I AM AN ENTOMOLOGIST

Bugs! They are everywhere, even where we don't expect them. But it makes them easier to find and to observe. Read through the books and cards to learn as much as you can about insects. Do some of the insect rubbing plates to get a better feel of their different forms. Before catching a live bug, practice studying the pretend bugs in the kit. Carefully move the insect to look at it from all angles. Describe what you see.

Now you may be ready to observe a live insect out in the wild or to bring it safely home in the insect "house." This is a living creature, so treat it with respect, even the ant.

Hands-on activities included in the kit offer suggested vocabulary, fun facts, and further reading. The chart below provides an overview of language, science, and math literacy skills highlighted in each activity.

	Activity #1 "Safari"	Activity #2 "Pretend"	Activity #3 "Live Bug"	Activity #4 "Create a Bug"
Language	Insect names	Action verbs	Descriptive words	Supplies
Math	Counting	Proportion		Estimating
Science	Habit/lifestyles	Cause & effect	Prediction Observation	Experimenting

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#1: Bug Safari

SUMMARY: Observing insects and bugs up close and personal in their natural settings.

WORDS TO USE:

Abdomen – the hind part of the body of an insect
Alike – similar in appearance, nature, or form
Antenna – a movable feeler on the head of an insect
Chrysalis – the hardened protective case made by and enclosing a butterfly pupa
Different – not the same
Insect – small, and often winged creatures that have six jointed legs and a body formed of a head, thorax, and abdomen
Magnifying glass – a lens that makes something seen through it appear larger than it is
Metamorphosis – a great change in the form of some animals during their transformation from an immature stage (caterpillar) to an adult stage (butterfly.)
Palps – insect mouthparts
Pupa – an insect when it is inside the cocoon or case
Spider – a wingless animal that is similar to insects, but has eight legs and has two parts instead of three, and often spins threads of silk for webs
Thorax – the middle of the three main divisions of the body of an insect, where the limbs are attached
Similar – having something in common

MATERIALS NEEDED:

Magnifier
Paper and pencil
Camera (optional)
Insect identification book from the library (optional)

ACTIVITY:

- Take a walk around your neighborhood with a grownup and look for bugs.
- You may have to crawl like a bug to find them.
- Experiment using the magnifier by moving it closer and farther away from yourself.
- Carefully look under rocks, through leaves, on plants, and under the ground. You can use a poking stick instead of your hands.
- Use the magnifying glass to see the bugs up close.
- Create a book of bugs by drawing or taking photos of what you find.
- Visit your local library or databases on the HCPL's homepage to find the names of the bugs.

OBSERVATION:

- How do objects look close up when you use the magnifier? Farther away?
- Do you see any parts on their bodies that people don't have?
- Can you find their "eyes", antennae, legs?
- How many legs do insects have? How many legs to you have? How many legs does a dog have?
- We can group things together in different ways. Scientists agree that insects have 6 legs. Things that don't have 6 legs aren't insects.
- Do the insects move their antennae?
- How do they move around?
- Do some bugs look similar? Do they have similar coloration? Similar shape?
- What sizes are they compared to other bugs that you have found?
- Can you determine where they live? If a bug visited you, what would you need to make it comfortable?

DID YOU KNOW?

- Dragonflies were around long before the dinosaurs.
- Stinkbugs ooze a nasty-smelling liquid when they sense that they are in danger
- Brightly colored insects are a warning to predators that they taste bad.
- Some insects hear with their legs.
- Some insects taste with their feet.
- There are more insects than any other kind of animals.
- All insects need the sun to warm their bodies.

SUGGESTED READING:

E Carle	The Very Quiet Cricket	J 595.7 G	Garden Friends (ICR)
E Ryder	My Father's Hands	J 595.7 Pyers	Why am I an Insect?
E Ward	Over in the Garden	J 595.7139 Guillain	Bug Babies (ICR)

ICR J 595.7 Fowler It's a Good Thing There are Insects

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#2: Pretend You are a Bug

SUMMARY: After watching some bugs, try to imitate their movements. Compare insect body parts with your own.

WORDS TO USE:

Biomimicry – how humans copy the way things are done in nature.
Butterfly – an insect that has a slender body and large colored wings covered with tiny overlapping scales and that flies mostly in the daytime
Chrysalis– the hardened protective case made by and enclosing a butterfly pupa
Cocoon – the silky covering which moth caterpillars make around themselves and in which they are protected while changing into a moth
Different – not the same
Imitate – to copy, to follow
Larvae – a young, wingless form of many insects that hatches from an egg. Very different from its parents
Metamorphosis - a great change in the form of some animals during their transformation from an immature stage (caterpillar) to an adult stage (butterfly.)
Moth – an insect that usually flies at night and has mostly feathery antennae and stouter body, duller coloring and smaller wings than butterflies
Similar – having something in common

MATERIALS NEEDED: Pictures of bugs (optional)

ACTIVITY:

- Talk about the various bugs that they have seen, discussing their similarities and differences.
- After watching some bugs, try to imitate their movements
- Fly like a mosquito. A bumblebee. A butterfly. A fly. A firefly.
- Crawl like an ant. A caterpillar. A beetle. An inchworm. A spider.
- Jump like a cricket. A grasshopper. A flea.
- Move like an inchworm. A roly-poly pill bug.
- Act out the four stages in the butterfly/moth metamorphosis process: egg on a leaf, caterpillar crawling, spinning and becoming a chrysalis/cocoon, then emerging as a butterfly or moth.

OBSERVATION:

- How did your flying change for each insect? Your crawling? Your jumping?
- Did you have to change your speed for different insects or bugs?
- What important work are your bugs doing as they move?
- Do you need to hide or camouflage yourself from predators?

DID YOU KNOW?

- Spiders are not insects because they have eight legs
- Dragonflies have four wings which do not fold.
- Flies only have two wings
- Flies are found all over the world
- Antennae can sense whether the air is warm or cold
- Dragonflies can stop in midair and can even fly backwards.
- When grasshoppers hatch from their eggs, they are tiny grasshoppers.

SUGGESTED READING:

E Struges	I Love Bugs
J 595.7 Feldman	Insects in Action
J 595.7 Rockwell	Bugs are Insects
J 595.7 Ziefert	Bugs, Beetles, and Butterflies (ICR)

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#3: Insect House Guest

SUMMARY: Insects are all around us, so you shouldn't have to go far to find one. Catch one and put it into a jar and observe it for a day or two at home. Be sure it is a safe bug that will not sting or bite you.

WORDS TO USE:

Habitat – the place where an animal or plant grows or lives in nature
Nectar – a sweet liquid produced by plants
Predator – an animal that lives mostly by killing and eating other animals
Proboscis – a long hollow body part (can be used to suck up the nectar)

MATERIALS NEEDED:

Jar with lid with tiny air holes
A live bug
Materials needed to keep the bug alive (ex. Grass, Leaves.)
Book about bugs
Net
Creature Peeper

ACTIVITY:

- Check first in a book or a website about insects to determine what that particular bug needs to stay alive. What does it eat? Where does it sleep?
- Take a trip outside to find a safe bug that can be captured and temporarily placed in a jar. (Avoid wasps and bees)
- Place some of the things that the insect will need to survive in the jar.
- You may have to use a butterfly net to capture the insect, but be careful so you don't damage the insect.
- Observe how the insect moves.
- Look carefully at its body parts and how it uses them.
- Don't forget to let the bug loose outside near where you found it so it can enjoy the outside world again.

OBSERVATIONS:

- Describe where you looked for bugs?
- Where did you find the one for the jar?
- Was it alone or with other bugs?
- What materials did you have to use in the jar to create a place for the bug to live?
- How did the bug move inside the jar?
- Describe the bug to another person explaining its color, size, shape.

DID YOU KNOW?

- Adult butterflies and moths feed on liquids, which they suck up with their proboscis.
- Ants and bees are social animals and live together in a community of like insects.
- Some insects protect against predators by looking like leaves, thorns, sticks, or bark.
- Gardeners like ladybugs because they will eat aphids, small bugs that are attacking the plants.
- Different insects have different types of mouths.
- Most insects only live for a few days, weeks, or months.
- Insects have no backbones.

SUGGESTED READING:

J 595.7 Dussling	Bugs! Bugs! Bugs!
J 595.7 Mound	Eyewitness Insect

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4: Building an Insect

SUMMARY: Use modeling clay and/or recycled materials from around the house to build an insect.

WORDS TO USE:

Abdomen - the hind part of the body of an insect
Antenna – a movable feeler on the head of an insect
Proportion – comparing one thing to another thing using size
Thorax – the middle of the three main divisions of the body of an insect

MATERIALS NEEDED:

Clay or a molding product
Pipe cleaners or sticks
Paper towels
Materials around the house (paper tubes, egg cartons, etc.)
Pictures of bugs

ACTIVITY:

- Look carefully at a bug or a picture of a bug.
- Talk about its size and shape.
- What can be used to create the head, abdomen, and thorax? (ex. Clay)
- What can be used to create the details on the bug? (ex. Pipecleaners)
  Head: 2 eyes, 1 mouth, 2 antennas
  Thorax: 2 wings, 6 legs
  Abdomen: no extra parts
- Can you create a habitat for the bug?
- Talk about each part as you build it.

OBSERVATIONS:

- Did you have to create a bug that is bigger than the real bug?
- What is the proportion of the head to the thorax? To the abdomen?

DID YOU KNOW?

- Each insect has 3 body parts (head, thorax, and abdomen).
- Beetles have the hardest armor of all insects.

SUGGESTED READING:

J 595.7 Guillain Bug Parts (ICR)