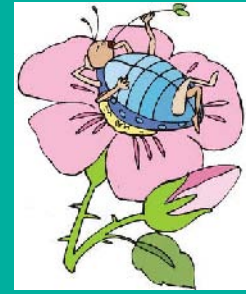




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GREENBURGH NATURE CENTER
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A BUG'S LIFE

GENERAL

Our naturalists gear each program to the grade level of your students and will accommodate any competency level if notified in advance. Our programs stress hands-on and direct involvement learning. *ALL Groups Should Meet Their Naturalist In The Visitors Parking Lot.*

A BUG'S LIFE (Grades Pre-K - 2nd, 1 Hour) (Grades 3rd - 7th, 90 Minutes)

They're everywhere, so let's get to know them! Learn how their life cycles compare to our own. Discover their adaptations for survival. See them eye-to-eye in our indoor honeybee hive. Search for them outdoors in the forest and the field. Learn why we should "thank an insect." Live insects and their relatives are used in this program.

Some activities, discussions or animals which may be part of the program

Inside

1. Parts of an insect

six legs, exoskeleton, wings,
antenna, head, thorax, abdomen

Use of insect mounts/props

2. Animals (when available)

Giant Hissing Cockroach (for info on go to

-><http://www.uky.edu/Ag/Entomology/entfacts/misc/ef014.htm>

African Millipede (for info on go to

-><http://www.sfzoo.org/cgi-bin/animals.py?ID=43>)

crickets, silkworms/cocoons, other

3. Slide show on insects (For grades 3-7 only)

4. Check out our observational bee hive

5. Optional

Bee equipment - hat/veil, smoker, frame with wax comb, honey

Outside

1. Search under logs/rocks in forest for insects

2. Walk around to various habitats in search of insects

3. Visit honeybee hives

(Optional)

4. Use net(s) to catch "safe" insects

(plant hoppers, beetles, butterflies)



Some Ideas for Pre-trip Activities

(NOTE: Teachers should adapt this material to the grade level of their students.)

- **MAKE watercolor butterflies** (or other insects). Use paint, coffee filters, pipe cleaners & clothes pins to construct a butterfly or other creepy crawler
- Discuss **adaptations** - physical characteristics that helps an animal (or plant) to survive
- Discuss what adaptations insects have - exoskeleton, wings, compound eyes, etc. and why they may need them.
- Make up a list of questions about insects to ask the naturalist when you arrive.



- Go over the different characteristics of insects: six legs, three body parts, etc.
- Have children "make" insects to learn about parts.
- Talk about metamorphosis. Insects undergo metamorphosis either complete or incomplete.

Complete Metamorphosis egg --> larva --> pupa --> adult

Incomplete Metamorphosis egg --> nymph stages --> adult

- Discuss predator/prey, camouflage, food webs/chains. See our vocabulary list for more.
- Look around your school for insects and record on a chart.

Some Ideas for Post-trip Activities

- Make a food chain/web poster using photos or drawings of insects and their food or prey.
- Life Cycles - Have students research the life cycles of some of the insects and draw each stage. It might be interesting to do a study in the fall and then again in the spring to note the changes in the population and to see the insects at their different stages.
- Have students do library research about the insects you saw while at the nature center.
- Find an insect that lives around your school and closely study its behavior - record this information on a chart.



Insects are very useful to humans in a variety of ways. Insects...

* are important pollinators of plants, especially fruits and crops. * provide honey, wax and silk.

* help control other pests. * are used to treat diseases in people.

* provide food for many birds, fish, humans and other animals. * are good indicators of water pollution.

* help the quality of the soil by aerating it and recycling organic material back to the soil and the ecosystem.

Some Vocabulary Words:

antennae - a pair of “feelers” used to help insects determine what is going on around them.

camouflage - colors or patterns that conceal an insect by matching its background.

chrysalis - the stage in development between caterpillar and adult butterfly when a protective covering forms around the young insect.

cocoon - composed of silk fibers secreted by a larva; the protective case in which the larva will pupate.

entomologist - a person who studies insects.

exoskeleton - external, waterproof, protective body covering which houses internal organs, muscles & tissues.

habitat - the place where an animal lives.

insectivorous - feeding on insects.

larva - the young form of an insect with complete metamorphosis - “larvae” is plural.

metamorphosis - changes in the shape and habits of an insect as it grows into an adult.

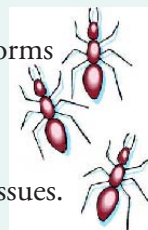
molting - the shedding of an insect’s hard outside skin so that the insect can grow larger.

nymph - the young form of an insect with incomplete metamorphosis; looks like a miniature adult without wings.

pollinate - to fertilize a plant by moving pollen to the stigma of the flower.

pupa - the stage of metamorphosis between the larva and the adult - “pupae” is plural.

niche - the role and animal or plant plays in a habitat.



Bibliography:

The Ladybug and Other Insects, Gallimard Jeunesse and Pascale de Bourgoing, Scholastic Books Inc., New York, 1991, ISBN 0-590-45235-5

Golden Guide to Insects, Zim and Cottam, Golden Press, New York, 1987, ISBN 0-307-24055-X

Insects do the Strangest Things, Leonora and Arthur Hornblow, Random House, Inc., New York, 1968, ISBN 0-394-800072-9 (old but a great mix of insect information)

When The Woods Hum, Ryder, Joanne, Frederick Warne & Co., New York, 1991, ISBN 0-688-07058-2

Nature Club Insects, Althea, Troll Associates, Mahwah, New Jersey, 1990, ISBN 0-8167-1962-4



Some Helpful Web Links: (Remember to type the links exactly as printed).

insects.org - <http://www.insects.org/index.html>
Nice Pictures and information.

The University of Arizona Center for Insect Science Education Outreach
<http://insected.arizona.edu/uli.htm>
Lesson plans & activity sheets for studying insects K-3rd grade.

eNature.com - <http://www.enature.com/fieldguides/intermediate.asp?curGroupID=4>
Great pictures and information on common insects.

EnchantedLearning.com - <http://www.enchantedlearning.com/themes/insects.shtml>
Rhymes, Crafts, Coloring Printouts, and Quizzes.

Department of Entomology at Texas A&M University - <http://insects.tamu.edu/>
Extensive information and pictures of insects.

Sci4Kids - <http://www.ars.usda.gov/is/kids/insects/insectintro.htm>
Insect stories & information.

