**Bird Species Study**

**Heredity and Inheritance of Traits and Biological Evolution: Unity and Diversity,**

**Driving questions of unit:** Kid friendly **“*Did you ever wonder what the Red Winged Blackbird's epaulet was FOR?”***

***NGSS question addressed: How do physical features within bird species help them survive and reproduce?***

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| ***Question(s)*** | ***Phenomenon*** | ***Scientific Practice(s)*** | ***What We Figured Out***  ***(DCI) - (CCC)***  ***Common Core)*** | ***Learning goals***  ***(Learning Performances)*** |
| *1. What is the epaulet FOR?* | ***The male red-winged blackbird has a bright red and yellow epaulet.*** | *Asking questions and constructing and analyzing claims based on evidence.* | **LS4-2 Differences among the individual bird’s features can help them survive, find a mate, or reproduce.**  *“The red-winged blackbird’s \_\_\_\_\_ helps it survive because…*  *“The red-winged blackbird’s epaulet helps it survive because… I know this because…*  ***ccc. cause and effect***  ***ccc. patterns*** | Student will ask and answer questions about specific physical features of the RWBB and engage in argument with evidence about how these would help them survive, find mates, and reproduce. |

**Grade Level: 3**

**Subject: Biological Evolution**

**Life sciences DQ of unit:** *Does the RWBB’s epaulet help it survive, reproduce, or find mates?*

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**Lesson Summary** 

Students will identify specific physical features of the RWBB and ask and answer questions of the bird’s physical attributes and behavior based on evidence and observed patterns in nature about how these would help them survive, find mates, and reproduce.

**Learning performance goals:** Student will ask and answer questions about specific physical features of the RBB and engage in argument with evidence about how these would help them survive, find mates, and reproduce.

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| **Evidence:** By the end of this lesson, students will have a claim of how the epaulet could be used for survival, finding a mate, or reproduction and what evidence they used to arrive at the claim. They will also have a model (drawing) in their notebooks with relevant information and labels to explain their thinking. |

**Standards Alignment From *Next Generation Science Standards*:**

**LS4B: Natural Selection**

Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)

**Common Core:**

* **CCSS ELA-Literacy SL 3.1A:** follow agreed-upon rules for discussions
* **CCSS ELA-Literacy SL 3.1B:** Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others
* **CCSS. ELA-Literacy SL 3.1D:** Explain their own ideas and understanding in light of the discussion.
* **MP.3.2** Reason abstractly and quantitatively
* **CCSS. ELA-Literacy.W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories

**Time Required:**

60 minute lesson.

**Materials**

* Large Photo of a Red winged blackbird
* large photo of the RWBB’s beak or you can use [this slideshow](https://docs.google.com/presentation/d/1IaKsu2rEMHBydjUKQNV4vth3DgXLuP-o51NCnj-884Q/edit#slide=id.g36bec3a568_0_5)
* Smaller [photos](https://docs.google.com/document/d/1AmZTAeOqcs_qGl043AvwqVFE-pry0vpUaEa7nk_5OG0/edit) with a close-up of the epaulet
* Large poster paper
* markers for posters, individual science notebooks, pencils
* Classroom ‘claim’ or story. In the [slideshow](https://docs.google.com/presentation/d/1IaKsu2rEMHBydjUKQNV4vth3DgXLuP-o51NCnj-884Q/edit#slide=id.g36bec3a568_0_5) it is slide 6.

**Preparation**

* Create the posters with the photo of the epaulet and label each one with ‘reproduction’, ‘survival’, ‘finding mates’. (depending on the size of the class, one or two of each),
* Have the photos on the screen from google docs already
* Create the chart for gathering student ideas or use the one on slide 5 or padlet.
* You may want to copy another smaller chart for each student to have in their science notebooks.

**Teacher Procedures:** 

**Pre-assessment:** Teacher displays large picture of the RWBB and then another with a close up of the beak. Tell students that most physical features on the RWBB help it survive, find a mate , or reproduce (Write these down and have the students come up with definitions for each term. Draw a little picture to help them remember). Then show a close-up on the screen or with a photograph of the RWBB’s beak. Ask them to write on a piece of paper what the beak is for, why they think that, and draw a picture. Collect these. The teacher should take notes about the reasoning the students used, the evidence used and whether the model displayed the information. Also take note whether the students have an understanding of the scientific concept.

***prep for observations:*** *It is important in science that there has been time spent during the year exploring how scientists observe. This is an important lesson to have in different ways in intervals throughout the year in science (as well as in other academic areas). Model by showing the class a picture or a brief movie (about red winged blackbirds) while you demonstrate how you would do observations, with gradual release of responsibility throughout the year. Remind them that this is not what the viewer is guessing about, but only what the viewer actually sees and observes. Show them how to draw a brief drawing and that you can write just a couple of words, as long as the writer knows what it means. Show a brief movie or even a picture and ask the students to do observations for five minutes. Then, at the end of this time, showcase some of the observations and ask students for input about what was included and not included in the observations. It may also be helpful to show two very different observations so students can see the various ways observations can be done. Pick one with quick drawings and few words that can still demonstrate the meaning. This may need to be repeated more than once before the field trip.*

**lesson**

1. Display a large picture of the RWBB and another of the female RWBB. Students in groups come up with an observation and then a question related to that observation with an emphasis on focusing specifically on the physical features. These are recorded on large poster paper. The teacher explains that many physical features help the RWBB survive, find mates, or reproduce. (define ‘survive’ and ‘reproduce’ as a class in the students’ own words).
2. Use an example with the RWBB’s beak. Discuss whether the beak would help it survive, find mates, or reproduce. It can fall into one or more categories. Remind students that scientists can find patterns from other animals and other birds as well as what they’ve seen in their experience to answer questions about something in nature. *(It helps it survive because I have seen birds use their beaks to eat, defend itself, stay on the tree. It helps it reproduce because I have seen birds use their beaks to make nests. I’ve seen animals use their teeth to growl at other animals to warn them to stay away.)* When students use their knowledge and experiences, show them how they can use this information to make predictions about the RRBB’s beak by thinking about the patterns in nature.
3. Show a picture of the RWBB’s nest and the statement about what they eat. Explain that this is important to understanding the RWBB in context.

Red-winged Blackbirds eat mostly **insects**, including **dragonflies**, damselflies, other flies, beetles, butterflies, and moths, as well as other invertebrates, such as spiders. They catch **insects** on plants, off the ground, and from the air. In the winter, they switch to mostly **grains**.



1. Point to the epaulet and identify it. Ask, “Do you think this helps the RWBB survive, reproduce, or find mates?” Explain to the students that there will be posters set up around the room with the red winged blackbird’s epaulet. Students should have a magic marker. They should write a sentence connecting the feature of the bird to the word on the poster. Remind students that as they walk around the room to try to use what they already know about animals from books, movies, and experience to make a claim about how the feature would contribute to the bird’s survival. Explain to the students that the class will have a ‘museum walk’ so the students can see each others’ ideas.
2. Place around the room pictures of RWBB on poster paper with the headings ‘survive, reproduce, find mates’ respectively on them. Student do a room walk and write down any ideas about how the epaulet could help with these areas.
3. When done, do a ‘museum walk’ and collect ideas. Call the students back to their seats and encourage the discussion, reminding them what listening looks/sounds like and what responding looks/sounds like. Encourage questions, “Did you think about?…” “I agree/disagree with \_\_\_\_\_ because…” (emphasis on the *because*). Demonstrate the use of the sentence starters from the language goals when possible and appropriate. (above). The possible student responses might be: to attract a mate, to scare off danger, to scare off other males, for no reason.

**Possible teacher prompts for discussion:**

* How would \_\_\_\_\_\_\_ help them survive?
* Would that behavior help them reproduce? Why?
* When do you think the bird is doing that? Why would it be then?
* This is the male red-winged blackbird. The female is almost all brown. Why do you think she isn’t doing this?
* What does the actions of the RRB remind you of? Do you have anything from your experiences to share about what you observed?

1. Say, “You’ve been using great evidence to support your ideas. You’ve been using patterns that you see in nature from other birds and other animals, which is what scientists do. In order to verify or examine these claims, we will need to examine the RWBB’s behavior and habitat. When we look at these things, we will be able to cross out some of these ideas, and some of these ideas will be reinforced or changed (Give an example from the students’ ideas of how this we could use real evidence to do this). The next thing we will do is study the habitat where the RWBB lives. We’ll see if we can get any clues from this to examine these ideas.” As they give ideas, work with the class to produce a classroom chart.
2. ***Example of possible chart answers***

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| epaulet is used to | category | evidence | what we would see | other information |
| scare off predators | survive | I know the monarch butterfly uses its colors to warn predators |  |  |
| attract females | reproduce  Find a mate | I know that the male cardinal uses its color to attract females |  |  |
| find food | survive | The owl uses its eyes to find food |  |  |

1. For ten or fifteen minutes, or after every student who has something to add has done so, explain that in science, you can use what you know and claim to tell a story. Write on the whiteboard (or use slide 6 in the slideshow. ) The parts of the body of an animal helps it find mates, reproduce, or survive. I think the red-winged black bird’s epaulet helps it \_\_\_\_\_\_\_\_\_. It uses its epaulet to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. I know this because\_\_\_ Fill this in with one example with the students’ help. Ask the kids to get out their science notebooks and write down the date, and their claim. It should be their own ideas, not copying from the board.

***The male RWB is displaying his epaulet because… my evidence is… (evidence would be from experience or discussion at this point until they can verify their claims during the field trip).***

1. Scientists also create models to explain and refine their thinking. Your model today is going to be a diagram that will be next to your claim. Use the class-made example to demonstrate. When you’re drawing, emphasize that only items needed to explain the claim should be in the drawing. For example, draw an unrelated turtle in the model and have the kids explain why it isn’t necessary to draw the turtle in the model as the turtle had nothing to do with the claim. Also model labeling all of the items drawn. Explain that this helps the diagram be clear to the reader. You’ll also want to demonstrate how to draw relationships to the events or objects in the model that come together to support the claim. When the model is complete, tell the kids that the model is like ‘telling a story’. Give the students some time to construct a model in their own science notebooks at this time. If needed, they can work in groups, but they all need to have a finished model.
2. When sufficient time has passed, students should ‘give one get one’ (where students share with one other person in the room what they wrote down and read what the other wrote down). Pick popsicle sticks (with students’ names or a different method to randomly choose students) to gather some of the ideas in that were stated throughout the room.

**Wrap up:** “Today we examined physical features of the red-winged blackbird. We talked about how these help a bird find a mate, reproduce, or survive (point to the student-made definitions when you say this, or read them out loud if needed). After that, we looked at the red-winged black bird’s epaulet. We made claims as a class about what it could be used for. You built on your experiences and gave comments and questions to improve your thinking.”

**Formative assessment:** Use the science notebooks as an ‘exit slip’ to determine if the students have an understanding of the science concept.

**Commonly Held Student Ideas** 

<http://assessment.aaas.org/misconceptions/ENM029/264>

**Differentiated instruction:**

Differentiated instruction includes modifications as specified in the IEP. These differentiations for delivering instruction and engaging with content material are available as needed for all students to meet grade level standards. They fall into three categories Sensory, Graphic and Interactive supports. Other modifications to assignments, such as modifications to print size, larger spaces for writing, dictation, etc., are included in a case by case basis

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| **Sensory Support** | **Graphic Support** | **Interactive Support** |
| **Real-life objects (*realia*)** | **Charts** | * **In pairs or partners** |
| **Manipulatives** | **Number lines** | * **In triads or small group** |
| * **Pictures and photographs** | **✓ Tables** | **Using cooperative groups structures** |
| **✓ Illustrations & diagrams** | **Graphs** | **Using the Internet or software programs** |
| **Magazines & newspapers** | **Timelines** | **In the native language** |
| **Physical activities** | * **Graphic Organizers:** | **With mentors** |
| **Video/films** | **Other Engineering model** | **sentence starters** |
| **Broadcasts** | * **Maps** |  |
| * **models and figures** |  |  |

**Teacher Content Background**

There are many species of Red winged blackbirds that live all over the world. Most live in wetlands. They are related to black birds, which live less often in wetlands. Red winged blackbird males arrive first to the wetlands to stake out their territory before the females arrive to build their nests.

Red-winged black birds are polygamous and can mate with as many as 15 different females in one mating season.

Territory is important, because the females do not choose to nest based on any characteristics of the male, but by the quality of the land and availability of food.

**References: (websites)**

The national Audubon Society

Journey North Red winged blackbirds