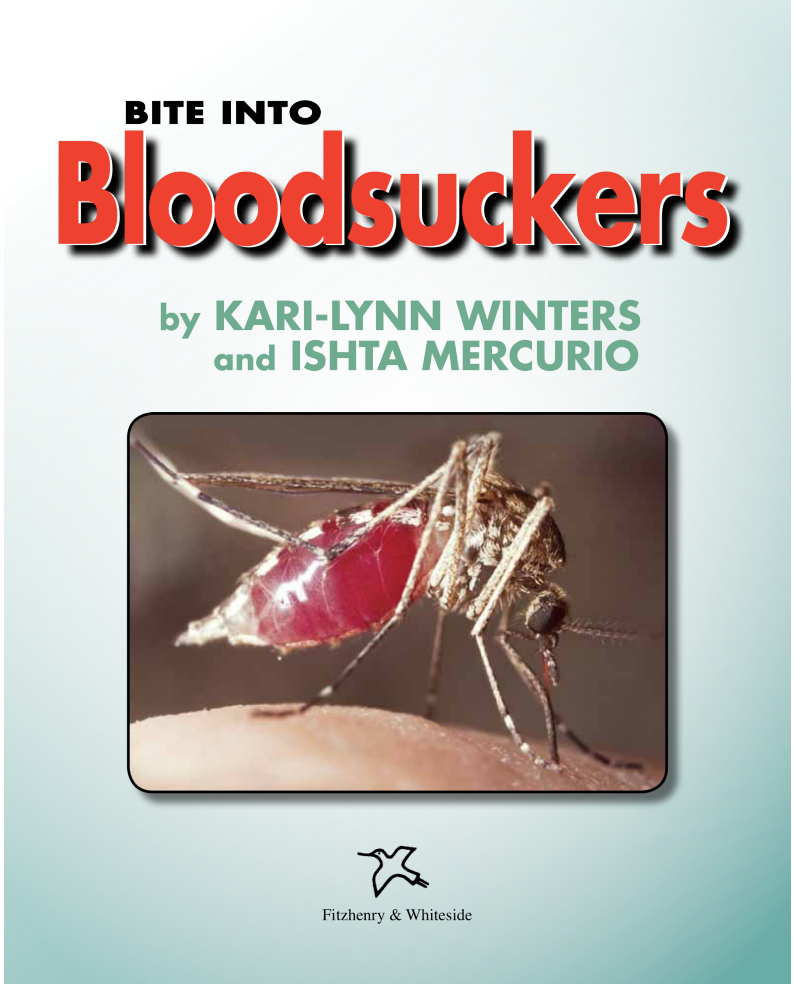

Bite Into Bloodsuckers: Teacher's Guide

Bite Into Bloodsuckers written by Kari-Lynn Winters and Ishta Mercurio
(Fitzhenry and Whiteside, 2015)
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How to Use this Guide

This companion guide to *Bite Into Bloodsuckers* is meant to assist teachers, librarians, and parents in extending children's learning beyond the pages of the book to engage them in critical thinking and creative problem-solving. *Bite Into Bloodsuckers* is an informational book written for Grade 6-8 students. As such, it can specifically aid in teaching the "Understanding Life Systems" strand of the Science curriculum. A book such as this helps students to see the profound impact that several species can have on the world.

If you wish to design a thematic unit on blood sucking parasites, *Bite Into Bloodsuckers* provides all of the scientific knowledge that you need as a teacher. This includes their habitats, anatomy, products, importance to human society, and much more! This Teacher's Guide supports learning in Science, but also provides teachers with many lessons and activities to extend learning and create cross-curricular connections.

All of the follow-up lessons and activities are independent of each other and do not need to be taught in sequence. In this way, teachers can choose the lessons that best fit the strengths, interests, and curriculum needs within their classroom. The "Overview" provides an outline of the lessons in the Guide, including the curriculum areas covered in each lesson.

Lastly, the "Additional Resources" section includes recommended websites and videos to further students' understanding of bloodsucking creatures.

Overview of Lessons & Activities

Lesson/Activity	Page	Curriculum Areas
A DANGER Debate	5	✓ Language (Oral Communication) ✓ Science (Interactions in the Environment)
"BEE" a Salesperson	6	✓ Language (Media Literacy, Oral Communication) ✓ Research Skills
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A DANGER Debate

- ✓ Language (Oral Communication)
- ✓ Science (Interactions in the Environment)

- Are bloodsuckers bad news?
- Which bloodsuckers spread disease?
- How does the spread of disease affect other species?

1. Review with students the ways that bloodsuckers feed on their hosts and sometimes transmit diseases.
2. Divide the class in half.
3. In two groups ask the students to choose a bloodsucker that they feel is the most dangerous. Give them opportunities to read through *Bite Into Bloodsuckers* and on the internet.
4. Ask students to discuss: Why is this bloodsucker dangerous? What disease/s can it carry? What are the symptoms and effects of the disease it carries?
5. Fill in the chart below.

Name of Bloodsucker	**Bloodsucker Dangers (e.g., physical characteristics, diseases contracted)**	**Additional notes and Arguments**

6. Place two chairs in the centre of the room. Behind each chair, place the other chairs in a line (as shown in the illustration below).

X X X X X X X X X X

X
X

X X X X X X X X X X

7. Encourage students to take on the roles of expert researchers and to (tag team) debate this important issue. Once a lead debater is finished making his/her point and has responded to the opposite side, he/she may step down by tagging someone else.
8. Once tagged, the new debater sits in the hotseat and continues the conversation where the first person left off.

Be a Salesperson!

- ✓ Language (Media Literacy, Oral Communication)
- ✓ Research Skills

1. View TV commercials or magazine advertisements.
2. Brainstorm strategies used (e.g., lower price, create a need, try to find a niche).
3. Explain to students that bloodsuckers are important and needed in our ecosystem.
4. In groups of three, have students choose one bloodsucker. Students will research and develop a short script for a TV commercial advertising why people should donate money to support that bloodsucker (e.g., Donate to the "Needo a Mosquito" Campain. Ensure that students include:
    a. The bloodsucker they are supporting.
    b. The name of the campaign
    c. Three reasons to persuade viewers support the bloodsucker they choose.
5. Allow students to present their scripts creatively, with the use of props and costumes.

Make Fake Blood

- ✓ Math
- ✓ Science
- ✓ Arts

MATERIALS:

- Golden Honey OR Corn Syrup OR Golden Syrup
- Water
- Red Food Coloring
- Chocolate Syrup
- Measuring Spoons
- Bowls

PROCEDURE:

Split the class into small groups. Pass out supplies to each group, so that each group may follow these instructions:

1. Measure out three tablespoons of corn syrup and one tablespoon of water, and mix to combine.
2. Mix in 20 drops of red food coloring one drop at a time.
3. Mix in one teaspoon of chocolate syrup to deepen the red of the mixture, until it looks like arterial blood.
4. Mix in another 2 teaspoons of chocolate syrup to thicken the mixture and deepen the brownish tone to mimic venous blood.
5. To make more or less fake blood, simply increase or decrease the proportions, maintaining a 3:1:1 ratio of Corn Syrup : Water : Chocolate Syrup, and using 5 drops of red food coloring per tablespoon of liquid (before ading the chocolate syrup).

TALKING POINTS:

- Why does arterial blood look bright red, while venous blood looks more brown?
- What is oxygenation? What is deoxygenation? How do these things happen within the circulatory system?

To Spray, or Not To Spray? That is the Question

- ✓ Language
- ✓ Science
- ✓ Research Skills
- ✓ Critical Thinking

BACKGROUND:

Mosquitoes are one of the most common vectors for diseases that affect humans. With the recent spread of the Zika virus throughout the lower half of North America, concern about mosquitoes' role in the spread of the virus led to broad spraying of pesticides in South Carolina. This killed not only the mosquitoes, but also the honeybees and other pollinators in the area. Students will debate whether this was a good idea, or a bad idea.

IMPLEMENTATION:

Split the class into two groups. Assign one group the "Pro Spraying" stance, and the other group the "Anti Spraying" stance. Ask the students to research their position. Students in the "Anti Spraying" group should be encouraged to research alternatives to spraying. Students in the "Pro Spraying" group should be encouraged to research reasons that spraying is a better option than any alternative. Encourage them to read the articles linked to on page 10 of this guide.

After an appropriate period of time, arrange the chairs in the room so that the two groups are sitting on opposite sides of the room.

Ask each group to nominate one spokesperson to open the debate with a prepared one-minute speech arguing their position. After each spokesperson has had their turn, other members of the group should take turns arguing and rebutting the other group in a tag-team style.

At the end of the exercise, ask each student to prepare a brief essay on which side won the debate, and why they think that side had the best position. They should cite examples from the debate.

Stuck in a Web:
Food Webs in Practice

- ✓ Arts
- ✓ Science
- ✓ Critical Thinking

OVERVIEW:

All species are either predators/parasites, or prey/hosts. Most species, like mosquitoes, are both - they feed on the blood of humans, birds, and other animals, but they are eaten by bats and other creatures. Through this exercise, students will each assume the role of one living creature, and learn how the food web in one ecosystem changes if that creature becomes extinct or its population increases.

IMPLEMENTATION:

Make a list of different creatures within one ecosystem. (Example: Lake Ontario would include invasive sea lampreys as well as trout, bass, whitefish, phytolankton, mussels, etc.) Assign one creature to each student, and have each student research that creature's eating habits and make a representation of that creature to bring to class. (It can be a drawing, painting, plasticine model, papier mache model, etc.) Some creatures that are plentiful can be assigned to more than one student. So in this example, two or three students can represent sea lampreys.

Have the students mill about the classroom, "eating" the other animals. Then remove one species - what happens to the creatures that this species used to feed on? Answer: they multiply. Assign the student(s) who represented that species new roles as the former prey of that species. How does the food web change?

Repeat the exercise, removing different species each time. What happens each time? What happens if the population of a predatory or invasive species increases? What happens when the invasive species is removed?

Have the students each write a brief essay explaining their assigned species' role in the food web, what happens if their species' population increases or decreases, and how the presence of invasive species affects the population of their assigned species.

Additional Resources

ARTICLES:

Death of Honeybees in South Carolina:

- http://www.nytimes.com/2016/09/02/us/south-carolina-pesticide-kills-bees.html?_r=0
- http://globalnews.ca/news/2915839/millions-of-bees-die-in-south-carolina-zika-spraying/
- http://www.cnn.com/2016/09/01/health/zika-spraying-honeybees/
- https://www.newscientist.com/article/2104477-bees-die-needlessly-as-zika-prompts-us-state-to-spray-pesticide/
- http://www.usatoday.com/story/news/nation-now/2016/09/02/millions-honeybees-killed-sc-following-aerial-zika-spray/89766710/

The Half-Life of DNA Makes Real-Life Jurassic Park Impossible:

- https://www.theguardian.com/world/australia-news-blog/2013/sep/12/moa-bird-bones-reveal-dna-half-life-but-jurassic-park-remains-fiction
- https://www.newscientist.com/article/dn22359-dnas-half-life-identified-using-fossil-bones/

VIDEOS:

National Geographic on Vampire Finches and Red-Footed Boobies:

- https://www.youtube.com/watch?v=zWNaQpISXkw

National Geographic on Vampire Bats:

- Vampire Bat vs Wrinkle Bat: https://www.youtube.com/watch?v=RBtmcsJ0XUI&feature=em-share_video_user
- Assassin Bug vs Vampire Bat: https://www.youtube.com/watch?v=F1or77Rf5VQ&feature=em-share_video_user

National Grographic on Bed Bugs:

- https://www.youtube.com/watch?v=WfKCcSPCOQo&feature=em-share_video_user

RELATED CHARITIES:

Mosquito Net Distribution:

- Nothing But Nets: http://nothingbutnets.net/
- World Vision: http://donate.worldvision.org/bed-nets-for-a-family
- Against Malaria Foundation: https://www.againstmalaria.com/