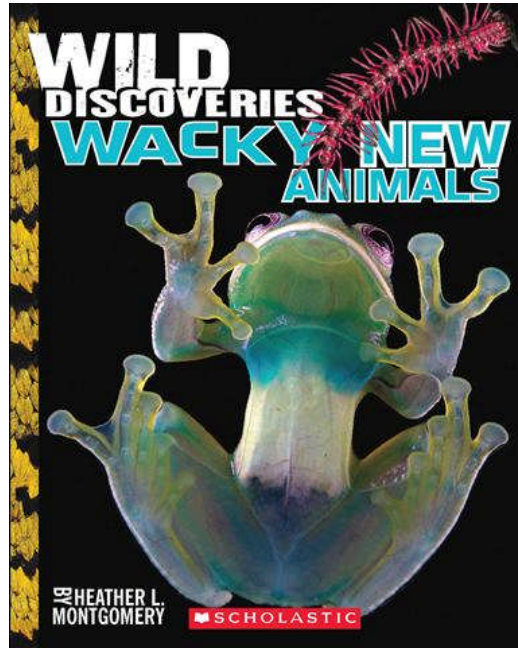


WILD ABOUT LEARNING

An Interdisciplinary Unit Fostering Discovery Learning



Written on a 4th grade reading level, *Wild Discoveries: Wacky New Animals*, is perfect for every kid who loves wacky animals! With engaging full-color photos throughout, the book draws readers right into the animal action! *Wild Discoveries* features newly discovered species from around the world--such as the Shocking Pink Dragon and the Green Bomber. These wacky species are organized by region with fun facts about each one's amazing abilities and traits. The book concludes with a special section featuring new species discovered by kids!

Heather L. Montgomery writes about science and nature for kids. Her subject matter ranges from snake tongues to snail poop. Heather is an award-winning teacher who uses yuck appeal to engage young minds. During a typical school visit, petrified parts and tree guts inspire reluctant writers and encourage scientific thinking. Heather has a B.S. in Biology and a M.S. in Environmental Education. When she is not writing, you can find her painting her face with mud at the McDowell Environmental Center where she is the Education Coordinator. Heather resides on the Tennessee/Alabama border. Learn more about her ten books at www.HeatherLMontgomery.com.



Photo by Sonya Sones

Dear Teachers,

As I wrote *Wild Discoveries: Wacky New Animals*, I was astounded by how much I learned. As expected, I learned amazing facts about animals and the process of scientifically describing new species, but my knowledge also grew in subjects such as geography, math and language arts. I have developed this unit to share that learning growth with children. I would be honored if you found these lesson plans helpful in your quest to inspire children to discover the wonders of our world.

As you implement these plans, I hope that your students become motivated and proud of their work. They may wish to share it with me. Because of the restrictions presented in COPPA (Children's Online Privacy Protection Act), I can't directly correspond over the internet with children without confirmed parental consent; however, I can correspond with you. You may share their writing samples through the "Contact" page on my website www.HeatherLMontgomery.com or by mailing work to P.O. Box 601, Ardmore, TN 39449.

Feel free to modify the text of any of these worksheets to suit your needs, but please do not alter the cover image. If you are looking for additional resources (such as videos of these animals in the wild), check out the links on my website, www.HeatherLMontgomery.com.

Heather L. Montgomery

Curriculum Connections: Correlations identified in this document are to the *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects*, 2010; *Next Generation Science Standards Draft*, May 2012; and, *National Curriculum Standards for Social Studies: A Framework for Teaching, Learning, and Assessment*, 2010.

WILD ABOUT LEARNING

An Interdisciplinary Unit Fostering Discovery Learning

Contents:

Wild Discoveries Scavenger Hunts – Pre-reading, during-reading and post-reading scavenger hunts to engage students with the text.

Where in the World? – Students discover and map the locations of species from the book.

Which is the Wackiest? – Evaluating all of the animals in the book, students determine which is the wackiest, write an opinion piece supporting their decision, and submit their opinions through an online survey.

Revise Like a Pro – Working with text from early drafts of the book, students practice revising and compare their ideas to those of a professional editor.

Get Wild About Graphs – Students develop a variety of graphs from data they collect from the text.

Wild Imaginations – Considering the biotic and abiotic features of a habitat, students create their own creatures.

Discoveries Around the School – Students create a classroom book of species in the schoolyard.

Extension Activity: More Wacky New Species – Students research additional new species and create a companion book.

Links of Interest – May be used for additional research

Complete Bibliography for *Wild Discoveries: Wacky New Animals* – May be used for additional research or for studying the breadth and depth of research required to write a nonfiction book.

NOTE: All of the text in this packet may be revised to meet the needs of your students.

WILD DISCOVERIES Scavenger Hunts

Curriculum Connections: Common Core (CC) RI 1.5, CC RI 1.7; CC RI 2.5, CC RI 2.7, CC RI 2.8; CC RI 3.7, CC RI 3.10; CC RI 4.7; Science Crosscutting Concept: Structure and function; Science Practices: Asking questions and observation

Materials: Copies of *Wild Discoveries*, pencils, copies of scavenger hunts

Essential Question: What text features and literary devices are used in a nonfiction book?

Objectives:

- Students become familiar with common text features in an informational text.
- Students identify devices and structures such as topic sentences, precise details, figurative language, etc.
- Students engage fully with the text.

Before Reading

Discuss strategies for pre-reading. List common text features of informational texts (headings, table of contents, indices, glossaries, etc.). Discuss the purposes of each feature. Explain that the scavenger hunt will orient them to text features used in *Wild Discoveries*. Have students engage with the text by completing the “Pre-reading” scavenger hunt. As a class, re-examine the list of common text features. Identify any which were not found in the book. Discuss why these might have been omitted.

During Reading

Ask students to pre-view the “During Reading” scavenger hunt. Have them star any terms they do not understand. List those terms on the board and discuss. Ask small groups of students to work with each unknown term and provide an example of it. Students may need to use the dictionary, their text book or the internet as resources. Ask each small group to select any two-page spread from the book and read it. Instruct them to complete the “During Reading” scavenger hunt individually or as a group.

After Reading

After students have read the entire book, instruct them to complete the “After Reading” scavenger hunt.

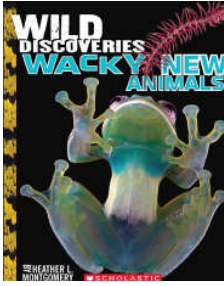
Note: It is not necessary to utilize all scavenger hunts. Select the best one for the class’s needs and revise the prompts as necessary.



NAME _____

WHAT CAN YOU DISCOVER?
 Scavenger Hunt
 (Pre-Reading)

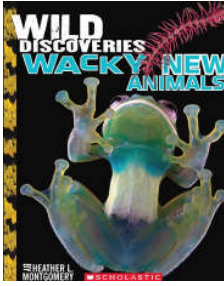
Try to find....	It is on page...	What is one thing you noticed about it?
Table of contents		
A weird looking animal		
Glossary		
An unsolved mystery		
A pie chart		
A discovery made by a kid		
A fun fact		
Events listed in order		
A labeled diagram		
A creature found in the ocean		



NAME _____

WHAT CAN YOU DISCOVER?
 Scavenger Hunt
 (During Reading)

Try to find...	It is on page....	Write it here.
A precise detail		
A linking word or phrase (and, but, also...)		
A concrete detail		
A topic sentence		
An illustration that helps explain or gives more detail		
A word you like		
A key word		
A detail you like		
A scientific name		
An interesting fact		



NAME _____

WHAT CAN YOU DISCOVER?
 Scavenger Hunt
 (After Reading)

Try to find....	It is on page...	Note (why did you answer that, what is the example, ...)
The wackiest animal in the book		
A word you did not know		
A description you like		
A paragraph with a variety of punctuation		
Your favorite animal in the book		
A paragraph with three supporting ideas		
A word that you like		
A metaphor		
The grossest thing in the book		
Example of alliteration		
An illustration you like		
An incomplete sentence		
A question you still have		

WHERE IN THE WORLD?

Curriculum Connections: CC 3.5, 3.10; Social Studies: People, Places and Environments; Social Studies: Global Connections

Materials: Copies of *Wild Discoveries*, paper and pencil, copies of blank maps, colored pencils/crayons, copies of “Where in the World” worksheet, labeled maps (from atlases, the internet or a projected map).

Essential Question: Where are new species found?

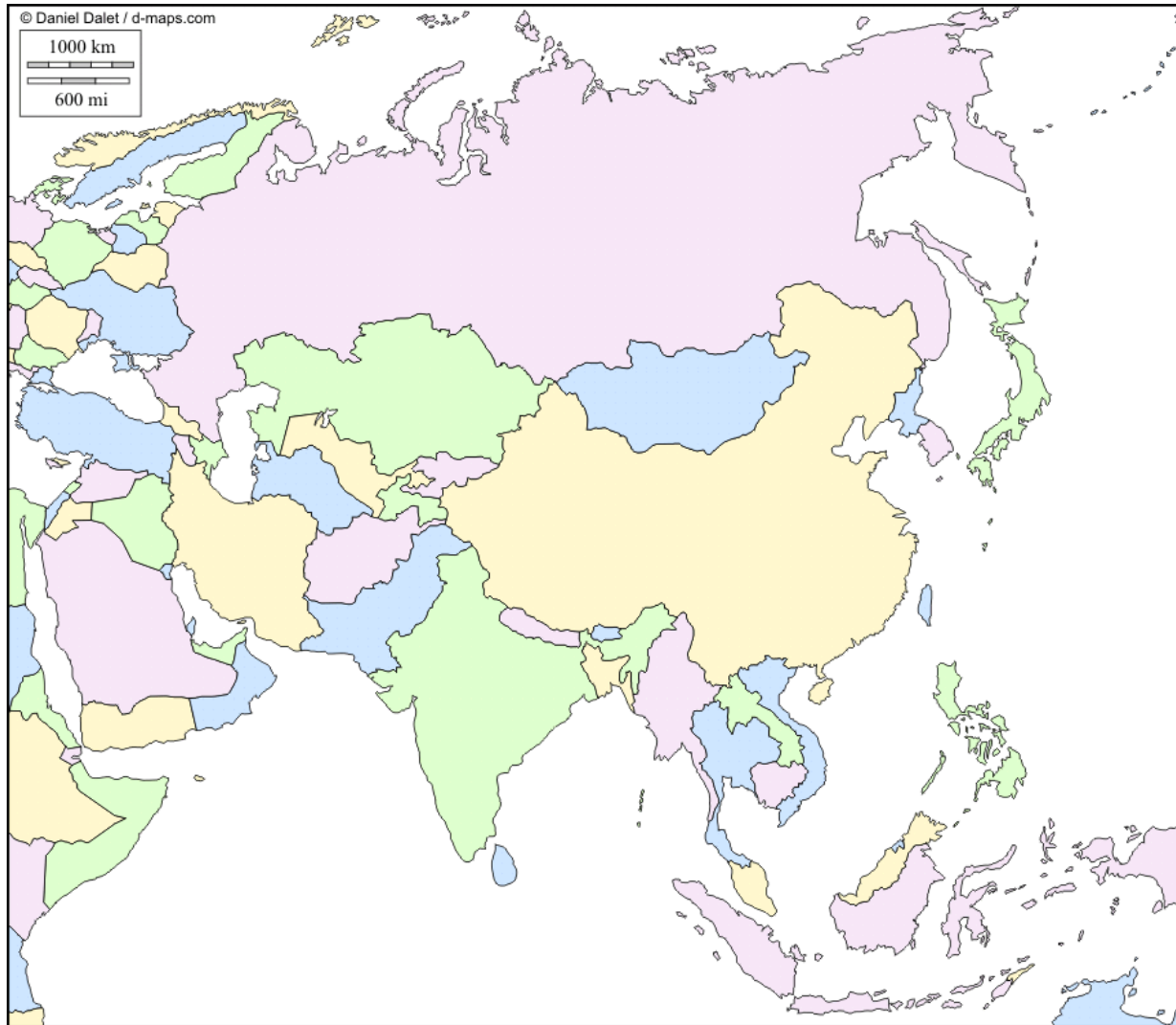
Objectives:

- Students gather data from informational texts.
- Students use maps and atlases to locate countries and bodies of water.
- Students plot the locations on a world map.

Discuss the idea that new species are discovered all across the globe. Some are found in remote rain forests, far-flung islands and distant mountains. Others, however, have been found in more unexpected places, such as museum drawers, markets and back yards. Instruct the students to use the sidebar information from *Wild Discoveries* to identify the locations of each species. Have them record the locations on the “Where in the World” chart. They can use atlases or world maps to find each location, and then color the corresponding location on their world map and add the number of the animal to the map.

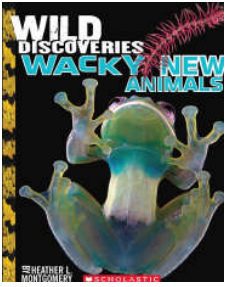
[Note: The student chart does not include all species in the book. For an extra challenge, have students try to locate the other species in the book (listed on the answer key). They will need additional maps for some of the species.]

Asia



Map of Asia courtesy of Memory-Improvement-Tips.com © 2010
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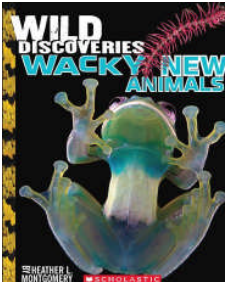


NAME _____

The Americas

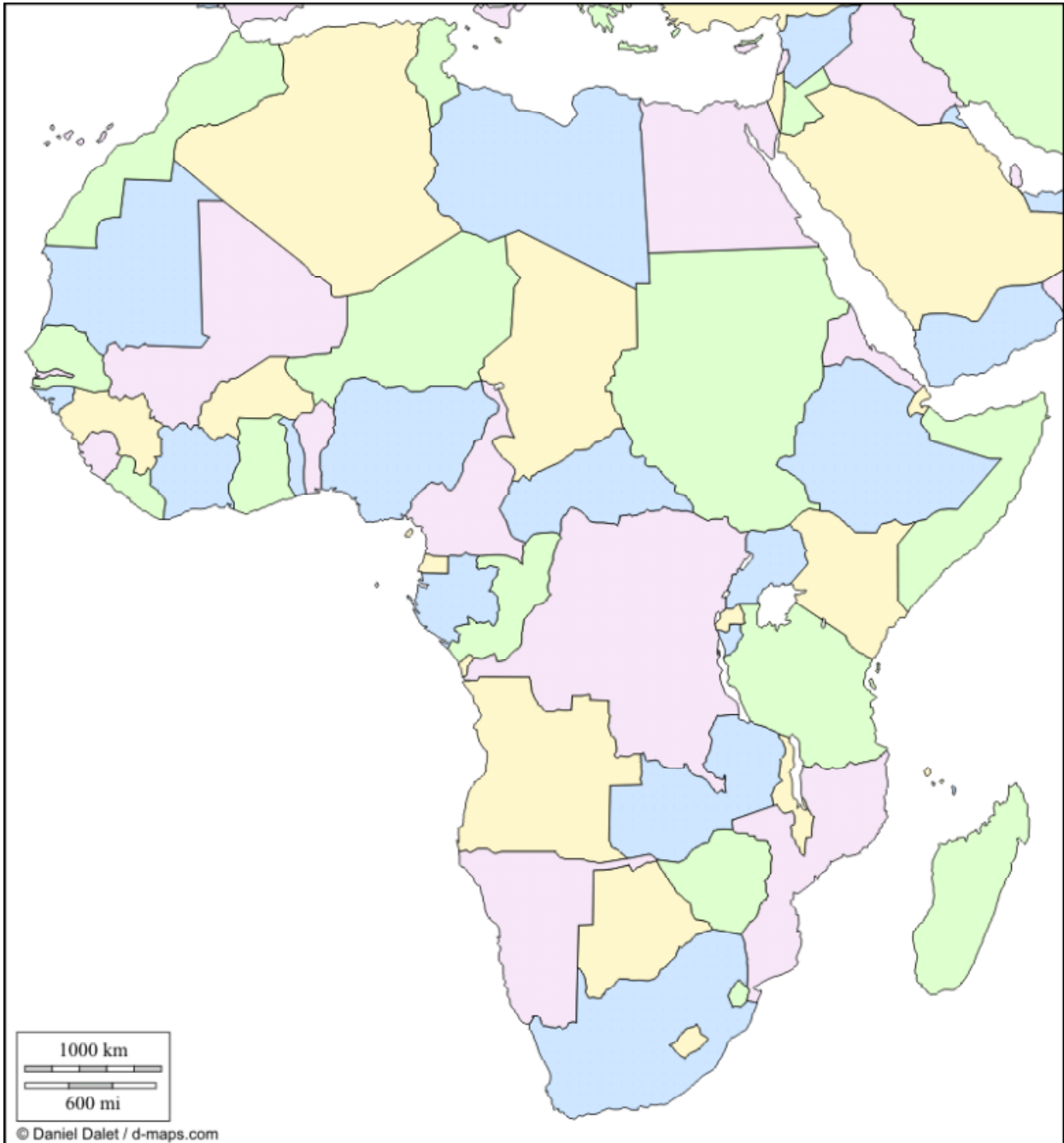


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NAME _____

Africa



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Where in the World?

Answer Key

Use the sidebars in the book to identify where each animal was found. Fill the location in on the chart. Use a labeled map to find the locations. Color the location on your map and add the animal's number to the map.

Animal	Location
1. Shocking Pink Dragon Millipede	Thailand
2. Caquetá Titi Monkey	Columbia
3. Blessed Poison Frog	Peru
4. Giant Velvet Worm	Costa Rica
5. Little Star Mushroom	Brazil
6. Atewa Hooded Spider	Ghana
7. Green Bomber	Pacific Ocean
8. Siau Island Tarsier	Indonesia
9. Blue Earthworm	Philippines
10. Timon's Chameleon	Madagascar
11. Chan's Megastick	Malaysia
12. Condor Glassfrog	Ecuador
13. Matilda's Viper	Tanzania
14. Patch-nosed Salamander	Georgia
15. Walter's Duiker	Benin
16. Tennessee Bottlebrush Crayfish	Tennessee
17. Blue Gum Gall Wasp	California
18. <i>T. Rex</i> Leech	Peru
ADDITIONAL SPECIES	
Psychedelic Frogfish	Indonesia
Bonaire Banded Box Jelly	Caribbean Sea (Bonaire)
Rosy Boneworm	Monterey Bay, California
Satomi's Pygmy Seahorse	Celebes Sea, Indonesia
Giant Whip Scorpion	Philippines
Grey-Faced Sengi	Tanzania
Burmese Snub-Nosed Monkey	Burma (also called Myanmar)
Black Warrior Wasp	Indonesia
Walter's Duiker	Benin
Bittersweet Clam	Mexico, California
Wattled Smoky Honeyeater	New Guinea
Amphibious Caterpillar	Hawaii
Histicola Bacteria	England

Where in the World?

Use the sidebars in the book to identify where each animal was found. Fill in the location on this chart. Use a labeled map to find the locations. Color the location on your map.

Animal	Location
1. Shocking Pink Dragon Millipede	
2. Caquetá Titi Monkey	
3. Blessed Poison Frog	
4. Giant Velvet Worm	
5. Little Star Mushroom	
6. Atewa Hooded Spider	
7. Green Bomber	
8. Siau Island Tarsier	
9. Blue Earthworm	
10. Timon's Chameleon	
11. Chan's Megastick	
12. Condor Glassfrog	
13. Matilda's Viper	
14. Patch-nosed Salamander	
15. Tennessee Bottlebrush Crayfish	
16. Walter's Duiker	
17. Blue Gum Gall Wasp	
18. <i>T. Rex</i> Leech	

On which continent were most of the animals on this list found?

If you wanted to find a new species of animal, where would you look?

WHICH IS THE WACKIEST?

Curriculum Connections: Common Core (CC) RI 2.1, RI 2.4, RI 2.5, RI 2.7, RI 2.8, RI 2.10, W 2.1, W 2.5, W 2.6, W 2.7, W 2.8; RI 3.1, RI 3.4, RI 3.6, RI 3.7, 3.10, W 3.1, W 3.4, W 3.5, W 3.6, W 3.7, W 3.8; RI 4.1, RI 4.4, RI 4.7, RI 4.8, W 4.1, W 4.4, W 4.5, W 4.6, W 4.7, W 4.8, W 4.9; RI 5.1, RI 5.2, RI 5.4, RI 5.7, RI 5.8, RI 5.9, W 5.1; W 5.4, W 5.5, W 5.6, W 5.7, W 5.8, W 5.9; Science Crosscutting Concept: Structure and function; Science Practices: Asking questions and observation

Materials: Copies of *Wild Discoveries*, pencils, paper

Essential Question: How can you defend your opinion in writing?

Objectives:

- Students evaluate species in the book.
- Students craft a written response supporting their decision.

After students have read *Wild Discoveries: Wacky New Animals* or one chapter of the book, ask them to read the “About the Author” on page 64. Pose the question: In your opinion, which is the wackiest animal in the book?

Instruct students to select an animal and defend their response in a short paragraph or essay. To fully support their answer, they may want to include:

- facts from the text
- information they glean from the photos and other graphics
- reasons from additional research that they conduct
- their own ideas

[Note: for some species, additional research may be hard to find. Consult the “Links of Interest” and the “Complete Bibliography” pages for assistance.]

Students may vote for their choice and share their opinion piece with Heather at:

<https://docs.google.com/spreadsheets/embeddedform?formkey=dFdid1BqRDBGMEk3cXVhZWh3SINnNWc6MQ>

Visit www.HeatherLMontgomery.com to see which animals get the most votes.

REVISE LIKE A PRO

Curriculum Connections: Common Core (CC) W 3.5, L 3.1, L 3.2, L 3.3; W 4.5, L 4.1, L 4.2, L 4.3; W 5.5, L 5.1, L 5.2, L 5.3; RI 6.5, W 6.2, W 6.5; RI 7.5, W 7.2, W 7.5; RI 8.5, W 8.2, W 8.5

Materials: Copies of *Wild Discoveries*, red pens (optional), paper, copies of Early Draft, method for projecting editor's comment pages

Essential Question: How can revision improve a piece of writing?

Objectives:

- Students proofread and revise text.
- Students compare their revisions to those of the editor and the author.

Read aloud the "Note to Young Writers." Explain that the students will be working with real text from the author's early drafts. Challenge them to proofread, mark up and then revise all or part of the text. As a group, look at the editor's comments. (Note: comments from several revisions have been consolidated here and presented in bold, red, and all-caps for easier viewing.) How many of the errors did the students catch? Did they catch additional grammatical issues? Did they find examples of sentence fragments or other incorrect grammar used specifically for stylistic purposes? Did they feel those should be corrected? Ask the students if they agree or disagree with the editor's subjective comments. Can they follow the editor's suggestions for revision?

When the students have polished their work, have them turn to page 38 in *Wild Discoveries* and compare their work to the final text in the book. Did Heather take all of the editor's suggestions? Did the students come up with better solutions?

A Note to Young Writers:

Like all manuscripts, *Wild Discoveries* went through many revisions before it became a book. As I drafted the manuscript, I had two different groups of writers critique it. With their comments and my own changes, I revised the entire draft four times. Then, I sent it to my editor. She and I went through five rounds of revisions before the text went to the designer. The designer developed the layout of the pages, inserted the pictures, created the charts, etc. The manuscript went through five more rounds of revision. That's fourteen revisions in all – whew!



The entire process involved myself, my editor, two copy-editors, a photo researcher, a designer, two fact-checkers and numerous executives. At each stage of revision, my manuscript improved. Sometimes it was hard to hear the comments that others made. In many cases I was being asked to cut out parts of the book that I liked. I did not want to revise my writing! But those comments helped me turn “good” into “great” and the team worked hard to make the book the best that it can be!

You can improve your writing, too. When you revise, look for more than just grammatical errors. Look for new ways to organize your thoughts so that the sentences say exactly what you mean. Seek words that shout out what you want said. Find metaphors and similes which are meaningful to your audience.

Practice revision by playing with my writing. Get out your red pen and write suggestions on my early draft. Can you find a better word to get the point across? Can you find my mistakes? Can you cut out the extra words that bog the reading down? After you are through, look at the comments from my editor. Do you agree with her? Can you follow her suggestions? When you have polished up your version, compare it to page 38 in the final book.

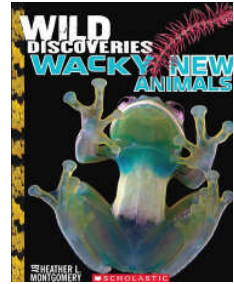
Now, you are on your way to becoming a professional writer!

Heather L. Montgomery

Weird, Wacky and Wild New Species

Early Draft

1/10/12



Chan's Megastick

Scientific Name: ***Phobaeticus chani***

Classification: Insect

Size: 22.3 inches

Role in Nature: Herbivore

Discovered in: Malaysia

Wack-y-meter: Medium

Hiding out in the Heart of Borneo, deep in the rainforest, was the longest insect in the world – and no one knew it!

ARM'S LENGTH

With legs and all Chan's megastick insect is almost two feet long. About as long as your arm! This bug is so big, that in a museum it takes up an entire drawer all by itself.

STICK STILL

Some stick insects act pretty weird:

- When they get blown out of a tree, they hold perfectly still instead of crawling to safety.

- Their eggs have tasty treats hanging off of them. Ant's carry the eggs to there nest to eat the treats.
- They reproduces without mating! When they do so, all of the young are either all male or all female.

Is Chan's megastick that weird to? Since only three are found in the entire world, we don't know yet!

TOP SECRET

How could the world's longest insect have in hiding for so long? It hangs out with twigs in the rainforest canopy. living on the top floor like that people on the ground don't stand a chance of catching a glance of them.

HOME OF THE GIANTS

Borneo is the home to other giants, too. In 2004, a new type of giant cockroach was spotted. It was almost 4 inches long!

Editor Comments (After several rounds of revisions) 2/9/12

~~*Weird, Wacky and Wild New Species*~~

WILD DISCOVERIES: WEIRD AND WACKY NEW ANIMALS

Chan's Megastick

Scientific Name: *Phobaeticus chani*

Classification: Insect

Size: 22.3 inches

Role in Nature: Herbivore

Discovered in: Malaysia



~~Wack-y-meter: Medium~~ **[THE WACKY METER WAS A GOOD IDEA, BUT I'VE SPOKEN WITH OUR DESIGNER, AND WE'VE DECIDED TO OMIT IT. WE'RE CONCERNED THE SPECIES THAT RATE "LOW" ON THE WACKY METER WILL SEEM LESS COOL.]**

The longest insect in the world has stalked the trees of the island of Borneo for many years, but no one knew it existed! **[COULD YOU PLEASE TRY TO COME UP WITH A BETTER OPENING?]**

ARM'S LENGTH

With legs and all Chan's megastick insect is almost two feet long. About as long as your arm! This bug is so big, that in a ~~musum~~ **MUSEUM** it takes up an entire drawer all by itself. **[I ONLY DELETED THIS BECAUSE IT'D BE MORE EXCITING TO PICTURE**

THE BUG AS LONG AS MY ARM IN THE WILD, RATHER THAN DEAD IN A DRAWER.]

STICK STILL

Generally speaking, stick insects act pretty weird: **[ARE THERE LOTS OF STICK INSECTS? SET THIS UP... THERE ARE ___ DIFFERENT KINDS OF STICK INSECTS IN THE WORLD...]**

- The eggs of some stick insects have yummy treats hanging off of them. Ant's **ANTS** carry these to ~~there~~ **THEIR** nest to eat the treats. They then toss the eggs in their trash dump where the eggs are safe until they hatch. **[WHAT ARE THE "YUMMY TREATS"? EXPLAIN OR CLARIFY THAT THE EGGS HAVE THINGS ON THE OUTSIDE OF THEM THAT ANTS LIKE TO EAT.]**
- When they get blown out of a tree and land on the ground, some of them hold perfectly still instead of crawling to safety.
- Some of them reproduce **S** without mating!

Is Chan's megastick that weird to **O**? Since only three are found in the entire world, we don't know yet!

TOP SECRET

How could the world's longest insect ~~have~~ **REMAIN** in hiding for so long? It hangs out with twigs in the rainforest canopy. **THE PERFECT CAMOUFLAGE!** People walk right under them without even spotting them.

HOME OF THE GIANTS

THE ISLAND OF Borneo is the home to other giants, too. A new type of giant cockroach was spotted in a cave there. It was almost 4 inches long!

[IN THE FINAL BOOK, THIS ANIMAL WILL ONLY GET ONE PAGE. YOU WILL NEED TO CUT SOME TEXT – ABOUT 50 WORDS.]

GET WILD ABOUT GRAPHS

Curriculum Connections: CC RI 2.7, CC MD 2.10; CC RI 3.7, CC MD 3.10; CC RI 4.7; Science Practices: Gathering and interpreting data

Materials: Copies of *Wild Discoveries*, paper and pencil, colored pencils/crayons, graph paper (optional)

Essential Question: How can you create a useful graph?

Objectives:

- Students explore the use of charts in a trade book.
- Students collect data from a text.
- Students chart and graph data.

After reading parts of *Wild Discoveries*, explain to students that they will be using data from the book to create charts and graphs. As a class, you may wish to view the bar chart at <http://infoqr.am/Which-is-Wackiest> which illustrates the results of readers' votes on the wackiest animal in the book.

Begin with a search of the text for any graphs and charts. Students should find an example of a pie chart (page 5) and a time line (page 25). Ask them to identify the text which corresponds to the pie chart. As a group, brainstorm other types of charts or graphs which could have been used. On the board, create several additional graphics with that data. Discuss the advantages and disadvantages of each. Challenge the students to develop more graphs and charts which could be incorporated into the book.

See the examples provided. As a class, begin by creating a tally chart to record data from the book (i.e. animals that live in the water, live on land, live in trees ...). Record the data and show students how to convert that information into several different charts/graphs (i.e. pie chart, bar graph, donut chart, etc.). Discuss the pros and cons of each example provided. Emphasize the importance of the title and labels/legends. Can they improve on the examples provided?

Allow the students to brainstorm variables that could be charted. Possibilities include:

- species with backbones, without backbones, plants/fungi/microscopic
- continent discovered on
- classification (reptile/mammal/insect/other/etc.)
- number of legs
- discovered by a man, a woman, a child

Break the students into small groups. Instruct each group to select a variable and collect the data from the book and additional resources if required. The "Tally Chart Template" can be used if appropriate. They should then select an appropriate type of graph and create a graph to present to their peers.

Internet Resource: <http://nces.ed.gov/nceskids/createagraph/default.aspx> allows for easy creation of graphs.

Example Tally Chart:

Title: Types of Animals in *Wild Discoveries*

Animal	Vertebrate (backbone)	Invertebrate (no backbone)	Other (plants, fungi, bacteria...)
Dragon Millipede		X	
Titi Monkey	X		
Poison Frog	X		
Velvet Worm		X	
Mushroom			X
Hooded Spider		X	
Frogfish	X		
Green Bomber		X	
Box Jelly		X	
Boneworm		X	
Seahorse		X	
Tarsier	X		
Whip Scorpion		X	
Caterpillar		X	
Blue Earthworm		X	
Chameleon	X		
Chan's Megastick		X	
Glassfrog	X		
Sengi	X		
Matilda's Viper	X		
Burmese Monkey	X		
Honeyeater	X		
Warrior Wasp		X	
Salamander	X		
Crayfish		X	
Walter's Duiker	X		
Histicola			X
Gall Wasp		X	
T. Rex Leech		X	
Bittersweet Clam		X	
TOTAL	12	16	2



Names: _____

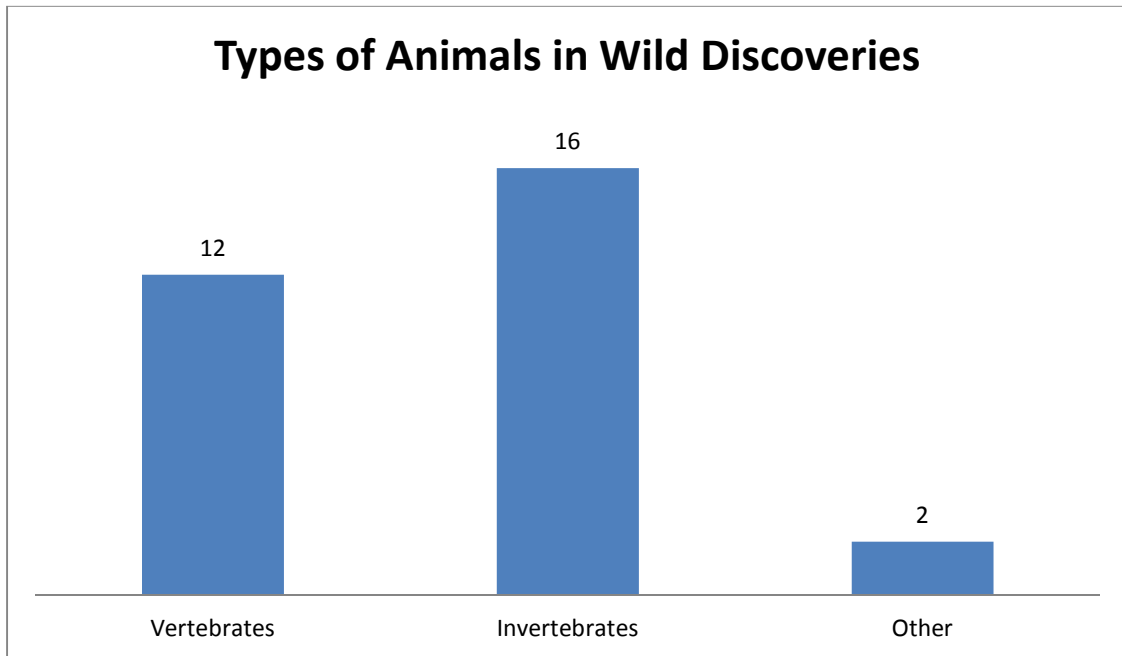
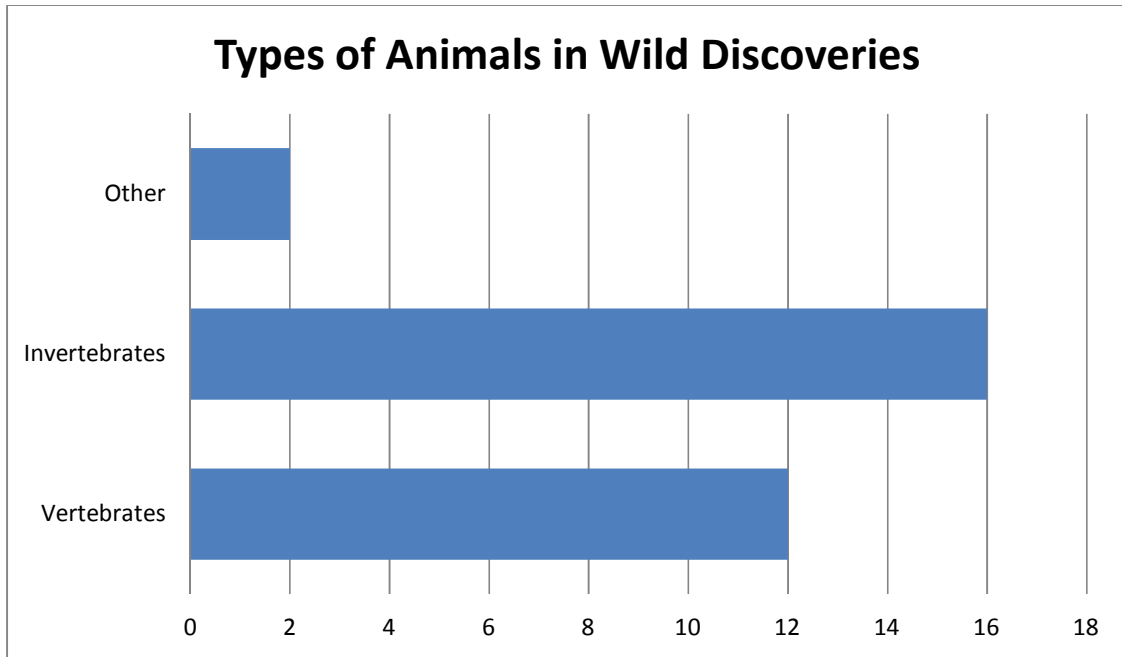
Tally Chart Template

Add your title here: _____

Add your categories to the top row of each column

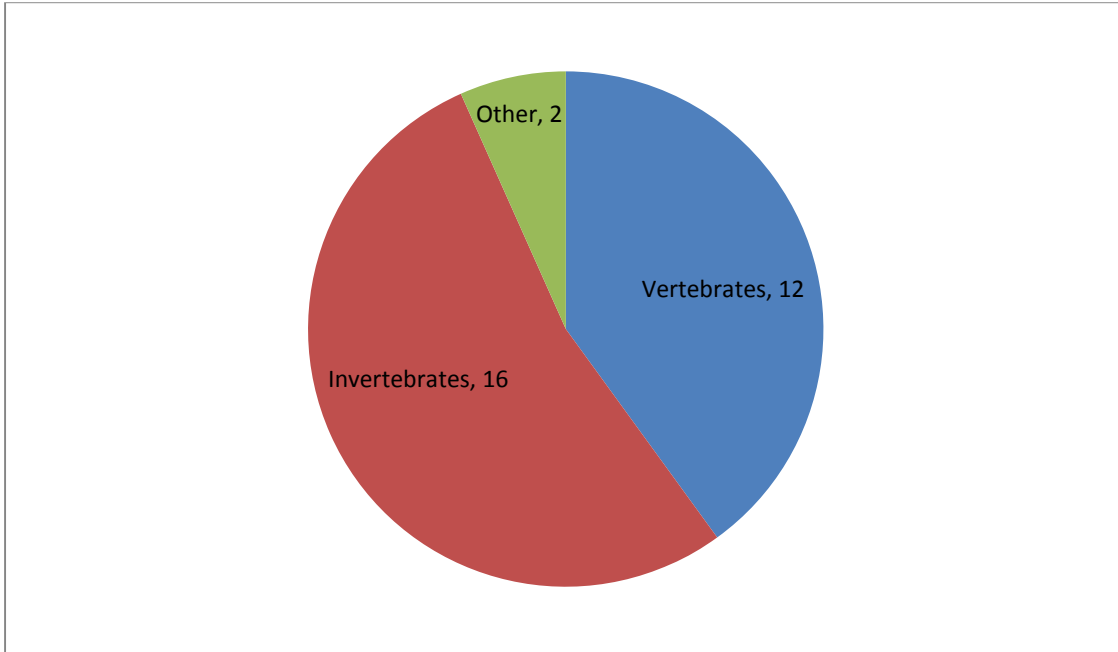
Animal				
Dragon Millipede				
Titi Monkey				
Poison Frog				
Velvet Worm				
Mushroom				
Hooded Spider				
Frogfish				
Green Bomber				
Box Jelly				
Boneworm				
Seahorse				
Tarsier				
Whip Scorpion				
Caterpillar				
Blue Earthworm				
Chameleon				
Chan's Megastick				
Glassfrog				
Sengi				
Matilda's Viper				
Burmese Monkey				
Honeyeater				
Warrior Wasp				
Salamander				
Crayfish				
Walter's Duiker				
Histicola				
Gall Wasp				
T. Rex Leech				
Bittersweet Clam				
TOTAL				

BAR GRAPH EXAMPLES:

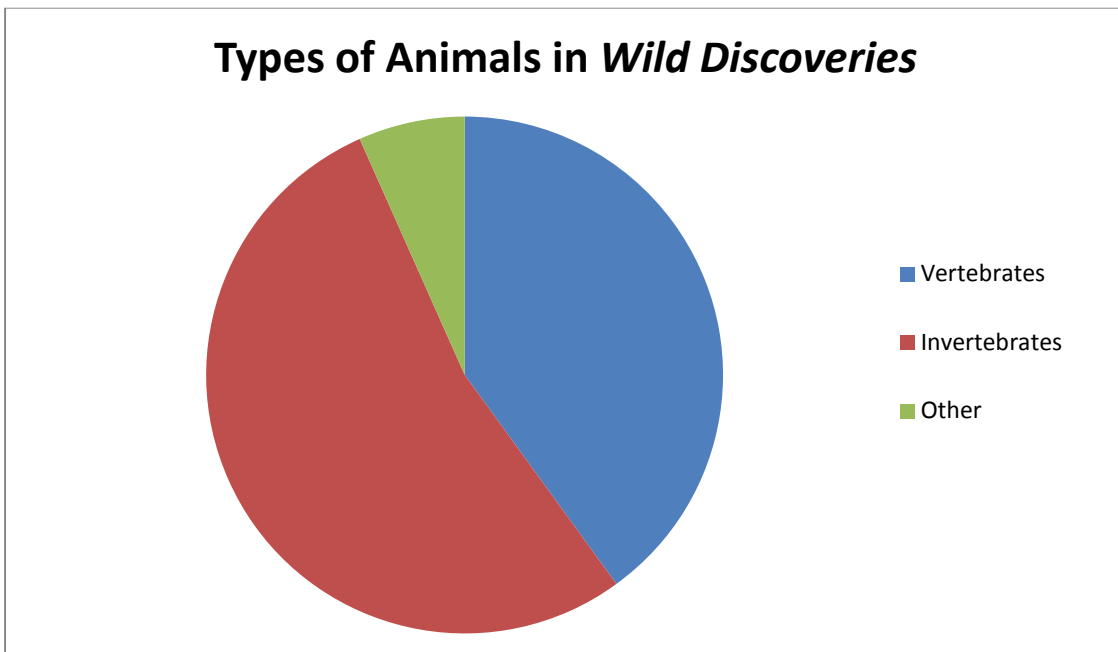


PIE CHART EXAMPLE

Types of Animals in *Wild Discoveries*

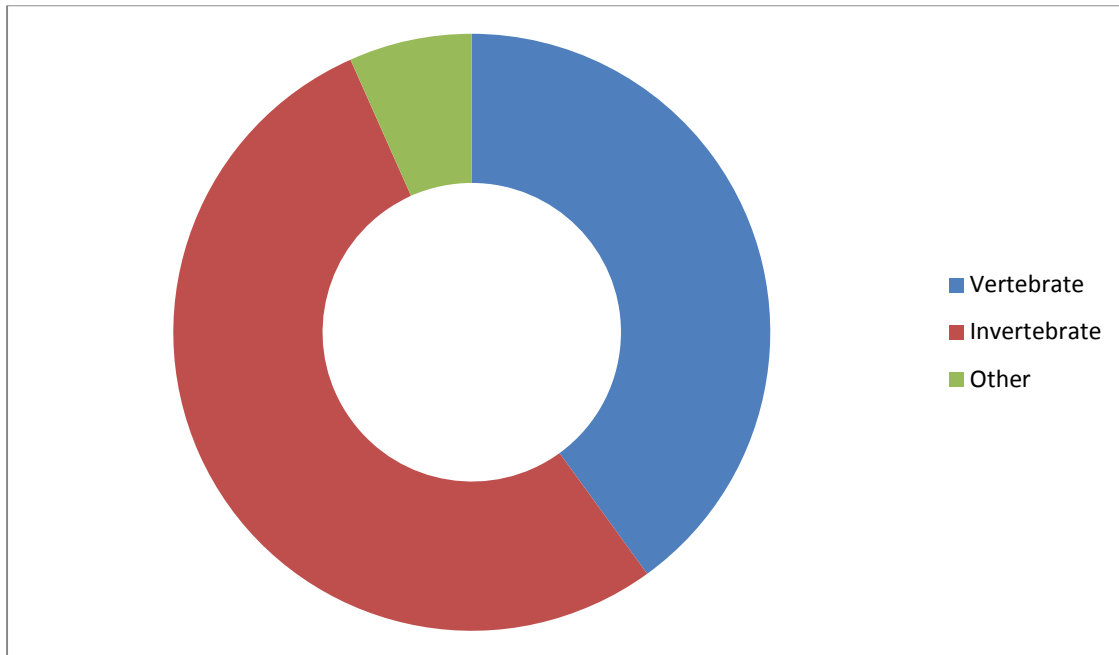


Types of Animals in *Wild Discoveries*

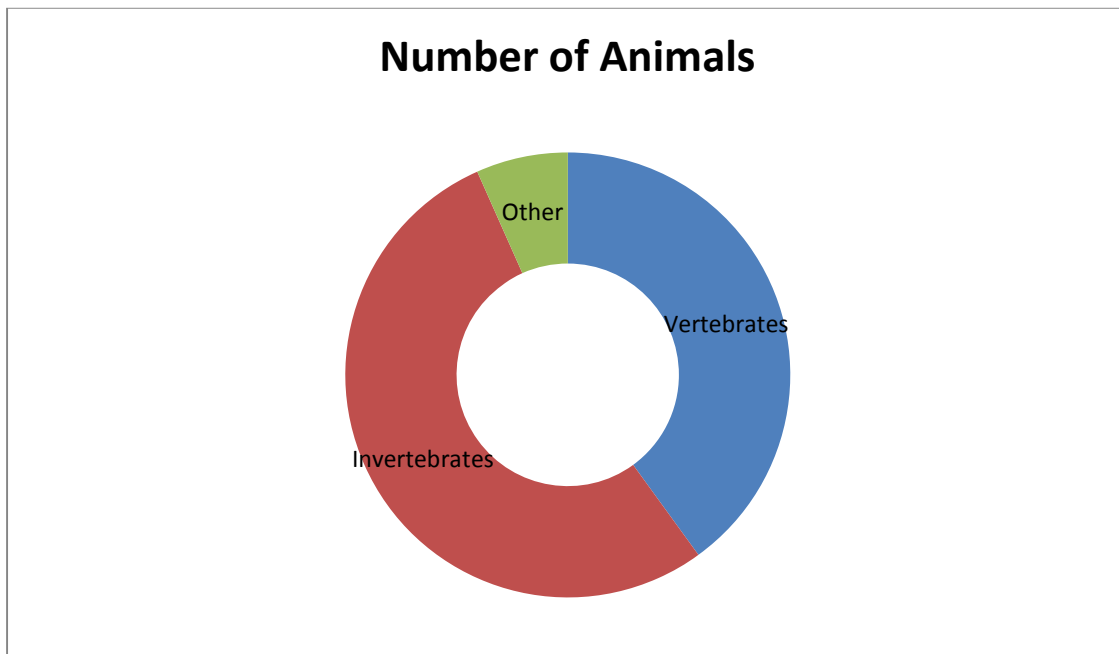


DONUT CHART EXAMPLE

Types of Animals in *Wild Discoveries*



Number of Animals



WILD IMAGINATIONS

Curriculum Connections: CC W 3.2, CC SL 3.4; CC W 4.2, CC SL4.4; CC W 5.2, CC SL 5.4;
NGSS Crosscutting Concepts: Structure and Function

Materials: Copies of *Wild Discoveries*, paper and pencil, colored pencils/crayons

Essential Question: What adaptations are required to survive in a specific microhabitat?

Objectives:

- Students identify the biotic and abiotic components in different ecosystems.
- Students evaluate adaptations appropriate for a habitat.
- Students create a creature which could survive in a specified habitat.

As a class, chart the biotic (living such as specific plants and animals) and abiotic (non-living such as light intensity, moisture level, temperature, minerals) components present in the following ecosystems: rainforest, ocean, mountain top. Discuss how those components effect what can live in that location.

Select one ecosystem and list adaptations which would allow an animal to survive in the conditions you listed. When listing adaptations, consider both physical (i.e. color, body parts, sense organs) and behavioral (i.e. flight, speed, communication) adaptations. Sketch a creature that has those adaptations, label its features and give it a name.

Instruct each student to select an ecosystem (not limited to those three) and a specific habitat within that ecosystem. For example, a student might select a freshwater ecosystem and the bottom of the lake as the specific habitat. Ask the students to develop a list of biotic and abiotic components as well as adaptations which might help an animal survive there. Then, they should create their own creature which might live there. Students should give it a name, make a labeled drawing of their creature, and write a paragraph describing the animal in detail. Have the students present their creatures to their classmates.

Wild Imaginations

EXAMPLE of student assignment:

Habitat: Mountain top pine tree

Biotic components	Abiotic components
Bark	-15 to 40 degrees Fahrenheit
Needles	9 feet of snow per year
Lichen	Almost constant wind
Birds - owls	Exposed granite covers most of the ground
Mountain lion	Direct sunlight only reaches the top of the tree for 4 hours per day. The rest of the tree receives only filtered light.
Squirrels	Air contains gasses and particles from exhaust in nearby cities
Surrounded by evergreen trees	
Pine cones and seeds coat the ground	

Possible Adaptations:, camouflaged like bark, windshield wipers to remove snow from eyes and back, dense fur, thick layer of fat, wings to fly, tail to hold on to tree, thin fingers to reach into pine cones for seeds, strong teeth to chew through pine cones, tough tongue for grasping and eating pine needles, method for eating pine needles without getting sick, scoop-like tongue for eating owl poop, good eyesight to see where squirrels have hidden nuts, speed to escape mountain lion, ears that fold into the head to avoid frostbite,...

DISCOVERIES AROUND SCHOOL

Creating a Class Book

Curriculum Connections: Common Core (CC) MD 2.1; CC W 3.2, CC W 3.3, CC W 3.4, CC W 3.7, CC W 3.10, CC L 3.2, CC L 3.3, CC MD 3.4; CC W 4.2, CC W 4.3, CC W 4.4, CC W 4.7, CC W 4.9b, CC W 4.10, CC L 4.2, CC L 4.3; CC W 5.2, CC W 5.3, CC W 5.4, CC W 5.7, CC W 5.9b, CC W 5.10, CC L 5.2, CC L 5.3; Science Crosscutting Concept: Structure and Function; Science Practice: Asking questions, observing; analyzing and constructing explanations; Science Core LS1.A, LS1.D, LS3.B, LS4.D

Materials: pencil, paper, rulers, magnifiers, access to the library, collecting jars, nets (optional)

Essential Question: What if we found an unknown species?

Objectives:

- Students evaluate text in a trade book.
- Students observe and research a living organism.
- Students write text modeled on a trade book.

After discussing safety issues, take the students on an exploration of their school grounds. They are to imagine they are the first explorers in the area and are in search of unique plants or animals. Ask each student to collect a plant or animal specimen and treat it as if they were the first human to discover it. They should observe it in its environment, study its behavior, research it, and write their own spread for the class book. Allow students to photograph or sketch their specimens and bring them inside for extended study.

Use *Wild Discoveries* as a mentor text. Student spreads may include: common name, scientific name, size, role in nature, location of discovery, descriptive writing about the specimen, a narrative of the discovery process, explanatory passages about physical or behavioral adaptations of the organism, an unsolved mystery, a diagram with labels and measurements, etc.

If possible, print and bind the spreads to create a class book.

Assessment: A rubric is included for assessing the students' work. If students are unfamiliar with rubrics or the terms used, as a class, read one spread of *Wild Discoveries* and use the rubric on it. Then allow students to assess another spread individually until they are comfortable with the tool and criteria.



WILD DISCOVERIES AROUND THE SCHOOL

Rubric

Score	4	3	2	1
Focus/ Information	<ul style="list-style-type: none"> Shows a strong understanding of the topic 	<ul style="list-style-type: none"> Shows an understanding of the topic 	<ul style="list-style-type: none"> Shows limited understanding of the topic 	<ul style="list-style-type: none"> Shows little understanding of the topic
Organization	<ul style="list-style-type: none"> A clear topic sentence, details and concluding sentence Uses effective linking words 	<ul style="list-style-type: none"> A topic sentence, details and concluding sentence Uses linking words 	<ul style="list-style-type: none"> Incomplete use of topic sentence, details and concluding sentence Little use of linking words 	<ul style="list-style-type: none"> No topic sentence, details and concluding sentence No use of linking words
Support/ Evidence	<ul style="list-style-type: none"> Skillfully uses specific facts, definitions, and details 	<ul style="list-style-type: none"> Develops the topic with facts, definitions, and details 	<ul style="list-style-type: none"> Uses some facts, definitions, and details 	<ul style="list-style-type: none"> Uses few or no facts, definitions and details
Language	<ul style="list-style-type: none"> Uses purposeful words Uses creative grammar, punctuation, etc. to improve readability Carefully varies sentence structure 	<ul style="list-style-type: none"> Uses strong words Uses correct grammar and punctuation Uses appropriate and varied sentence structures 	<ul style="list-style-type: none"> Uses basic words Uses some correct grammar but with some errors Uses correct sentence structure 	<ul style="list-style-type: none"> Uses simple or incorrect words Uses incorrect grammar Uses incorrect sentence structure

MORE NEW SPECIES

Curriculum Connections: CC: RI 3.9, W 3.2, W 3.4, W 3.5, W 3.6, W 3.7, SL 3.4; RI 4.9, W 4.2, W 4.4, W 4.5, W 4.6, W 4.7, W 4.8, W 4.9b, SL4.4; RI 5.9, W 5.2, W 5.4, W 5.5, W 5.6, W 5.7, W 5.8, W 5.9b, SL 5.4; W 6.2, W6.4, W 6.5, W 6.6, W 6.7, W 6.8; W 7.2, W 7.4, W 7.5, W 7.6, W 7.6, W 7.7, W 7.8; W 8.2. W 8.4, W 8.5, W. 8.6, W 8.7, W 8.8; NGSS Crosscutting Concepts: Structure and Function

Materials: Copies of *Wild Discoveries*, access to the internet, digital databases, magazines, etc.

Essential Question: How does an author select material for inclusion in their work?

Objectives:

- Students analyze the species selected for *Wild Discoveries* for selection criteria.
- Students identify additional new species which fulfill those criteria.
- Students write, revise and share their work.

Ask students to review several species descriptions in *Wild Discoveries* and the letter to the reader on page 4. As a class, list criteria the students think the author, Heather L. Montgomery, used for selecting the species. Have the students research additional new species, select the “best” candidates, and create a class book of additional new species.

Some questions for beginning the class discussion:

- Should they limit their work to new animals or consider all new species?
- What time frame do they consider to be “new”? [Note: because of the delays in publication, a time span of the past ten years may be the most appropriate.]
- Do they want to mimic the structure of *Wild Discoveries*? If so, what common elements do they need to include on every page?

These are some of the same questions Heather considered when writing the book!

Students may want to visit some of the links listed on the Links of Interest page or consider the types of sources in the bibliography.

Instead of a book, students may post their work digitally through wikipages, Pinterest, blog, etc.

Links of Interest



*Year of Science 2009, Meet the Bonaire Banded Box Jellyfish,
http://yearofscience2009.org/themes_ocean_water/general/meet-bbbj.html

*Sengis (Elephant-Shrews) Photographic Gallery: New Gray-Faced Sengi,
http://researcharchive.calacademy.org/research/bmammals/eshrews/photogallery_new_species.php#expedition

YouTube The Velvet Worm, <http://www.youtube.com/watch?v=FbVDYSiH-Vw>

YouTube Green Bomber Worms, <http://www.youtube.com/watch?v=c2xzUb7uIO4>

YouTube Boneworms,
<http://www.youtube.com/watch?v=URi8KccVkks&feature=endscreen&NR=1>

YouTube Tennessee Bottlebrush Crayfish
<http://www.youtube.com/watch?v=e05nqc1ygYg>

International Institute for Species Exploration, Top Ten New Species:
<http://species.asu.edu/index>

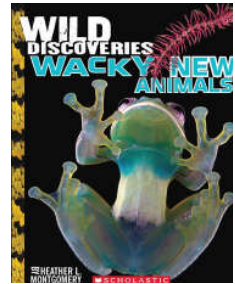
Discovery News, Top 10 New Species named: Photos, <http://news.discovery.com/animals/top-10-new-species-photos-110523.html>

National Geographic Daily News, New Species Photos: Giant Milliped, Horned Frog Among Borneo Find, : http://news.nationalgeographic.com/news/2012/10/pictures/121005-borneo-new-species-bugs-animals-science-environment/#/new-species-dna-barcoding-borneo-trees_59935_600x450.jpg

National Geographic Daily News, Pictures: "Pancake" sea Slug Among New Philippines Species, <http://news.nationalgeographic.com/news/2011/06/pictures/110628-philippines-new-species-deep-sea-ocean-rare-animals-sharks-nudibranchs>

* = particularly helpful for visualizing the steps in the scientific process and the team-work required for scientific projects.

Complete Bibliography for *Wild Discoveries: Wacky New Animals*



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