

Teacher Guides were made by teachers for teachers as a collaborative project of EVSC, USI, and WNS. Special thanks to the authors of this Guide: EVSC Teachers Susan Keach & Lindsey Rolley and to the authors of the bibliography: USI Dept. of Teacher Education faculty Dr. Joyce Gulley and Dr. Jeff Thomas.

Program: IT'S A BUG'S LIFE

Target Audience: Grade 2

Description: Enter the circle of life as we contemplate the wonder of nature's design. There are organisms among us that undergo cyclic changes in form and function to carry out their lives. Butterflies and other insects will dance before our eyes and demonstrate the magical cycle of life.

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Program Agenda:**Time Needed:** 2.5 hrs.

I. WELCOME & INTRO to insects	15 min.
II. ACTIVITIES (with rotation if necessary)	
A. Insect Observations	20 min.
B. Insect Life Cycles	20 min.
C. Butterfly Magic	20 min.
D. Hike	60 min.
III. CONCLUSION	15 min.

Program Synopsis:

After a brief introduction to vocabulary and concepts, children will be split into smaller groups for the duration of the program. Groups will move among activity stations demonstrating different insect species, characteristics, and life cycles. Activity stations will include a hike in that will allow students to see live insects in their natural habitat, a chance to see live & preserved insects up close in magnifying viewers, identification of real preserved butterfly species with ID field guides, discussion of insect life cycles using replica models for butterfly, ant, bee, praying mantis, and ladybug, and crafting a puppet life cycle stages “magic trick” for a butterfly. Students will utilize their notebooks to record their observations and demonstrate their learning.

Objectives: Students will be able to....

1. Recognize that organisms change forms and behaviors in life cycles.
2. Describe the stages of an insect’s life cycle.
3. Observe insects in their natural habitats, and how needs are met in all stages.
4. Draw and write about observations in a notebook.
5. Gain an appreciation for nature’s design and balance in the circle of life.
6. Have Fun

Indiana Academic Science Standards Summary: Students observe and describe a diversity of insects in their habitats, and use tools to investigate their life cycle stages and habitat needs for all stages. Students make models demonstrating the life cycle stages to revise their understanding of them, and describe their findings in notebooks.

Indiana Academic Science Standards:2010 IASS Grade 2 Nature of Science and Life Science Standards: Life Cycles

- 2.3.1 – Observing closely over a period of time, record in pictures and words the changes in plants and animals throughout their life cycles, including details of their body plan, structure, and timing of growth, reproduction, and death.
- 2.3.2 – Compare and contrast details of body plan and structure within the life cycles of plants and animals.

STEM Correlations:

- **Science:** Life cycles of fly, sheep, frog, butterfly, and human in the Science Companion Life Cycles Kit (Lesson 1: Introduction to Life Cycles and Lesson 2: Exploring Life Cycles and Spans).
- **Technology:** Life cycles flipchart (found on Promethean Planet), tools (magnifying glass, camera)
- **Engineering:** habitat building, notebooking (drawings, sketches, charts, labeling)
- **Mathematics:** measuring (length of a life span, length of insects at each stage, compare/contrast lengths of other insects and life spans)

English/Language Arts Correlations:

- **Writing:**
 - Four Square/Diamond Foldable: Where do ____ live? What does a ____ eat? What does a ____ look like? How does a ____ benefit the environment?
 - *Use any insect
- **Reading:**
 - KWL chart
 - Make connections using both fiction and nonfiction literature examples
 - graphic organizers

Program Preparation:

Students will gain more out of the program if they have been introduced to the following vocabulary and concepts prior to the program visit.

Vocabulary:

Insect, life cycle, metamorphosis, invertebrate, exoskeleton, habitat, pupa, larva, abdomen, antennae, thorax

Concepts:

Insect structure:

- Invertebrate - animals that lack a backbone
- Exoskeleton - a rigid external covering / skeleton for the body
- 3 body segments: head, thorax, and abdomen
- 6 legs
- 2 antennae
- Sometimes wings

Insect life cycles:

- Egg, larva, pupa, adult
- Chrysalis / cocoon - contains the pupa stage (butterfly, moth, etc.), which is where metamorphosis takes place
- Metamorphosis - a process by which an animal physically develops after birth or hatching, involving a relatively abrupt change in the animal's body structure

Pre-Program Lesson: See appendix A

Program Follow Up:

- Review vocabulary & concepts.
- Lead students to discuss / share their field trip experiences
- Review student notebooks as a class and assist students with completion/correction of answers.
- Post-Program Lesson (See Appendix B)
- Rent the WNS Traveling Nature Trunks for your classroom, if available for your program topic.
- Utilize one of the many supplemental lesson plans available on our website: www.wesselmannaaturesociety.org > Educators (top tab). Most programs have completed supplements but some are still in development.

Activity suggestions:

- Take students outside to collect insects in the garden or schoolyard. Use tools to observe, measure, compare. Sketch and write about them.
- Have a class ant farm to observe how ants work in a colony
- Give each student a mealworm to care for in class to feed and care for until it becomes metamorphoses into a beetle (not all the students mealworms will survive to beetle life stage)
<http://teacher.scholastic.com/lessonrepro/lessonplans/mealworms.htm>
- Raise live butterflies
http://www.thebutterflysite.com/rearing_shtml

Arts/ Crafts:

- Butterfly mobile
<http://www.enchantedlearning.com/crafts/butterfly/lifecyclemobile/>
- Color a life cycle chart
<http://www.thebutterflysite.com/images/butterfly-life-cycle-1.gif>

Games:

- Insect scavenger hunt (look for insects in various life stages, signs of insect activity, etc.)
- Simon says move-like-this-insect game
- Fly/jump/inch in an “Insect Olympics”

Snacks:

- “Ants on a Log:” Spread peanut butter (check for peanut allergies) on half of a celery stick. Add raisins along the top for ants. Enjoy!
- “Ladybug Apples:”
http://www.ehow.com/info_8276980_fun-snacks-kids-animals.html

Music:

- Butterfly life stages
<http://www.youtube.com/watch?v=1YVqHnw0W-Q>

Bibliography:

ABOUT INSECTS: A GUIDE FOR CHILDREN. Cathryn Sills. Peachtree, 2000. ISBN 1561452076. EVPL Call Number 595.7 SILL. Describes the anatomy, behavior, and habitat of various insects, including the beetle, moth, and cockroach.

AMAZING INSECTS. Lynn Stone. Rourke Books, 2001. ISBN 1559163097. EVPL Call Number 595.7 STONE. Insect life cycle and habitats are shown through text and photographs.

BUG SHOTS: THE GOOD, THE BAD, THE BUGLY. Alexandra Siy. Holiday House, 2011. ISBN 9780823422869. EVPL Call Number 595.7 SIY. Photographs of highly magnified insect parts.

BUSY BUILDERS. Roxie Munro. Marshall Cavendish Children's Books, 2012. ISBN 9780761461050. EVPL Call Number 595.7156 MUNRO. Simple text and detailed illustrations show readers how insects build homes for themselves.

A BUTTERFLY IS PATIENT. Dianna Hutts Aston. Illus. Sylvia Long. Chronicle Books, 2011. ISBN 9780811864794. 595.789 ASTON. Intricate illustrations portray the butterfly's life cycle and its habitat.

CREEP AND FLUTTER: THE SECRET WORLD OF INSECTS AND SPIDERS. Jim Arnosky. Sterling Children's Books, 2012. ISBN 9781402777660. EVPL Call Number 595.7 ARNOS. The diversity of insects and spiders is showcased through detailed illustrations and foldout pages.

LADYBUGS. Gail Gibbons. Holiday House, 2012. ISBN 9780823423682. EVPL Call Number 595.769 GIBBO. Physical attributes, habits, and life cycle of the ladybug are described through simple text and colorful illustrations.

STEP GENTLY OUT. Helen Frost. Photographs by Rick Lieder. Candlewick, 2011. ISBN 0763656011. EVPL Call Number 811.54 FROST. Poetic language and close-up photographs capture a bug's eye view of the world.

UNBEELEAVABLES. Douglas Florian. Beach Lane Books, 2012. ISBN 1442426527. EVPL Call Number 811.54 FLORI. Poems reveal the life cycle of bees. Factual textboxes extend the content.

ELECTRONIC BOOKS: *This book is available as a free download at the Evansville Vanderburgh Public Library. Teachers can download electronic books display them on iPads or on computers connected to Promethean boards. Many of the library's electronic books can be displayed through a Kindle App on a computer.*

BUGS! BUGS! BUGS! Bob Barner. ISBN 9781452110042. Children are introduced to a variety of insects through rhyme. Factual information about insects extends the learning.

Other Book Resources:

- Carle, Eric. *Butterfly*
- Carle, Eric. *The Very Hungry Caterpillar*
- Himmelman, John. *A Monarch Butterfly's Life*
- Aston, Dianna Hutts. *A Butterfly Is Patient.*

- Rabe, Tish. *On Beyond Bugs: All About Insects (Cat in the Hat's Learning Library)*.
- Heller, Ruth. *The Reason for a Flower* (Extension activity)
- Arlon, Penelope. *Insects*. DK Publishing, 2006.
- Capeci, Anne. *Insect Invaders*. Scholastic, Inc., 2001
- Council for Environmental Education. *Project Wild: K - 12 Curriculum & Activity Guide*. 2005.
- Foley, Cate. *Find the Insect*. Children's Press, 2000.
- Goor, Ron and Nancy. *Insect Metamorphosis: From Egg to Adult*. Atheneum, 1990.
- Kite, L. Patricia. *Insect Facts and Folklore*. Millbrook Press, 2001.
- Milord, Susan. *The Kids Nature Book: 365 indoor/outdoor activities and experiences*. Williamson Publishing, 1989.

Website Resources:

- Pre and Post visit lesson plans on our website: www.wesselmannaturesociety.org
- Indiana DNR Educator Resources: <http://www.in.gov/dnr/fishwild/2340.htm>
- Project Wild: <http://www.projectwild.org/> Facts and crafts:
<http://www.kidsbutterfly.org/education>
- Insect life cycle:
http://www.learningpage.com/member/pdfs/monthly_sets/spring_fun/creepyapril/lpsf7cc_07.pdf
- Insects Video and Information: <http://www.bbc.co.uk/nature/life/Insect/by/rank/all>
- Let's Talk About Insects: <http://urbanext.illinois.edu/insects/11.html>
- Insects: <http://www.mcwdn.org/Animals/Insect.html>

Program Assessment:

Be sure to ask a pre- and post- program survey question to assess student learning.
(A ready-to-use form was provided with your confirmation and is also available on our website.)
Please report the results on your program evaluation form and return to us.

Assessment Option (1) *Standards based assessment provided

by "It's A Bug's Life program (This is the **ONLY** assessment returned to the program director).

Q: What are the four stages of an insect's life cycle?

A: egg, larvae, pupae, adult

Assessment Rubric (1):

Assessment Rubric: "It's A Bug's Life"					
Name _____					
	0	1	2	3	4
Q: What are the four stages of an insect's life cycle?	Unable to name any of the stages of an insect's life cycle correctly.	Names ONE of the four stages of an insect's life cycle correctly.	Names at least TWO of the four stages of an insect's life cycle correctly.	Names at least THREE of the four stages of an insect's life cycle correctly.	Correctly identifies all FOUR stages of an insect's life cycle.

IT'S A BUGS LIFE: Assessment Option (2) *This is a more extensive assessment for teachers to evaluate students' learning upon completion of the Bug's Life program. This assessment **DOES NOT** have to be returned to the program director.

Q: What are the four stages of an insect's life cycle?

A: egg, larvae, pupae, adult

Q: How many legs does an insect have?

A: 6

Q: Name the 3 body parts of an insect.

A: head, thorax, abdomen

Assessment Rubric (2):

Assessment Rubric: It's A Bug's Life				
Name _____				
	0	1	2	3
Q: What are the four stages of an insect's life cycle?	Student was unable to answer any of the questions correctly.	Student was able to answer ONE of the questions correctly.	Student was able to answer TWO of the questions correctly.	Student was able to answer all THREE of the questions correctly.
Q: How many legs does an insect have?				
Q: Name the 3 body parts of an insect.				

Appendix A

Pre-Program Lesson: What is an Insect?

Objective: Students become familiar with vocabulary and insect knowledge.

Activity:

- *Start with a K-W-L for insects
- *Take Pre-Test for “It’s A Bug’s Life” Program
- *Introduce new vocabulary words (see program guide) by making a foldable and drawing pictures to make meaning
- *Read Ladybugs by Gail Gibbons

Appendix B

Post-Program Lesson: Un”bee”lievable Insects

Objective: Students review what they learned from the “It’s A Bug’s Life” program to compare and contrast other animals, plants, insects, and human life cycles found in the Science Companion Life Cycles Kit.

Activity:

- *Take Post-Test for “It’s A Bug’s Life” program
- *Complete the K-W-L (What I learned)
- *Introduce the life cycle of a bee (YouTube has several videos)
- *Discuss how the “bee” and “butterfly” life cycles are similar. How are they different?
- *Read Unbeelievable by Douglas Florian
- *Students write their own poem about an insect