**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?***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***Question(s)*** |  ***Phenomenon*** | ***Scientific Practice(s)*** | ***What We Figured Out******(DCI) - (CCC)*** ***Common Core)*** | ***Learning goals******(Learning Performances)*** |
| *2. How do we verify and/or investigate* *our claims about what the epaulet is for?*  | ***Birds and other animals behave in strange and interesting ways.***  | *Plan and conduct an investigation*  | **TS1.B: Developing Possible Solutions**Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. **“***We can make predictions and test them with observations to help us choose which claim to look at more closely. “***ccc. cause and effect**  | Students will predict possible observable behaviors of the RBB that will verify or eliminate certain claims.  |

**Grade Level: 3**

**Subject: Biological Evolution**

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

**Topics:**

**Biological Evolution: LS4.B:** **Natural Selection:** Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. **(3-LS4-2)**

**Author: Miller and Severson**

**Usage Rights**  

**Lesson Summary** 

**Students will predict possible observable behaviors of the RWBB that will verify or eliminate certain claims about what is the purpose of the epaulet for the red winged blackbird.**

**Learning performance goals:** 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.

|  |
| --- |
|  |

**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, what evidence they used, and a prediction of what they would observe on the field trip to support their claim. They will also have a model in their notebooks with relevant information and labels to explain their thinking.

|  |
| --- |
|  |

**Technology, Social Studies, art, music:** Students will use technology to observe the phenomena. They have a choice to use technology and/or art in their presentations and models.

**Time Required:** 60 minute lesson.

**Materials:**

* Chart from previous lesson
* photo from last lesson,
* video camera or ipad for recording,
* individual science notebooks, pencils.
* [This slideshow](https://docs.google.com/presentation/d/1IaKsu2rEMHBydjUKQNV4vth3DgXLuP-o51NCnj-884Q/edit#slide=id.g36bec3a568_0_5) (from previous lesson) can be used

**Preparation:**

* Be prepared to give an example to the class
* If you are not going on a field trip, then you will be using a video. Prepare students for this instead.

**Teacher Procedures:**

1. Teacher should display poster paper with ideas on them from the [Lesson A](https://docs.google.com/document/d/1weEu9Rdbqx238tDQTUFUv8WdUT2ex5Ux2nFg5ybUsp8/edit) class with the different categories (survive, reproduce, find mates) and how the RWBB’s epaulet could aid the bird in these areas. Also, in the front of the room or on screen, have all of the reasons that the students came up with listed.

2.Suggested introduction to the unit: “Last time we met, we talked about the epaulet and how it might help the RBB reproduce, find a mate, or survive. Look over the reasons all of you gave. I’ll give you a minute to read through the list. What do you notice?” Give the students a moment and then have them partner share and then discuss in large group anything interesting that stands out for them from the list. Some students may have the same thing,for example; to warn off predators, but have it in a different category or used in a different way.

Remind the students that the next time they meet, the class will be going on a field trip to observe and verify or adjust these claims. But for today, the class was going to look at the claims and try to anticipate what they would see in the wetland if their claims were true.

3. Choose an example of one of the claims. An example might be: ‘The red winged blackbird uses its epaulet to warn off predators’. It uses the red color as a warning and it scares off the predators when it waves it in front of them. What would you see the red-winged blackbird doing if this were what its epaulet was for?

4.Get some ideas. Have the volunteers act out what they predict they would see in front of the room.

5. If possible, have students with like ideas group together in threes or fours. They can use their ipads to film each other if they have the technology. Otherwise they can act it out in person.

6. Groups present their behaviors. With each each act, work with the class to write down on the classroom chart the expected behavior and circumstances they would see if their claim was correct.

***Possible chart answers***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **epaulet is used to**  | **category**  | **evidence**  | **what we would see**  | **other information**  |
| scare off predators | survive  | know the monarch butterfly uses its colors to warn predators  | RWBB flashing its epaulet whenever a predator would come by  | They would not flash it when there wasn’t dangerThey could make noises too, to scare away predators  |
| attract females  | reproduceFind a mate  | I know that the cardinal uses its color to attract females  | RWBB flashing its epaulet when females are around  | Might happen more in the spring  |
|  find food  | survive  | The owl uses its eyes to find food  | Bugs flying around the epaulet  | the RWBB eating |
| warn other RWBB to stay away | reproduceFind a mate | When the bear shows its teeth to other bears, it warns them to keep away.  | RWBBs scaring other RWBBs away or fighting.  |  |

8. In their science notebooks (or ipads), students should find their claim from the other day. So far, they have a drawing in their notebook and a claim that reads:

**“The male RWB is displaying his epaulet because… my evidence is… (evidence would be from experience or discussion).”**

Use the model sentence from the board and the class-made chart (from last class) to add to the sentence.

**On the field trip, I expect to see:** Students can work in groups or pairs and/or use the charts to fill in their predictions. Pick popsicle sticks to have some students read their full sentences out loud.

**Wrap up:** Today we looked at the claims from last time and made predictions about what we would see on our field trip. We made a chart with all of your claims. Scientists understand that crossing out or changing a claim can be as important as using real evidence to support your claim. We can use the chart to compare the predictions with what we observe. We also acted out the predictions and the claims to help with understanding.

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

**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

|  |  |  |
| --- | --- | --- |
| **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](http://www.audubon.org/)

[Journey North Red-Winged Blackbirds](http://www.learner.org/jnorth/tm/spring/RedwingFacts.html)