

RESERVA

THE YOUTH LAND TRUST

NAME THIS FROG!

WHAT'S MY NAME?

RECOMMENDED FOR GRADES 2-5

A Lesson on Naming Newly Discovered Species

WRITTEN AND DEVELOPED BY RESERVA: THE YOUTH LAND TRUST
FOR BOTH VIRTUAL AND IN-PERSON LEARNING

Photo by Callie Broaddus

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Our “What’s My Name?” unit brings the excitement of scientific discovery right to your classroom, with a hands-on experience of naming a *real* new species! As the loss of biodiversity, endangered species, and pristine habitats are increasingly affecting our daily lives, we believe it is important to engage young students in real science and conservation. If you have questions, comments, or requests for our next unit, please email info@reservaylt.org.

*Note: This unprecedented opportunity for your students to submit names for a real new frog species is only open until **September 30th, 2020!** However, the unit and slide deck will stay available permanently for your reference.*

WHAT'S MY NAME?

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The lessons in this unit address the following Next Generation Science Standards:

2	2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.
3	<p>3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.</p> <p>3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.</p> <p>3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</p> <p>3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.</p>
4	<p>4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.</p> <p>4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p>
5	<p>5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p> <p>5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p>

binomial naming system: The official system of naming species of plants and animals by giving each a name made up of two parts. The two parts that make up the binomial name - also called the scientific name - are the generic name and the specific name. The binomial name is always in Latin to make sure that the name is always the same in all languages that scientists might be using. For example the binomial name of the lion is *Panthera leo*.

common name: The common name is the name that the species is most often called. Take, for example, the African Lion. The common name can be different in different languages. For example, in Spanish the word for "lion" is "león," and in Swahili it is "simba."

general name: The general name is the first part of the binomial name, which identifies the genus—a type of scientific grouping—to which the species belongs. For example: *Panthera leo*. *Panthera* is a genus of big cats that also includes tigers, leopards, and jaguars.

Latin: A classical language that is no longer spoken but has been used to describe animals scientifically for nearly 400 years.

publish: When a scientist makes all of their research, along with the chosen names of a newly discovered species, available to the public in a scientific paper or journal.

scientific name: The two-part Latin name that identifies an animal scientifically (see: **binomial naming system**).

specific name (or epithet): The specific name is the second part of the binomial name which identifies the species of the plant or animal. For example: *Panthera leo*. The epithet *leo* means that this species is the lion.

NAMING A NEW SPECIES

Essential Question: What is the difference between a common name and a scientific name, and how do scientists select these names?

Summary

Scientists discovered a new species of Torrent Frog in the Chocó Cloud Forest of Ecuador and you have the chance to officially name it!

Before choosing a name for this frog, we need to know how a new species is named. Lesson 1 will help us understand what a **common name** for a species is (for example, "Lion") and what a **scientific name** is (for example, *Panthera leo*).

Then we'll learn how scientists choose these names for new species once they are discovered. In Lesson 2, you will put your new skills into practice by researching this new species of frog and submitting your idea for the new species' common and scientific names!

Hook

GROUP QUESTION: What is your favorite wild animal. Where does it live? What does it need to survive? How do you think it got its name?

GROUP QUESTION: Do you have a pet at home? What is your pet's name? How did he/she get his/her name? Do you think that his/her name fits your pet's personality/appearance/individual story?

RESOURCES

Website:

American Museum of Natural History—Dinosaur Names:

<https://www.amnh.org/dinosaurs/dinosaur-names>

Binomial Nomenclature Facts for Kids: https://kids.kiddle.co/Binomial_nomenclature

Video:

Crash Course — Taxonomy: Life's Filing System - Crash Course Biology #19:

https://youtu.be/F38BmgPcZ_I

Scientific Name

When a scientist picks a name for a species, they follow a two-name system called a **binomial naming system**. Think about us humans, the *Homo sapiens*—the first word, “*Homo*,” is the genus (or **general name**), and the second word, “*sapiens*,” is the species (or **specific name**). This second word is also called the **specific epithet** because it distinguishes the species from others within its genus.

The genus is always written with a capital letter, and the species begins with a lower-case letter. Sometimes, you may see the general name abbreviated—for example, *H. sapiens*.

DISCUSS: You already know at least one **scientific name**, whether or not you were aware of it—*Tyrannosaurus rex*! How is this species abbreviated? *T. rex*! (Note: most familiar dinosaurs are known by their general names only.)

Latin

Coming up with a specific epithet takes a lot of creativity and hard work! It also takes a lot of research into a language called **Latin**, the language in which all scientific names are written. Take, for example, the origin of the name *Hemidactylus frenatus*: The name *Hemidactylus* (a genus of lizard) comes from the Greek words “hemysis” (meaning “half”) and “dactylos” (meaning “finger”). The genus name probably refers to the rows of skin folds under these gecko’s fingers, which are grouped in two halves. The specific epithet *frenatus*, which comes from the Latin words “frenum” (meaning “bridle”) and “atus” (meaning “provided with”) refers to the color pattern of the face.

Common Name

Along with the **scientific name**, scientists also choose a **common name** for the species they are describing. It usually relates to the Latinized word they choose for the species, but that isn’t a requirement. Often, common names will give clues to the species’ taxonomy (or evolutionary tree). For example, the common name “Red-spotted Glassfrog” tells us that the frog has red spots, but it also allows scientists who are familiar with frogs to know it belongs in the glass frog family, *Centrolenidae*. If the common name had just been “Red-spotted Frog,” it would still make sense, but it would be less helpful as an identifier.

ACTIVITY 1

Rename an Animal!**Directions:**

Each of these animals has a misleading common name. As a group, identify physical characteristics of each animal and encourage students to share any information they might know about the animal's behavior, habitat, or anything else related to the species. After this group review, students will offer their own creative ideas for alternate common names. *Review using the slide deck for virtual learning, or pass out the worksheet for in-person learning.*

DISCUSS: Why is the common name for this species misleading? What else do we know about this animal, and what can we tell about it from the photo?

Google Slide Deck:

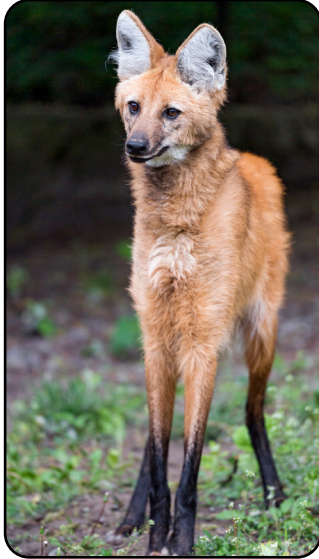
Pause on the last slide so students can choose one or two animals to rename. Each student is asked to present one of their new names to the rest of the class until everyone has spoken at least once.

DISCUSS: Why did you choose the name you created? Was it because of a physical characteristic of the animal, its habitat, or something else? *There's no wrong answer!*

Renaming Worksheet:

Hand one of the four worksheets out to each student to fill out. As students finish, they stand up at their desk to present one or both of their new species names.

Name: _____



FLOKOR CC / TAMBAKO THE JAGUAR / CAPTIVE

Maned Wolf

THOUGH IT IS CLOSELY RELATED TO WOLVES, THE MANED WOLF IS NOT ACTUALLY A WOLF!



FLOKOR CC / THEO BRAZZOLARA

Koala Bear

KOALAS ARE MARSUPIALS, WHICH ARE VERY DIFFERENT FROM BEARS!

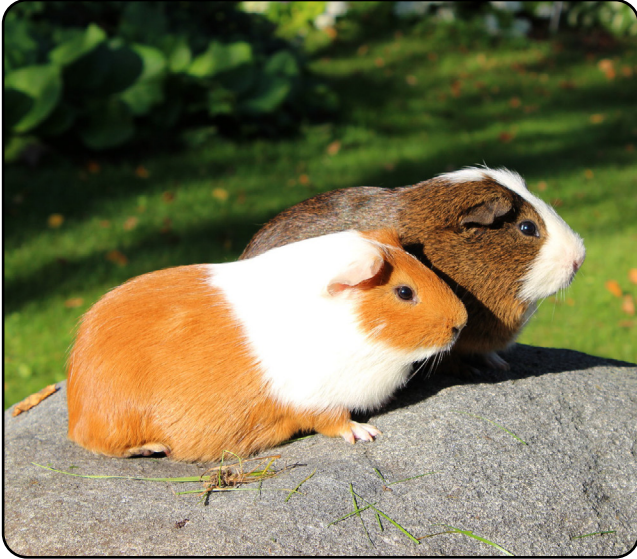
Write a new common name for this animal:

Write a new common name for this animal:

Why did you choose this name?

Why did you choose this name?

Name: _____



FLOKOR CC / ANDY MASONNE / DOMESTIC

Guinea Pig

GUINEA PIGS ARE RODENTS, NOT PIGS, AND THEY COME FROM SOUTH AMERICA, NOT GUINEA (WHICH IS IN AFRICA).

Write a new common name for this animal:

Why did you choose this name?



FLOKOR CC / CHARLES (CHUCK) PETERSON / CAPTIVE

Starfish

STARFISH ARE NOT FISH AT ALL! THEY ARE VERY DIFFERENT ANIMALS CALLED ECHINODERMS.

Write a new common name for this animal:

Why did you choose this name?

Name: _____



FLICKR CC / LONEYSHRIMP

Flying Fox

FLYING FOXES CAN BE AS BIG AS A FOX, AND MAY EVEN LOOK LIKE A FOX, BUT THEY ARE ACTUALLY THE LARGEST BATS IN THE WORLD!

Write a new common name for this animal:

Why did you choose this name?



© CALLE BROADUS / RAINFORREST TRUST / WILD

White Rhinoceros

WHITE RHINOS AREN'T REALLY WHITE! THEIR NAME IS SUPPOSEDLY A MISTAKE THAT STUCK AROUND AFTER A MISTRANSLATION.

Write a new common name for this animal:

Why did you choose this name?

Name: _____



FLOKOR OG / MRWRITTER / WILD

Killer Whale

THE KILLER WHALE IS NOT A WHALE; IT'S ACTUALLY THE LARGEST MEMBER OF THE DOLPHIN FAMILY!

Write a new common name for this animal:

Why did you choose this name?



FLOKOR OG / MATTHIAS APPEL

Red Panda

THE RED PANDA ACTUALLY BELONGS TO ITS OWN FAMILY, AILURIDAE, AND IS MORE CLOSELY RELATED TO WEASELS AND RACOONS THAN THE GIANT PANDA.

Write a new common name for this animal:

Why did you choose this name?

A REAL DISCOVERY

Essential Question: What would be a meaningful, creative, or suitable name for this new species of frog?

“Original discoveries, to remind you, are what counts the most. Let me put that more strongly: they are all that counts. They are the silver and gold of science.”

— Edward O. Wilson, *Letters to a Young Scientist*

Summary

Now that you know all about naming animals, it's time to put your knowledge into practice—*real* practice. Ecuadorian scientists are ready to **publish** a new species of frog they discovered in the Chocó cloud forest, but they're still missing one important thing: a name!

This is where YOU come in. For the first time ever, the opportunity to name a new species is open only to kids and youth up to 26 years old. In this lesson, we'll review what scientists know about this new frog species so you can have all the information you need to come up with a great name for this brand new species!

Hook

VIDEO: [Hip Hop Science: Hi! My Name Is ____ \[Name This New Species\]](#) (7:37)

The Scientific Naming Process

When a new species is discovered, it doesn't have a **specific name (or epithet)** yet. So, it is referred to by its genus followed by “*sp. nov.*” which means “species nova” or “new species.” Before a scientist chooses a specific epithet, they have to conduct a lot of research to ensure that this is not a species already known to science under a different name. At this point, the species may be called a “confirmed candidate,” or *CC*. That's why you'll see us refer to this frog as *Hyloscirtus sp. CC*. The process can take months or even years, because other scientists don't always agree with the conclusions of the scientists who discovered and studied the new species.

When they are ready to publish the name along with all of their findings, they include as much information as they can—from DNA analysis to scientific drawings and even CT-scans—to convince other scientists that their findings are correct. After time, research, and a lot of paperwork, the new species is ready to be shared with the world!

ACTIVITY

Name This Frog!**Directions:**

Screen share: Go to reservaylt.org/frog and review the sections labeled "Physical characteristics," "Location & Habitat," "People," and "Use Your Imagination!" Discuss your observations after each section, then provide time to think and write a species name.

DISCUSS: What information in this section could be useful in thinking of a name? What do you observe about the photos in this section?

Optional: Review the Wikipedia list linked below to identify common sounds in Latin names. Encourage students to try to Latinize their names.

>> EXIT TICKET

STUDENTS SUBMIT THEIR FINAL ENTRIES ONLINE AT [RESERVAYLT.ORG/FROG](https://reservaylt.org/frog).

OR

HANDOUT: COLLECT ENTRIES AND SUBMIT FOR EACH STUDENT, USING THE TEACHER'S EMAIL ADDRESS AND STUDENT'S NAME AND AGE FOR EACH ENTRY.

RESOURCES

Websites:

Reserva Frog Naming Competition: reservaylt.org/frog (English) or reservaylt.org/rana (Spanish)

Wikipedia—List of Latin and Greek words commonly used in scientific names:

https://en.wikipedia.org/wiki/List_of_Latin_and_Greek_words_commonly_used_in_systematic_names

Name: _____

Age: _____

Common Name:

Specific name (Optional—a scientist will help make sure the Latin is correct!)

The general name, also known as the genus, is already written for you.

Hyloscirtus _____

Explain why you chose these names:

Acknowledgments:

Written & Developed by: Callie Broaddus, Shaalini Ganesalingam, and Will Thompson

Design by: Callie Broaddus, Reserva Founder & Executive Director

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These lesson plans were based on the structure of our Habitat & Biodiversity Conservation unit, developed by Emily Voreas, Reserva Advisory Council Member and Educational Consultant.

This species naming opportunity was made possible by the Ecuadorian scientists who made this discovery, and the Reserva team would like to extend its deepest gratitude to them for providing youth with the opportunity to name this frog. A special thank you to: Mario Yáñez Muñoz (Investigador División de Herpetología, Instituto Nacional de Biodiversidad), Juan Pablo Reyes Puig (Fundación EcoMinga, Investigador Asociado INABIO), the Zoological Laboratory at Universidad San Francisco de Quito, and the Alexander Koenig Bonn Museum.

About Reserva

Reserva: the Youth Land Trust is a nonprofit organization dedicated to empowering young people to protect biodiversity through youth-led projects in conservation, education, and storytelling. Based in Washington, D.C., Reserva is supported by an international Youth Council, a group of (currently) 50 youth from around the world who formally advise on our actions and help design, share, and implement Reserva's initiatives.

Our Mission:

We create youth-funded nature reserves to protect biodiversity, fight climate change, and to elevate the status of young people as environmental change-makers. We educate youth around the world on the importance of habitat and biodiversity and empower them with this platform for action. And we design creative projects that amplify our impact on a global scale through engaging storytelling.

Contact us:

reservaylt.org

info@reservaylt.org

P.O. Box 57277

Washington, D.C. 20037

Social Media:

@ReservaYLT

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