2b
Social Studies: 17.a.1b, 17.B.2b
Language Arts: 4.B.2b

IN
Science: 5.4.4, 5.4.7, 5.6.1, 6.4.8, 8.4.8

MI
Science: SCI.III.2.E.1, SCI. III.2.E.2, SCI.III.4.E.2
Social Studies: SOC.II.2.LE.1, SOC.II.2.MS.2, SOC.II.4.LE.5

WI
Science: C.4.5, C.8.4, F.4.4, F.8.2, F.8.7

setting

INDOORS

materials

- Creature Cards
- Journals
- Pencils
- Sand Dune Diagram (copy for each station, page 122)
- Sign (for each station)
- Stations around the room

background

Sand dunes start as bare sand, then become dunes with grass helping to hold them in place. Over time, shrubs and trees are able to take root. As more time passes, a full forest, also called a climax forest, is able to grow at the back edge of a dune system. This change in ecosystems that takes place over time is called succession.

During succession, a series of changes occurs in the ecological community that inhabits a region. Succession happens because the activities of living organisms and abiotic factors change the conditions of a region so that it becomes more inhabitable by a different group of organisms.

In sand dunes, an example of the changing communities is beach, foredune, interdunal pond, forested backdune. If marram grass takes root on a beach, its roots will begin to trap sand, causing small dunes to form. This then sets the stage for additional plant and animal life to inhabit the dunes. In sand dunes, an example of the changing communities is beach, foredune, interdunal pond, forested backdune. Each of these habitats is an ecosystem that transitions into the next.

Note: If classes cannot take a field trip to the sand dunes, this can be used as an in-class alternative activity. This activity can also be done prior to a field trip to the sand dunes to give students background information.

procedure

1. Stations need to be set up around the room, as students will circulate through stations to study the habitats that make up sand dunes. At each station there should be the diagram of the beach, foredune, interdunal pond (also called a trough) and backdune. An arrow should point to the one section at each different station. At each station, there should also be the name of the habitat (region) and three to five sand dune Creature Cards. See Journal Pages for stations and accompanying questions. Depending on the number of students, you may want to set up each station twice for smaller groups.

2. Have students look in their journals at the drawing of sand dune regions they did in *Dune Journey*. Explain that the sand dune ecosystem is an example of "succession" and define this word. Ask students to explain how they think succession is exemplified in the sand dune ecosystem. Take a few responses.

3. Tell students they will be taking an in-class field trip to the dunes today. They will be going to different stations to learn about the different areas of a sand dune ecosystem and the organisms that live there. They will work in small groups and rotate between the different stations, spending 10 minutes at each. At each station, they will answer questions in their journals.

4. Explain that each of the four sand dune regions is made up of plants and animals specially adapted to live in that environment. For example, the fins of a fish make it well-suited for swimming in water; the long beak of a heron helps it to fish.

5. Tell students that as they go through the stations, they should be thinking about the order in which succession happens in a sand dune ecosystem.

Satisfy Your Curiosity QUESTION IDEAS

- *What special adaptations does my organism have?*
- *What habitat is it best suited for and why?*
- *Does my organism have specific interactions with other organisms for which it has developed special adaptations? What are they?*

wrap-up

Station questions and wrap-up questions can be discussed after the activity or on the following day.

1. Answer in journals and discuss as a class: What is an adaptation? Give an example that you learned from the stations. What is succession? How do the sand dunes demonstrate succession?

2. Do you think that any one of these habitats is more important than another? Why or why not?

3 Have students give a show of hands to see which area was their favorite. If there is an even dispersal of hands, students can be grouped by area of interest for the final project. If not, the teacher should assign students to groups for the project.

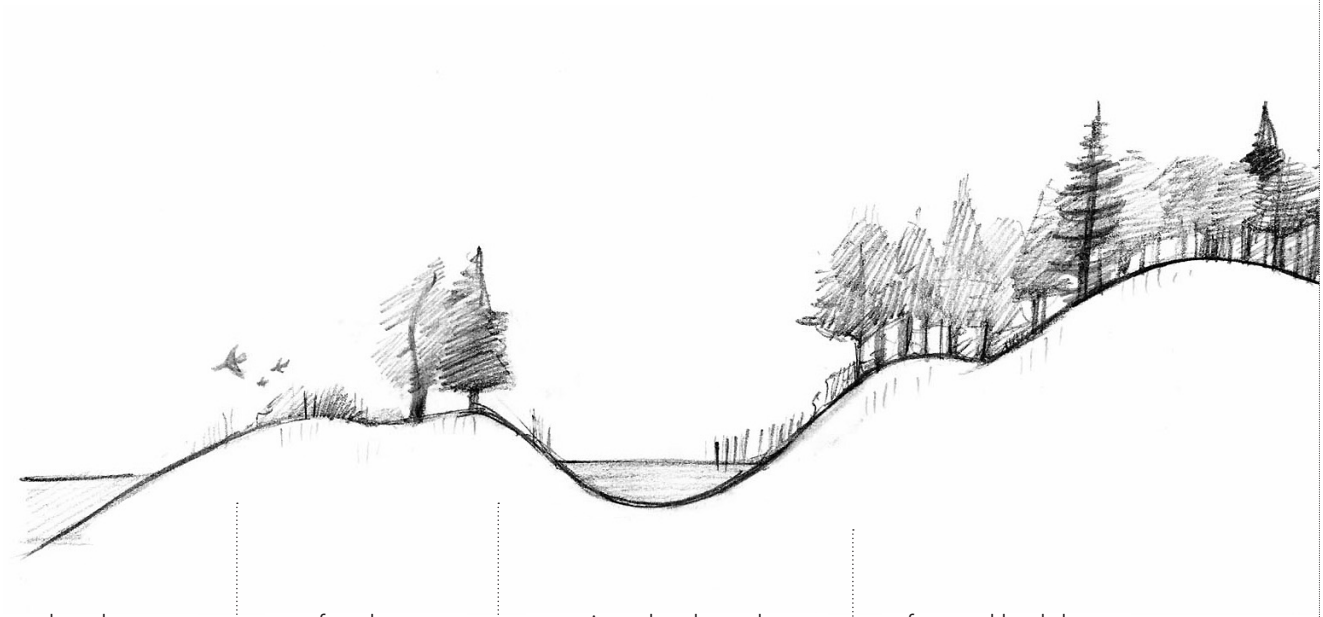
assessment

Rubric on next page

Indoor Dunes Rubric

ELEMENTS	☆☆☆☆	☆☆☆	☆☆	☆
DISCUSSION: Student participates in initial discussion on sand dune habitat and exhibits active listening skills (eye-contact, confirming or referencing others' comments, affirmative gestures or comments).	Addresses all of the components	Missing one component	Missing two components	Missing three or more components
STATIONS: Student works with group to thoughtfully answer questions in their journals at each of the 4 stations. Student makes careful and accurate sketches with labels. Student differentiates between the micro habitats, and identifies adaptations needed to live in each one.	Addresses all of the components	Missing one component	Missing two components	Missing three or more components
DISCUSSION: Student defines and gives examples of organism adaptations. Student is able to discuss and explain the different micro habitats.	Addresses all of the components	Missing one component	Missing two components	Missing three or more components

Sand Dune Diagram



beach

- sea rocket
- piping plover
- bronzed tiger beetle

foredune

- eastern hognose snake
- marram grass
- Pitcher's thistle
- Fowler's toad

interdunal pond

- dragonfly
- eastern box turtle
- great blue heron
- water strider

forested backdune

- white tailed deer
- red fox
- black oak
- pileated woodpecker

*This diagram shows where some sand dune plants and animals live. These species are part of the Great Lakes Creature Cards.

8 | Indoor Dunes

FIRST NAME																				
LAST NAME																				

Beach Station

Description: In the sand dune ecosystem, the beach is the area that changes most. The temperature, wind and waves cause big changes for this area every day. Sea rocKet (a plant) and the tiger beetle (an insect) live here. Dead insects and fish often wash up here along the shoreline.

[1] Predict: Do you thinK that many or few animals would be able to live on the beach?
Hint: Do many sudden changes maKe life harder or easier?

[2] LooK at the Creature Cards. SKetch and label one beach organism.

[3] What adaptations enable it to live in (or visit) this habitat?

[4] Why do you thinK birds such as, gulls and sandpipers visit the beach?

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8 | Indoor Dunes

4-8

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Foredune Station

Description: The foredune is where marram grass causes sand to begin building up into a dune. Temperatures get very hot in this area, reaching between 120°F (48.8°C) and 180°F (82.2°C). The organisms here must adapt to the temperatures in order to survive. Some burrow underground to reach cooler temperatures.

[1] What time of day do you think animals in this area would be would be most active? Why?

[2] Marram grass is adapted for sand burial. As it gets buried by blowing sand, its leaves grow longer. It has fine, dense roots, which trap sand particles. Explain: Why are these fine, dense roots important for survival in the foredune area?

[3] Sketch and label one plant or animal from the Creature Cards.

[4] What adaptations enable it to live in this habitat?

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Interdunal Pond

Description: Small ponds often form between the foredune and the backdune. This is called a trough or interdunal pond. The Great Lakes control the water level in these ponds. When the lake level is low, so is the pond. Dune systems do not always have interdunal ponds.

[1] If interdunal ponds have low water levels one year and high water levels the next year, do you think the same kinds of organisms are able to live there each year? Why or why not?

[2] What adaptations will some of the organisms that live here have? Give two examples.

[3] Sketch and label at least one organism from the interdunal pond area.

[4] What adaptations enable it to live in this habitat?

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BacKdune

Description: The area behind the foredune (and interdunal pond, if there is one) is the backdune. It is protected from the force of the wind and has a layer of topsoil. This enables taller shrubs and trees to grow here, creating a cool, shady forest.

[1] What is different about the backdune forest from the beach and the foredune areas? (Hint: read the descriptions of the other two areas.)

[2] There are more animals able to live in the backdune forest than other dune areas. Why?

[3] Sketch and label one organism that lives in the backdune area.

[4] What adaptation enables it to live in this habitat?

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4-8

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LAST NAME																				

[1] What is a good definition of an adaptation? Give an example from the stations.

[2] What is succession? How do the sand dunes demonstrate succession?

[3] Do you think any one of these habitats is more important than another? Why or why not?

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Sand Dune Ecosystem Creature Cards

The following illustrated information cards feature Great Lakes plants and animals found in sand dune ecosystems. Students will use these cards to complete the worksheets in the "Indoor Dunes" activity. The cards on this page instruct students on how to read the cards and provide definitions for terminology used on the cards.

Name: Species' common and scientific names are provided.
*: Indicates that this card can be used in the activities Tangled Web and Web of Life.

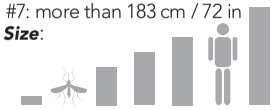
who?
description

A description of the species that includes type, physical characteristics and species status (endangered, invasive, etc.)

Scale: A scale conveys the relative size of the species. A darkened column indicates the species place in the size range. The sizes for each column are as follows:

#1: less than .6 cm / .25 in
#2: .6 cm / .25 in – 6.3 cm / 2.5 in
#3: 6.6 cm / 2.6 in - 30 cm / 12 in
#4: 31 cm /1 2.1 in - 61 cm / 24 in
#5: 63.5 cm / 25 in - 122 cm / 48 in
#6: 123 cm / 48.5 in - 183 cm / 72 in
#7: more than 183 cm / 72 in

Size:



where?
environment

An explanation of the species' general environment and specific habitat

Interesting Fact ✶

Characteristics that make this plant or animal unique

what?
characteristics

Facts about the species role in the food web, reproduction and other distinguishing habits

F52

Creature Card Definitions

Carnivore: a flesh-eating animal

Colony: a population of plants or animals in a particular place that belong to one species

Consumer: a plant or animal that preys on other living things or eating particles of organic matter

Crustacean: any of a large class of mostly water-dwelling arthropods (as shrimps, wood lice, water fleas, and barnacles) having an exoskeleton of chitin

Decomposer: an organism that lives on and breaks down dead organisms

Detritus: particles of decaying organic material

Diurnal: active in the daytime

Endangered species: a species in immediate danger of extinction

Flock: a group of birds or mammals assembled together

Forage fish: fish that primarily eat phytoplankton and zooplankton (especially diporeia); they are prey for larger predators such as lake trout and whitefish; they include smaller fish such as herring, alewives, chubs, and smelt.

Herbivore: animal that eats only plants

Invasive species: plant or animal that enters an ecosystem to which it is not native and competes with one or more species for food, shelter, and/or reproductive opportunities.

Larva: a young wingless, often wormlike, form (grub or caterpillar) that hatches from the egg of many insects

Migrate: to pass from one region or climate to another usually on a regular schedule for feeding or breeding

Creature Card Definitions

Mollusk: any of the category (phylum: mollusca) of invertebrate animals (as snails, clams, and mussels) with a soft body lacking segments and usually enclosed in a shell

Nocturnal: active in the night

Omnivore: feeds on both animal and plant matter

Phytoplankton: very small, freely floating plant that drifts with water currents

Plankton: small water organisms that exist in a drifting, floating state; is the base of freshwater ecosystems, provides food for larger animals and indirectly for humans, whose fisheries depend on phytoplankton and zooplankton

Predator: an animal that lives by killing and eating other animals

Prey: an animal hunted or killed by another animal for food

School: group of fish that swim together; generally of the same species for protection, feeding and other reasons

Solitary: growing or living alone; not forming part of a group or cluster

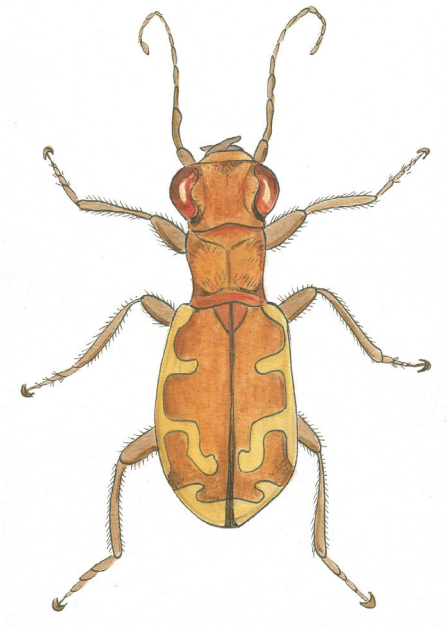
Spawn: to produce or deposit eggs

Species of concern: a plant or animal that may become threatened

Threatened species: a plant or animal needing special action to protect it from becoming endangered

Toxin: a substance produced by a living organism that is very poisonous

Zooplankton: Very small floating or swimming animals that drift with water currents



Bronzed Tiger Beetle

SCIENTIFIC NAME:
CICINDELA REPANDA

who?
description

Type: insect

Length: 10-13 mm / .4-.5 in

Coloring: brown with copper and red; other types can be black or green

Body Features: long legs and antennae

Size:

where?
environment

Habitat: foredune, beaches, sand dunes, open woods, near water; live in burrows

Interesting Fact ★

Larvae build tunnels in the ground and wait on top for passing insects to eat. The bronzed tiger beetle is frequently found on beaches.

what?
characteristics

Feeding:

➲ ***Who eats me?***
birds, spiders, wasps

➲ ***What do I eat?***
insects, including ants

Role: consumer, carnivore

Reproduction: life cycle is egg, larva, pupa and adult, has 2 year life

Activity: diurnal

F53

Sea Rocket

SCIENTIFIC NAME:
CAKILE EDENTULA

who?
description

Type: plant

Height: 15-50 cm / 6-20 in

Leaves: thick and fleshy

Flowers: white - lavender

Size:

where?
environment

Sunlight: full sun

Habitat: foredune, sandy beaches, above the water line

Interesting Fact ★

Sea rocket lives in areas of bare sand where other plants cannot survive. It has a long taproot to hold it in place and fleshy leaves which help it hold in moisture.

what?
characteristics

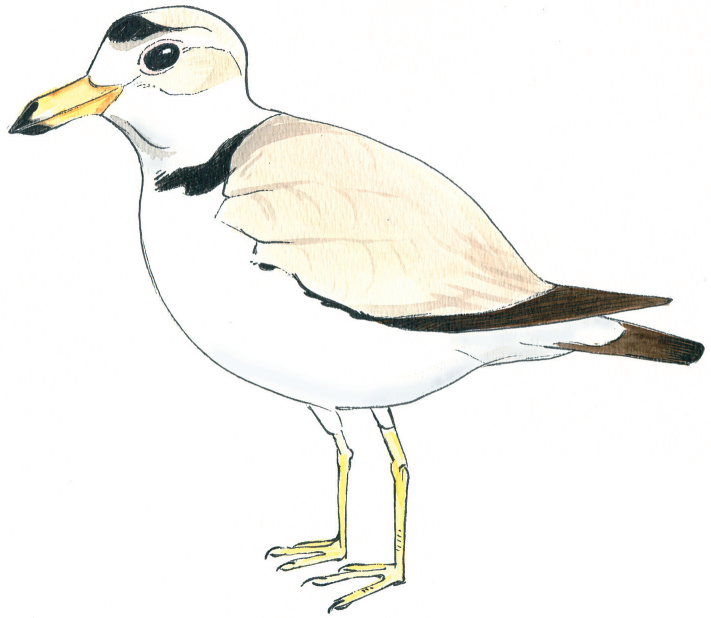
Feeding:

➲ ***Who eats me?***
deer and mice

➲ ***What do I use to make food?***
sunlight

Role: producer

Reproduction: flowers are pollinated



Piping Plover

SCIENTIFIC NAME:
CHARADRIUS MELODUS

who?
description

Type: bird

Height: 14 cm / 5.5 in

Coloring: sandy grey with dark bands across head and breast, orange legs

Body Features: short bill

⊠ ***Endangered species in the Great Lakes***

Size:

where?
environment

Habitat: beach, sand and gravel shores of rivers and lakes, sand bars

Interesting Fact ★

The piping plover is an threatened species in the United States and an endangered species in Canada, which means it is protected because there are not many left.

what?
characteristics

Feeding:

➲ ***Who eats me?***
coyotes and crows

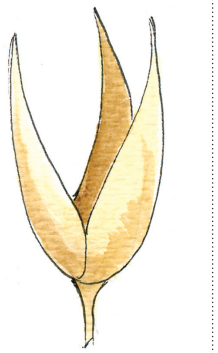
➲ ***What do I eat?***
insects, crustaceans, mollusks

Role: carnivore

Reproduction: 2-4 eggs laid in sand in May, both parents care for young

Grouping: pairs and groups

Activity: migrate yearly to Gulf of Mexico and Caribbean



Marram Grass

SCIENTIFIC NAME:
AMMOPHILA BREVILIGULATA

who?
description

Type: plant

Height: up to 1 m / 3 ft

Leaves: narrow, spike-like

Other: scaly underground stems extend 10-12 m / 30-45 ft, forms an underground web with its roots

Size:

where?
environment

Sunlight: full sun

Habitat: foredune, in sand dunes

Interesting Fact ★

Marram grass uses its roots to stabilize the soil for its own survival. This also enables other vegetation to take hold in the dunes.

what?
characteristics

Feeding:

➲ ***Who eats me?***
fungi and nematodes

➲ ***What do I use to make food?***
sunlight

Role: producer

Reproduction: perennial, new shoots grow from spreading roots

F55

Pitcher's Thistle

SCIENTIFIC NAME:
CIRSIUM PITCHERI

who?
description

Type: plant

Height: up to 91 cm / 3 ft

Leaves: finely and deeply lobed and can be up to 30 cm / 1 ft long

Flowers: cream or pink flowers - when not in flower, it is a cluster of silvery leaves

Other: stem and leaves covered with fine white hairs

⛒ ***Threatened species in the Great Lakes***

Size:

where?
environment

Sunlight: full sunlight

Habitat: foredune, open sand dunes and low beach ridges and often found near shore

INTERESTING FACT ★

The fine white hairs on the thistle help the plant retain water and reflect the sun's strong rays. The taproot can be 6 feet long. Shoreline development destroys this plant and its habitat.

what?
characteristics

Feeding:

➲ ***Who eats me?***
butterflies and bees eat nectar

➲ ***What do I use to make food?***
sunlight

Role: producer

Reproduction: grows 5-8 years before flowering; pollinated by insects, mainly bees, seeds are spread by wind

Eastern Hognose Snake

SCIENTIFIC NAME:
HETERODON PLATIRHINOS

who?
description

Type: reptile

Length: 51-84 cm / 20-33 in

Coloring: Can be tan, yellow, brown, and olive. Large dark blotches behind the head.

Body Features: uses upturned nose a shovel for burrowing and foraging for food

Size:

where?
environment

Habitat: foredune, in sand dunes, lives in burrows in sandy areas

INTERESTING FACT ★

This harmless snake defends itself by flattening its head and neck, then hissing and striking with a closed mouth. If this does not repel the threat, the snake goes into convulsions, opens its mouth, rolls over and "plays dead."

what?
characteristics

Feeding:

➲ ***Who eats me?***
raccoons, hawks

➲ ***What do I eat?***
toads, frogs, mice, and insects

Role: consumer, carnivore

Reproduction: female lays eggs in burrow, and they hatch in August and September

Grouping: solitary

Activity: diurnal, most active in spring and summer

F56

Fowler's Toad

SCIENTIFIC NAME:
BUFO FOWLERI

who?
description

Type: amphibian

Length: 4-7 cm / 2-3 in

Coloring: cream colored front; green-grey back with dark brown spots; males have dark vocal pouches during breeding season

Body Features: each dark spot contains 3-4 warts

Size:

where?
environment

Habitat: foredune, lives in sand dunes and lakeshore; uses shallow water for breeding, burrows in sand, debris, or leaf litter

Interesting Fact ★

This toad secretes a toxin from the glands on the sides of the neck to protect itself from predators.

what?
characteristics

Feeding:

➲ ***Who eats me ?***
eastern hognose snake, raccoons, skunks.

➲ ***What do I eat?***
insects

Role: consumer, carnivore

Reproduction: female lays 7000 eggs in shallow water; tadpole-frog life cycle takes 1-2 months

Grouping: gathers in April-June for breeding, otherwise solitary

Activity: juveniles are diurnal; adults are nocturnal

Great Blue Heron

SCIENTIFIC NAME:
ARDEA HERODIAS

who?
description

Type: bird

Length: 1.2 m / 4 ft tall, wingspan is 2.4 m / 7 ft

Coloring: head white with black stripe, back grey-blue, breast white

Body Features: long, yellow bill

Size:

where?
environment

Habitat: interdunal pond, wetlands and lakes, nests in treetops made of dry branches, nests are 30 cm / 1 ft deep and 91 cm / 3 ft wide

Interesting Fact ★

The great blue heron is the largest heron, and the second largest bird (by height) in the Great Lakes. The largest bird by height is the sandhill crane.

what?
characteristics

Feeding:

Who eats me?
eggs eaten by crows, ravens, gulls, raccoons

What do I eat?
small fish, shell fish, frogs, rodents, reptiles, small birds

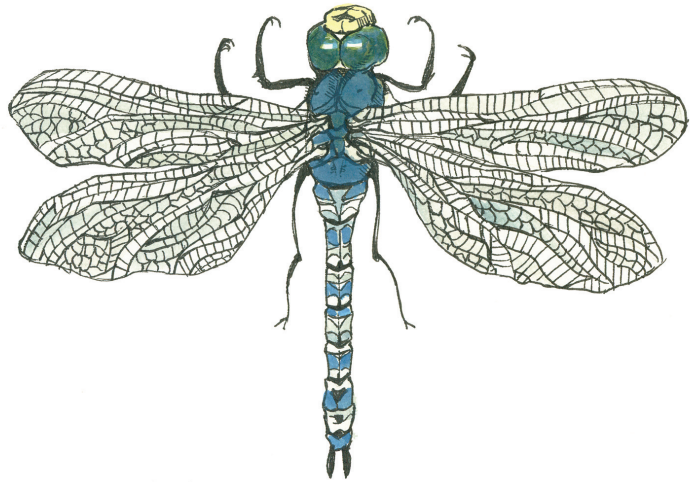
Role: consumer, carnivore

Reproduction: 3-5 eggs; nest in woodlands in spring

Grouping: colonies

Activity: female is diurnal, male is nocturnal; migrate south for winter

F57



Dragonfly (blue darner)*

SCIENTIFIC NAME:
AESCHNA CONSTRICTA

who?
description

Type: insect

Length: 5-8 cm / 2-3 in wingspan

Coloring: primarily blue and green

Body Features: four wings operate independently

Size:

where?
environment

Habitat: interdunal pond, in and around wetlands; underwater for first stage of life

Interesting Fact ★

Dragonflies are a living fossil; they have not changed for over 300 million years. They can hover, fly backwards, loop, and speed up to 56 km / 35 mi per hour.

what?
characteristics

Feeding:

Who eats me?
fish

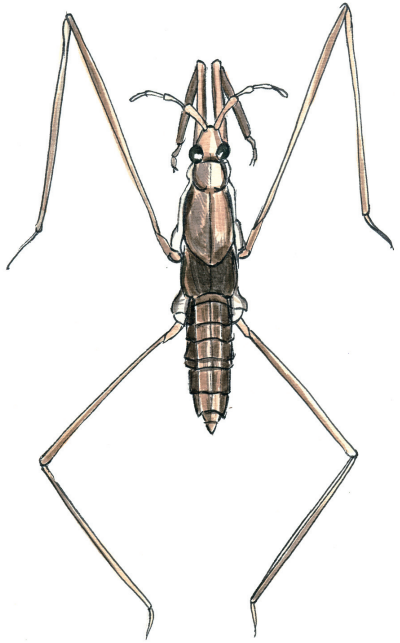
What do I eat?
mosquitoes, midges and other small, flying insects

Role: consumer, carnivore

Reproduction: lay eggs in water; first stage of life underwater; adult stage on land and in flight

Grouping: solitary

Activity: diurnal



Water Strider*

SCIENTIFIC NAME:
GERRIS REMIGIS

who?
description

Type: insect

Length: 1.2 cm / .5 in

Coloring: dark brown to black

Body Features: long legs, two legs can fold under front of body

Size:

where?
environment

Habitat: interdunal pond, freshwater lakes and wetlands, live under leaves, spend time on surface of water

Interesting Fact ★

Water striders communicate with each other through ripples on the surface of the water.

what?
characteristics

Feeding:

➲ ***Who eats me?***
birds, fish, dragonflies

➲ ***What do I eat?***
Insects from water and land, plants

Role: consumer, omnivore

Reproduction: lay eggs at water's edge

F58

Eastern Box Turtle

SCIENTIFIC NAME:
TERRAPENE CAROLINA

who?
description

Type: reptile

Length: 12-15 cm / 5-6 in

Coloring: black with yellow and orange spots and stripes

Body Features: high, domed shell with hinged bottom

Size:

where?
environment

Habitat: interdunal pond, wooded dunes and moist fields and forests; lives in mud and leaves

Interesting Fact ★

When box turtles are 4-5 years old, they can pull in their legs and head to completely close their shell for protection. Some box turtles grow to be over 100 years old.

what?
characteristics

Feeding:

➲ ***Who eats me?***
raccoons, foxes

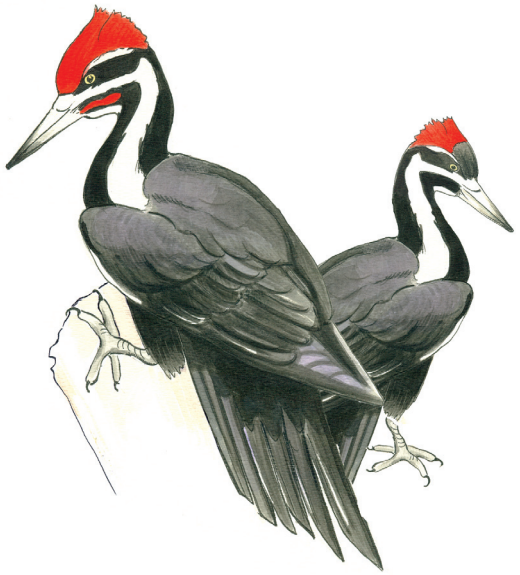
➲ ***What do I eat?***
berries, mushrooms, earthworms, slugs, snails, and insects

Role: consumer, omnivore

Reproduction: eggs; 3-6 in the summer, laid on land and covered in dirt

Grouping: solitary

Activity: diurnal; spring and summer



Pileated Woodpecker

SCIENTIFIC NAME:
DRYOCOPUS PILEATUS

who?
description

Type: bird

Length: 40-48 cm / 16-19 in

Coloring: black body with white neck stripes, white wing lining

Body Features: red crest on top of the head, chisel-shaped bill, male has red mustache

Size:

where?
environment

Habitat: forested backdune, mature forests; create holes in already hollow trees

INTERESTING FACT

The pileated woodpecker uses its long, pointed, sticky tongue to eat ants from their tunnels. This woodpecker has a loud, ringing call. They will make up to 16 holes in a tree which allow them to escape from predators.

what?
characteristics

Feeding:

Who eats me?
snakes eat eggs, hawks

What do I eat?
ants and other insects living in wood, berries, and nuts

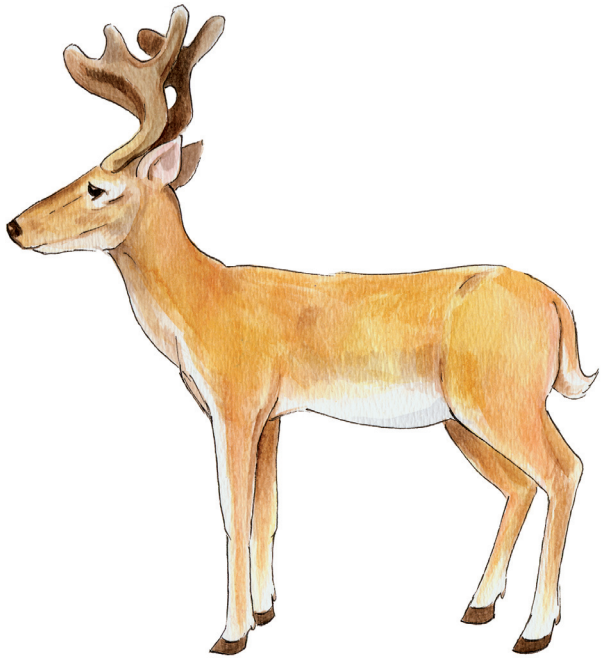
Role: consumer, omnivore

Reproduction: 3-8 white eggs in a tree cavity. Both parents incubate eggs

Grouping: can live in groups

Activity: diurnal, strong flyer, climbs on trees; hops on the ground, sleeps in tree at night

F59



White-Tailed Deer

SCIENTIFIC NAME:
ODOCOILEUS VIRGINIANUS

who?
description

Type: mammal

Height: 1 m / 3-3.5 ft tall at shoulder

Coloring: red-brown in summer; gray-brown in winter

Body Features: "white-tailed deer" refers to the white underside of the tail, which is held up like a flag when deer is alarmed or running, male (buck) has antlers

Size:

where?
environment

Habitat: forested backdune, open woodland, edges of a forest

INTERESTING FACT

Deer are able to run up to 64 km / 40 mi per hour, jump 3 m / 9 ft fences, and can swim well. Their fur has air spaces in the core which insulates them against the cold. Males lose their antlers and re-grow them each year.

what?
characteristics

Feeding:

Who eats me?
coyotes, humans

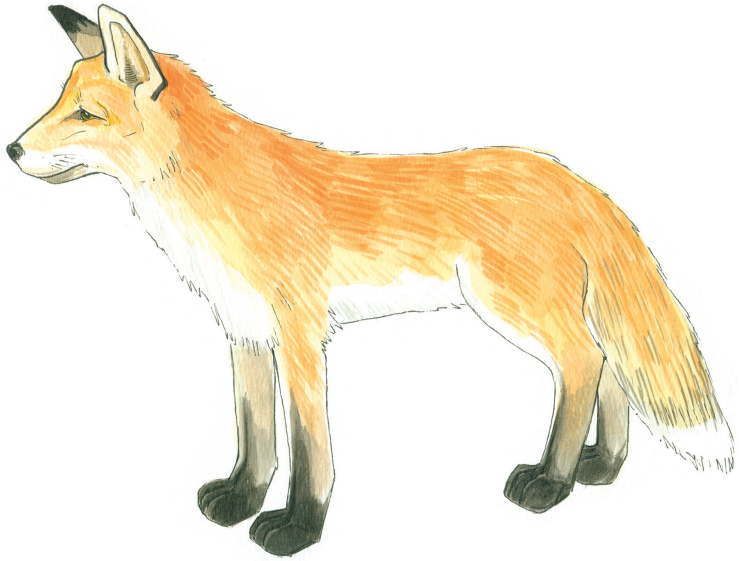
What do I eat?
grass, herbs, leaves, bark, trees, shrubs, fungi and acorns

Role: consumer, herbivore

Reproduction: in May or June, 1-2 fawns born

Grouping: may travel in small herds

Activity: feed in early morning and again in early evening



Red Fox

SCIENTIFIC NAME:
VULPES VULPES

who?
description

Type: mammal

Length: 94-97 cm / 37-38 in

Weight: 4-5 kg / 10-15 lbs

Coloring: usually red /yellow or red / brown yellow, white underside, tail has white or black tip

Body Features: feet and legs are black

Size:

where?
environment

Habitat: forested backdune, forest, prairie, farmland, and sometimes in suburbs, live in dens in the ground

Interesting Fact ★

The red fox usually has two entrances to a den and other dens nearby. This allows them to move to safety when needed. A red fox can jump as high as 2 meters / 6.5 feet.

what?
characteristics

FEEDING:

➲ ***Who eats me?***
bobcats, eagles eat pups

➲ ***What do I eat?***
rodents, rabbits, insects, birds, turtles, berries, fruit, and dead animals

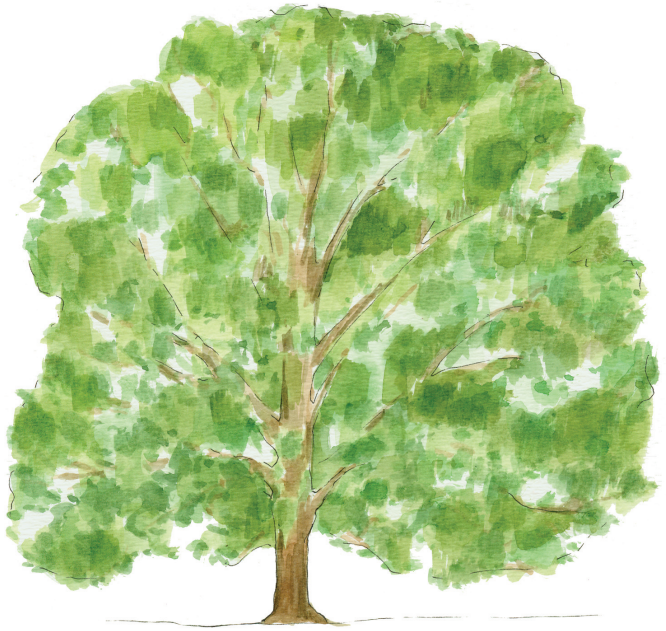
Role: consumer, omnivore

Reproduction: one litter per year, 4-9 young born in a den, usually in the ground

GROUPING: SOLITARY, EXCEPT WHEN RAISING A LITTER AND MATING

ACTIVITY: NOCTURNAL, ACTIVE AT DUSK

F60



Black Oak

SCIENTIFIC NAME:
QUERCUS VELUTINA

who?
description

Type: tree

Height: 46 m / 150 ft

Leaves: deeply lobed

Flowers: separate male / female flowers are single or in multi-flowered spikes

Other: deciduous

Size:

where?
environment

Sunlight: bright sunlight

Habitat: forested backdune, woodlands, rich, moist, well-drained soil to poor, sandy soil

Interesting Fact ★

The underside of the leaves are covered with tiny hairs. Native Americans used parts of the black oak as medicine for many things including: fever, chills, and sore eyes.

what?
characteristics

Feeding:

➲ ***Who eats me?***
mammals, insects, and birds eat the nuts in autumn

➲ ***What do I use to make food?***
sunlight

Role: producer

Reproduction: nuts (acorns) mature in 2-3 years after tree is 20 years old