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# Close encounters in the rainforest : a children's book for eight and nine-year-olds

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*Close Encounters in the Rainforest: A Children's Book for Eight and Nine-Year-Olds*

By

Vandana Mathrani

Mentor: Sean O'Shea

Submitted in partial fulfillment of the requirements of the degree of

Master of Science in Education

Bank Street College of Education

2013

## Abstract

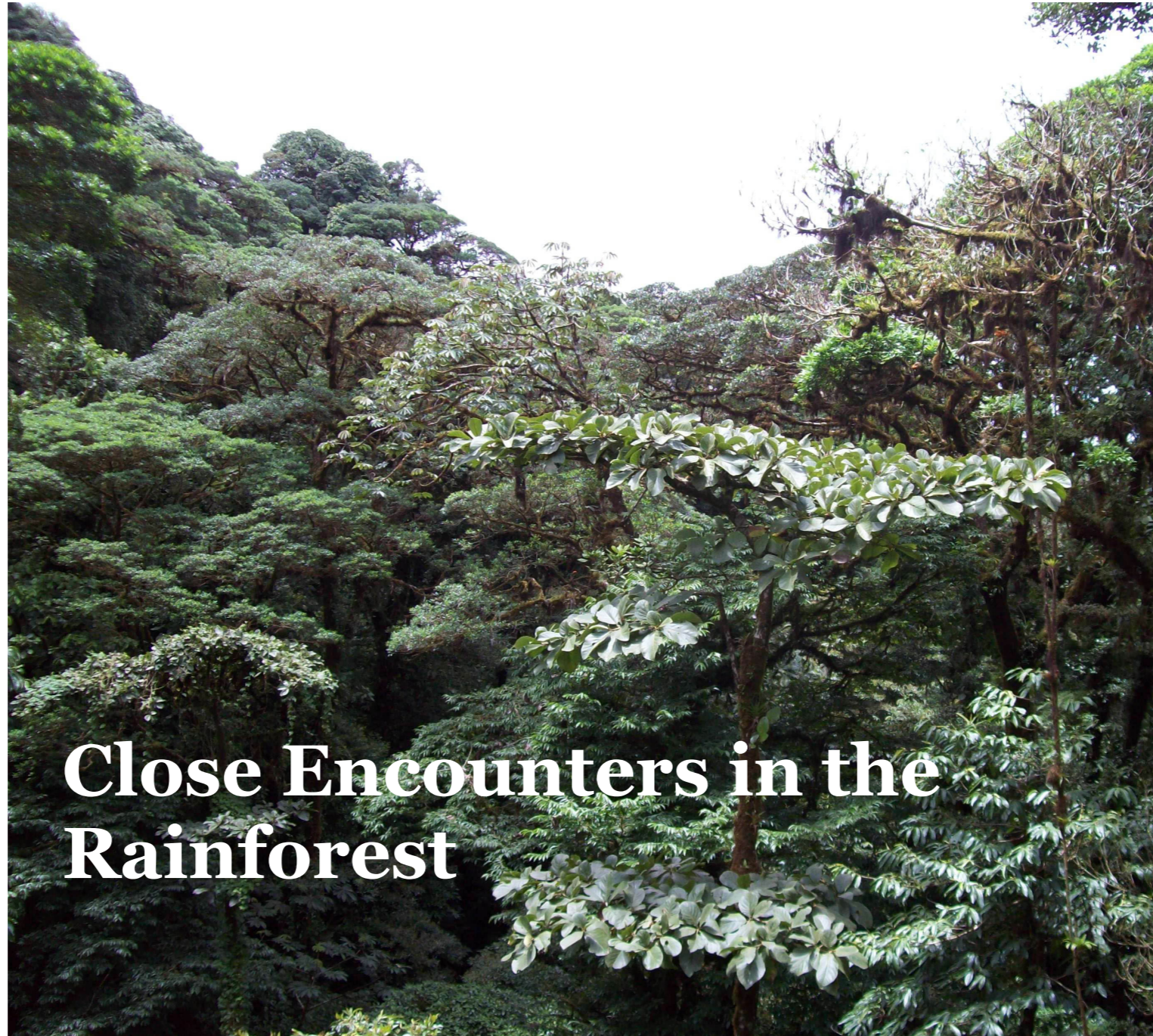
### *Close Encounters in the Rainforest: A Children's Book for Eight and Nine-Year-Olds*

*Close Encounters in the Rainforest* is a children's book that describes the array of biodiversity present in a tropical rainforest. The book is designed for eight and nine-year olds because it's content is aligned with that age group's interests and curriculum themes. *Close Encounters in the Rainforest* is written in a first-person narrative format in which a red-eyed tree frog is telling the story of the different animals and plants one can encounter in a Costa Rican rainforest. The text and vocabulary in the book are based on the science content and reality of a tropical rainforest. The book can also be viewed as a field guide to some of the most important plants and animals, and dynamics, found in the rainforests of Costa Rica. The content of the book can also be informative for adult readers.

The Introduction explains the reasoning behind the creation of the book, including reflections and the inspiration for it. The Introduction also includes rationale for the use of certain illustrations and text in the book. The Similar Books section deals with descriptions of other books that deal with rainforest life. In the section Rationale for Audio Book Version, the book is analyzed in the context of the use of technology to aid students with special needs, what types of mixed-media formats engage children and what types of images and illustrations should be utilized. The Conclusion explains how this book can be used and applied by children, educators, and parents.

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# Close Encounters in the Rainforest

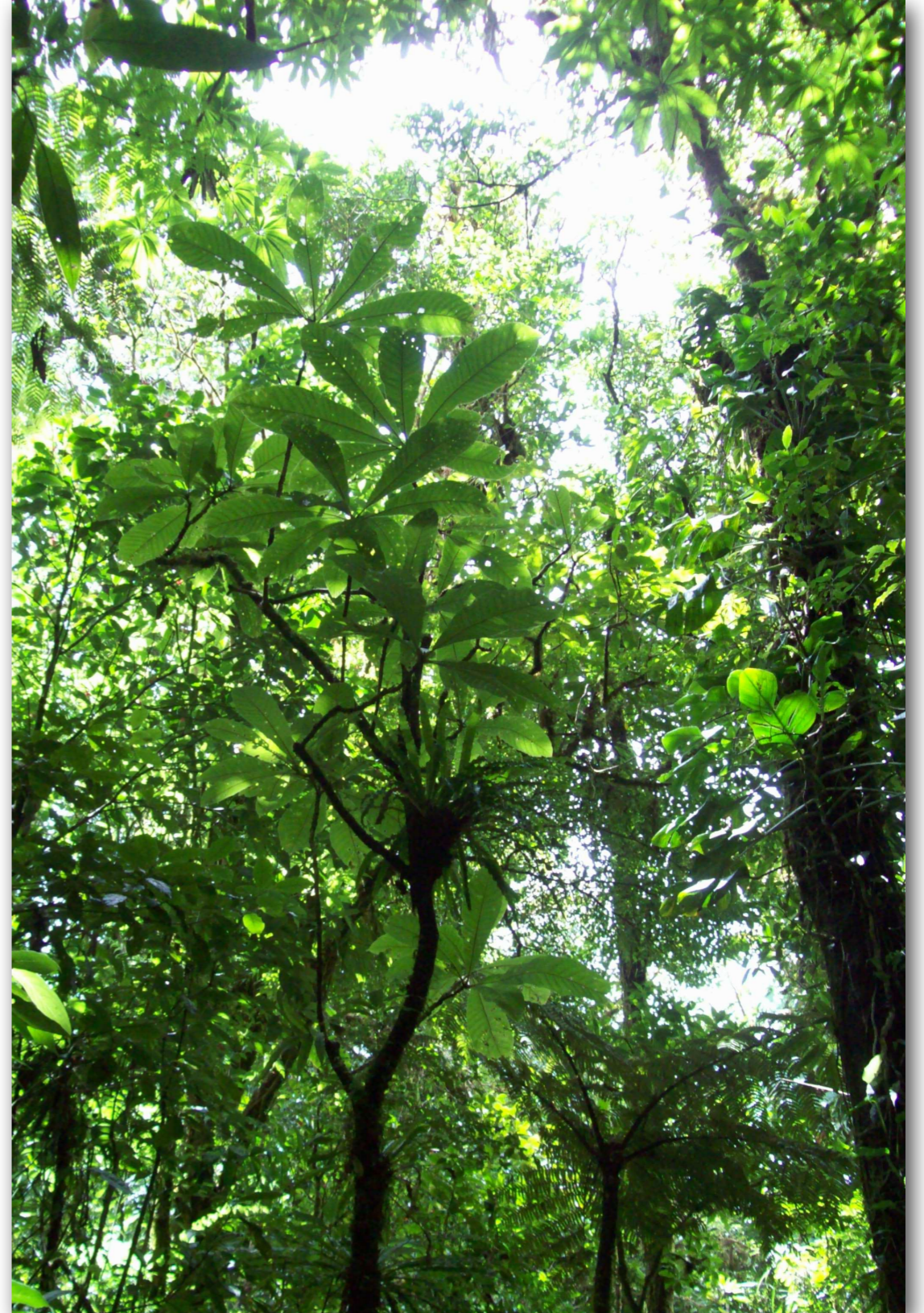
VANDANA MATHRANI

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# Close Encounters in the Rainforest

Written & Illustrated By:  
Vandana Mathrani

Photographs By:  
Vandana Mathrani



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## DEDICATION

To the living beings of the forest – may you thrive - so that future generations can admire and witness your wonder

and

to the indigenous peoples, the guardians, of this Earth – may your lives and ways continue to be an inspiration to us  
all.





*Hola!* (Hi!) My name is Tree. I'm a red-eyed tree frog and I live in the **rainforest** in Costa Rica.

Welcome to my home! I'll be showing you many of the different animals and plants that also live in the rainforest.



I live in the **cloud forest** of Monteverde, Costa Rica. Monteverde is a special and unique place. It is home to so much **biodiversity**. You can see so many different plants and animals here!

There are over 2,500 types of plants and over 400 **species** of birds here.



Cloud forests are formed when moist air travels up the mountain slopes and, cooling as it rises, forms clouds.

The branches of trees in these forests are covered with different plants that attract different kinds of wildlife.

Where I live is home to so many different kinds of plants and animals that it would take many books to tell you about each one of them!

Did you know that more than 50% of all the plants and animals living on Earth live in tropical rainforests?





Look here! You can spot a beautiful Blue Morpho butterfly! Let me introduce you to my friend, Morpheus. Morpheus's wings are actually brown, not blue. The **illusion** of the shiny blue wing color comes from tiny, layered, glass-like **scales** on the upper wings when they are open.



Meet Howie, the howler monkey. In Costa Rica, he is also called *mono congo*.

Howler monkeys defend their **territory** by howling. Howie's loud roar can be heard as far as one mile away!

Look straight ahead. Can you spot the **camouflaged** hairy creature hanging upside down from the branch of that tree? That's Minka, the slow moving three-toed sloth. Notice her long arms and claws. She uses her sharp claws to hold on to the tree branches.

Three-toed sloths here live mostly in Cecropia trees and they can live upside-down! They only eat leaves and they spend about 80% of their time taking naps!



This beautiful **bromeliad** is a plant known as an “**epiphyte**” or “air plant.” Bromeliads grow on tree branches and also on the ground. They have thick, waxy leaves that collect water. Their leaves are nested and leaf litter falls into the “nests” and provides **nutrients** for the plant. Many frogs also lay their eggs in the water in the “nests.”





Oh no! Please don't tell Tomas that I'm here.  
Tomas is a toucan and toucans eat frogs like me.  
We better spend as little time here as possible.

Just know that the toucan: usually does not fly,  
eats mostly fruits, has a colorful beak, and is  
recognized by its call. Toucans are found in all of  
Costa Rica's rainforests.

Yikes! I'll make sure I'm careful as I hop quietly  
along.



Another animal that has an interesting call is the Three-wattled Bellbird. Meet Billy.

Three-wattled Bellbirds, like Billy, are not usually seen but most times are heard. His call sounds like metal being struck!

Notice that the male grows three worm-like wattles.



Wow, we have spent a long time on our walk through the rainforest and it is getting dark.

Take a look at Vinny, the vampire bat. Vampire bats are active at night and suck on other animals' blood without killing them. These bats are **parasites**.

Vinny's fangs are razor-sharp teeth! So if you don't have to, don't spend too much time outdoors at night.





Look down close on the ground. See that? That is Rusty, the Central American rusty wandering spider. This spider hunts **prey** on the forest floor at night. Its feet can sense vibrations caused by creatures rustling through the leaf **litter**. This spider pounces on its prey and injects poison into the prey.

Be sure to have a flashlight handy and walk carefully while also looking at the ground while you walk.



Hooray! It's a new day! Good morning. Let us continue our journey into the rainforest so you can meet some more animals that live here.

Look close at the ground. Here you can see some leaf cutter ants carrying cut leaves to their underground nests. The ants actually don't eat the leaves but they feed on a fungus that grows on the **decomposing** leaves in their nests.



Wow! Notice the red “hotlips” flower. Hotlips is a forest flower that has a small white flower inside it that attracts many kinds of butterflies and hummingbirds. Here you can see a hummingbird feeding on the **nectar** of this flower. Hummingbirds can beat their wings up to 90 times a second! They can also fly backwards and sideways.

Look at this beautiful bird. Meet Manuel, a Resplendent Quetzal. This emerald-green bird was considered **sacred** by the Mayan people.

The Resplendent Quetzal is an **endangered** species but these birds are still sighted in the cloud forests of Monteverde. The tail feathers can reach more than 30 inches long!



This brilliant orange creature was a friend of mine. The Golden Toad, as he was known, was discovered by people in 1964. Only the males were bright orange and each toad measured about only one inch long.

Golden Toads were seen as recently as 1986 but since 1988, they have not been seen in the cloud forests. It is very sad that Golden Toads are now **extinct**.







Look here at another beautiful creature of the rainforest, the jaguar. Meet Jack. You can see that Jack is waiting in the **understory** for his next meal.

Jaguars are endangered and hard to see in the wild. They are endangered mainly because of people hunting them and destroying their rainforest **habitat**. Jaguars are the largest of the **neotropical** cats.



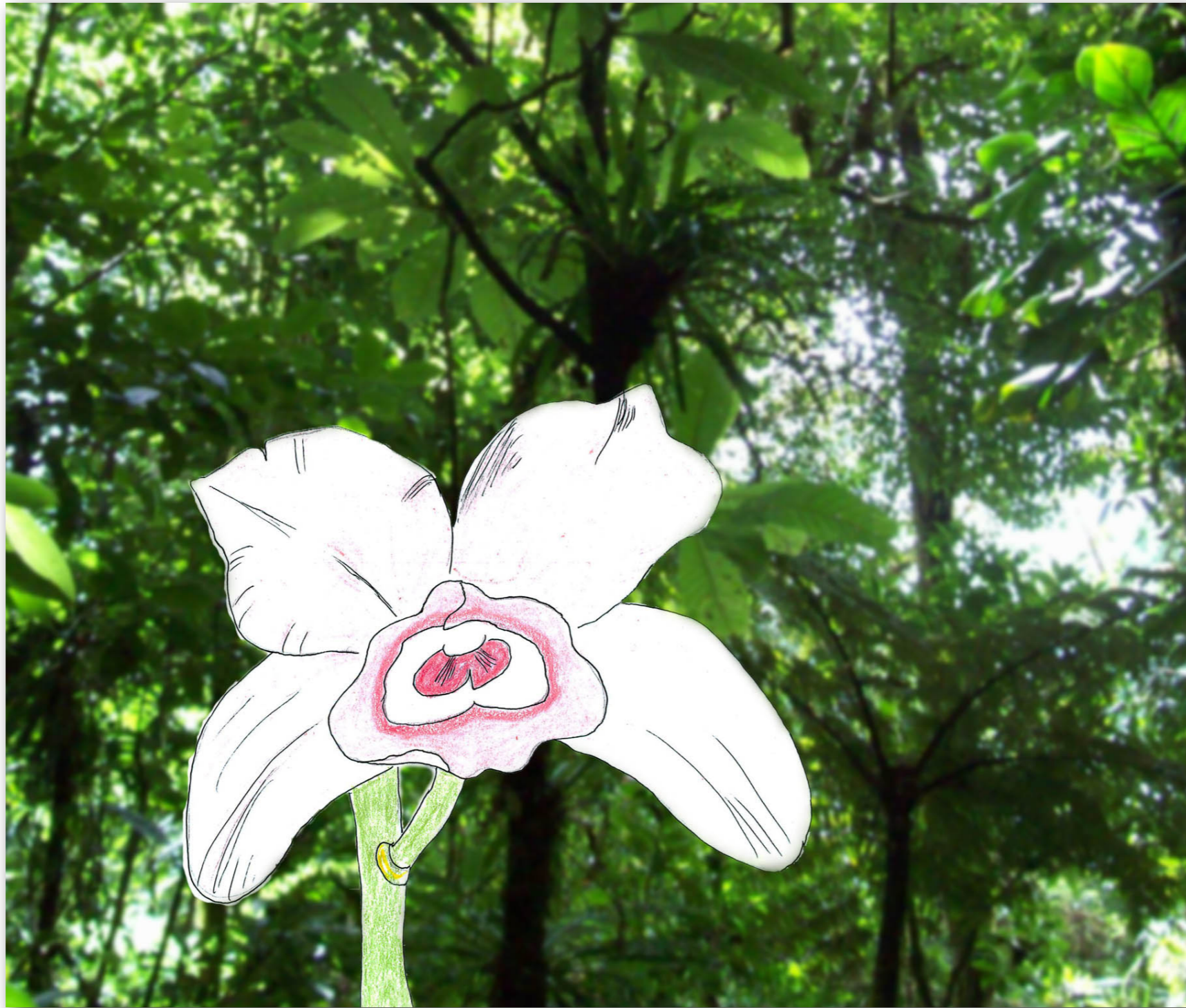
If you wander quietly and you are very still, you might see a jaguarundi. Another member of the wild cats, the jaguarundi has a long, slender body and can be either black, gray, reddish or brownish in color.

Jaguarundis hunt and eat small animals like ground-feeding birds. They are usually shy and are **native** to Central America. They are also disappearing due to the destruction of the forests.



While walking through the cloud forest, you can spot Polly, the puma. The puma is one of six species of the wild cat family found in the cloud forests.

Pumas are large, **solitary** cats and hard to see in the forests. They even eat some small domesticated cats!



See this lovely flower! This is an orchid. Costa Rica has over 1,300 species of orchids. Many orchids have pleasant smells, while a few have unpleasant smells. There are many different kinds of orchids and they range in color from whites to pinks to lavender-purples. Some orchids are as small as your thumbs!

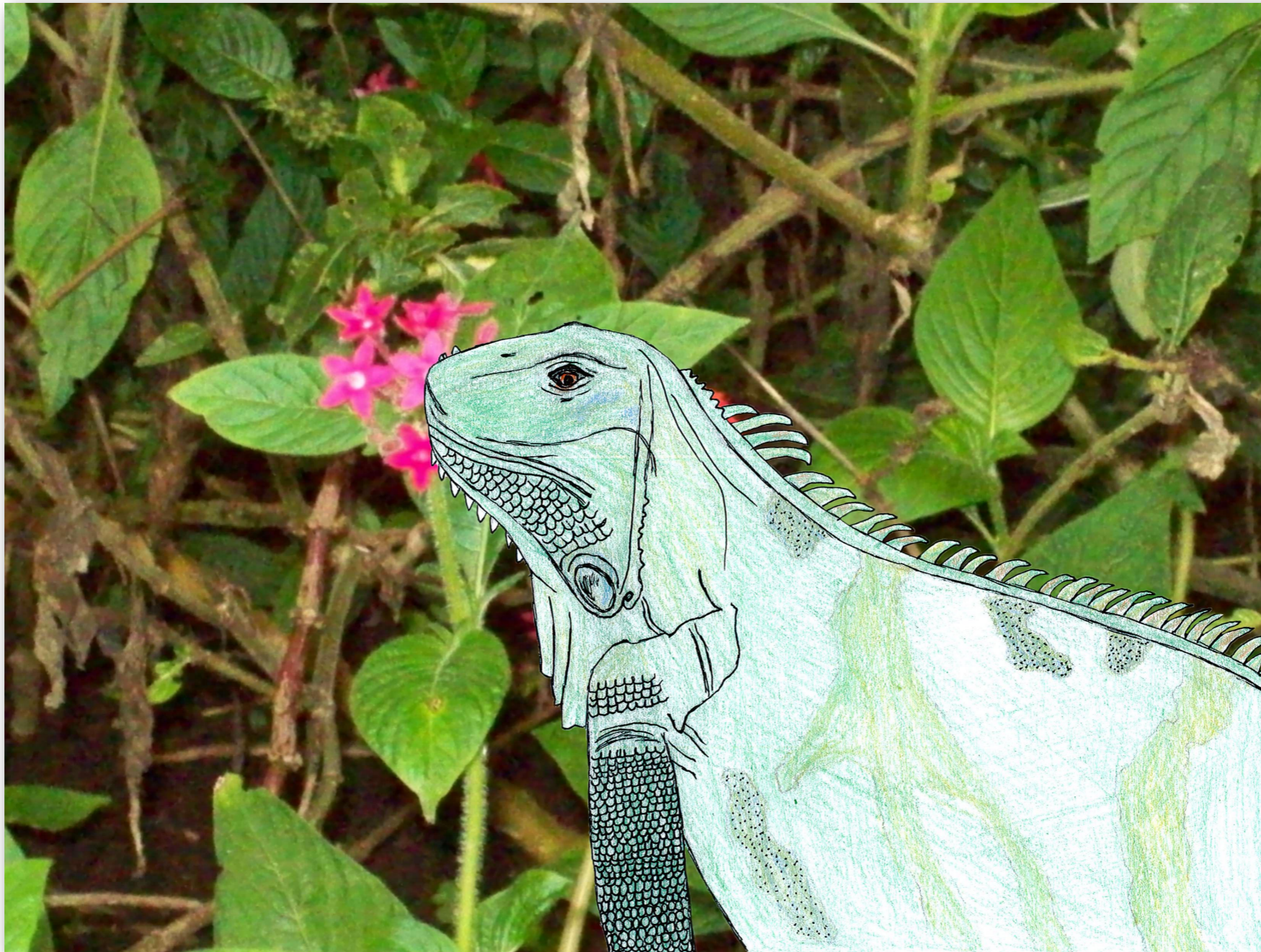
Take a look at this glasswing butterfly. Meet Lassie. Also known as the clearwing butterfly, she feeds on the nectar of flowers. The wings are see-through, like glass!



Here you can spot Maggie, a Blue-crowned Motmot.  
Maggie eats ants, frogs, fruits, and seeds. Both males and females of this species have the same colors.

Since Maggie might see me (and want to eat me), let's get moving!





Last but not least, meet Igor, the Green Iguana. Green Iguanas are large lizards that can grow up to six feet long! They come in a range of colors, not just green. They can have red and orange mixed in and even some blue on them.

They live mostly in trees but when they are threatened, they will jump from a branch and plunge into a river.

So glad that you could meet some of my neighbors in my community. Thank you for exploring the rainforest with me. You can always learn more about me and my friends and our habitats.

And tell your friends at school that amazing places like rainforests are worth saving and protecting. That way, creatures like us can be around for more visitors to see!

*Hasta luego!* (See you later!)





THE END

# Glossary

**biodiversity** - the number and types of organisms in a certain place.

**bromeliad** - a type of plant with stiff leaves growing in crowded circles.

**camouflaged** - when a color or pattern matches an organism's surroundings and helps hide the organism.

**canopy** - the main top layer of a forest.

**cloud forest** - a unique forest that has 100% humidity. A large portion of the precipitation is from the surrounding clouds and mist. Because of lots of moisture, cloud forests have a lot of biodiversity.

**decomposing** - something that breaks down into parts, decays, or rots.

**epiphyte** - a plant that grows on another plant, without stealing water or nutrients from it.

**extinct** - no longer living; died out.

**habitat** - the place where a plant or animal usually lives.

**illusion** - a misleading image.

**litter** - the top almost broken down layer of leaves and soil on the forest floor.

**native** - an animal or plant that is from a certain place.

**nectar** - the sweet liquid inside flowers.

**neotropical** - of or relating to the tropical region that is south, east, and west from the center of Mexico.

**nutrients** - “food” that plants and animals need to grow and live healthy

**organism** - a living being.

**parasites** - organisms that feed on different organisms while giving nothing to those organisms.

**prey** - an animal that is food for another animal.

**rainforest** - a moist forest that receives at least 80 inches of rainfall each year.

**sacred** - worthy of respect or religious worship.

**scales** - small plate-like structures forming the outside covering of fish, reptiles, some mammals, and some insects.

**solitary** - existing or living alone.

**species** - one kind of living thing. All people are one species.

**territory** - an area of land or region in which a group of animals of the same species is active.

**understory** - the layer in the tropical rainforest that is about 33 to 66 feet above the ground.

This layer includes young canopy trees, small palms, and adult understory trees.

## Acknowledgements

I would like to acknowledge my sister, Varsha, who served as an editor and helped color some of the illustrations for the book. She was also instrumental in providing feedback for the story and the type of voice to use for the audio book version.

I would like to thank my IMP mentor Sean O' Shea for feedback for my IMP and for the book. Special thanks also to Marian Howard who helped me in deciding the format and focus for the book.

Many thanks to digital media specialist Jeff Hall for all his help in making the digital and audio versions of my book. I learned so much about how technology can be used to create visually appealing e-books.

I would like to thank Bethany Elmore, one of the local guides in Costa Rica who encouraged me to keep on drawing. This book would never have happened without her enthusiasm and encouragement.

## About the Author

Vandana Mathrani is a graduate student at Bank Street College of Education in New York City. She majored in biology in college. *Close Encounters in the Rainforest* is her first children's book.

Vandana plans to pursue a career in elementary education and science education to be able to share her love of learning and discovery about the natural world to children.



## Introduction

Growing up in New York City, I was always drawn to the places where the "natural world" and the "city world" met. I can think back to places such as Inwood Hill Park and Central Park, where as an elementary and middle-school student I spent afternoons learning about spring peepers in Central Park's Azalea Pond and bird-watching for song birds for a Breeding Bird Census in Inwood Hill Park. Urban Park Rangers taught and guided my ecology club members and I during expeditions in these natural areas of New York City, and I was amazed to see life before my very eyes. I grew to enjoy learning about nature and ecology in both the breathtaking outdoors of New York and its science and research institutions, such as the American Museum of Natural History and the Wildlife Conservation Society. I fondly remember those days learning with joy and experiencing science in a whole new way.

I chose to create a children's book after taking a graduate rainforest ecology course, *The Delicate Connection of People and the Biology of the Rainforest*, in Costa Rica. I was so inspired by the environment that surrounded me that I knew I wanted to be able to create work that would showcase some of the wonderful animals and plants that I witnessed and learned about there. This intensive summer ecology course also fit in with my learning-style in that it was an experiential education course that showcased the implications of creating curriculum and educational experiences for students back in the States. By experiencing nature and science first-hand outdoors in a rainforest, I was able to learn from inquiry-based investigations about the biodiversity of the rainforest and also how an educator can also create such experiences in the "outdoors" of New York City.

While I was in Costa Rica, I took a sketchpad around with me so that I could illustrate some of the wildlife that I observed there. I remember one of the local guides for the course, who admired my drawings, told me that I should keep on drawing throughout the course and utilize my drawings to illustrate curriculum materials. Her feedback and encouragement also guided me to utilize my art skills in the creation of *Close Encounters in the Rainforest*.

Another experience in Costa Rica propelled me to the idea of illustrating and writing a children's book. This experience was a very memorable yet frightening one! One day, I was walking on a solo hike in the rainforest (after being instructed by the course instructor that she wanted all of us students to be able to hear and see more wildlife this way, as we would be quieter walking on our own) when I encountered a jaguarundi, a wild cat of the rainforest, smaller than a jaguar but much larger than a domesticated house cat. The jaguarundi's eyes and my eyes met. It (I am not sure if it was a male or female) growled and hissed at me. I froze in place at the sight of it and the sound of its growl. I stayed in one place for about 10 seconds and prayed. I then walked slowly in the direction in which I came from and after it was out of my sight, I darted on the trail. I think I might have interrupted its hunting of its prey. I will never in my life forget that experience. The excitement and fear and all the other emotions I felt in those moments will remain with me for life. After my experience, which was so visceral, and it was real, I realized that I needed to capture what I saw and observed to share with people around me. After coming back to the States, the more I thought and remembered the experience, I realized I wanted to educate other people about this animal as well as other animals of the tropical rainforest of Costa Rica. I decided that by illustrating and writing a children's book about the myriad of animals and plants of the rainforest, I could do justice to my reminiscences and memories from my trip.

In my book, I chose to use large drawings of some of the animals and plants that I saw there, to be able to showcase the characteristics and features of each organism. I wanted the featured animals and plants to look realistic yet still be indicative of being detailed illustrations of them. The only animal that I wanted to look like a cartoon was the red-eyed tree frog, who is the protagonist who tells the story. I chose to do this because I knew children would be attracted to this feature in the book. I also felt that my words told by the character of a frog would be more engaging for children than if I drew an illustration of myself. As for the text for the book, I utilize words that are developmentally appropriate for the age group and also are interesting. For each animal and plant, I wanted to include at least one unique fact about them. The difficult and scientific terms are shown in bold text. I include a glossary of the terms at the end of my book.



## Similar Books

There are many children's books written about rainforests, the diversity of animals and plants there, and the importance of protecting rainforests. *Close Encounters in the Rainforest* has some similar elements with them, but it also has some differing and unique ones that make it stand apart from other books. Before writing and illustrating *Close Encounters in the Rainforest*, I researched and looked at many different children's science books. All of the books contained text. Some of these books contained only illustrations, others only had photographs, and some had a combination of both illustrations and photographs.

Four books that are similar to *Close Encounters in the Rainforest* are Kristin Joy Pratt's *A Walk in the Rainforest*, Nancy Levinson's *Rain Forests*, Colleen Sexton's *Rain Forests*, and Rochelle Strauss's *Tree of Life*. There are similarities and differences between these books and *Close Encounters in the Rainforest*.

*A Walk in the Rainforest* (1992) is written and illustrated by Ms. Pratt. *Close Encounters in the Rainforest* is similar to this book because it was written and illustrated by me. *A Walk in the Rainforest* (1992) tells the story of the different animals and plants one can encounter in the rainforests of South America, Central America, Africa, and America. Her illustrations are stunning, full of color and details. The story is told in large bold font. Each page has a paragraph or two with a description, in smaller font, of the animal or plant in the drawing on the page. The use of, what looks like, markers and paints make the illustrations engaging and enticing. Some of Pratt's illustrations are not realistic but all of them are colorful and eye-catching. *A Walk in the Rainforest* (1992) contains half-page

illustrations with text covering the rest of the page. Pratt includes interesting facts about each featured organism in a descriptive paragraph, under the story. *A Walk in the Rainforest* (1992) can be viewed as a research text or guide to different plants and animals in the different rainforests around the world. *Close Encounters in the Rainforest* is similar to this book because it also features one animal or plant followed by text about the respective organism. *Close Encounters in the Rainforest* however is more specific since it focuses only on the organisms in Costa Rican rainforests. *Close Encounters in the Rainforest* is a book that contains a main character, a tree frog of a Costa Rican rainforest, who tells the story. This is what makes *Close Encounters in the Rainforest* stand apart from *A Walk in the Rainforest* (1992) and the other books mentioned.

Nancy Levinson's *Rain Forests* (2008) is a general rainforest guide to the different plants and animals in the world's different rainforests. *Rain Forests* (2008) contains no photographs and it features many different animals on each page. She breaks her book into sections that feature animals and plants of rainforests in specific places. For example, she has a section on the Brazilian Amazon and the creatures that live there. The layout of *Rain Forests* (2008) also has text on one page followed by illustrations on the next page. *Close Encounters in the Rainforest* is similar to this book in terms of the layout. *Rain Forests* (2008) has a section all about animals and plants of Costa Rican rainforests. Levinson describes useful adaptations of some of the animals and plants. *Rain Forests* (2008) ends with a section about the people who have lived in rainforests and the people who have used their resources. A hopeful message about protecting the Earth's rainforests is found at the end of *Rain Forests* (2008). *Close Encounters in the Rainforest* also has a hopeful message at the end of the book about education and protection of rainforests.

Colleen Sexton's *Rain Forests* (2008) is a basic children's science book about rainforests. This book includes interesting facts about rainforests such as the amount of rain they receive per year, where most tropical rainforests are located, the different layers of rainforests, and some of the animals that live in the different layers of the rainforests. The book only includes photographs and text. Each photograph is large, taking up typically a half-page to two-thirds of a page. Not more than two sentences make up the text for each page. *Close Encounters in the Rainforest* is similar to this book because it contains visuals that are also large. *Close Encounters in the Rainforest* is different because it contains more advanced language in the text and it has drawings. The text in *Close Encounters in the Rainforest* is specific to details and examples in Costa Rican rainforests. Sexton's book is a children's science book about rainforests in general.

Rochelle Strauss's *Tree of Life* (2004) includes lots of statistics and interesting facts about different species on Earth including different animals typically found in rainforests. For example, she writes, "Imagine a frog the size of a housefly! The strawberry poison dart frog may be small, but, like all dart frogs, it is poisonous" (Strauss, 2004, p.20). Another specific fact about a rainforest organism is, "The largest bromeliad is just a bit smaller than a backpack. It can hold nearly 2 gallons of water" (Strauss, 2004, p.15). *Tree of Life* (2004) contains only drawings, and these drawings cover full pages with some paragraphs of text on the pages with drawings. Similar to *Close Encounters in the Rainforest*, *Tree of Life* (2004) follows a comparable layout. *Tree of Life* (2004) contains illustrations that are colorful and attractive. These illustrations however are not lifelike, unlike most of the illustrations in *Close Encounters in the Rainforest*. Another key difference is *Tree of Life* (2004) is not written like a story with a main character telling the story. It is mainly a children's reference

book with facts and statistics about the biodiversity that exists on Earth.

After researching similar books about biodiversity and rainforests, it was clear to me that I wanted *Close Encounters in the Rainforest* to veer away from a classic children's science book to one in which there is a story told by a real character of the rainforest, a red-eyed tree frog, who teaches readers about different animals and plants common to a rainforest of Costa Rica. I wanted to convey a sense of familiarity and informality in the language used by the frog so that readers could learn more about him and his neighbors in the rainforest.

*Close Encounters in the Rainforest* and Eight and Nine-Year Olds

Eight and nine-year olds fit into the stage of middle childhood (Cole et al., (2005), p.447). Children take on more responsibilities in both the school and home settings during this stage of life. Eight and nine-year olds explore social relationships, develop personal identity, and develop moral understanding (Cole et al., (2005), p.447). *Close Encounters in the Rainforest* is a developmentally appropriate resource as it relates to moral understanding.

The text, language, and story in *Close Encounters in the Rainforest* is geared for this age group because it uses everyday language and a story that is relatable. For example, Tree states “*So glad that you could meet some of my neighbors in my community. Thank you for exploring the rainforest with me. You can always learn more about me and my friends and our habitats. And tell your friends at school that amazing places like rainforests are worth saving and protecting.*” The main character is using familiar language in a friendly way. This can be engaging for children at this age. Children are encouraged to think about and develop a moral understanding that if human beings do not stop the destruction of rainforests, so many different animals and plants will suffer as a result. Saving and protecting rainforests is an action that eight and nine-year olds can relate to because there is a moral component in this action. Cole et al. (2005) describes the changes in social relations for children in this age group when they state, “Children take intentions into account in judging behavior” and “children can think about how others perceive them” (p.459). Many eight and nine-year olds will probably gain an understanding of Tree’s point of view and see that animals like him depend on the rainforest to survive. In terms of cognitive growth, this age group looks for an

“explanation of facts” and this is a “good age for scientific exploration” (Wood, (1997), p.101). *Close Encounters in the Rainforest* is developmentally appropriate because it is a science exploration book that includes facts about different organisms and perspectives from the main character.

The process of making *Close Encounters in the Rainforest* involved:

- 1- sketching with pencil
- 2- outlining with a fine-tipped black pen
- 3- coloring each plant or animal in a realistic manner, with colored pencils and crayons
- 4- writing about each illustration
- 5- scanning each finished illustration
- 6- typing the text that corresponded to each illustration
- 7- using Photoshop to add digital photographs from Costa Rica as backgrounds for some of the illustrations
- 8- reading aloud the text

The process of making the children's book, and the audio book version of it, was detailed and labor intensive. Creating the illustrations, the thinking process around what to write, and the actual writing of the text for the book took the most time. The use of hand-drawn colored illustrations can be engaging for eight and nine-year olds. The vocabulary words and text in *Close Encounters in the Rainforest* are developmentally appropriate because I tried not to include too few or too many sentences on the pages. The vocabulary and language is engaging for this age group, with vocabulary words shown in bold font and

the sentences corresponding to the illustrations near them. For example, Tree states, “*Take a look at this glasswing butterfly. Meet Lassie. Also known as the clearwing butterfly, she feeds on the nectar of flowers. The wings are see-through, like glass!*” A reader can gain an understanding of the word “nectar” by looking at the context of the sentence. Using a variety of approaches to define vocabulary words can help readers (Yun & Cervantes, (2006), p.2). “Using visuals” in the forms of illustrations and “explaining definitions by using examples or synonyms” are two techniques used by educators. In *Close Encounters in the Rainforest*, I do this through the use of illustrations and giving an example, such as “like glass.”

I concluded my book with the main character waving to the readers and asking them to think about coming to visit the rainforests of Costa Rica. He also asks the readers to consider protecting rainforests for the sake of the animals and plants living there and also, so that future generations can enjoy visiting and witnessing these precious and beautiful places where life flourishes. I chose to conclude in this way so that readers could come away with an appreciation for rainforests and the biodiversity present there, and also with a respect for conservation of the place and why places like these should be preserved. I wanted the readers to be dazzled by the amazing biodiversity and also be thoughtful about protecting rainforests.

### Rationale for Audio Book Version

Today, children are exposed to and use technology at early ages. On a day-to-day basis, I notice toddlers playing math games and doing puzzles on their parents' phones. There are phone applications that exist for educational and entertainment purposes. Children's engagement with technology is partly due to the fact that we live in a technologically rich environment.

Research shows that introducing audio books into the curriculum at schools can benefit students with literacy needs (Wolfson, 2008). Audio books provide "another opportunity to increase the understanding and appreciation of the written word" (Wolfson, 2008). These resources can model reading, teach critical listening, build on prior knowledge, and improve vocabulary for students (Wolfson, 2008). With the understanding that all students learn in different ways, I chose to have two formats of *Close Encounters in the Rainforest*. The print format and the audio book format help reinforce understanding of content material because students experience the content in multiple ways, visually through looking at the pictures and through the auditory system, when listening to the read aloud.

When deciding how I wanted to create *Close Encounters in the Rainforest*, I chose to mainly use illustrations, with background images from photographs in Costa Rica. In order to engage the readers, I wanted a front cover that would catch the attention of the reader's eyes and have the main storyteller, the red-eyed tree frog, featured there. The layout of the book has a repeating sequence of illustration on one page followed by the text for that illustration on the next page. The main character, Tree, a red-eyed tree frog is the only



animal in the book that is portrayed in a cartoon-like visual. He is also the only character speaking in the story. I wanted to feature all of the other animals realistically with close-to-accurate backgrounds from photographs that I took in Costa Rica. I knew that I wanted the backgrounds to be blurred and faded-out images from the photographs. I used the program Photoshop to help achieve the desired results for the scenes for each illustration.

When I made the audio book version, I narrated the story when the text pages were displayed. I chose to use the same one voice throughout the audio book since Tree, the red-eyed tree frog, is the only one who speaks in the story. I chose to use a friendly and excited voice for Tree in order to engage children. I used proper intonation and lively expressiveness during the read aloud to show Tree's different emotions when he describes his friends and enemies in the story. Narrators of audio books can "serve as models for reading by providing inflection, tone, voice, dialect, pacing, pausing, silence, and different voices (Baskin & Harris, (1995) from Wolfson (2008)).

Robinson states, "Audio books provide reinforcement between hearing words and seeing the words in print. Audio books help readers sound out unfamiliar words. ESL students can hear how words sound and the inflections in the story" ((2003), p.8). Students with special needs and English language learners (ELLs) can benefit from audio books for these reasons. Using read alouds, ELLs' English proficiency and literacy development will benefit from improved comprehension skills. This allows them to "read more accurately, follow the text or story more closely, master new concepts in the content-area, and feel motivated to read in school and for pleasure" (Breiseth, (2010), p.1). Research shows that the uses of audio books provide benefits for ELLs (Koskinen et al., 2000). Two results of audio book use at home reported by the families of ELLs included an increased engagement

in reading and more practice in reading by ELLs (Koskinen et al., 2000).

Another positive effect of using audio books is recognition of target words or vocabulary words (Yun & Cervantes, 2006, p.2). Audio books can help students recognize vocabulary words when listening where the vocabulary words in bold are used by the speaker in context. An activity that can go with the audio book or narration can be a cloze activity, where students can practice listening comprehension skills and spelling skills (Yun & Cervantes, 2006, p.2).

Audio books should have a place in the childhood classroom. I believe that integrating audio books into curriculum can make for a more lively classroom and it can also benefit all students. “At-risk readers who have difficulty reading a book independently can listen to the audio version of that book. These students will more easily be able to participate in classroom discussions and assignments” (Robinson, 2003, p.8). I chose to differentiate my work to two formats to benefit all students, especially students with special needs and ELLs.

## Conclusion

*Close Encounters in the Rainforest* can be used by children, teachers, and parents. A read aloud of this book can engage children and increase their motivation to read books on their own (Wolfson, 2008). Children with special needs can experience this book in the same way as other children through a read aloud. By providing two formats of this book, a classic print format and an audio book format, the same content can be accessed in multiple ways. This can be helpful for student engagement, student learning, and knowledge and reinforcement of important information and key vocabulary terms.

According to Chip Wood, eight and nine-year old children can be drawn to themes such as nature, interdependence within community, and environmental concerns ((1997), p. 91, 103). Science curriculum, for eight and nine-year olds, tends to focus on plants and animals, as well as environmental concerns in the country and the world (Wood, 1997, p.91, 103). *Close Encounters in the Rainforest* meets the interests and curriculum needs/standards of eight and nine-year olds due to its coverage of a rainforest in a certain part of the world, the different plants and animals that live in that rainforest, and the current actions of people cutting down rainforests and planting trees. The book is also relevant because it covers current events such as deforestation and the attempts by groups of people to protect rainforests.

Children will be attracted to the information in this book because it is presented in a lively and interesting way through the lens of a current inhabitant of the rainforest, a red-eyed tree frog. The information about what is happening today to rainforests is current and

accurate and children will come away with a sense of the urgency to educate others to help protect and save the rainforests for inhabitants and for future generations. This concluding message in *Close Encounters in the Rainforest* is hopeful, relevant, and influential because it is based on current events and the knowledge that once children become educated about the importance of rainforests, they can become stewards in trying to save them. Children have already made a positive impact on the rainforests in Costa Rica through the creation of The Children's Eternal Rainforest, the largest private reserve, protecting 55,600 acres of tropical forests, in Costa Rica. In 1986, children around the world started fundraising to purchase and protect this rainforest to preserve nature's legacy.

*Close Encounters in the Rainforest* helps to showcase and celebrate the biodiversity in a rainforest while also being a contemporary piece that looks at the positive and negative impact human beings can have on the rainforests. This work supports children's interest in the environment and the burgeoning movement of positive activism for the protection of these unique places on Earth.

## References

**Breiseth, L. (2010). Reading Comprehension Strategies for English Language Learners. *Colorin Colorado*. March 5, 1-3.**

This article discusses strategies on how to build background knowledge, teach vocabulary, and build comprehension skills in ELLs.

**Cole, M., Cole, S.R., & Lightfoot, C. (2005). *The Development of Children*. 5th Edition. New York, NY: Worth Publishers.**

This graduate-level textbook includes research, educational theories, and practical information about child development. The section on middle childhood, part IV, describes the biological and cognitive developments and common features of children at this stage.

**Hastings, J. Oct. 2005. *School Library Journal*. Reading Pen. 1-2.**

This article describes the Readingpen, which fits right into the model of Universal Design for Learning, an educational framework in which assistive technologies designed to help students with special needs also benefit the general student population, making learning more accessible across the board. It combines optical character recognition and text-to-speech capabilities with a built-in English-language dictionary, an English/Spanish translation tool, and a thesaurus.

**Koskinen, P., Blum, I., Bisson, S., Phillips, M. & Baker, T. (2000). Book Access, Shared Reading, and Audio Models. *Journal of Educational Psychology*. 92(1), 23-36.**

This article discusses research on how access to different resources, strategies, and audio books can influence reading motivation, comprehension, and fluency in linguistically diverse students at school and at home. Access to audio books provided benefits to ELLs.

**Robinson, L. (2003). For the Love of Books: Expanding E-Books and Audio Books in School Libraries. *Media & Methods*. September/October, 6-12.**

This article includes examples of educational resources for different content areas. The article gives reason as to why to include e-books and audio books in a collection. Students who have difficulty reading a book independently can listen to the audio version of that book. These students will more easily be able to participate in classroom discussions and assignments.

**Skouge, J., Rao, K. & Boisvert, P. (2007) Promoting Literacy for Diverse Learners Using Audio and Video Technology. *Early Childhood Education Journal*. 35(1), 5-13.**

This article describes multimedia technologies that support literacy including recorded books and stories. Children with special needs, such as those who physically cannot hold books or are blind are supported through digital and audio books. Tips for families include how to incorporate reading using technology at home with children.

**Wolfson, G. (2008). Using Audio Books to Meet the Needs of Readers. *American Secondary Education*. 36(2), 105-114.**

This article describes what literacy skills can improve by using audio books in the classroom. The author states, "Removing the restraints of word recognition and

decoding allows a very positive focus on the meaning behind an author's words. This provides an opportunity for many students, including those with special needs, to experience the same books as the other students. Best practices may be adapted to develop literacy skills before, during, or after listening."

**Wood, Chip. (1997). *Eight Year Olds and Nine Year Olds. Yardsticks. Greenfield, MA: Northeast Foundation for Children, Inc.***

This book is a resource for parents and teachers and outlines some of the common growth patterns, appropriate curriculum, and classroom implications for different aged children. The sections on eight and nine-year olds were useful in understanding what is developmentally appropriate in terms of interests and curriculum for children in this age group.

**Yun, J. & Cervantes, M. (2006). *Defining Words: What Can Teachers and Students Do? The Internet TESL Journal. 12(1), 1-3.***

This article discusses techniques that teachers and students can use to learn new words and define new words. Read alouds and listening to audio are some useful ways for students to become active word learners. Repeated exposure to words in context and careful attention to them help students learn and define words.

## Annotated Bibliography

**Benoit, P. (2011). *Tropical Rain Forests*. NY: Children's Press.**

This "True Book" about tropical rainforests is a children's science book that details how rainforests are important to the health of the planet. The book includes interesting facts about the rainforests and the wildlife in them. Also included in the book are photographs, maps, and information about the peoples who live in rainforests. The end of the book outlines the present deforestation that is occurring and the impact that has on the climate. The book also includes interesting statistics about tropical rainforests, including the size of the largest tropical rainforest, the number of species that become extinct each year, and the size of the Earth's land covered by tropical rain forests. The last page of the book is entitled "Finding a Solution" in which planting trees is highlighted as a way for people to help save rainforests.

**Doris, E. (2001). *Life at the Top: Discoveries in a Tropical Forest Canopy*. NY: Raintree Steck-Vaughn Publishers.**

This children's science book is about the tropical rainforest canopy and the biodiversity that exists there. It includes a description of the canopy, what organisms live in the canopy, an explanation of the different layers in a rainforest, different scientists who studied rainforests, incredible photographs of rainforests and wildlife, how scientists classify different organisms, and the interdependence of plants and animals. One specific example is the poison-dart frog's dependence



on bromeliads. The book ends with a description of how different plants and animals are important in tropical forests. A useful glossary of terms is found at the end.

**Firestone, M., Miranda, C., & Soriano, C. (2010). *Discover Costa Rica*. Singapore: Lonely Planet.**

This guide book to Costa Rica includes information about the reserves and national parks in Costa Rica and the different wildlife in those places. There are stunning photographs of plants and animals, including of howler monkeys and sloths. Maps show the different forest and protected areas. There is information about the animals one might see in the rainforests.

**Green, J. (2004). *Revealed Rain Forest*. New York: DK Publishing, Inc.**

This book was researched and written by a rainforest expert. In this book, there are wonderful large photographs and information about the plants and animals of the world's rainforests. The biological diversity of the rainforests is revealed. The author emphasizes the importance of the rainforests because they help regulate the Earth's climate and they are home to many different plants and animals. The book starts off with understanding the top layer of the rainforest, the canopy, and the many different organisms that live there. Next, the author describes the importance of the forest floor and the inhabitants of that part of the forest. Then, the author details how many rainforest plants reproduce by making seeds. She describes the different animals that help disperse the seeds. Finally, the author describes the mighty Amazon River and the creatures of the Amazon rainforest that depend on the river for their survival. This book is both

educational and engaging due to the dazzling photographs and guide about wildlife in the heart of tropical rainforests.

**Greenspan, E. (2013). *Frommer's Costa Rica 2013*. NJ: John Wiley & Sons, Inc.**

This guide book to Costa Rica was written by an American who settled in Costa Rica in 1992. The book includes a whole section on wildlife, including the plants and animals that inhabit this part of the Earth. The book includes beautiful photographs of the people and culture and the animals and plants. It also includes information about the national parks of Costa Rica and which animals are present in each park. There is also a section on Spanish terms and phrases that can be useful for visitors to Costa Rica.

**Greenwood, E. (2001). *Eye Wonder: Rain Forest*. NY: DK Publishing, Inc.**

This detailed children's book gives a realistic glimpse into the rain forests in different parts of the world and the animals and plants that inhabit them. The book has beautiful photographs of the wildlife in the rainforests. There is information about the geographic locations of rainforests, medicinal information about plants from the rainforests, and nocturnal creatures of the rainforests. There is also information about the layers in a rainforest. The colorful photographs are very helpful in learning about the amazing creatures of the rainforests.

**Heinrichs, A. (2010). *Nature's Wonders: The Amazon Rain Forest*. NY: Marshall**

**Cavendish Benchmark.**

This book is about the wildlife and peoples of the Amazon rainforest. The beauty, history, plants, animals, people, and environmental issues are all covered in this book. The book includes beautiful large photographs from the rainforest,

including some of the plants and animals found here. There is a chapter in the book about explorers of the rainforest and what resources they exploit from the forest. There is also a chapter on the native peoples of the forest and how they managed resources wisely and took only what they needed for survival. The book ends with a clear message-- that we, humans, can follow the ways of indigenous people to both use resources from the forest and also preserve the forest for all life forms and in the future.

**Lang, A. (2004). *Baby Sloth*. MA: Fitzhenry & Whiteside.**

This children's book details the life of a baby sloth as he grows. The story is situated in a rainforest in Central America. The baby sloth clings to his mother. As the baby sloth grows, he learns what leaves to eat and how to climb up the tree towards the sunshine to dry off after frequent rains. The sloth is sleepy most times and usually does not leave the safety of the trees. When the sloth is grown to a certain age, the mother sloth leaves the young sloth to fend for himself and learn how to deal with life's daily challenges, including predators such as wild cats. This book has wonderful large photographs that capture a baby sloth as it grows at different stages typical in the daily life of a sloth.

**Levinson, N. (2008). *Rain Forests*. NY: Holiday House.**

This children's book is about the different rainforests on Earth. It is written for children in grades one and two. The book includes colorful drawings of animals and plants in the different rainforests on Earth. There is a map included that shows where most tropical forests are located and where temperate rain forests are located. There is a part that shows nocturnal animals and also a description of the

different layers in tropical rainforests. The book ends with a section on the people who live in rainforests and how today more and more people are taking interest in conserving and protecting rainforests.

**Miller, S. (2008). *Sloths*. NY: PowerKIDS press.**

This non-fiction children's science book is full of details about different sloths that live in Central and South America. Some of the details included in this book are the lengths of sloth's claws, the number of hours sloth typically sleep for, how much a baby sloth weighs, and the number of different kinds of trees sloths feed on. This book has beautiful large photographs of different types of sloths, baby sloths, and their predators. The photographs of some of the sloths were very helpful for detailing the illustrations of *Close Encounters in the Rainforest*.

**Murray, J. (2005). *Vampire Bats*. MN: ABDO Publishing Company.**

This comprehensive children's book details the life of vampire bats, where they live, what they look like, and what they eat. The book includes large photographs of vampire bats in different positions, such as roosting and about to bite other animals. Facts such as vampire bats can live up to 20 years, they roost upside down, and they drink blood from cows and horses are written in this book. The book includes a useful glossary of definitions of important words from the text.

**Murray, P. (1997). *Rainforests*. USA: The Child's World, Inc.**

This children's book details what rainforests look like, how they grow, what are the different forest layers, different plants and animals that live in rainforests, where rainforests are located, and how much it rains in the rainforest. Beautiful full-page photographs are included in this book. A glossary of useful terms is

included at the back of the book. There is a hopeful message at the end about the importance of rainforests as “the lungs of the world” and why we should save them.

**National Geographic Society. (Sept/Oct. 2012). *National Geographic: Little Kids.***

***Jaguars Grow Up.* DC: National Geographic: The Magazine for Young Explorers.**

This magazine geared for children includes facts about animals, children's activities, and a main article about baby jaguars. The magazine includes incredible photographs of different animals. There is a section about different bats that eat fruits. The main article is about jaguars and what they eat and how long baby jaguars live with their mother. The activities in this magazine are developmentally appropriate for young children. There are different activities where the reader is asked to match a picture with the number of creatures in the picture, circle the objects that one finds in a larger picture with many objects, name the animal in the picture, and find the letter "j" placed in a drawing of a rainforest.

**Pfeffer, W. (2003). *The Shortest Day: Celebrating the Winter Solstice.* NY: Dutton Children's Books.**

This children's book is all about the winter solstice. It describes how different animals survive in the cold climate and how people long ago came up with the idea of celebrating the shortest day. People decorated their homes with wreaths to remind themselves and others of the coming spring and the return of longer days. The drawings in this book are thoughtfully made and appropriately placed with the corresponding text. This book was helpful in thinking about the layout for

*Close Encounters in the Rainforest.* The text is found on one page and the illustration that accompanied it is found on the next page. At the end of the book, there is a list of solstice facts that explains why there is less daylight in some parts of the world during winter. There are also activities for children to do that help show the different number of hours of daylight and darkness in different times of the year.

**Pratt, K.J. (1992). *A Walk in the Rainforest*. California: DAWN Publications.**

This book was written and illustrated by a high school student from Missouri. The author introduces readers to “an alphabetic journey through the tropical rainforest.” She has drawn illustrations of different animals and plants that are found in different rainforests in different parts of the world. Her illustrations are beautiful and highlight the wondrous beauty of the creatures of these forests. Each page includes a large illustration of an animal or plant and text that goes with the drawing. Another key feature on each page is a listing of facts about the organism and where it can be found. The author hopes that her book can educate and inspire young people to learn about the rainforests and love and protect them.

**Senior, K. (2005). *What on Earth? Life in a Rain Forest*. CT: Children's Press.**

This nonfiction children's science book addresses the biodiversity in rainforests, why plants grow so well there, and why rainforests are so important. Beautiful drawings and illustrations of plants and animals are included on the pages in this book. There is a section about what the weather is like in rain forests. There are useful sections on facts about rainforests and a glossary of useful terms. Interspersed in the book are photographs of wildlife.

**Sexton, C. (2008). *Learning about the Earth: Rain Forests*. MN: Bellwether Media.**

This children's book, a Level 3: Early Fluent book, details the different rain forest layers, the different plants and animals that live there, and the way people have used resources from the rainforest. This book also ends with a hopeful message that people should protect rainforests so that the plants and animals that live there are also protected.

**Stewart, M. (2005). *Sloths*. MN: Carolrhoda Books, Inc.**

This children's book is about the slowest mammals in the world, the sloths. The book outlines how sloths survive in the tropical rainforests and how they escape predators such as jaguars, ocelots, and harpy eagles. Beautiful large photographs of different sloths from different parts of the world are included. The book ends with information of the recent threats on sloths, how human beings are cutting down the rain forests and how the sloths are losing their homes as a result. The book ends with a hopeful note about how many people are forming conservation groups to protect and preserve the rainforests and the animals that live in them.

**Strauss, R. (2004). *Tree of Life: The Incredible Biodiversity of Life on Earth*. NY: Kids Can Press, Ltd.**

This illustrated children's book is about the tremendous biodiversity that exists on Earth. The book is broken into chapters that details and classifies some of the important living organisms, such as plants, animals, fungi, invertebrates, and mammals. Examples from the different groups are shown and there are fact bubbles that explain the examples. The drawings in this book are colorful and life-like. Under the different kingdoms, the number of species that scientists have

found and classified is mentioned. The book ends with a hopeful message that readers become guardians of the Earth to help protect the tree of life and its species. Tips are given so that readers can make good choices and do helpful things to become guardians of life on Earth. Some tips include reducing the impact on the Tree of Life, creating wildlife habitats, and educating others about biodiversity and conservation.

**Taylor-Butler, C. (2007). *A Home in the Rain Forest*. USA: Children's Press.**

This children's nonfiction book is geared for grades 1-2. The book includes a word hunt of bolded words to look out for in the text. Beautiful full page color photographs are included. Some important animals are highlighted in the book. The different forest layers are explained and the different animals living in them are also described. A glossary of new words is included at the end.

**Wainwright, M. (2000). *Jungle Jumble*. Costa Rica: Mark Wainwright.**

This children's book is a bilingual informational book about the wildlife of Costa Rica. The author is a well known naturalist and illustrator and he has depicted humorous caricatures and colorful illustrations of a variety of Costa Rican animals. Conservation information and natural history about the animals are included. This book ends up being an educational game book where the reader can combine sections of different animals to create their own new fantasy species.