



Duck Eggs

Focus: Variation

1

Not all eggs look exactly the same.

Duck eggs can vary in size, color, and markings.

Some eggs have spots while others are plain.

Scientists observe differences to learn about animals.



Observation Challenge

- Which egg is the largest?
- Which egg is the smallest?
- Which egg has spots?
- What differences do you notice?
- What patterns do you see?



Science Thinking

Why might scientists pay attention to small differences between eggs?

Think about how careful observations help scientists learn.



Vocabulary

variation



Differences between living things of the same kind.



pattern

A design that repeats.



observe

To look carefully and notice details.

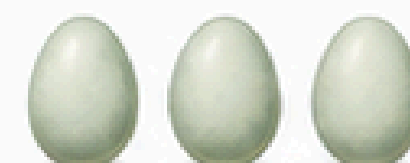


Scientist's Claim

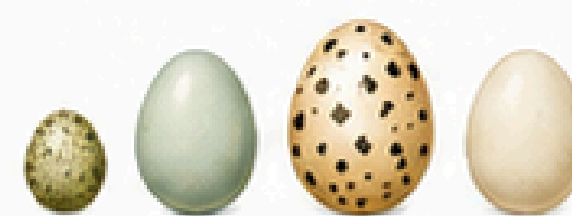
Which claim is best supported by the evidence?



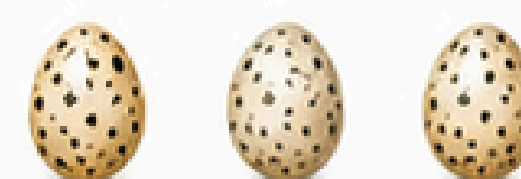
All duck eggs look exactly the same.



Duck eggs can have different sizes and patterns.



Duck eggs are always spotted.



Use the evidence from your observations to decide which claim is correct.



Caregiver Discussion

- Which egg would be easiest to recognize?
- Why do you think eggs are not all exactly alike?



Did You Know?

Even eggs from the same duck can look a little different! Variation is normal in nature.



NAEYC Alignment

SCI 1.1

Observe and compare characteristics of living things.



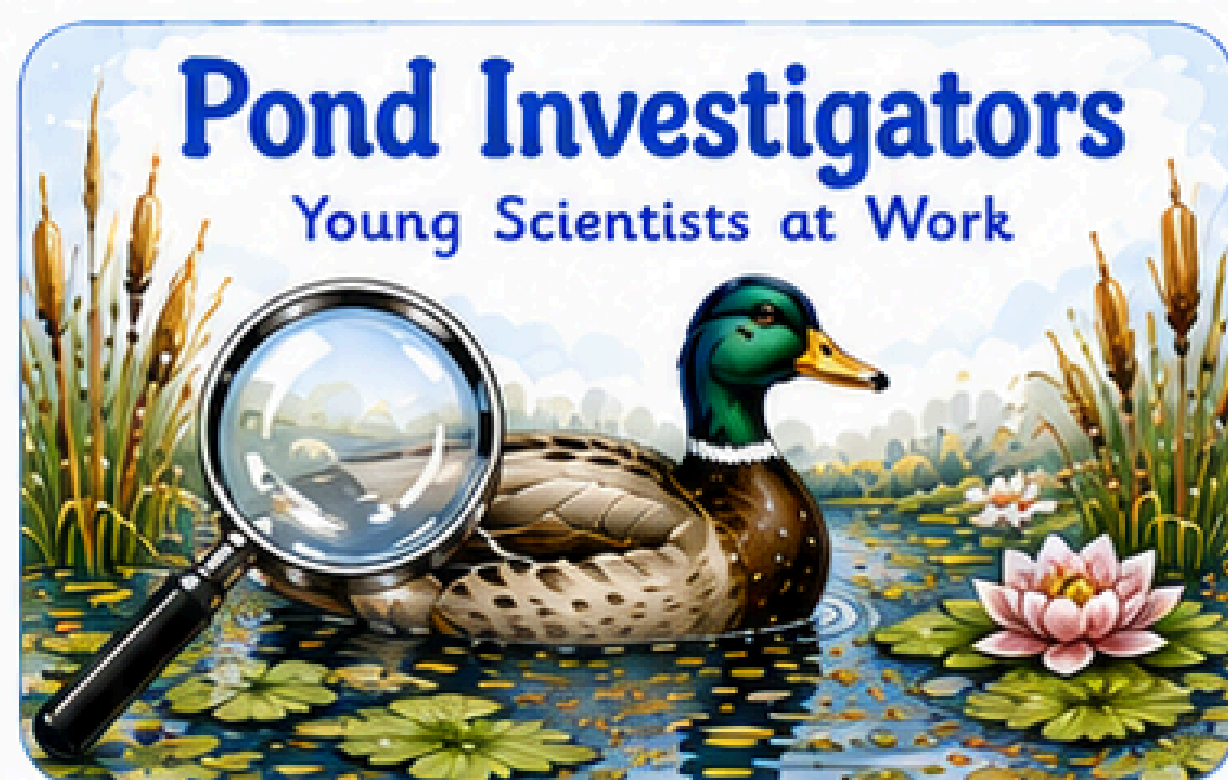
Common Core Connection

RI.K.1

Ask and answer questions about key details.



★ Big Idea: Scientists notice variation and use evidence to understand living things. ★



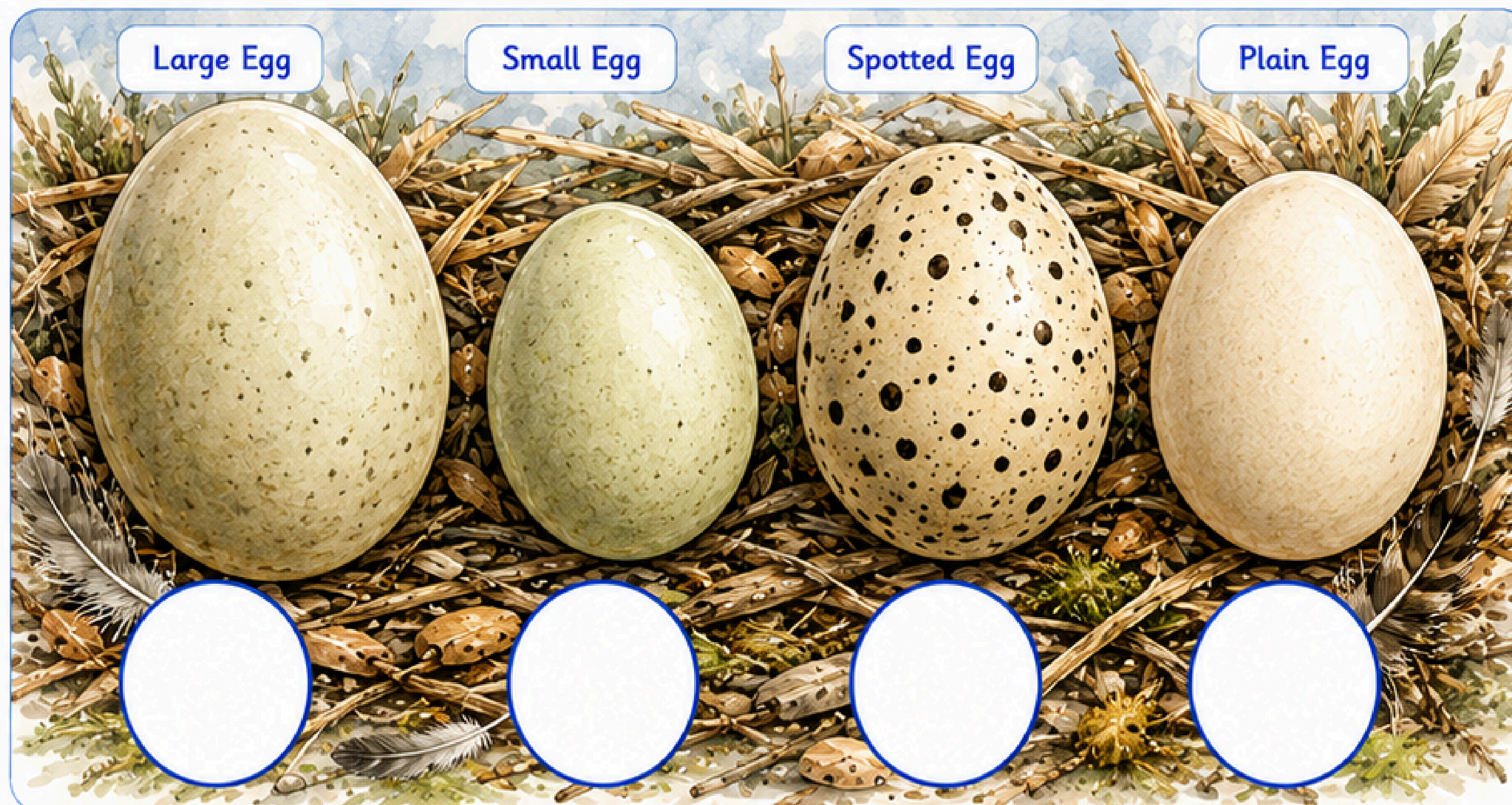
Egg Detective

2

Become an Egg Detective!

Look carefully at the eggs. Scientists look for clues.
Can you find evidence showing that eggs are different?

➤ Big Idea: Scientists use observations
to identify variation. ➤



Evidence Hunt

- Which egg is the largest?
- Which egg is the smallest?
- Which eggs have spots?
- Which eggs look most alike?
- What patterns do you notice?



Scientist's Claim

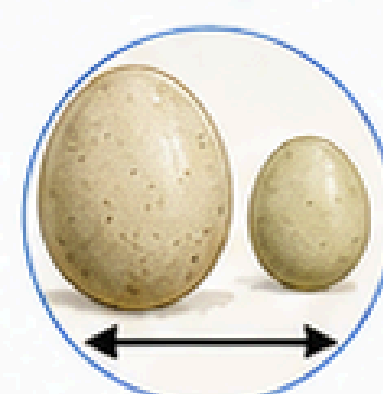
Which claim is best supported
by the evidence?

- ☐ All duck eggs look exactly the same.
- ☐ Duck eggs can have different sizes and patterns.
- ☐ Duck eggs are always spotted.

Use the evidence from the eggs
to support your answer.

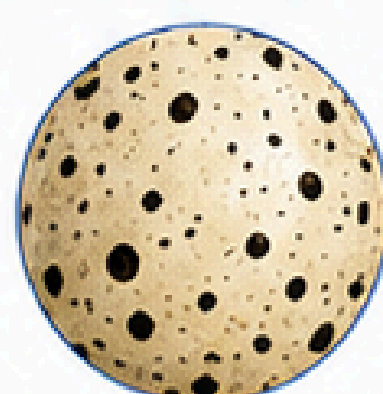
Variation Evidence Panel

What clues show variation?



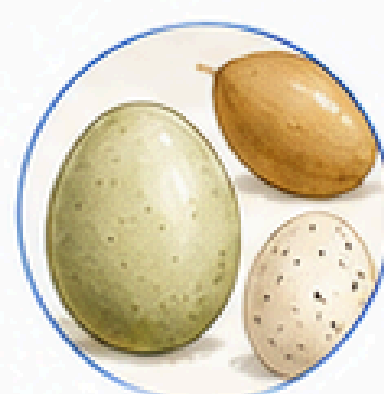
Size Differences

Eggs can be big
or small.



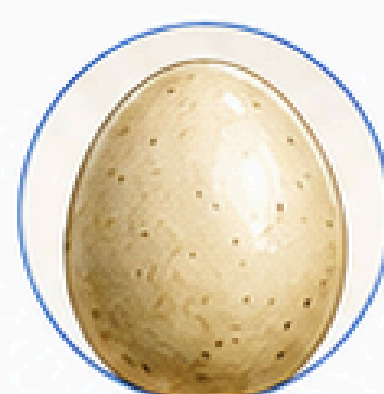
Spot Patterns

Some eggs have spots.
Some do not.



Color Differences

Eggs can be different
shades.



Egg Shapes

Eggs can be rounder
or more oval.

Explain Your Thinking

Why might scientists pay
attention to small differences
between eggs?

What evidence helped you
make your decision?



Vocabulary



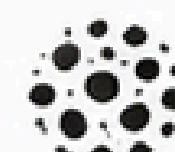
variation

Differences between
living things of
the same kind.



observe

To look carefully
and notice
details.



pattern

A design or
feature that
repeats.



NAEYC Alignment

SCI 1.1

Observe and compare characteristics
of living things.



Common Core Connection

RI.K.1

Ask and answer questions
about key details.





Pond Investigators

Young Scientists at Work

Nests

3

Focus: Materials and Purpose

Big Idea: Different materials solve different problems.

Ducks carefully build nests using many materials.
Each material has a job.
Scientists look at the clues to understand how nests work.



Evidence Hunt

Look closely at the nest.

- Which materials look soft?
- Which materials look strong?
- Which materials seem best for warmth?
- Which materials seem best for support?
- What evidence helped you decide?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ All nest materials do the same job.
- ☐ Different nest materials help in different ways.
- ☐ Ducks only use feathers to build nests.

Use the evidence from the picture to support your choice.



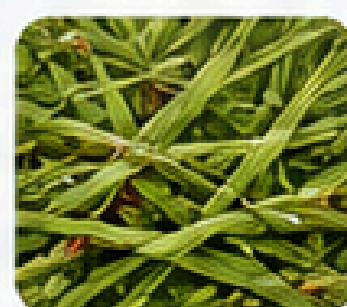
Material Evidence Panel

What clues do these materials give us about the nest?

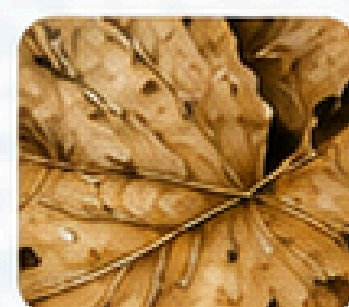
Feather



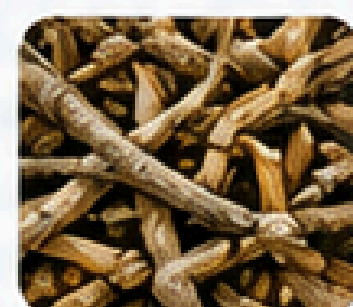
Grass



Leaf



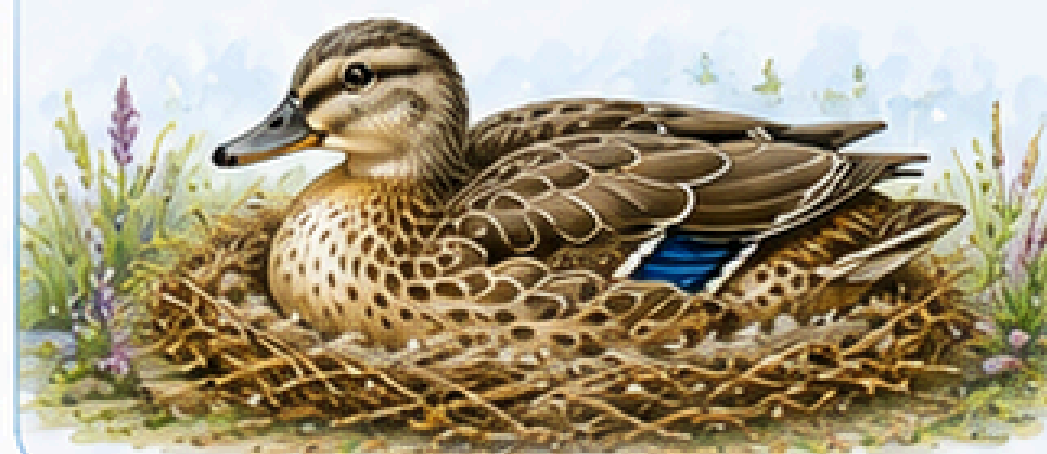
Stick



Explain Your Thinking

Why might ducks use both feathers and sticks in the same nest?

How do the clues fit together?



Caregiver Discussion

- Which material seems most important?
- Could a nest work well if it only used one kind of material?



Vocabulary

material

What something is made from.



structure

How something is built.



purpose

The job something is meant to do.



NAEYC Alignment
SCI 1.1
Observe and compare natural materials.



Common Core Connection
RI.K.3
Describe connections between objects and their purposes.





Nest Builder Challenge

4

Become a Nest Builder!

Scientists study materials to understand how things work.
Look carefully at each material. What clues tell you
how it might help a nest?

➤ Big Idea: Different materials solve different problems. ➤

Feathers

Soft and fluffy.



Grass

Long and flexible.



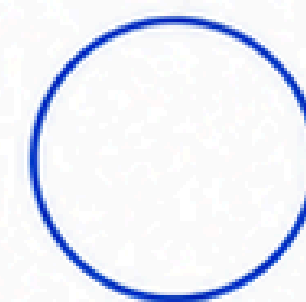
Leaves

Dry and broad.



Sticks

Sturdy and strong.



Ducks use a variety of materials to build strong, comfortable nests.



How might each material help a duck nest?



Evidence Hunt

- Which material looks softest?
- Which material looks strongest?
- Which material seems best for warmth?
- Which material seems best for support?
- What evidence helped you decide?



Scientist's Claim

Which claim is best supported by the evidence?

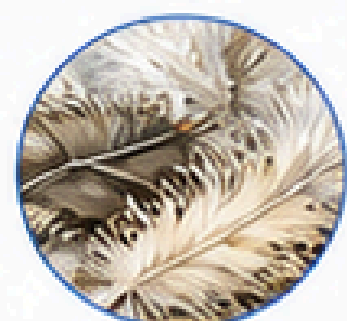
- ☐ One material can do every job.
- ☐ Different materials help nests in different ways.
- ☐ Ducks only need feathers to build nests.

Use the evidence from the materials to support your answer.



Material Evidence Panel

Look closely at the clues. What can you discover?



Soft Texture

Fluffy feathers can keep eggs warm.



Flexible Texture

Grass bends and can weave into the nest.



Wide Surface

Leaves create a soft, cushioned layer.



Strong Structure

Sticks form a sturdy framework.

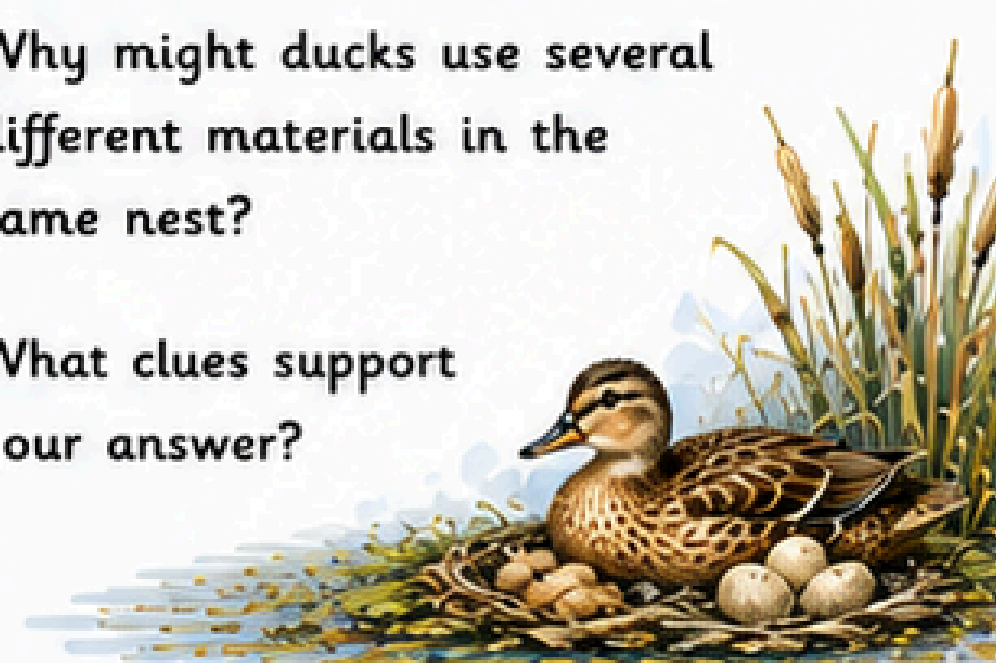
What clues tell you what each material is good at?



Explain Your Thinking

Why might ducks use several different materials in the same nest?

What clues support your answer?



Vocabulary



material

What something is made from.



structure

How something is built.



purpose

The job something does.



NAEYC Alignment

SCI 1.1

Observe and compare natural materials.



Common Core Connection

RI.K.3

Describe connections between objects and their purposes.

★ Scientists investigate materials by gathering evidence and determining how different structures solve problems. ★





Pond Investigators

Young Scientists at Work

Hatching

5

Focus: Life Cycle Evidence

Big Idea: Living things change in predictable stages.

Ducklings hatch through a series of stages.
Scientists use evidence to determine what stage comes next.



Intact Egg

The egg looks whole.
Nothing can be seen inside.



Cracked Egg

A small crack appears.
The duckling is starting
to break the shell.



Duckling Emerging

The duckling pushes
harder and opens
the shell.



Newly Hatched

The duckling is out!
It is wet and fluffy.
It will dry soon.



Evidence Hunt

Look closely at the sequence.

- Which egg is changing first?
- What evidence shows a duckling is getting ready to hatch?
- Which stage seems newest?
- What clues help you place the stages in order?
- What pattern do you notice?



Life Cycle Evidence Panel

Close-up clues help scientists understand what is happening.



Tiny crack

The shell is starting
to break.



Larger crack

More of the shell
has broken.



Duckling beak

The beak helps break
the shell.



Broken shell

The duckling has
pushed all the way out!



Scientist's Claim

Which claim is best supported
by the evidence?

- ☐ Ducklings appear suddenly.
- ☐ Ducklings hatch through several stages.
- ☐ Eggs never change.

Use the evidence from the
pictures to support your choice.



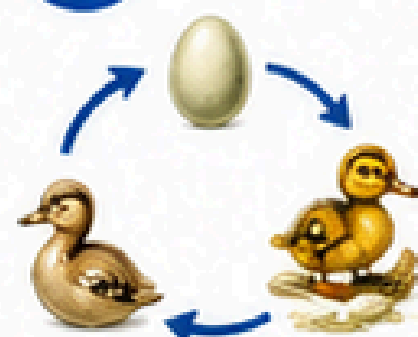
Explain Your Thinking

How do the clues fit together to
show a life cycle?

Why is it important to observe
stages in order?



Vocabulary



life cycle

The stages of
growth and change
in a living thing.

stage

One step
in a
process.



evidence

Information we observe
that helps us answer
a question.



Caregiver Discussion

- What evidence shows
the duckling is growing?
- Could you predict the next
stage if you had never
seen a duck hatch before?



NAEYC Alignment

SCI 1.1

Observe changes in
living things over time.



Common Core Connection

RI.K.3

Describe connections between
stages and events.



★ Scientists look for evidence of change and use patterns to understand life cycles. ★



What Happened First?

Become a Science Detective!

Look carefully at the pictures. Scientists study sequences. Can you put the events in the right order?

➤ Big Idea: Life cycles follow patterns. ➤

6

These pictures show part of a duck's life cycle.

Look closely. What might have happened first?



Scientists look for clues to put events in order.
Use the evidence in the pictures!

What clues tell you
what happened first?



Sequence Challenge

Look at these stages. How can they help you decide?



Whole Egg



First Crack



Pushing Out



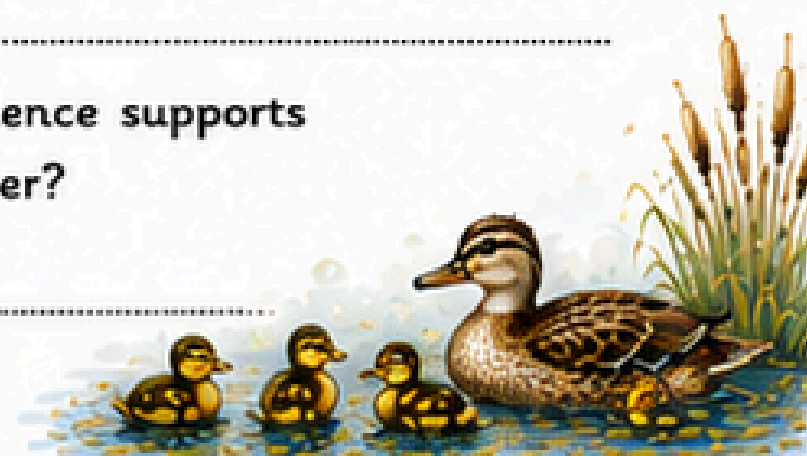
Out and Free



Explain Your Thinking

Why is it important for scientists
to put events in order?

What evidence supports
your answer?



Vocabulary

1 → 2 → 3

sequence

The order in which
events happen.



hatch

To come out
of an egg.



life cycle

The series of changes
that living things go
through.



NGSS Alignment

SCI.1.1
Observe and compare
characteristics and changes
in living things.



Common Core Connection

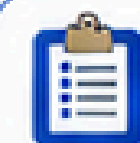
RI.K.3
Describe the connection between
individuals, events, ideas, or pieces
of information in a text.



Evidence Hunt

Look carefully at the pictures.

- What do you see that helps you decide?
- What changed from picture to picture?
- What stayed the same?
- What new clue appears?
- Which clue is most important for ordering the events?



Scientist's Claim

Which claim is best supported
by the evidence?

- ☐ The duckling is out of the egg before the egg cracks.
- ☐ The events happen in the order A, B, C, D.
- ☐ The order does not matter.

Use the evidence from the
pictures to support your answer.

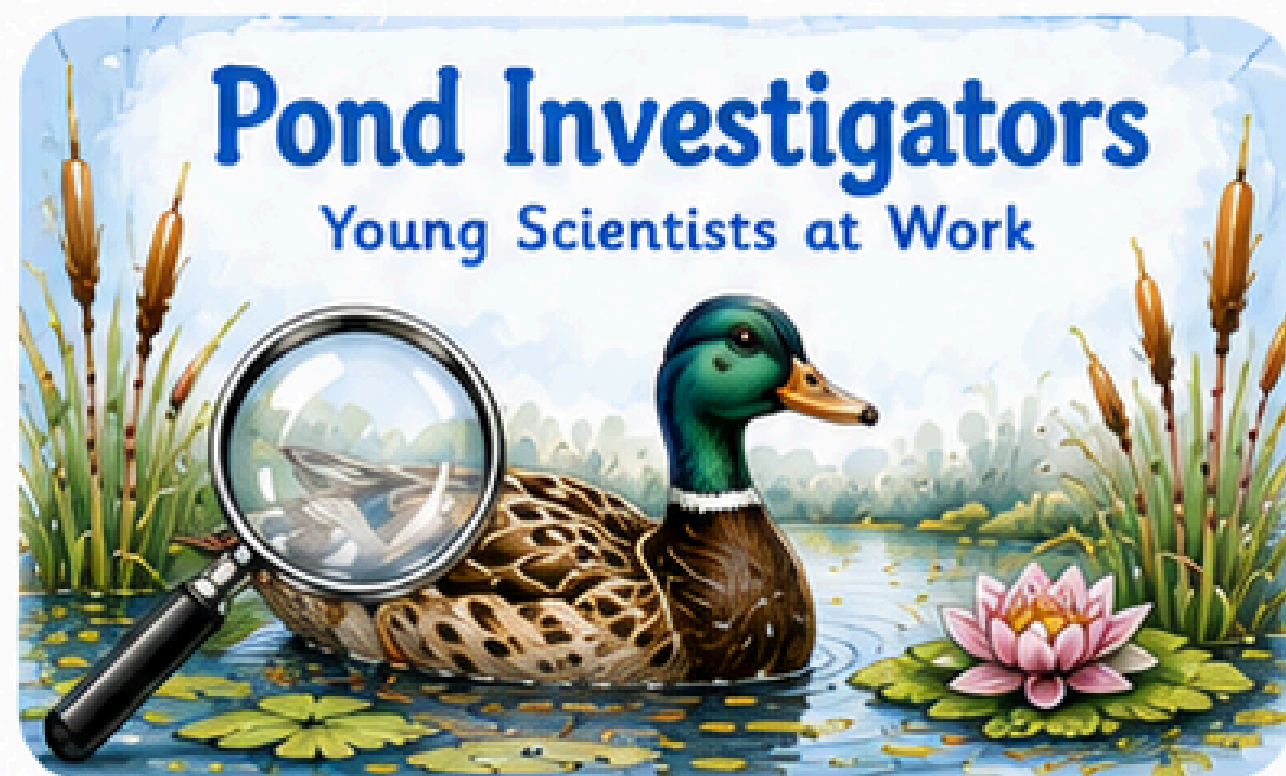


Caregiver Discussion

- What clues helped you figure out the order?
- How do sequences help us understand life cycles?



★ Scientists investigate sequences by using evidence and looking for clues and patterns. ★



Ducklings

Focus: Needs and Behaviors

7

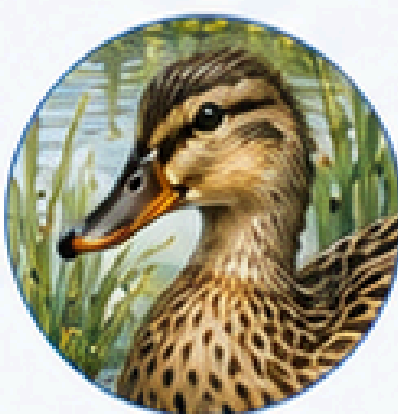
➤ Big Idea: Young animals depend on adults. ➤

Ducklings stay close to their mother for protection.
Mother ducks help ducklings find food and safe places.
Young ducklings cannot do everything adults can do.
Scientists study animal behavior to understand survival.



Behavior Evidence Panel

Close-up clues help us understand what is happening.



Mother Watching

The mother looks around to keep ducklings safe.



Ducklings Following

They stay close and follow where she goes.



Group Staying Together

Staying in a group helps keep them protected.



Near Shelter

They stay near plants where they can hide.



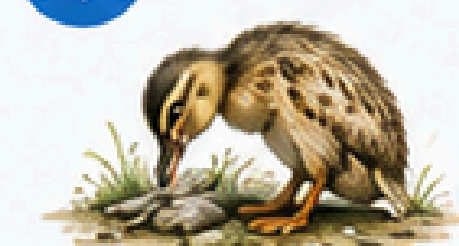
Explain Your Thinking

Why might staying close to an adult help a duckling survive?

What clues in the picture support your answer?



Vocabulary



behavior

Something an animal does.



depend

To need help from something or someone.

protection

Keeping something safe from harm.



NAEYC Alignment

SCI 1.1

Observe animal behaviors and survival strategies.



Common Core Connection

RI.K.3

Describe connections between behaviors and survival.



Evidence Hunt

Look carefully at the duck family.

- What evidence shows the ducklings stay near their mother?
- What is the mother duck doing?
- Which ducklings seem safest?
- What behaviors help the ducklings survive?
- What pattern do you notice?



Scientist's Claim

Which claim is best supported by the evidence?

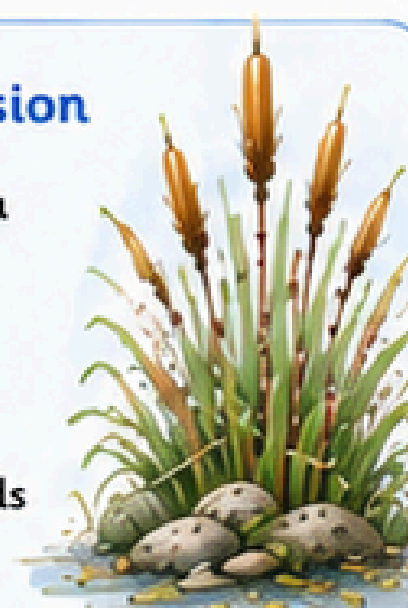
- ☐ Ducklings do not need adults.
- ☐ Ducklings depend on adults for safety and guidance.
- ☐ Ducklings always stay far away from adults.

Use the evidence from the illustration to support your choice.



Caregiver Discussion

- What evidence helped you decide that the ducklings depend on their mother?
- Can you think of another young animal that depends on adults?



★ Scientists study behavior to understand how young animals survive and grow. ★



Survival Investigation

Become a Resource Detective!

Animals need certain things to live and grow.
Look at the pictures. What does a duckling **NEED** to survive?
What does it **NOT** need?

➤ Big Idea: Animals depend on resources. ➤

8

Look at the pictures below. For each one, decide:

- Does a duckling need this to survive?
- Is it helpful but not necessary?
- Or is it not needed at all?

Explain how you made your choice.

Clean Water	Food	Shelter	Space to Move	Television	Bicycle	Couch
☐	☐	☐	☐	☐	☐	☐



Scientists look for clues to decide what living things need.
Use the evidence in the pictures!



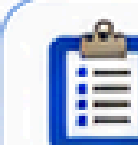
What does a
duckling need
most to stay alive
and grow?



Evidence Hunt

Look carefully at the pictures.

- Which things are natural?
- Which things come from people?
- Which things help a duckling stay alive?
- Which things are fun but not necessary?
- What evidence helped you decide?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Ducklings need all of the things shown to survive.
- ☐ Ducklings need some things and not others.
- ☐ Ducklings do not need water, food, or shelter to survive.

Use the evidence from the pictures to support your answer.



Resource Clue Panel

What clues show which things are resources for a duckling?



Water

Ducklings drink it and it helps keep them clean.



Food

Gives energy to grow strong.



Shelter

Helps keep them safe from weather and hidden danger.



Space to Move

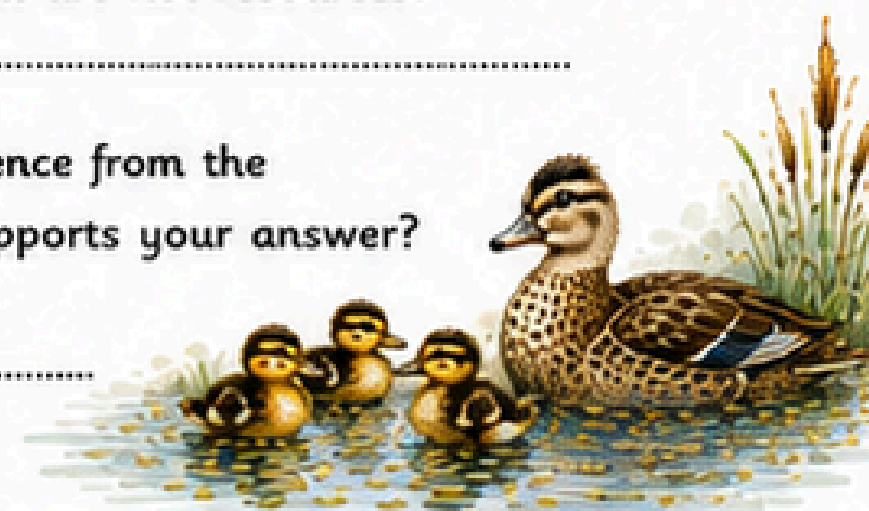
Allows them to swim, explore, and find what they need.



Explain Your Thinking

Why do you think some things look fun but are not resources?

What evidence from the pictures supports your answer?



Vocabulary



Something living things need to survive and grow.



need

Something an animal must have to live.



natural

Found in nature; not made by people.



survive

To stay alive.



NGSS Alignment

SCI 1.1

Observe and compare characteristics of living things and their environment.



Common Core Connection

RI.K.1

Ask and answer questions about key details in a text.



★ Scientists investigate resources by gathering evidence and deciding what living things need to survive. ★



Feathers

9

Focus: Multiple Functions

Big Idea: Adaptations can have more than one purpose.

Duck feathers help with many important jobs. One adaptation can help solve different problems. Scientists look for evidence to understand how adaptations help animals survive.



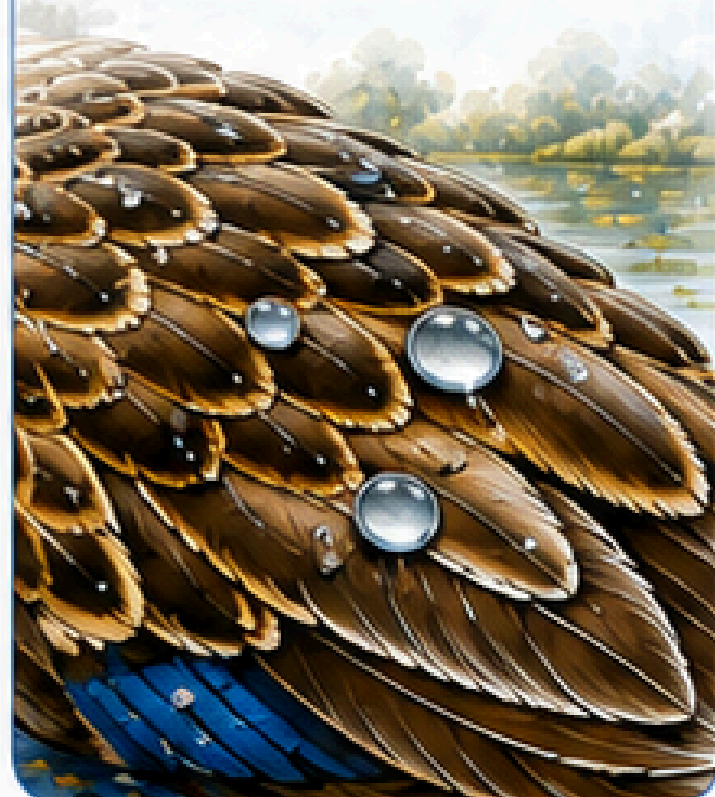
Warmth

Feathers trap air close to the body and help keep ducks warm.



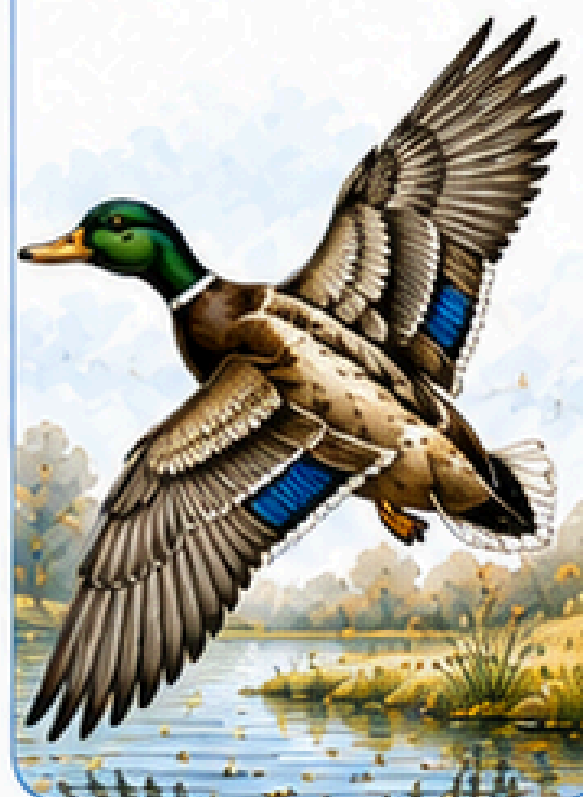
Waterproofing

Oils from the duck's body coat the feathers so water beads up and rolls off.



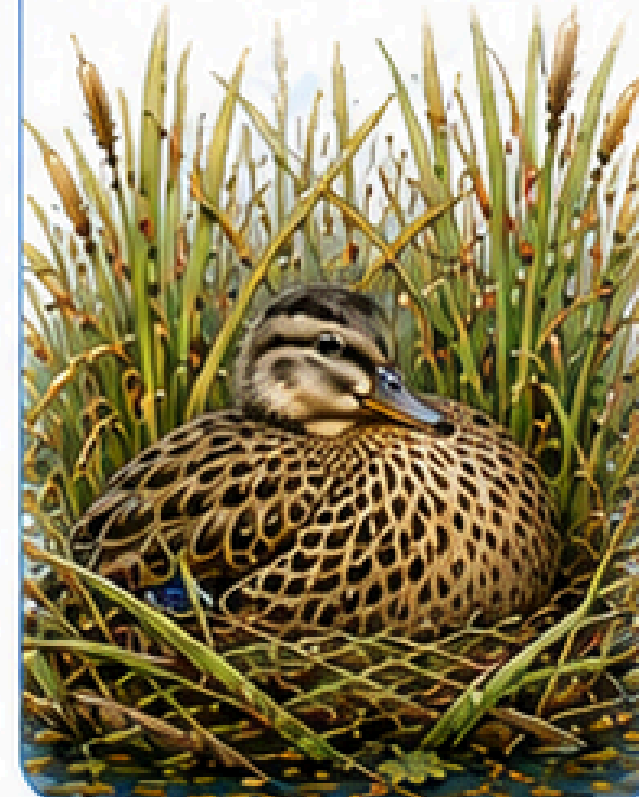
Flight

Strong wing feathers give ducks lift and help them fly long distances.



Camouflage

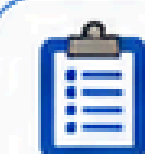
Feather colors help ducks blend in with plants and surroundings.



Evidence Hunt

Look carefully at the feather examples.

- What evidence shows feathers help ducks stay warm?
- What evidence shows feathers help ducks stay dry?
- What evidence shows feathers help ducks fly?
- Which feather function seems most important? Why?
- What pattern do you notice?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Feathers only help ducks fly.
- ☐ Feathers help ducks survive in several ways.
- ☐ Feathers are only for keeping warm.

Use the evidence from the illustrations to support your choice.



Feather Evidence Panel

Close-up clues help us understand how feathers work.



Water Beads

Drops of water bead up and roll away.



Fluffy Layers

Soft down feathers trap air to keep ducks warm.



Strong Wings

Wing feathers are flat and strong for flight.



Camouflage Colors

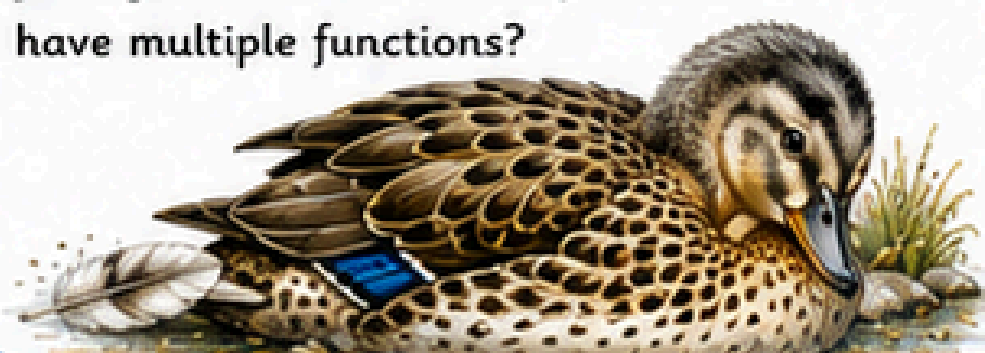
Colors and patterns help ducks blend in.



Explain Your Thinking

Why might it be helpful for one adaptation to do several jobs?

How do the clues in the pictures fit together to show that feathers have multiple functions?



adaptation

A body part or behavior that helps an animal survive.



waterproof

Able to keep water from soaking through.



function

The job something does.



NGSS Alignment

1-LS1-1

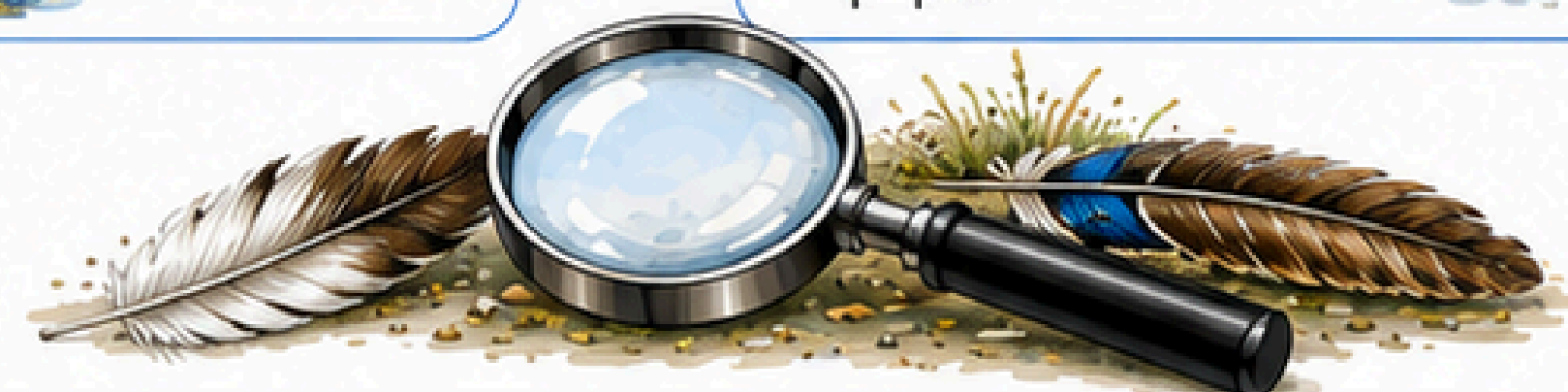
Use body parts and behaviors to survive.



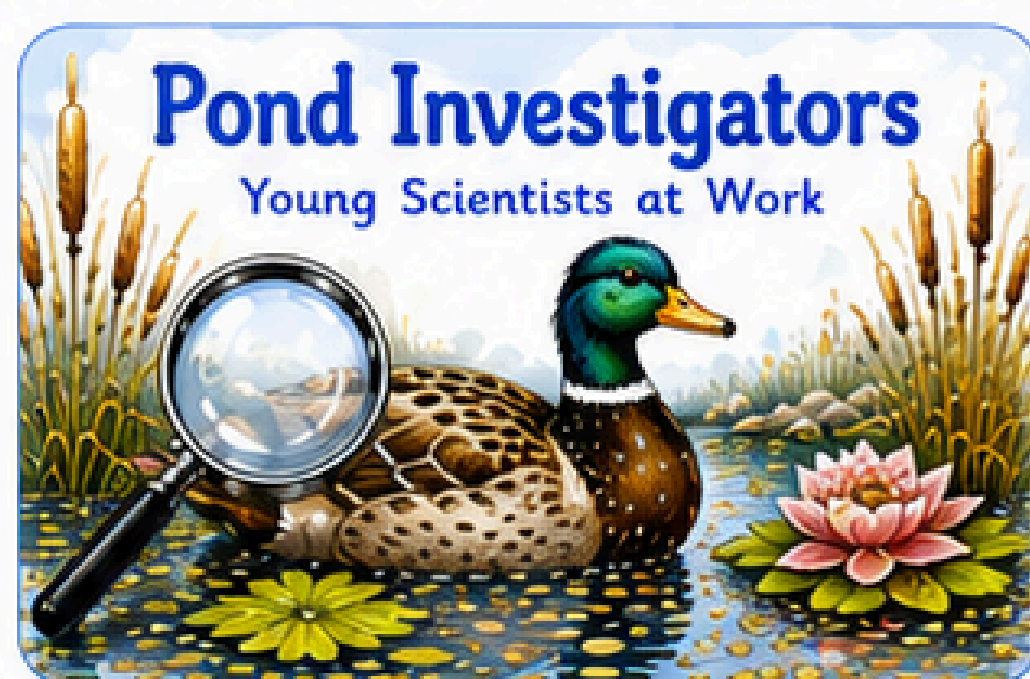
Common Core Connection

RI.1.3

Describe connections between body parts, behaviors, and survival.



Big Idea: Scientists investigate adaptations to discover how animals are built for survival in more than one way.



Feather Case File

Become a Feathers Detective!

Feathers help ducks in many important ways.
Look at the evidence. What job does each feather do best?
What might be the most important feather job?

➤ Big Idea: Adaptations often have more than one function. ➤

10

Each feather has clues. What do these clues tell you about the main job of each feather?

A. Warmth

Keeps ducks warm.



Evidence (what you see)

- Soft and fluffy
- Traps air
- Many tiny branches



B. Waterproofing

Keeps water out.



Evidence (what you see)

- Oily surface
- Water beads up
- Smooth and tight



C. Flight

Helps ducks fly.



Evidence (what you see)

- Long and strong
- Stiff shaft
- Flat shape



D. Camouflage

Helps ducks blend in.



Evidence (what you see)

- Patterned colors
- Blends with surroundings
- Mottled markings



Scientists collect clue to learn what a structure is for.
Use the evidence in the pictures!

What job do you think each feather does best?
Which job might be the most important? Why?



Feather Evidence Panel

Look closely at the clues. What patterns do you notice?



Fluffy

What does the soft, bushy texture help the feather do?



Smooth and Oily

What does the oil and smooth surface help the feather do?



Strong Shaft

What does the stiff shaft help the feather do?



Blends In

What does the pattern help the feather do?

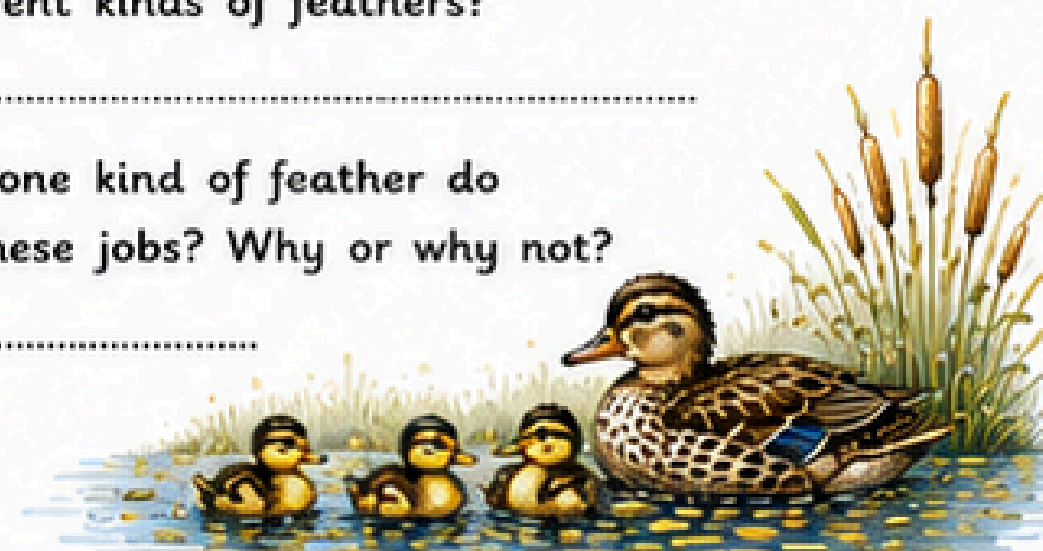
How do these patterns (structures) help each feather work?



Explain Your Thinking

Why do you think ducks need different kinds of feathers?

Can one kind of feather do all these jobs? Why or why not?



Vocabulary



adaptation

A body part or behavior that helps an animal survive.



function

The job something does.



evidence

Information that helps answer a question.



NGSS Alignment

SCI 1.1

Observe and compare characteristics of living things.



Common Core Connection

RI.1.3

Describe connections between individuals, events, ideas, or pieces of information in a text.



Evidence Hunt

Look carefully at the feathers.

- What do you see that shows warmth?
- What do you see that shows waterproofing?
- What do you see that shows flight?
- What do you see that shows camouflage?
- What clue is most important for deciding?



Scientist's Claim

Which claim is best supported by the evidence?

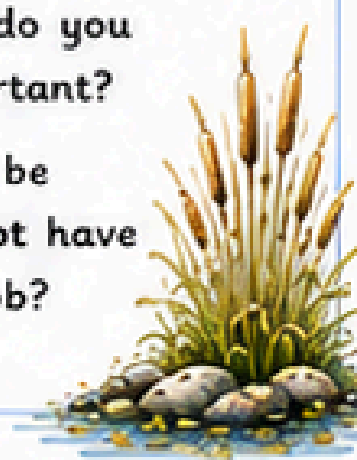
- ☐ All feathers do the same job.
- ☐ Each feather has one main job.
- ☐ Feathers do not help ducks survive.
- ☐ Feathers have several jobs, but one is most important.

Use the evidence from the pictures to support your answer.



Caregiver Discussion

- Which feather job do you think is most important?
- How might a duck be affected if it did not have feathers for that job?



★ Scientists investigate adaptations by gathering evidence and understanding how structures help living things. ★





Webbed Feet

➤ Focus: Adaptations ➤

11

★ Big Idea: Body parts help animals survive.

Ducks have webbed feet that help them move through water.

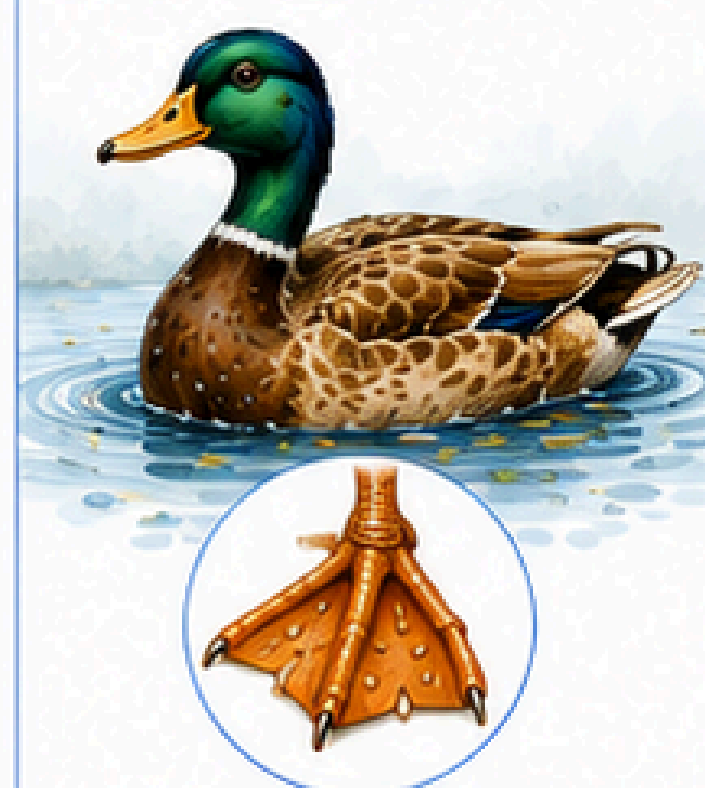
The skin between the toes acts like a paddle.

Different animals have different feet for different jobs.

Scientists study body parts to understand how animals survive.

Duck

Lives in ponds and lakes.



Webbed foot

Great for swimming and pushing water.

Goose

Lives in lakes, ponds, and fields.



Partially webbed foot

Helps with swimming and walking on land.

Chicken

Lives in barns, yards, and fields.



Strong, separate toes

Great for scratching, walking, and perching.

Human

Lives on land and in water.



Flexible foot

Great for walking, running, and balance.



Evidence Hunt

Look carefully at the different feet.

- Which foot looks best for swimming?
- Which foot looks best for walking on land?
- What evidence do you see?
- Which foot has the most webbing?
- What pattern do you notice?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ All animal feet work the same way.
- ☐ Different feet are adapted for different jobs.
- ☐ Webbing does not help animals swim.

Use the evidence from the illustrations to support your choice.



Foot Evidence Panel

Close-up clues help us understand how each foot is designed.



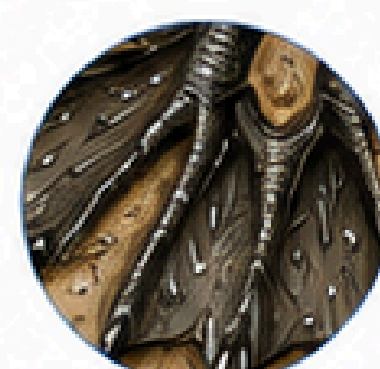
Webbing

The skin between the toes makes a wide paddle.



Separated toes

Toes spread out for grip on land and perching.



Wide surface

Helps push against water and soft ground.



Arches and toes

Help humans balance and move on many surfaces.

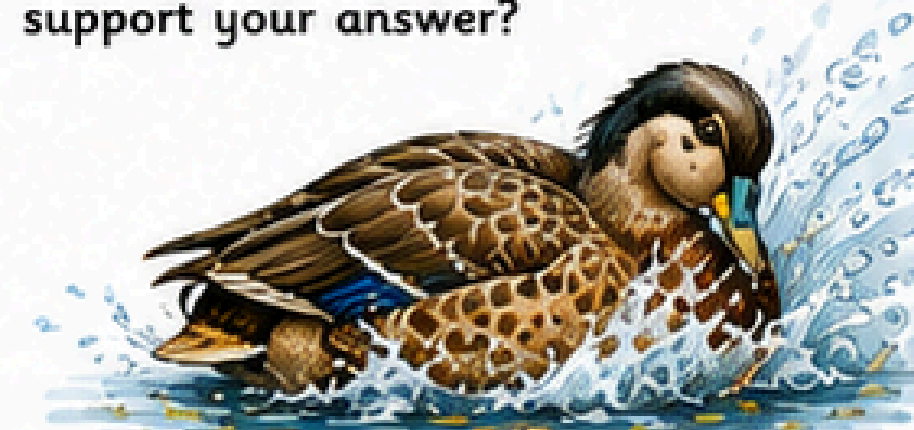
What clues tell you what each foot is designed to do?



Explain Your Thinking

How might webbing help a duck move through water?

What clues in the picture support your answer?

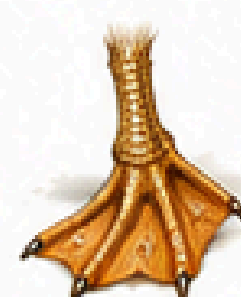


Vocabulary



adaptation

A body part or behavior that helps an animal survive.



webbed

Toes connected by skin.



paddle

Something used to push through water.



NGSS Alignment

1-LS1-1

Use body parts and behaviors to survive.



Common Core Connection

RI.K.3

Describe connections between adaptations and survival.



★ Scientists investigate evidence to understand how body parts help animals survive. ★



Foot Comparison Lab

12

Become a Comparison Scientist!

Different feet help animals do different jobs.

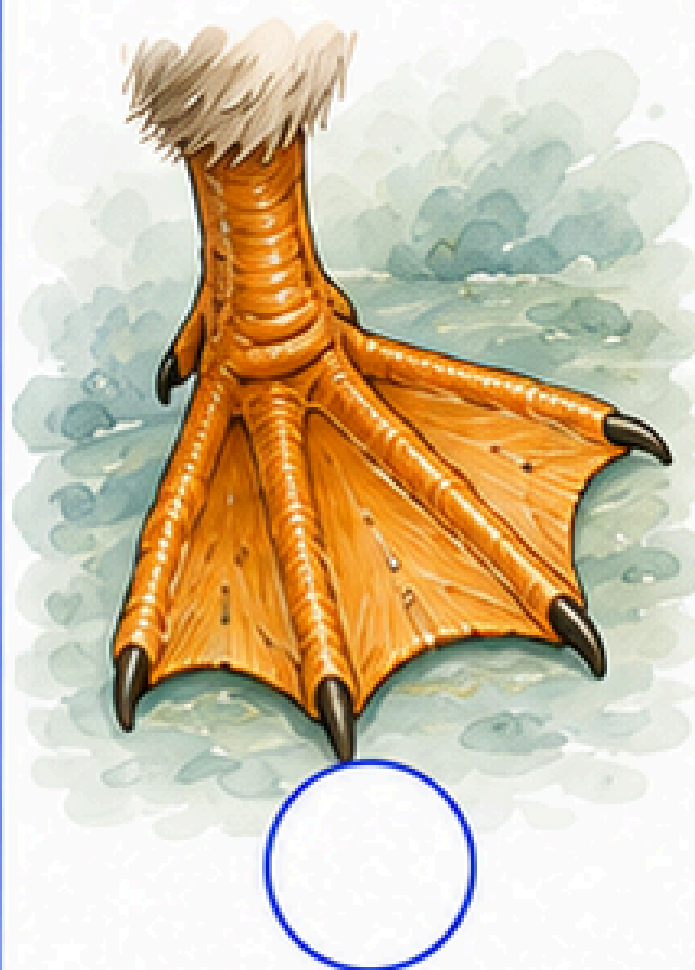
Look closely at each foot.

Which one works best for swimming in a pond?

➤ Big Idea: Body structures are adaptations. ➤

A. Duck Foot

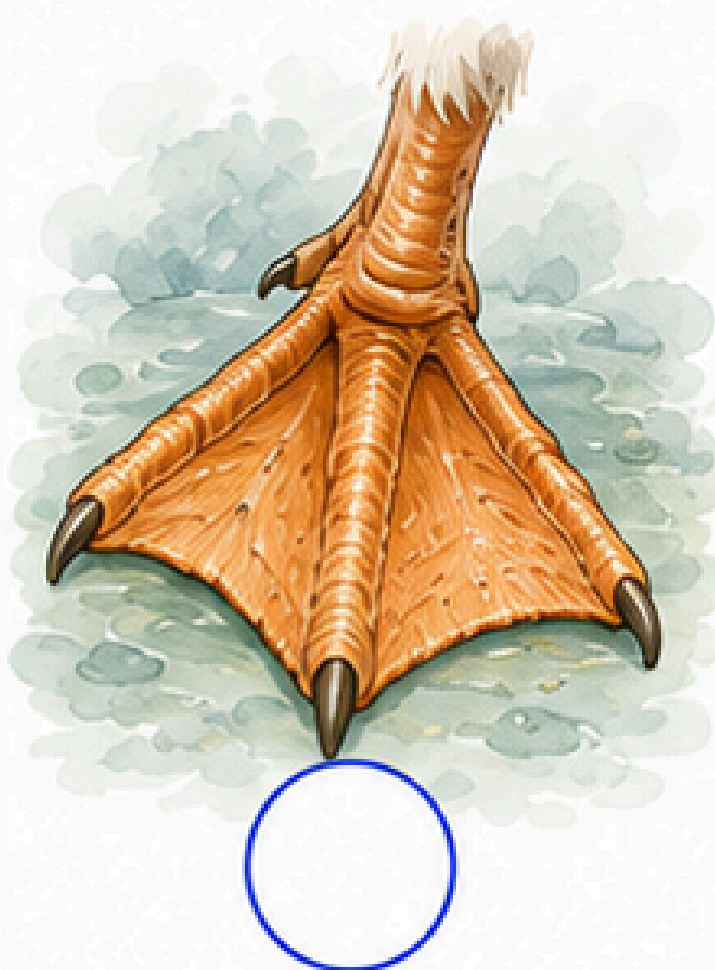
Lives in ponds and lakes.



Scientists compare body structures to understand how they help animals. Use the evidence in the pictures!

B. Goose Foot

Lives in ponds and lakes.



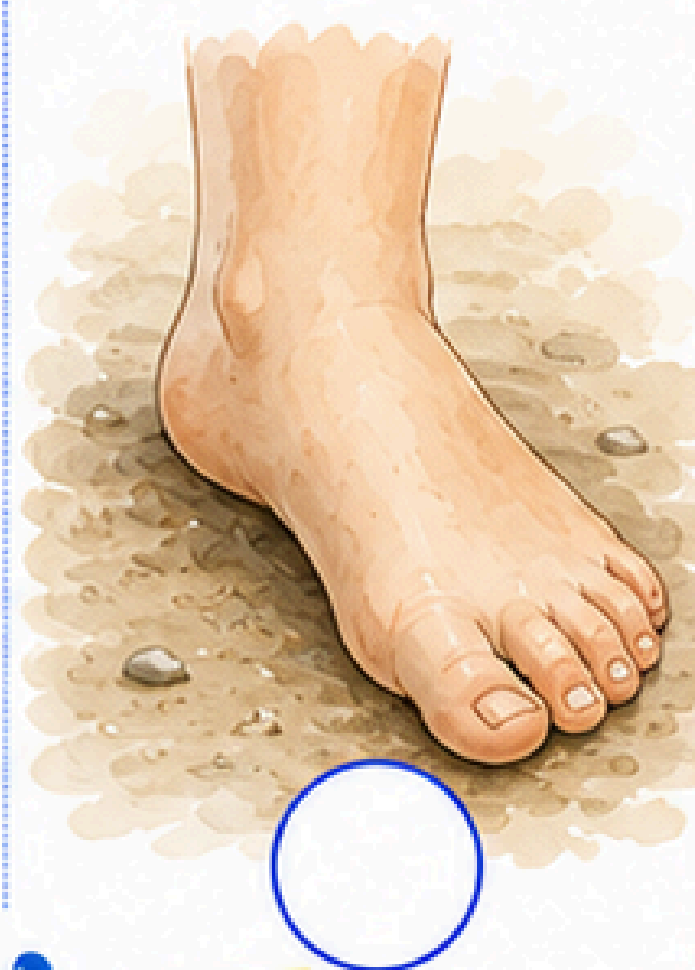
C. Chicken Foot

Lives on land.



D. Human Foot

Lives on land.



Which foot do you think works best for swimming? Why?



Evidence Hunt

- What do you see that shows webbing?
- Which foot looks best for pushing water?
- Which foot looks best for walking on land?
- What differences do you see between the feet?
- What clue is most important for deciding?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ All feet work the same way.
- ☐ Webbed feet work best for swimming.
- ☐ Feet are not important for how an animal moves.

Use the evidence from the pictures to support your answer.



Foot Clue Panel

Look closely at the clues. What do they tell you?



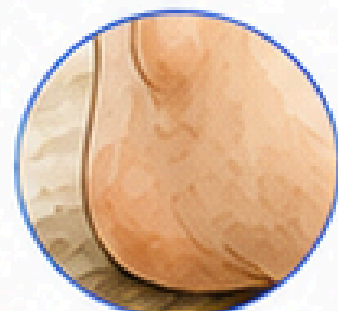
Webbing

Skin between the toes spreads out like a paddle.



Scales & Claws

Hard surfaces help grip the ground.



Flat Sole

A flat surface helps with balance.



Toe Shape

Toes are shaped for different jobs.

What clues show how each foot might be used?



Explain Your Thinking

Why do you think webbed feet help ducks and geese swim?

How would life be different for a duck if it had chicken feet?

What evidence supports your thinking?



Vocabulary

adaptation

A body part that helps an animal survive in its environment.



structure

The way something is built.



webbing

Skin between toes that helps push water.



compare

To look at two or more things to find similarities and differences.



NAEYC Alignment

SCI 1.1

Observe and compare characteristics of living things and their environments.



Common Core Connection

RI.K.3

Describe the connection between individuals, events, ideas, or pieces of information in a text.



★ Scientists investigate by comparing structures to understand how they help living things survive. ★



Growing Up

Focus: Development

13

➤ Big Idea: Growth changes appearance and ability. ➤

Ducks change as they grow.
Scientists look for evidence of change to understand
how living things develop over time.

1. Duckling

Small and fluffy.
Yellow and brown down
keeps it warm.



Abilities: Can swim and
follow its mother.

2. Juvenile Duck

Larger with more feathers.
Colors start to look
like an adult.



Abilities: Stronger swimmer,
learning to fly.

3. Adult Duck

Full feathers and bright colors.
Larger, stronger,
and fully grown.



Abilities: Can fly, find food,
and care for young.



Development Evidence Panel

Close-up clues help us understand how ducks develop.



Feather Growth

Down feathers are
replaced by adult
feathers.



Increasing Size

Ducks become much
larger as they grow.



Larger Feet

Feet grow bigger to
help with swimming
and balance.



Longer Wings

Wings get longer
and stronger for
flying.

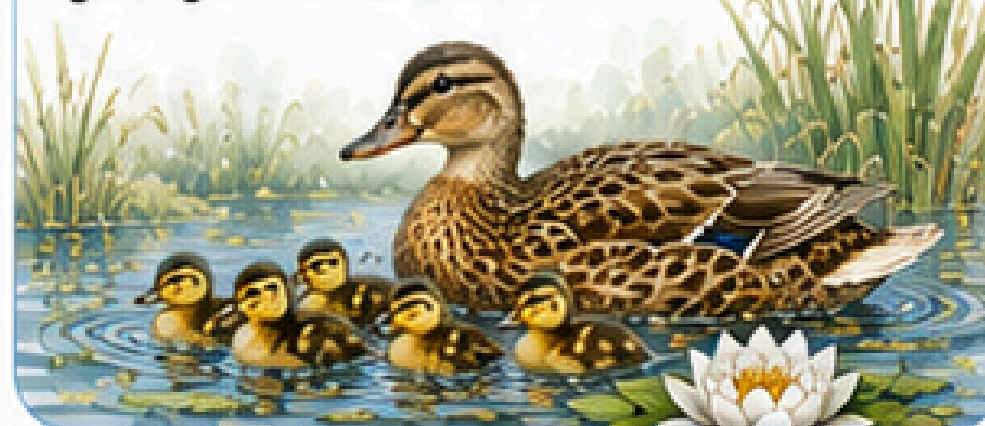
What clues tell you this duck is older?



Explain Your Thinking

How do the clues show that
ducks develop over time?

What evidence suggests that
older ducks can do things
younger ducks cannot?



Vocabulary



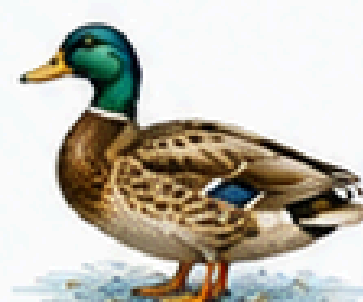
development

The process of
changing and gaining
new abilities.



juvenile

A young animal
that is no longer
a baby.



growth

The process of becoming
larger and more
developed.



NAEYC Alignment

SCI 1.1
Observe changes in
living things over time.



Common Core Connection

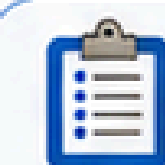
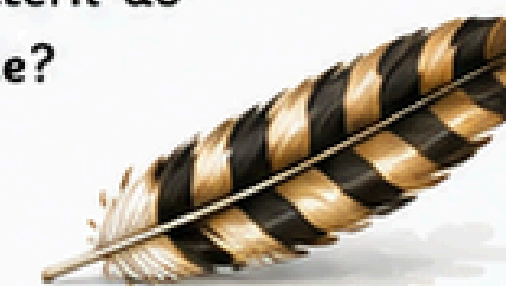
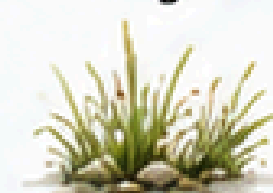
RI.K.3
Describe connections between
stages of development.



Evidence Hunt

Look carefully at the three ducks.

- Which duck is the youngest?
- Which duck is the oldest?
- What evidence shows growth?
- Which body parts change the most?
- What pattern do you notice?



Scientist's Claim

Which claim is best supported
by the evidence?

- ☐ Ducks stay the same size throughout life.
- ☐ Ducks change in appearance and ability as they grow.
- ☐ Ducklings are born with all their adult feathers.

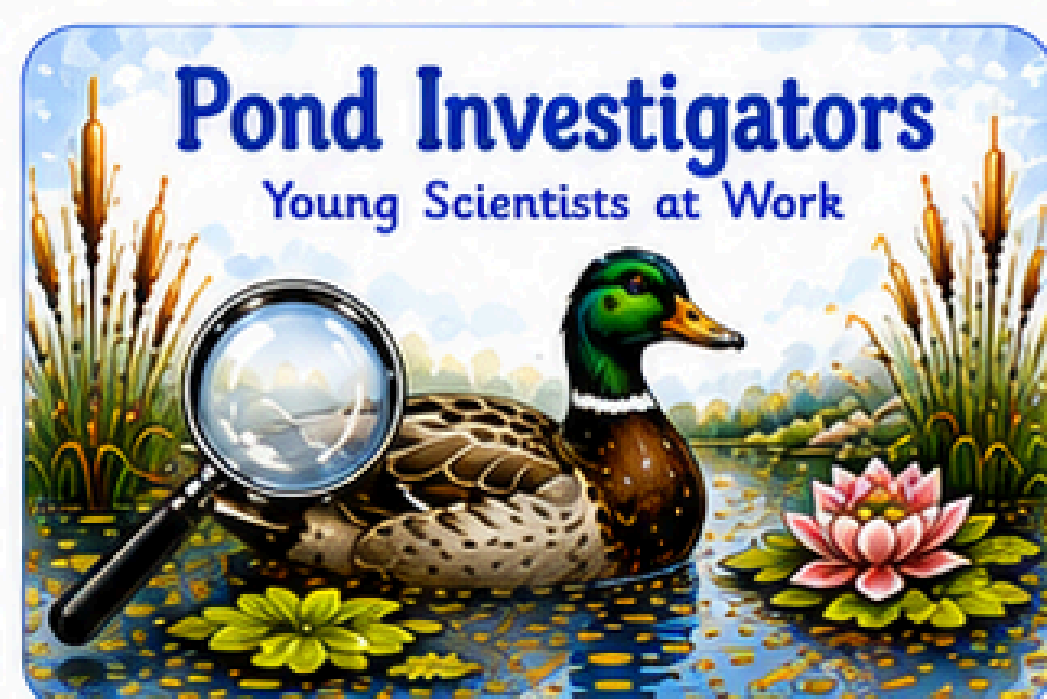
Use the evidence from the
illustrations to support your choice.



Caregiver Discussion

- Which change seems most important as ducks grow?
- How do children change as they grow older?





Growth Evidence Challenge

14

➤ Become a Growth Scientist! ➤

Animals change as they grow.
Look closely at the duck at each stage
How does growth change their bodies and what they can do?

➤ Big Idea: Development changes appearance and abilities over time. ➤

A. Duckling

Young duck



B. Juvenile Duck

Older duck



C. Adult Duck

Grown duck

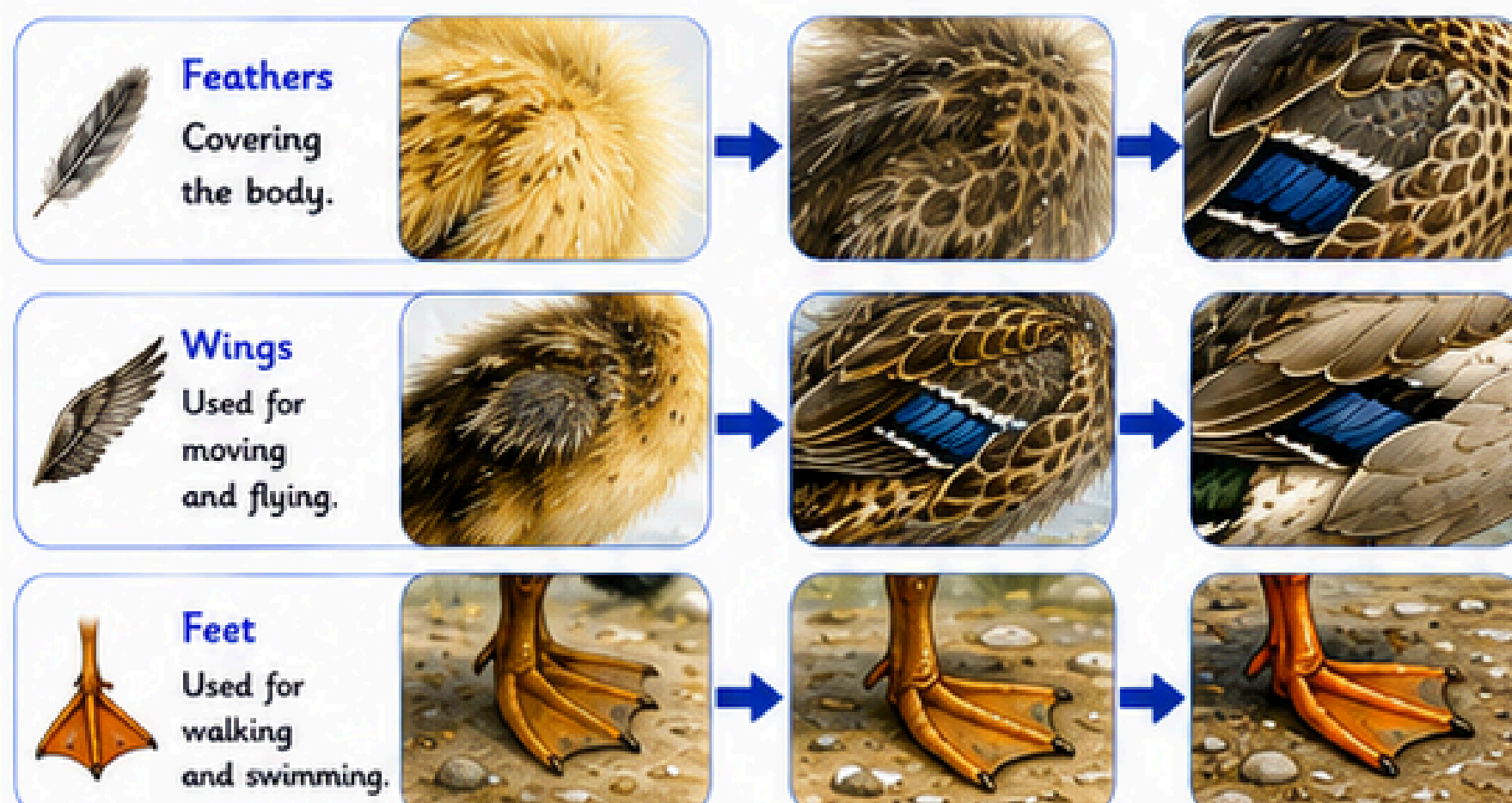


What evidence supports the idea that ducks change as they grow?
Look at details, compare, and use the evidence from the pictures.



Growth Evidence Panel

Look at the close-ups below. What changed? What stayed the same?



★ Which feature changed the most? Why do you think that change is important?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Ducks stay mostly the same as they grow.
- ☐ Ducks change in size, feathers, and abilities as they grow.
- ☐ Ducks only change color as they grow.

Use evidence from the pictures to support your choice.



Explain Your Thinking

How might larger wings and stronger feathers help an adult duck do things a duckling cannot?

What evidence supports your answer?



Evidence Hunt

Look carefully at all three ducks.

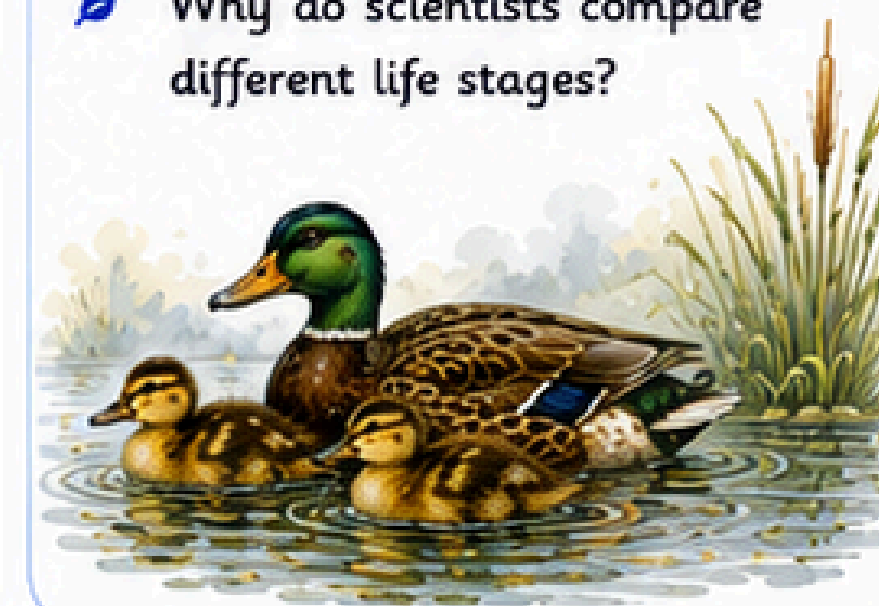
- What evidence shows the ducks are different ages?
- Which body part changed the most?
- Which features stayed the same?
- What pattern do you notice from duckling to adult?
- Which evidence is strongest?



Caregiver Discussion

Discuss together.

- Which change seems most important for survival?
- Why do scientists compare different life stages?



Vocabulary

juvenile

A young animal that is not yet an adult.



development

The process of growing and changing.



evidence

Information that helps support an idea or answer.



NGSS Alignment

LS1.A

Use observations to describe patterns of what plants and animals (including humans) need to survive.



Common Core Connection

RI.1.3

Describe the connection between two individuals, events, ideas, or pieces of information in a text.

★ Scientists investigate growth by gathering evidence and looking for patterns over time. ★



Pond Investigators

Young Scientists at Work

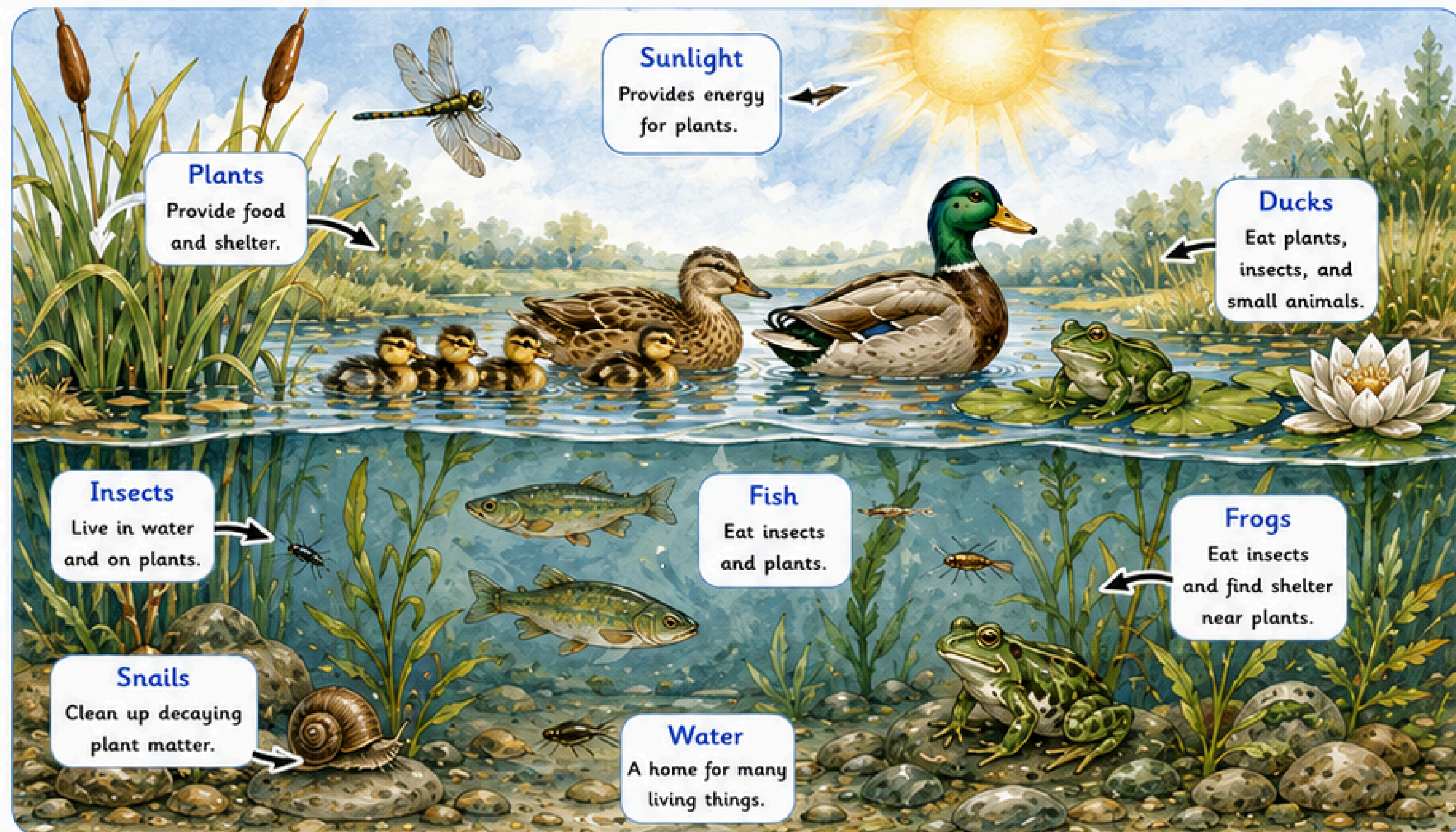
Pond Ecosystem

Focus: Connections

15

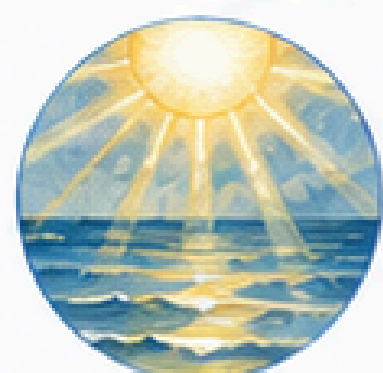
Big Idea: Everything is connected.

A pond is a community of living and nonliving things.
They depend on each other to survive.
Scientists look for connections to understand ecosystems.



Ecosystem Connection Panel

Close-up clues help us understand how things are connected.



Sunlight

Plants need sunlight to grow.



Plants

Plants provide food and shelter.



Fish

Fish hide in plants and eat insects.



Frogs

Frogs rest on plants and eat insects.



Ducks

Ducks eat plants and small animals.

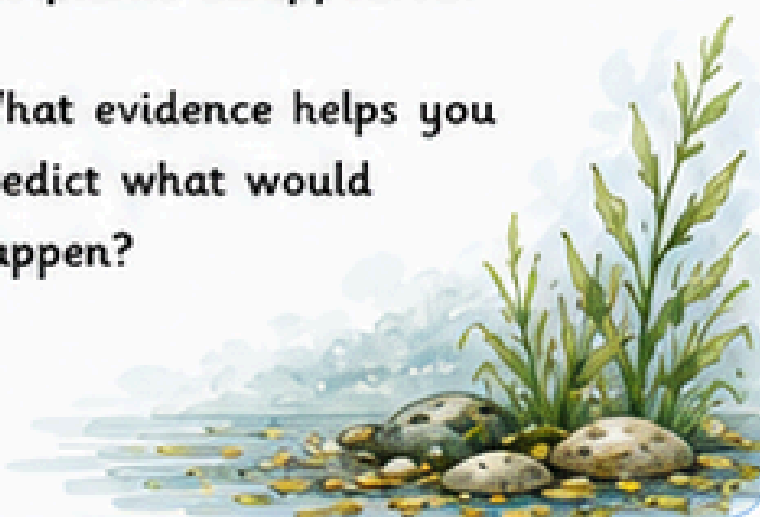
What connections can you find?



Explain Your Thinking

How might the pond change if the plants disappeared?

What evidence helps you predict what would happen?



Vocabulary



ecosystem

Living and nonliving things interacting in one place.



connection

A relationship between two or more things.



resource

Something living things need to survive.



NAEYC Alignment

SCI 1.1
Observe relationships among living things and their environment.



Common Core Connection

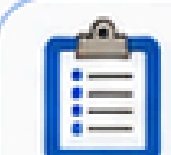
RI.K.3
Describe connections between scientific ideas.



Evidence Hunt

Look carefully at the pond.

- What living things can you find?
- What nonliving things can you find?
- Which animals seem to depend on plants?
- Which animals use the water?
- What connections do you notice?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Plants and animals do not affect one another.
- ☐ Everything in a pond ecosystem is connected.
- ☐ Water is not important in a pond ecosystem.

Use the evidence from the illustration to support your choice.



Caregiver Discussion

- Which connection in the ecosystem seems most important?
- What might happen if one part of the ecosystem changed?



★ Scientists investigate ecosystems to discover connections among living and nonliving things. ★



Ecosystem Investigation

16

Become an Ecosystem Detective!

Many living and nonliving things work together in a pond.

Look closely at the scene.

What depends on what? How are the things connected?

➤ Big Idea: Everything in an ecosystem is connected. ➤



What do you notice in the pond?
What might depend on what?

🔍 Scientists look for connections between living and nonliving things.
Use the evidence in the picture!

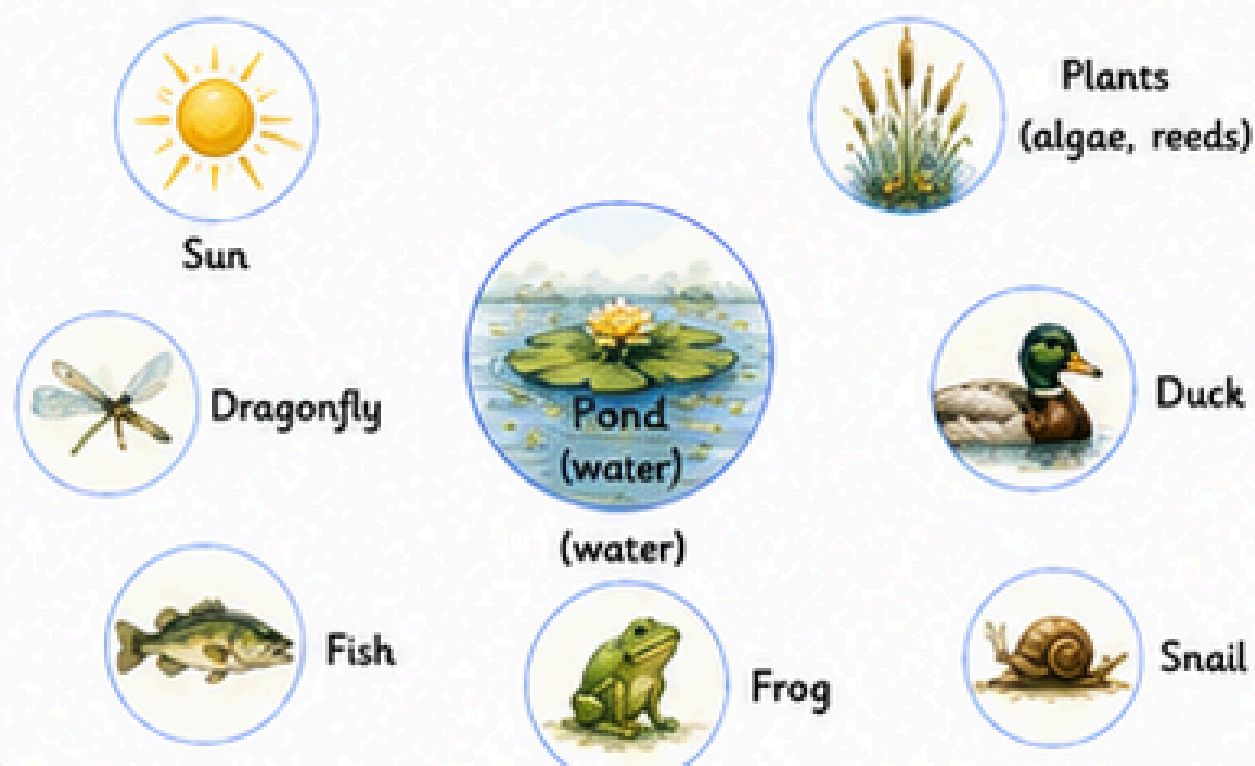
Evidence Hunt

- What living things do you see?
- What nonliving things do you see?
- What might the plants provide for animals?
- What might the sun provide for the pond?
- What might happen if one thing in the pond disappeared?



Pond Connection Map

Look at the picture. Draw arrows to show how things are connected.



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Only the biggest animals are important.
- ☐ Everything in the pond affects something else.
- ☐ The pond would be fine if one thing changed.

Use the evidence from the picture to support your answer.

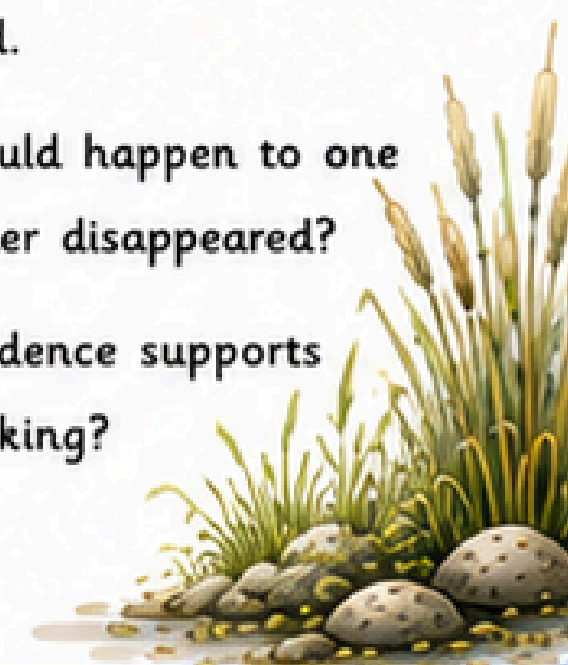
Explain Your Thinking

Choose two things from the pond.

Explain how they might be connected.

What would happen to one if the other disappeared?

What evidence supports your thinking?



Caregiver Discussion

- What connection in the pond surprised you the most?
- If something in the pond changed, what do you think would change next? Why?



Vocabulary



ecosystem
All the living and nonliving things in an area working together.



depend
To rely on something else for survival.



connection
A relationship between living and nonliving things.



affect
To cause a change in something.



NAEYC Alignment
SCI 1.1
Observe and compare characteristics of living things and their environments.



Common Core Connection
RI.K.3
Describe the connection between two individuals, events, ideas, or pieces of information in a text.



★ Scientists investigate ecosystems by gathering evidence and discovering how everything is connected. ★



Staying Safe

17

Focus: Survival Strategies

★ Big Idea: Animals use different strategies to stay safe. ★

Animals use different strategies to avoid danger.

Some animals hide, while others use camouflage.

Some animals stay in groups for protection.

Scientists study survival strategies by looking for evidence.

1. Camouflage

Duckling blends into reeds and grasses.



Matching colors and patterns help hide the duckling from view.

2. Shelter

Duckling hides beneath cattails.



Shelter provides cover and keeps the duckling out of sight.

3. Group Protection

Ducklings stay close to mother duck.



Staying in a group makes it harder for predators to catch one.

4. Open Area

Single duckling stands in the open.



No cover or camouflage makes this duckling easier to see.



Survival Evidence Panel

Close-up clues help us understand how each strategy works.



Matching Colors

Colors help the duckling blend into its surroundings.



Shelter Cover

Plants create a safe place to hide.



Family Group

Being together helps provide protection.



Visible in Open Space

Standing in the open makes it easier to see.

Which clues show which strategy works best in each situation?



strategy

A plan or method used to solve a problem.



camouflage

Colors or patterns that help an animal blend in.



protection

Something that helps keep an animal safe.



NGSS Alignment

1-LS1-1

Observe animal behaviors and survival strategies.



Common Core Connection

RI.K.3

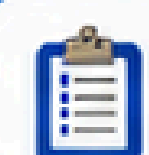
Describe connections between behaviors and survival.



Evidence Hunt

Look carefully at the animals.

- Which animal is hardest to see?
- Which animal is using camouflage?
- Which animals are staying together?
- Which animals are using shelter?
- What evidence helped you decide?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Animals use only one strategy to stay safe.
- ☐ Animals use different strategies depending on the situation.
- ☐ Camouflage is the only way animals stay safe.

Use the evidence from the illustrations to support your choice.



Caregiver Discussion

- Which strategy seems most effective?
- Can you think of another animal that uses one of these strategies?



★ Scientists investigate evidence to understand how animals survive in their environments. ★



Which Strategy Works Best?

18

Become a Survival Scientist!

Animals use many strategies to stay safe.
Look at the pictures. Which strategy might give ducklings the strongest protection from predators?

➤ Big Idea: Animals use multiple strategies to survive. ➤

A. Camouflage

Blending in with surroundings.



How well might this strategy work?

Not well ☆☆☆☆☆ Very well

B. Using Shelter

Hiding in plants or other cover.



How well might this strategy work?

Not well ☆☆☆☆☆ Very well

C. Staying Together

Keeping close to other ducklings.



How well might this strategy work?

Not well ☆☆☆☆☆ Very well

D. Alone

Moving or staying by itself.



How well might this strategy work?

Not well ☆☆☆☆☆ Very well



Scientists gather evidence and think about what would help most in a dangerous situation.



Strategy Clue Details

What clues help you decide how well each strategy might work?



Blends with colors and patterns.



Plants hide ducklings from view.



More eyes can see danger coming.



Harder to be seen, no one nearby for help.



Explain Your Thinking

Imagine a hawk is flying over the pond.

Which strategy would help the ducklings most in that moment?
Why?

What evidence from the pictures supports your answer?



Vocabulary



strategy

A plan or action used to reach a goal.



predator

An animal that hunts and eats other animals.



protect

To keep safe from harm or danger.



evidence

Clues or facts that help answer a question.



NAEYC Alignment

SCI 1.1

Observe and compare characteristics of living things and their environments.



Common Core Connection

RI.K.3

Describe the connection between two individuals, events, ideas, or pieces of information in a text.



Evidence Hunt

- What evidence shows how the ducklings blend in?
- What evidence shows how the plants provide shelter?
- What evidence shows how staying together could help?
- What risk might come with being alone?
- Which evidence is most important for staying safe?



Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Camouflage is the best strategy.
- ☐ Staying together gives the strongest protection.
- ☐ Being alone helps ducklings avoid predators.

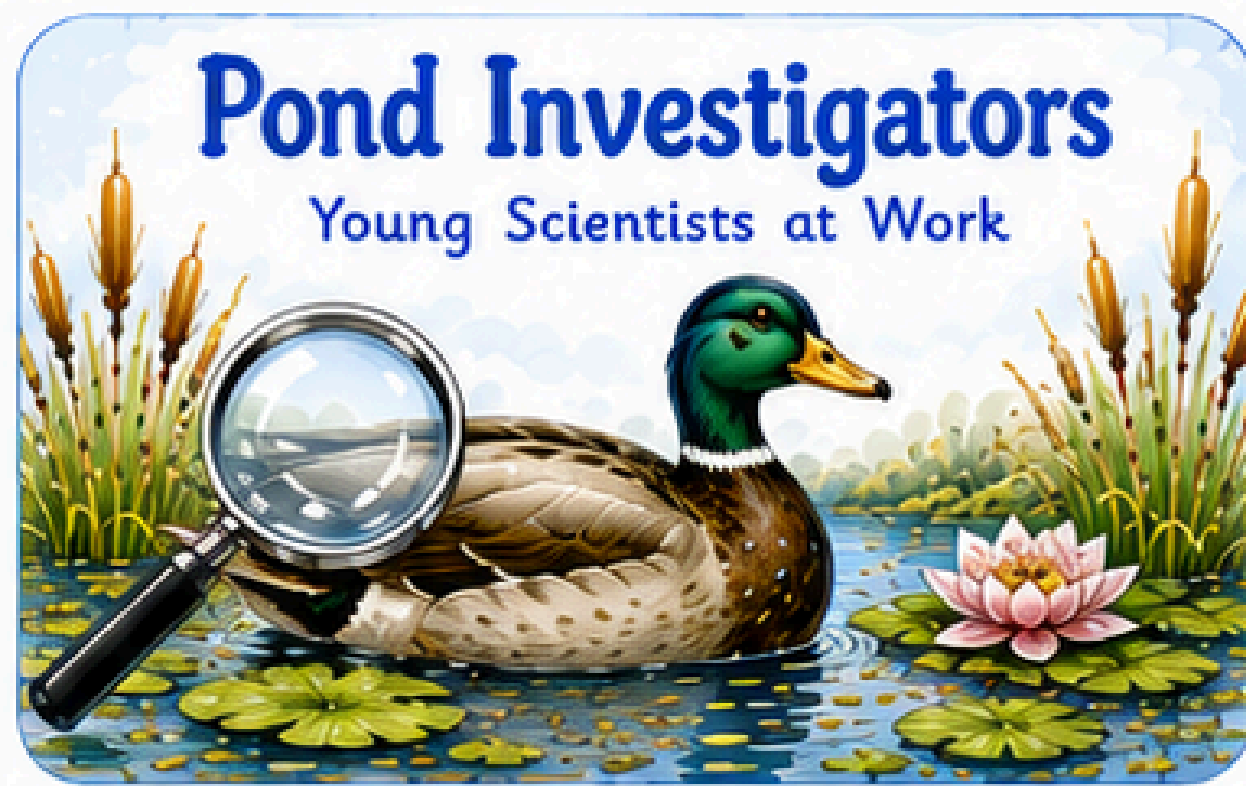
Use the evidence from the pictures to support your answer.



Caregiver Discussion

- Why might no single strategy work every time?
- How might ducklings use more than one strategy each day?

★ Scientists investigate survival strategies by gathering evidence and deciding which helps animals the most. ★

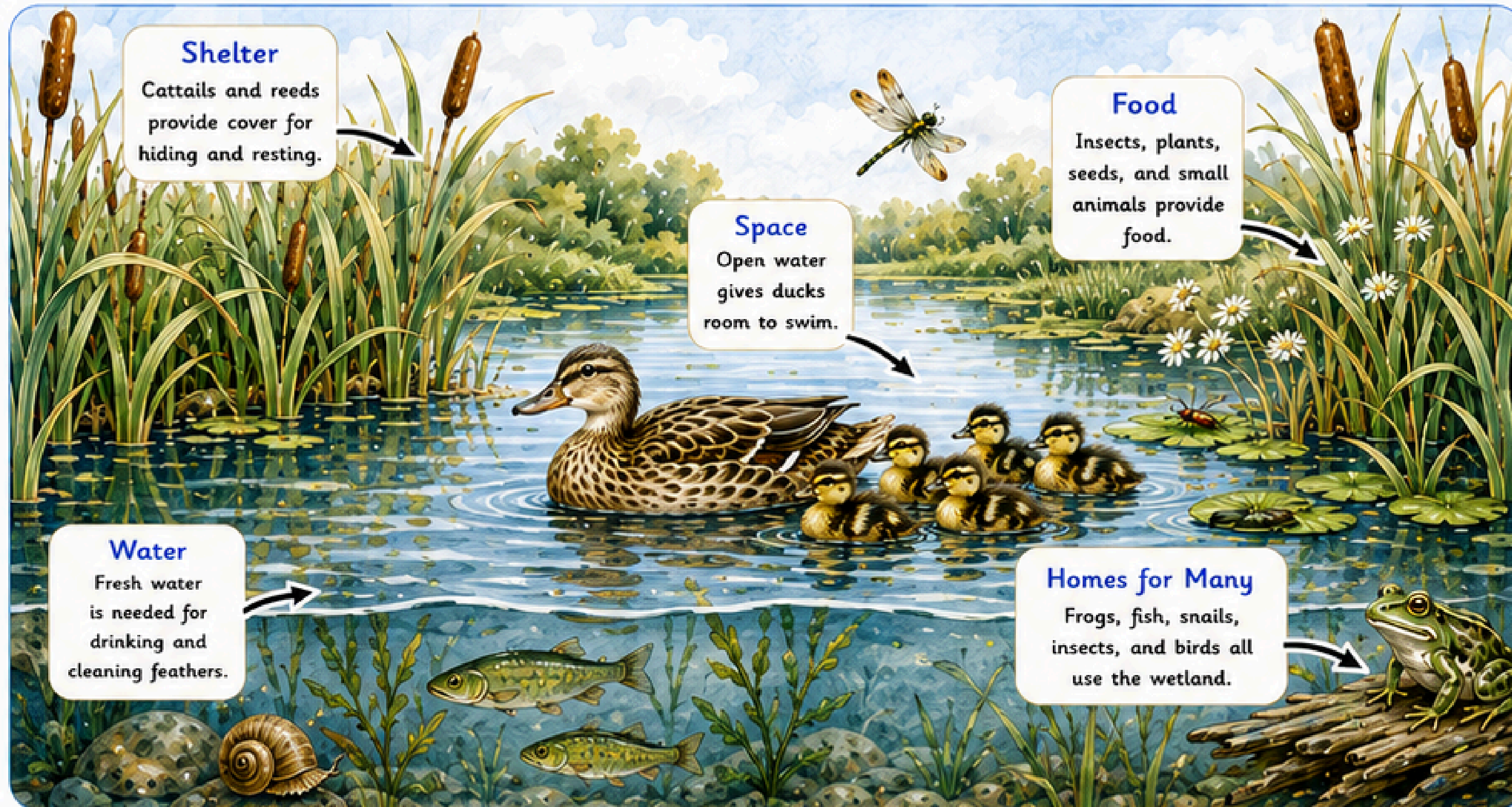


Duck Homes

Focus: Wetlands

19

➤ **Big Idea:** Habitats provide resources. ➤
Many ducks live in wetlands because wetlands provide important resources.
Scientists study habitats by looking for the resources animals need to survive.



Resource Evidence Panel

Close-up clues help us understand the resources ducks use.



Water Source
Clean water for drinking and swimming.



Food Source
Insects and plants provide food.



Shelter Source
Plants provide hiding places from danger.



Animals Using Resources
Ducks find food, shelter, water, and space here.

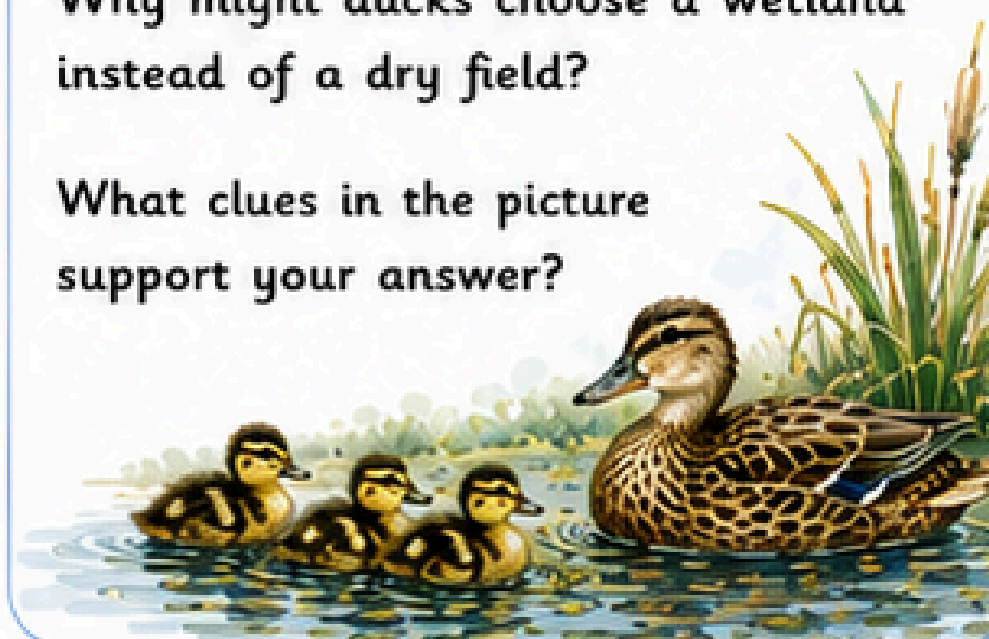
What resources do you see? How are they used?



Explain Your Thinking

Why might ducks choose a wetland instead of a dry field?

What clues in the picture support your answer?



Vocabulary



habitat

A place where a living thing lives.



wetland

A habitat where land and water meet.



resource

Something living things need to survive.



NAEYC Alignment

SCI 1.1
Observe how habitats provide resources.



Common Core Connection

RI.K.3
Describe connections between habitats and survival.



Evidence Hunt

Look carefully at the wetland.

- Where do you see water?
- Where do you see food?
- Where do you see shelter?
- Which animals use the wetland?
- What evidence shows this habitat provides resources?



Scientist's Claim

Which claim is best supported by the evidence?

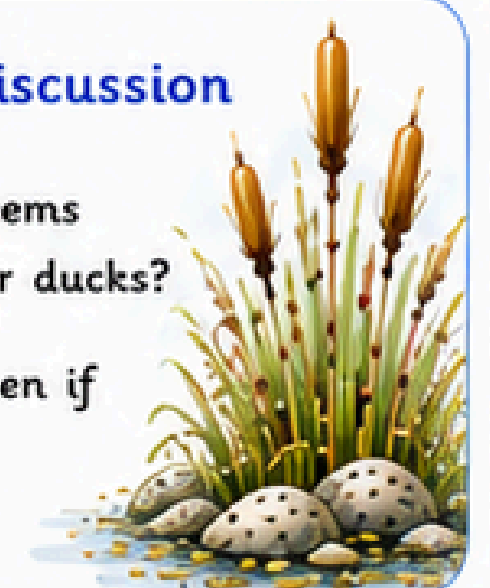
- ☐ Wetlands provide resources animals need.
- ☐ Ducks can live equally well anywhere.
- ☐ Water is not important in a wetland habitat.

Use the evidence from the illustration to support your choice.



Caregiver Discussion

- Which resource seems most important for ducks?
- What might happen if one resource disappeared?



★ Scientists investigate habitats to understand how resources help animals survive. ★



Habitat Investigator

20

➤ Become a Habitat Scientist! ⚡

Compare habitats and use evidence to determine how they support living things.

How are habitats alike and different?

How do the parts work together in each place?

➤ Big Idea: Different habitats provide different resources, but all habitats depend on living and nonliving parts working together. ⚡



A. Habitat Investigation

Look closely at each habitat. What do you notice? Fill in the chart below.

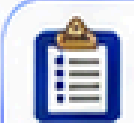
	Wetland Ponds, marshes, and swamps	Desert Hot and dry places	Forest Many trees and plants	Grassland Open areas with grasses
Living Things (plants & animals)				
Nonliving Things (water, soil, air, sun)				
What Stands Out? (one important detail)				
How Parts Work Together (How things depend on each other)				



Evidence Hunt

Look carefully at all four habitats.

- What evidence shows how each habitat is different?
- What evidence shows how they are alike?
- What evidence shows how living things depend on nonliving things?
- How do people affect habitats?
- What evidence is most important for deciding how to care for habitats?



Scientist's Claim

Which claim is best supported by all of the evidence you have gathered?

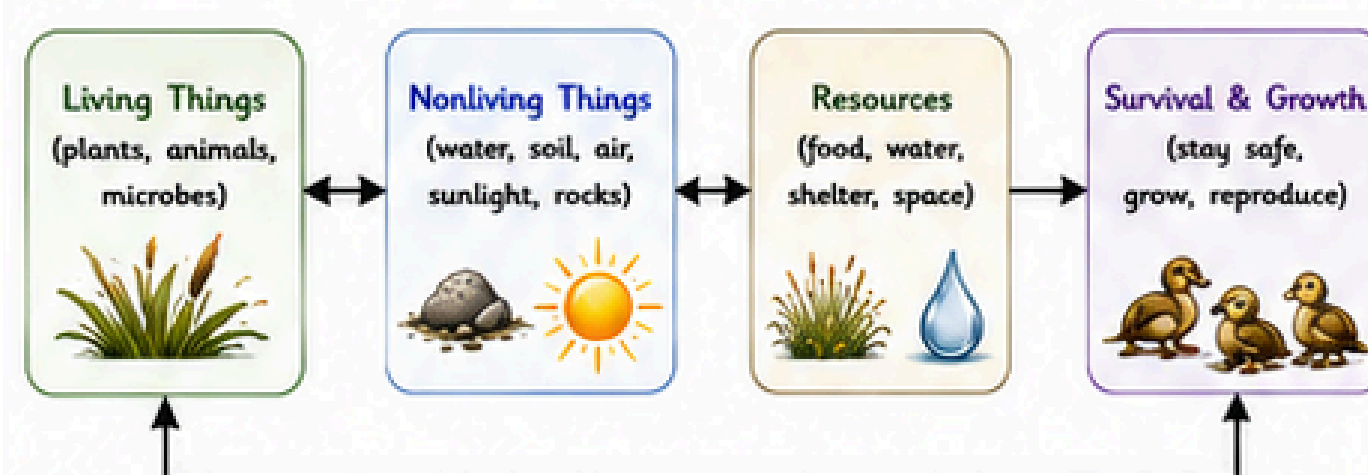
- ☐ All habitats are the same.
- ☐ Living things can survive without nonliving things.
- ☐ Every habitat has different parts, but the parts work together.
- ☐ People do not affect habitats.

Use evidence from the page to support your claim.



B. Habitat Connection Map

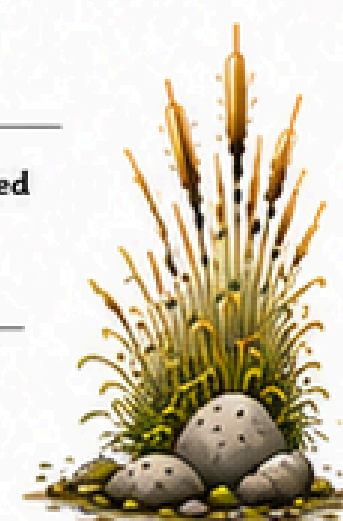
Draw arrows to show how the parts in each habitat connect. One example is done for you.



C. Think Like a Habitat Scientist

Use what you learned to answer.

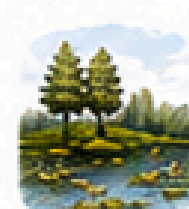
- If one nonliving thing in a habitat changed, how might that affect the living things?
- Which habitat would be most affected by a long drought? Why?
- What can people do to help keep habitats healthy?



Key Vocabulary



habitat
The natural home of a living thing.



ecosystem
All the living and nonliving parts in an area.



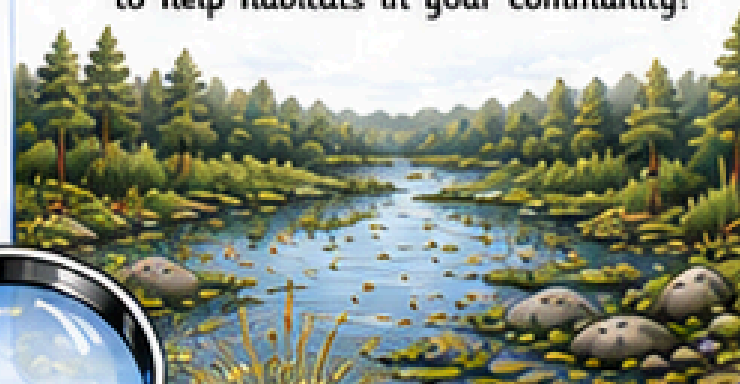
interdependence
Parts rely on each other to survive.



balance
A healthy condition where things work well together.



impact
An effect of something that changes a system.



NGSS Alignment

LS2.A, LS2.C

Identify and compare living things and their habitats. Describe how organisms depend on their environment.



Common Core Connection

RI.1.3, RI.1.7

Describe connections between ideas in a text. Use illustrations and details to understand key ideas.



★ Great scientists ask questions, gather evidence, think critically, and care for the world around them! ★



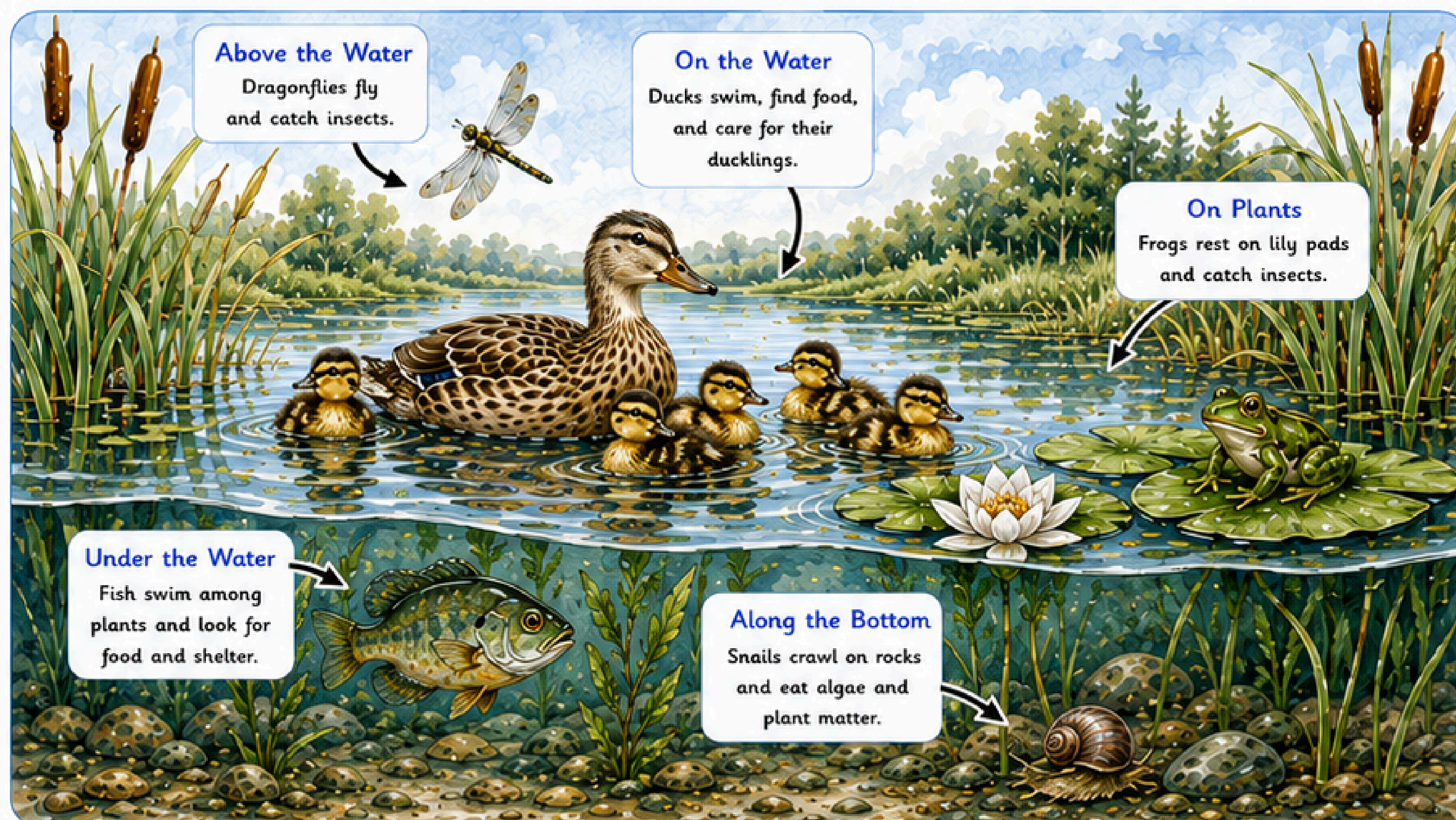
Pond Community

21

Focus: Species Interactions

➤ Big Idea: Many species share the same habitat. ➤

A pond community contains many different species. They use different parts of the pond and interact. Scientists study communities by looking for patterns and relationships.



Community Evidence Panel

Close-up clues help us understand how species use the pond.



Frog on Lily Pad
Uses plants for resting and catching insects.



Fish Underwater
Uses water and plants for food and shelter.



Dragonfly Above
Uses air space to fly and hunt for insects.



Snail on Shore
Uses rocks and plants for food and protection.



Ducks on Surface
Uses open water for swimming and feeding.

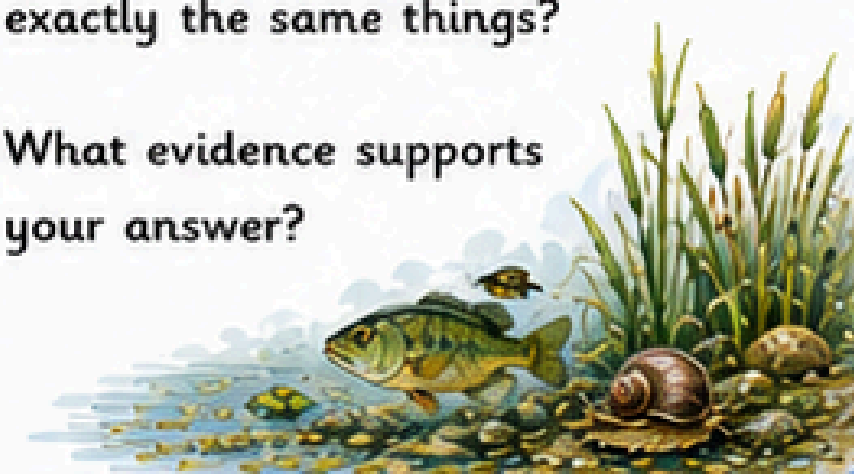
How does each species use the pond differently?



Explain Your Thinking

How can different species share the same habitat without doing exactly the same things?

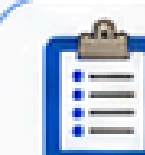
What evidence supports your answer?



Evidence Hunt

Look carefully at the pond community.

- Which species spend time in the water?
- Which species spend time above the water?
- Which species use pond plants?
- Which species share the same space?
- What patterns do you notice?



Scientist's Claim

Which claim is best supported by the evidence?

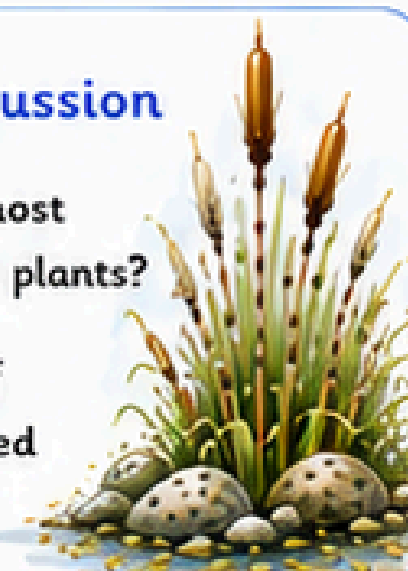
- ☐ Ducks are the only animals that use the pond.
- ☐ Many species share the same habitat in different ways.
- ☐ Every species uses the pond exactly the same way.

Use the evidence from the illustration to support your choice.



Caregiver Discussion

- Which species seem most connected to the pond plants?
- What might happen if one species disappeared from the community?

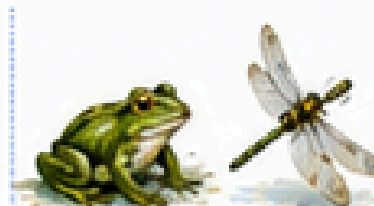


Vocabulary

community
Different species living together in the same habitat.



species
A group of living things that are alike.



interaction
When living things affect one another.



NAEYC Alignment

SCI 1.1
Observe relationships among living things in a community.

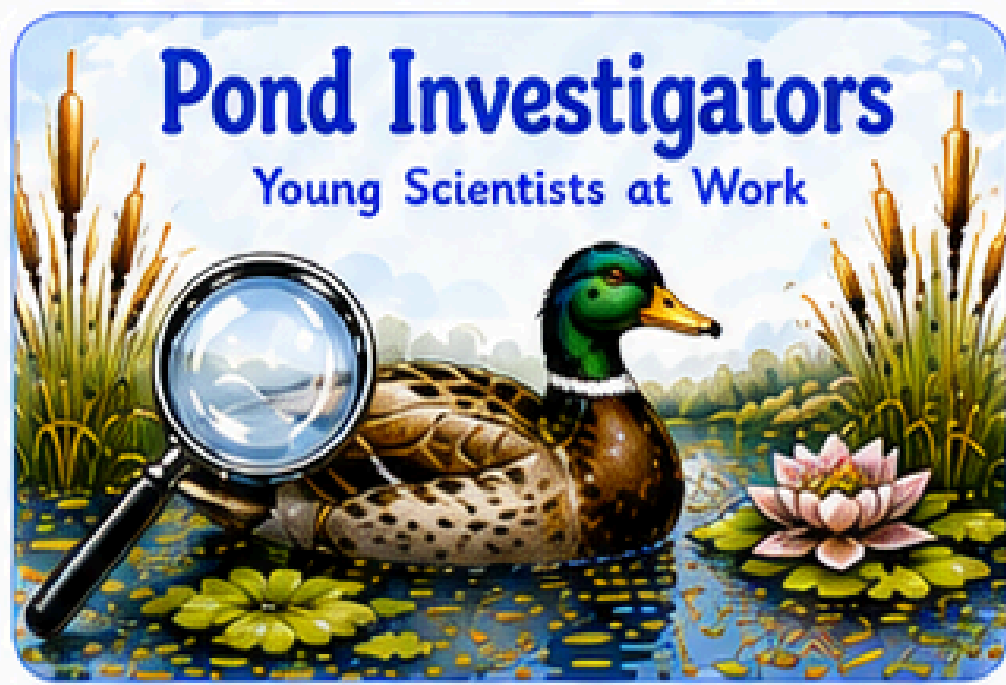


Common Core Connection

RI.K.3
Describe connections among living things and their environment.



★ Scientists investigate pond communities to understand how species interact and share habitats. ★



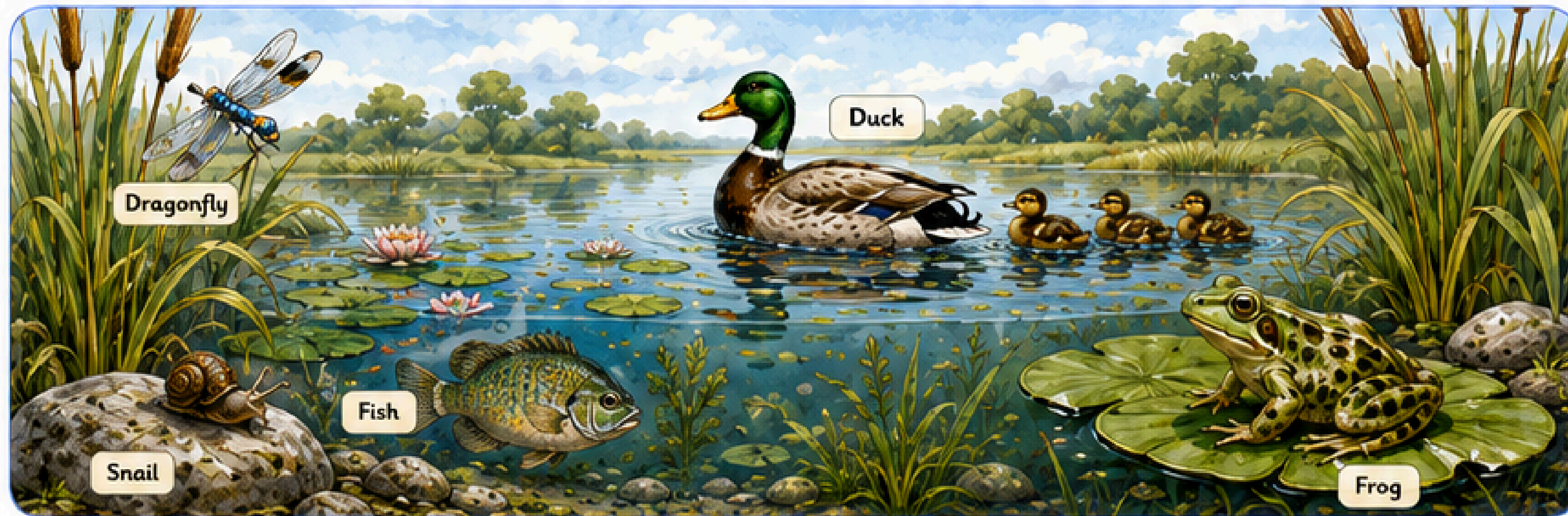
Community Challenge

22

Become a Pond Community Expert!

Use evidence from the pond to explain how different species share the same habitat.

Big Idea: Different species share habitats, but they use resources in different ways.



A. Analyze the Community

Look carefully at the pond. Answer using evidence from the scene.

1

Which species use the water?

2

Which species use plants?

3

Which species use shelter?

4

What resources do several species share?



Evidence Hunt

Find and list evidence in the scene. Write (E) for evidence or (I) for inference.

- ☐ Water users (who live in or drink water)
- ☐ Shelter users (who hide or nest)
- ☐ Plant users (who eat or rest on plants)
- ☐ Shared resources (used by many)
- ☐ Different species
- ☐ Interactions between species (observed together)

What other evidence can you find?



B. Community Evidence Table

Check (✓) the resources each species uses.

Species	Uses Water (drink, live, swim)	Uses Plants (food, rest, hide)	Uses Shelter (hide, nest, protect)
Duck	☐	☐	☐
Frog	☐	☐	☐
Fish	☐	☐	☐
Snail	☐	☐	☐
Dragonfly	☐	☐	☐



C. Scientist's Claim

Which claim is best supported by the evidence?

- ☐ Every species uses the habitat in exactly the same way.
- ☐ Different species use the same habitat in different ways.
- ☐ Only ducks depend on the pond.

Support your claim with evidence from the scene and the table.



D. Explain Your Thinking

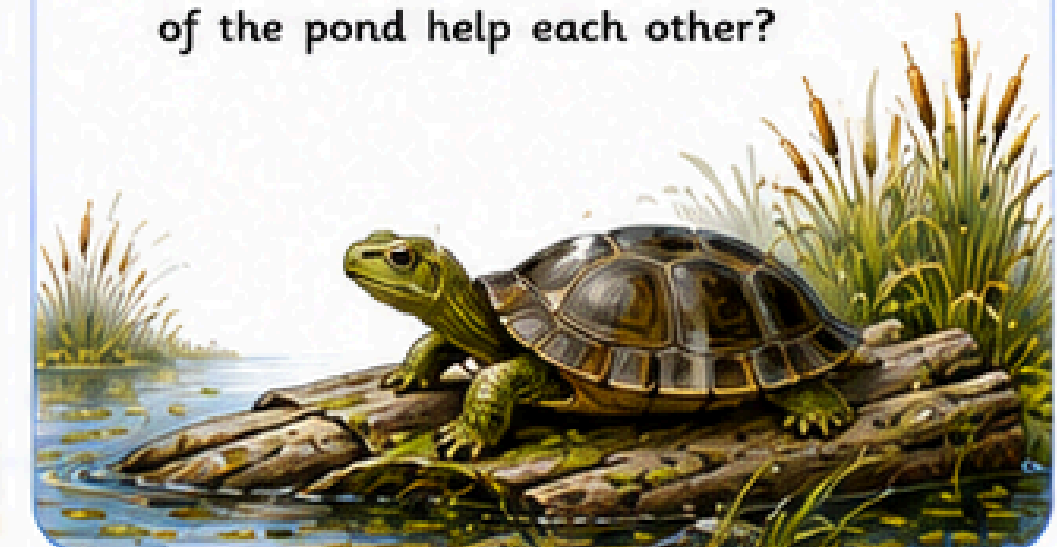
- Why can many species live together in the same pond?
- What evidence supports your answer?



Caregiver Discussion

Talk together about the pond community.

- Which species seems most dependent on the pond? Why?
- What might happen if one species disappeared?
- How do the living and nonliving parts of the pond help each other?



Key Vocabulary

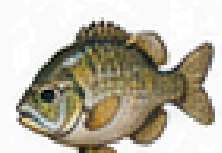
community

All the different species living in the same place.



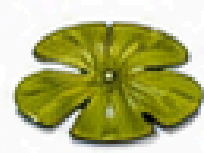
species

A kind of living thing.



resource

Something living or nonliving that living things need.



interdependence

Living things rely on each other and the environment.



NGSS Alignment

LS2.A, LS2.C, LS4.D

Observe, compare, and describe organisms and how they depend on each other and their environment.



Common Core Connection

RI.1.3, RI.1.7

Describe connections between ideas in a text and use details to support key ideas.

★ Great scientists use what they know, ask questions, solve problems, and take action to make the world a better place! ★

