

ELA: Grade 8, Lesson 12, Parasites

**Lesson Focus:** The focus of today's lesson will be on the informational text, "Top 10 Real-Life Body Snatchers."

**Practice Focus:** Students will analyze an informational text to determine the main ideas and study author's craft.

**Objective:** Students will use "Top 10 Real-Life Body Snatchers" to determine the main ideas with a focus on author's craft.

**Academic Vocabulary:** parasitizes, hijack, ingests, expose, subsides

**TN Standards:** 8.RI.KID.1, 8.RI.KID.3, 8.RI.CS.4, 8.W.TP.2

**Teacher Materials:**

- The Teacher Packet for ELA, Grade 8, Lesson 12

**Student Materials:**

- Paper and a pencil, and a surface to write on
- The Student Packet for ELA, Grade 8, Lesson 12 which can be found on [www.tn.gov/education](http://www.tn.gov/education)

**Teacher Note 1:** small portions of the source text have been omitted from this lesson in preparing it to air on public television.

**Teacher Note 2:** teachers delivering this lesson will want to make sure they are comfortable saying the scientific terms: *Toxoplasma gondii*, *Paragordius tricuspidatus*, and *Nemobius sylvestris* beforehand!

Teacher Do	Students Do
<p><b>Opening</b> (1 min)</p> <p><b>Hello! Welcome to Tennessee's At Home Learning Series for literacy! Today's lesson is for all our 8th graders out there, though everyone is welcome to tune in. This lesson is the second in this week's series.</b></p> <p><b>My name is ____ and I'm a ____ grade teacher in Tennessee schools. I'm so excited to be your teacher for this lesson! Welcome to my virtual classroom!</b></p> <p><b>If you didn't see our previous lesson, you can find it on <a href="http://www.tn.gov/education">www.tn.gov/education</a>. You can still tune in to today's lesson if you haven't seen any of our others. But it might be more fun if you first go back and watch our other lessons, since today we'll be talking about things we learned previously.</b></p> <p><b>[Show Slide 1] Today we will continue learning about real-life body snatchers! Before we get started, to participate fully in our lesson today, you will need:</b></p> <ul style="list-style-type: none"><li>• Paper and a pencil, and a surface to write on</li><li>• The Student Packet for ELA, Grade 8, Lesson 12 which can be found on <a href="http://www.tn.gov/education">www.tn.gov/education</a></li></ul> <p><b>Ok, let's begin!</b></p>	<p>Students gather materials for the lesson and prepare to engage with the lesson's content.</p>

<p><b>Intro</b> (1 min)</p> <p>Today our goal is to read the informational text called “Top 10 Real-Life Body Snatchers” so that we can analyze the information in the text to determine its meaning. We will begin with me reading a portion of the text and then we will reread it and pause along the way for deeper understanding. At the end of the lesson, I will assign you independent work that you can complete after the video ends.</p>	<p>Students listen to the teacher and learn an overview of the lesson.</p>
<p><b>Teacher Model/Read-Aloud</b> (20 min)</p> <p>Now, let’s dig in to the informational text we will be studying, which is an article about real-life “body snatchers.” [Show Slide 2.] If you tuned in to the previous lesson, you’ll remember that historically, people who were called “body-snatchers” were people who stole dead bodies from graves in order to study or sell them. But these aren’t the type of body-snatchers we’ll be reading about. [Show Slide 3.] We’re going to read about certain types of parasites, or living things that survive by using or hurting other living things, which we call their hosts.</p> <p>At the end of the previous lesson we asked you to write in response to the prompt: Why did the author title a text about parasites “Top 10 Real-Life Body Snatchers”? What did you write? What I think is that although parasites may not physically steal their hosts’ bodies, they take control of their hosts’ bodies and use them for their own benefit. So they steal them in a way, just not in the same way body-snatchers usually steal bodies. Today we’re going to find out more about how parasites take advantage of their hosts.</p> <p>As a reminder, we will be hearing a lot of scientific names in this text, like <i>Toxoplasma gondii</i>, from the previous lesson. Don’t worry about understanding or remembering them; just know they’re names scientists use to refer to different species. I’ll be clear about what we are referring to.</p> <p>Yesterday, we looked at the introduction and certain words and phrases that will help us understand the text. This text has several sections in it - one section on each real-life body-snatcher, or parasite. Today, we will study in-depth the first of those sections and then we will learn about more as we go through the week. [Show Slide 4.] As a reminder from yesterday, we will use the information we learn today to complete the Venn Diagram on the article. Here is what the diagram looks like [Point to slide.]:</p> <p>This Venn diagram shows some of the things parasites do when they infect their hosts. Some change body features,</p>	<p>Students understand the meanings of body-snatcher, parasite, and host, activating prior knowledge of parasites and hosts in preparation for learning more about those topics.</p> <p>Students recall the structure of a Venn diagram, review how to use one, and understand how the week’s lessons will help them complete one about parasites and their similarities and differences.</p>

some use chemicals and venoms, some lay eggs in their hosts, and many do a combination of two or even all three of these things.

As we read about ten different parasites this week, we're going to be sorting them into the various sections of this Venn diagram. For example, if we read about a parasite that uses venom and changes body features but does not lay eggs, we'll put it in this upper left section where the circles overlap [Point.] to show that it is in the "chemicals and venoms" and "changing body features" circles but not in the "laying eggs" circle. If we read about a parasite that changes body features, uses chemicals or venoms, *and* lays eggs, we'd write its name in the very center. Don't worry about this just yet, though, as we will complete this exercise at the appropriate time in the lesson.

So let's begin the text! I will begin by reading a section of the text about parasites and their hosts. We will then reread the section and analyze it on a deeper level. As I read the text, please take notes on your paper. Try to focus on the relationship between each parasite and its host and write down key details about them. [Show Slide 5.]

Let's begin:

**"Top 10 Real-Life Body Snatchers"**

1. *Paragordius tricuspidatus*. So exactly how a hairworm parasitizes a cricket is unknown. Scientists suspect that the insect ingests either an infected mosquito or water containing hairworm larvae." [Show Slide 6.]

Notice how the author says "exactly how a hairworm parasitizes a cricket is unknown." The word "parasitizes" is an unusual word and not used very often. Based on what we have discussed about the word "parasite," take a moment and write on your paper what you think the word "parasitizes" means in the context of the text. [Pause.]

Great! The word "parasitizes" is of course very similar to the word "parasite." [Show Slide 7] In this case, the author is taking the noun "parasite" and using its verb form, "parasitize" to indicate that the hairworm is acting upon the cricket in a way that a parasite does - to take advantage of it.

[Show Slide 8.] Let's look at the second sentence - "Scientists suspect that the insect ingests either an infected mosquito or water containing hairworm larvae." "Larvae" are just young

versions of the hairworm—you may have learned about larvae in science classes. But notice the word “ingests” here. You are probably familiar with the term “digests” as in when you “digest” your food after a meal. What do you think the term “ingests” means in this context? Take a moment and write your answer on your paper. [Pause.]

Good. [Show Slide 9.] To “ingest” is to take something into the body by swallowing or absorbing it. So before you can digest your dinner, you have to ingest it. In this case, the cricket might ingest either the parasite itself or a mosquito infected with the parasite—scientists aren’t sure which way the hairworm gets inside it. Ok, great. [Show Slide 10.] Now, let’s read some more of the passage:

“But once inside, the hairworm grows three to four times as long as the cricket, filling all parts of its body except the head and legs.” [Show Slide 11.]

Hold on, what? Can you imagine having a worm inside of you that’s four times as long as you are tall? And having it fill up your entire body, except for your head and legs? I mean, if you’re five feet tall, that’s like having a 20-foot-long worm in you! GROSS. But let’s get back to the text and find out more about this poor cricket who’s gotten a worm parasite inside of it. [Show Slide 12.]

“What happens next is even more bizarre. The parasite, *Paragordius tricuspidatus*, produces proteins that hijack the cricket’s central nervous system, making it attracted to areas brighter than its shaded forest home.”

Ok, reading on in this section, we notice that the author says that the parasite produces proteins that “hijack” the cricket’s central nervous system. What does the term “hijack” mean? [Pause.] That’s right. [Show Slide 13.] It means to “take control of something by force.”

Now, take a moment to write on your paper what you think the author means by using the word “hijack” in the context of the article. Be specific in using details from the article. [Pause.]

Ok, thank you. Let’s refresh our memory a bit as we think about what the author meant. In the passage, what did the author say that the hairworm is taking over? [Pause.]

That's right. The hairworm is taking over the cricket's central nervous system. [Show Slide 14.] You may have learned about the central nervous system in science classes, or you may learn about it in future classes. We don't need to understand it in depth now except to know that it plays a key role in controlling what the body does. So when the hairworm hijacks the cricket's central nervous system, how exactly does this affect the cricket? [Pause.] [Show Slide 15.]

Yes, it makes it leave its shaded forest home and become attracted to brighter areas and water—places the cricket normally doesn't go and places that might even be dangerous to it!

So let's get back to what I asked you a minute ago: what the author meant by using the word "hijack." To help answer that question, let me ask you this - what would you picture if the author just said the hairworm USES the cricket's central nervous system, instead of hijacking it? [Pause.]

I would think that, instead of taking over the central nervous system by force, the hairworm simply took a part of it for its benefit. But the author in this article purposefully chose the word "hijack" which changes the picture in my mind a bit. [Show Slide 16.] When the author says "The parasite...produces proteins that hijack the cricket's central nervous system," I imagine in my mind someone hijacking a plane or a bus. They are taking over the vehicle by force, redirecting it away from its normal route, and using it for its own benefit regardless of who else needs it.

Keep in mind that when we're looking at a word like "hijack" in the context of an article like this, it conveys a certain kind of tone. Let's quickly revisit the idea of tone. What is tone and why is it important? Take a moment and write your answer on your paper. [Pause.]

Yes! [Show Slide 17.] Tone is how a writer communicates an attitude toward a subject or topic—the parasite hairworm, in this case. What kind of tone do you think the author is conveying here with the use of the word "hijack"? In other words, how does the author feel about the hairworm? Take a moment to reflect and then write your answer on your paper. [Pause.]

Terrific. I think he is trying to show that he's a bit scared and horrified by the worm's actions—the way it hijacks the

cricket is alarming! And I don't know about you, but I agree. I wouldn't want to be that cricket.

Ok, let's keep reading. [Show Slide 18.]

"The cricket, *Nemobious sylvestris*, heads then to an exposed pond or river and dives in, at which point the hairworm emerges from its host. In an aquatic, or water-based, environment, the worm can find a mate and reproduce."

Look at that first sentence again: "The cricket, *Nemobious sylvestris*, heads then to an exposed pond or river and dives in, at which point the hairworm emerges from its host's rear end." What do you think the word "exposed" means in this sentence? Take a moment and write your answer on your paper. [Pause.]

[Show Slide 19] The word "expose" means "to uncover something, to make it easier to see." In the context of the passage, the author refers to "an exposed pond or river" as it is a pond or river that is in the open, not covered up or blocked from view. It is easily accessed by the cricket.

Ok, let's continue reading. [Show Slide 20.]

For some crickets, it's a leap to their death. But others lucky enough not to have drowned have lived for several months after the parasite removes itself. In fact, the crickets' strange attraction to light subsides as little as 20 hours later."

Let's look at one more academic word in this section. Here is the sentence: "In fact, the crickets' strange attraction to light subsides as little as 20 hours later." You may or may not be familiar with the word "subsides." But based on the context, what do you think the word means? Take a moment and write your answer on your paper. [Pause.]

[Show Slide 21.] The clue in the sentence that helped me was the phrase "as little as 20 hours later." I knew from earlier in the passage that the parasite had made the cricket be unusually attracted to light. This sentence says that the cricket's attraction usually subsides "as little as 20 hours later," which indicates to me something changed about it. I can infer from this clue that the attraction is decreasing or fading away. In other words, the cricket is returning to its normal state of avoiding light. So "subside" means to decrease.

**Guided Practice** (5 min)

Ok, now, let's reread this section now that we have further explored some of the key words in it. Be sure to take notes as I read as you will add them to the Venn Diagram shortly.

*"Paragordius tricuspidatus."* [Show Slide 22.] So exactly how a hairworm parasitizes a cricket is unknown. Scientists suspect that the insect ingests either an infected mosquito or water containing hairworm larvae. But once inside, the hairworm grows three to four times as long as the cricket, filling all parts of its body except the head and legs."

[Show Slide 23.] Let's make sure we understand what is happening here. Scientists are trying to figure out how this hairworm gets inside a cricket to become a parasite. They think that the cricket somehow eats or take in through its mouth a mosquito or water containing hairworm larva. Once they get inside, the larva does the expanding trick and fills the entire body of the cricket. Let's see what happens next.

[Show Slide 24.]

"What happens next is even more bizarre. The parasite, *Paragordius tricuspidatus*, produces proteins that hijack the cricket's central nervous system, making it attracted to areas brighter than its shaded forest home. The cricket, *Nemobius sylvestris*, heads then to an exposed pond or river and dives in, at which point the hairworm emerges from its host. In an aquatic, or water-based, environment, the worm can find a mate and reproduce."

If you tuned in to the previous lesson, you'll remember that parasites can alter, or change, their hosts' appearance or behavior. It sounds like this hairworm changes its host cricket's behavior by producing proteins or chemicals to make the cricket head toward the light, then dive into water and possibly even drown—all so that the hairworm can get the water it needs to reproduce. Yikes.

[Show Slide 25.] This is important information that we need to add to the Venn diagram. Go ahead and take out your copy of the Venn Diagram you drew yesterday. If you were not able to draw it yesterday, go ahead and draw a fresh copy.

Now, I know that you may not have the text in front of you, but I think your notes will help. We read about one parasite today, the hairworm in the cricket, but we'll read about more as we go through the week. Take a moment now to think

Students copy the Venn Diagram onto their paper and complete each circle, including the overlaps.

<p>about where the information you just learned might fit into this Venn diagram. Does it lay eggs? Does it use chemicals? Write “hairworm &amp; cricket” where you think the pair belongs on the Venn diagram. [Pause.]</p> <p>Great, I’ll show you what information I identified and you can see how it matches up with your thoughts. If I include information that is not on your Venn Diagram, please add what I tell you to it.</p> <p>[Show Slide 26.] The main note from today that I noticed goes into the Chemicals &amp; Venoms circle. Let’s look back at our notes. I see that the hairworm produced a protein that hijacks the cricket’s central nervous system. This qualifies as a chemical or venom that changes the host’s behavior.</p> <p>Take a minute now to make sure your diagram matches this one. [Pause.]</p> <p>Perfect. We’ll add more information to our diagrams over the next few lessons. For now, let’s finish the last portion of today’s text. [Show Slide 27.]</p> <p>“For some crickets, it’s a leap to their death. But others lucky enough not to have drowned have lived for several months after the parasite removes itself. In fact, the crickets’ strange attraction to light subsides as little as 20 hours later.”</p> <p>Before we go on, let me check: as we read the text that second time through, did you write down key details about how the hairworm and the cricket interact? Take a minute now to do that if you haven’t already. [Pause.]</p> <p>What did you write? [Show Slide 28.] I wrote: “When the hairworm gets inside the cricket it hijacks the cricket’s behavior, making it dive into water and risk drowning. Then, the hairworm comes out of the cricket and reproduces in the water.” Take a minute to add or change anything you want to in your notes before we go on. [Pause.]</p> <p>Great, thank you.</p>	
<p><b>Independent Work</b> (1 min)</p> <p>Let’s reflect on today’s lesson. Today we learned about a parasite, the hairworm, and the creative way it takes advantage of its host, the cricket. For your independent work, please respond in writing to the following prompt:</p>	<p>Students will respond to a writing prompt that synthesizes their knowledge from today’s lesson.</p>



## PBS Lesson Series

<p>[Show Slide 29.] <b>Students, please write the prompt down on your paper so you will have it handy for when you are responding in writing.</b></p> <p><b>In your own words, write a summary of today’s passage on the hairworm and the cricket. As you write the summary, be sure to use each of the following vocabulary terms that we used today:</b></p> <p><b>parasitizes, hijack, ingests, exposed, subsides</b></p>	
<p><b><u>Closing</u> (1 min)</b></p> <p><b>Thank you. I enjoyed working on the Body Snatchers informational text with you today! Thank you for inviting me into your home. I look forward to seeing you in our next lesson in Tennessee’s At Home Learning Series! Bye!</b></p>	

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