Insects

Magic Forest Academy
Nature Based Education
Stage 2 Guidebook

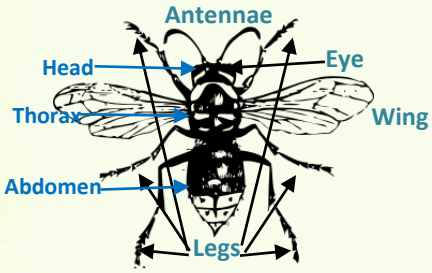
"Insects are born from the sun…they are the sun's kisses"
~Alexander Scriabin~

INTRODUCTION

We feature several individual insects throughout the Magic Forest books; such as, Ants, Butterflies, Dragonflies, and Bees. We would love to feature all insects; however, since there are over a million named and catalogued species with an estimate of many millions more yet to discover, we decided to dedicate this book to insects overall.

Biologically, Insects are known as *Insecta,* categorized as *Hexapoda* under the category of *Arthropoda*. Arthropods include *Arachnids, Myriapods*, and *Crustaceans* which are often confused as insects. Examples in each of these are Spiders and Scorpions (Arachnids), Centipedes and Millipedes (Myriapods), and Woodlice (Crustaceans). Arthropods are *invertebrates* distinguished as having an *exoskeleton (*hard outer shell*)* around its lightweight body that has three primary segments which are the head, thorax and abdomen. Insects have compound eyes, mouth, antennae, three pairs (6) of jointed legs and typically two-pair of wings attached to its thorax (there are exceptions; such as, the wingless ants and silverfish).

Scientific Classification
Kingdom: Animalia **Phylum:** Arthropoda **Subphylum:** Hexopoda **Class:** Insecta



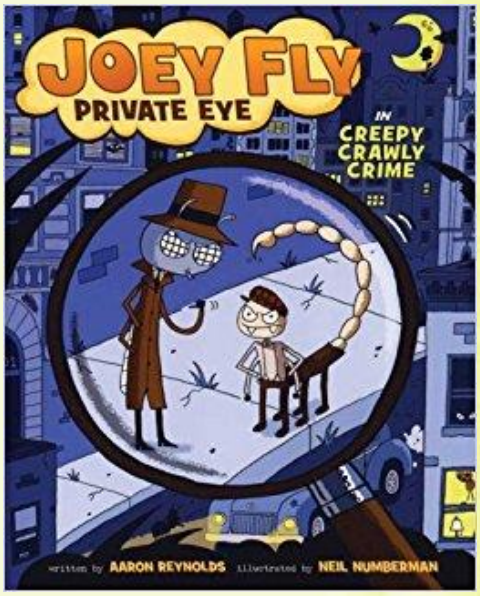
Insects not only live in every type of habitat, they outnumber all other life-forms on Earth, including humans. While we enjoy swarms of beautiful butterflies, darting dragonflies, and appreciate the honey and wax bees provide us, there are numerous other insects considered as pests. Instead of eradicating insects we do not like, we need to realize they are still critical to our ecosystems because they break down plant and animal waste, pollinate crops, aerate soil and serve as a major food source for many other animals. This makes learning about insects important, so let's get started!

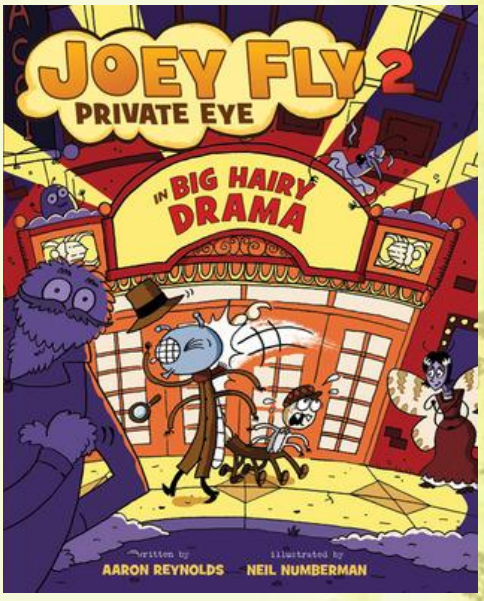
READING

Joey Fly Private Eye

by Aaron Reynolds

If you like learning about creepy-crawly insects and other arthropods, you will appreciate these Joey Fly, Private Eye books. Each book is graphically illustrated as a unique and witty detective mystery that Joey Fly and his assistant, a young scorpion named Sammy Stingtail, try to solve. There is adventure and intrigue, as well as some slapstick and buggy wisecracks. In the case of the Creepy Crawly Crime, a swallowtail butterfly, named Delilah, hires Joey to find her missing diamond pencil box. There are numerous suspects throughout the story, starting with Gloria, the ladybug friend of Delilah, but as ‘’*the facts start to line up like centipedes at a shoe sale*”, the real culprit is revealed to the shock of all.





There are several classic stories that introduce fun and fantastical fictional insects; for example, we meet Jiminy Cricket in Pinocchio, and the Humbug and Spelling-Bee in The Phantom Tollbooth, as well as numerous quirky insects in Alice in Wonderland; such as, the Gnat, Rocking Horse-Fly, Snap-Dragonfly and the Bread and Butter-fly!

MATH

Cricket Thermometer

With math and the help of a male cricket, you can determine the approximate outdoor temperature. The best time to try this is in the evening of spring or summer, as this method works as long as weather is above 55 degrees Fahrenheit when male crickets are more likely to chirp.

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You can estimate the temperature in Celsius using a different calculation; which is, count the average number of cricket chirps in 25 seconds, divide that number by 3, then add 4 for the result. For example, if you counted an average of 54 chirps over a 25 second interval, you divide 54 by 3, equaling 18 then add 4, thus the temperature is 22° C.

If you cannot find a chirping cricket, you can still practice converting temperatures between the Fahrenheit Scale (US) and Celsius Scale (Metric) using these calculations (rounding up or down):

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SCIENCE

Insect Hotel

Insect Hotels are not only fun to build, they also make a great science project, and benefit gardens by attracting pollinators and predatory bugs that help control pests. There are numerous ways to create an Insect Hotel, from simply stacking bricks to building elaborate housing structures. Whichever construction method you choose, make sure you can section off a variety of natural materials inside the hotel to attract different types of insects. Suggested materials are bark, sticks, twigs, cones, rocks, stones, grass, straw, wood chips, leaves and bamboo. Clay bricks with holes are also good for attracting solitary bees that pollinate gardens. Place your Insect Hotel in a sunny location, preferably with a watering station nearby. See our Bee themed book for more information on building solitary bee habitats and watering stations.

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Try an experiment by learning which herbs deter different types of insects. Include clippings of one particular herb in your hotel, then observe if adding the herb made an impact on the types of insects visiting the hotel. Remove that herb and try adding different types of herbs, updating your journal with each result.

This investigative science project will increase your understanding of insects, and the insects will appreciate having a hotel habitat to enjoy!

Entomology is the branch of Zoology that studies Insects

ARTS & CRAFTS

Amber Insects

It takes millions of years for tree resin to fossilize insects, but you can make these fun replicas in minutes! You will need bottle-caps to make this craft, which you can ask friends and neighbors to save for you (thus saving them from landfills!) or you can buy them at craft stores. You also need pictures to fit inside the bottle-caps. You can draw insect pictures as we have done here, or find pictures to cut out of magazines. To make the "amber", mix a tablespoon of clear craft glue with 2 drops of yellow food coloring. Carefully stir the glue and food coloring together (If you mix too quickly you will produce glue bubbles). Glue your picture to the inside of the bottle-cap then pour the tinted glue on top of the picture until you reach the edge of the bottle-cap. Let the glue dry overnight then you can use the bottle-caps to make crafts. To make jewelry or accessories, punch holes in the bottle-cap before gluing pictures inside. To make a corded bracelet, punch two holes oppose each other in each side of the bottle-cap. Braid the first half of the bracelet, thread one string through the holes, then braid the remaining half of the bracelet before gluing a picture to the inside of the cap.

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FUN & GAMES

Caterpillar Race

Caterpillars may appear to have more than 6 legs; however, their true legs equal only 6, thus making them an insect. These 6 legs emerge from their thorax while the other legs, called prolegs, emerge from their abdomen. Now that we cleared that up, let's get on with the race! You will need 8 or more players and an open field to play. Separate into two equal teams, lining up on one side of the field. Two starting players get down on all fours (hands and legs), then their remaining teammates get behind the starting players, also on all fours; however, each player grabs the ankles of the player in front of them to latch on. Have someone announce 'Go!' to start the race. Each team must then "crawl" towards the finish line across the field without letting go of each other's ankles. The first team to cross the finish line wins! If you don't have enough players for the above race, try having players race to the finish line by wiggling across the field on their tummies.

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RECIPE

Ladybug Crackers

These clever crackers are tasty and fun to make.

Prepare the *Hummus Spread* by blending all ingredients together in a food processor or blender. If the hummus is too thick, add a tablespoon or more of water to make the spread a creamy paste.

Slice the tomatoes in half, then slice a notch halfway up the middle of each tomato half to form the ladybug wings. Spread a layer of hummus on each cracker, place a tomato half on top of the hummus, with the flat side facing downwards, spreading the tomato "wings" slightly. Attach an olive slice to the tip of the tomato as the ladybug "head" using a dollop of hummus as the adhesive. Chop an olive slice into small pieces, attaching a few to the top of the tomato "wings" as the ladybug spots, again using hummus as the adhesive. Insert two snips of chives through the olive "head" as the "antennae". Voila! You now have a Ladybug Cracker! Made a tray of these lovely ladybugs, either for yourself, or a festive occasion with friends.

Ingredients

Hummus Spread

- 1 15oz can of garbanzo beans, drained with 2 tablespoons of liquid reserved
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Ladybug Crackers

- Round or square crackers of your choice
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- Two sprigs of chives
- 1 small can of sliced black olives, drained

ADDITIONAL ACTIVITIES

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6. Learn which insects are considered ‘Pollinators’ and update your nature journal with what you learn.
7. Learn which insects are nocturnal and why nocturnal insects are important to our ecosystems. Update your nature journal with what you learn.
8. New insects are discovered every year. Research and learn at least 10 new insects discovered in the past year. Create a map showing geographically where each was discovered.
9. Learn the history of Entomology and create a report of what you learn. Include biographical information on at least 5 famous Entomologists.
10. Research Insect themed mythologies from around the world; for example, the Tlingit tribe’s origin myth of mosquitoes, the insects featured in Navajo and Cochiti creation myths and the scarab beetle found in ancient Egyptian mythology.
11. Research recipes for Natural Insect Repellent and Insect Bite Salves, and create them for your own use.
12. Join an online Entomological group designed for children; such as The USA’s Entomological Foundation (www.entfdn.org) or the UK’s Bug Club (www.amentsoc.org/bug-club)

Visit www.magicforestacademy.com for additional nature themed resources; including reference material, lesson plans, activities and more

NOTES

***As Snug as a Bug in a Rug**, is an idiom that means feeling cozy and comfortable, generally when tucked in and ready for bed.*

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The next pages are designed as
Print-Friendly Summary pages for your convenience

MAGIC FOREST ACADEMY
STAGE 2 NATURE EDUCATION
INSECTS

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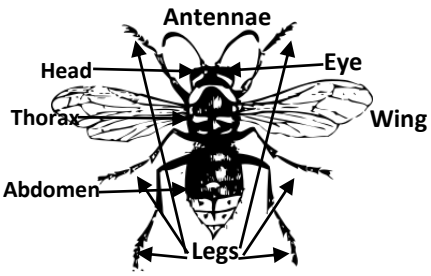

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CLASSIC CHILDHOOD

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RECIPE

Ladybug Crackers

These clever crackers are tasty and fun to make.

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Slice the tomatoes in half, then slice a notch halfway up the middle of each tomato half to form the ladybug wings. Spread a layer of hummus on each cracker, place a tomato half on top of the hummus, with the flat side facing downwards, spreading the tomato "wings" slightly. Attach an olive slice to the tip of the tomato as the ladybug "head" using a dollop of hummus as the adhesive. Chop an olive slice into small pieces, attaching a few to the top of the tomato "wings" as the ladybug spots, again using hummus as the adhesive. Insert two snips of chives through the olive "head" as the "antennae". Voila! You now have a Ladybug Cracker! Made a tray of these lovely ladybugs, either for yourself, or a festive occasion with friends.

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