

The Mangrove Tree: Planting Trees to Feed Families
written by Susan L. Roth and Cindy Trumbore
illustrated by Susan L. Roth

About the Book

Genre: Juvenile Nonfiction

Format: Paperback, \$10.95
40 pages, 10-7/8" x 8-7/8"

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Reading Level: Grade 4

Interest Level: Grades K–6

Guided Reading Level: R

Accelerated Reader® Level/Points:
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Lexile™ Measure: NC19190L

*Reading level based on the ATOS Readability Formula

Themes: Animal/Biodiversity/Plant Adaptations, Animals, Collaboration, Environment/Nature, Human Impact On Environment/Environmental Sustainability, Kindness/Caring, Nature/Science, Nonfiction, Responsibility

Resources on the web:

leeandlow.com/books/the-mangrove-tree

SYNOPSIS

For a long time, the people of Hargigo, a village in the tiny African country of Eritrea, were living without enough food for themselves and their animals. The families were hungry, and their goats and sheep were hungry too. Then along came a scientist, Dr. Gordon Sato, who helped change their lives for the better. And it all started with some special trees.

*These are the trees,
Mangrove trees,
That were planted by the sea.*

With alternating verse and prose passages, *The Mangrove Tree: Planting Trees to Feed Families* invites readers to discover how Dr. Sato's mangrove tree-planting project transformed an impoverished village into a self-sufficient community. This fascinating story is a celebration of creativity, hard work—and all those mangrove trees that were planted by the sea!

All guided reading level placements may vary and are subject to revision. Teachers may adjust the assigned levels in accordance with their own evaluations.

BACKGROUND

Afterword from Susan L. Roth & Cindy Trumbore

"Gordon H. Sato was born in 1927 in Los Angeles, California. He, too, was once a hungry child in a desert land. He never forgot his teenage experience during World War II in the deprived conditions of the Manzanar War Relocation Center, a concentration camp for Japanese Americans in the California desert. His family and many others were forced to live there, surrounded by barbed wire, because the United States and Japan were at war. To help feed his family in Manzanar, Gordon learned how to make corn grow in the dry, dusty soil.

Years later Gordon earned a doctorate degree and became a cell biologist. He first went to Eritrea, a tiny country in eastern Africa, in the 1980s. He helped fight famine there by raising fish for food during the country's war of independence against Ethiopia.

After Eritrea gained its independence in 1993, Dr. Sato wanted to help the people of the war-torn young country. Poverty and hunger were widespread. Dr. Sato observed camels eating leaves from mangrove trees that grew naturally in the country. He decided the leaves would also make good food for goats and sheep, which in turn would provide food for the people.

Dr. Sato noticed that mangroves could live in seawater in areas where freshwater streams, created by seasonal rains, emptied into the sea. He did experiments to learn which elements and nutrients the freshwater provided, and concluded that if nitrogen, phosphorus, and iron were added to seawater, mangroves could grow in it.

When Dr. Sato began his planting project in the village of Hargigo in Eritrea, he trained a group of villagers to cultivate and use the mangrove trees. About one million mangroves have now been planted in Hargigo. Over time the trees have greatly benefited all the people of the village.

Dr. Sato has started two similar projects in northwestern Africa. He hopes they will be as successful as the one in Eritrea. In 2008, he began a planting project in Mauritania. The mangroves in Mauritania are planted 200 yards (about 183 meters) inland. Originally Dr. Sato's team irrigated the trees with seawater pumped in from the Atlantic Ocean. Then they discovered that the tree roots had reached down to seawater flowing below the soil, making irrigation unnecessary. In 2010, Dr. Sato began a new project in Morocco, planting two thousand trees to start, with millions to follow.

Dr. Sato sees the Moroccan model as a way to create mangrove forests in the world's great deserts. He believes that large-scale planting of forests would have an enormous positive economic impact on world poverty and hunger. By reducing the amount of carbon dioxide in the atmosphere, the plantings could also help slow global climate change.

The Manzanar Project is the name Dr. Sato has given to his work planting mangrove trees. Why did he choose to name his project after the concentration camp where he lived so many years ago? Dr. Sato has said that his work growing mangroves to erase poverty and hunger is based on his

The Mangrove Tree

Teacher's Guide [leeandlow.com/books/the-mangrove-tree](https://www.leeandlow.com/books/the-mangrove-tree)

experiences growing corn in the desert at Manzanar. He wanted to turn those experiences into something good. He called his work The Manzanar Project to remind people that it is possible to fight injustice with hope.

Dr. Sato has received numerous awards. In 1984, he was elected to the United States National Academy of Sciences for his work in cell biology. In 2002, he was named a laureate of Switzerland's Rolex Awards for Enterprise for helping to make the world a better place for humankind. And in 2005, Dr. Sato received the Blue Planet Prize given by Japan's Asahi Glass Foundation to recognize scientific work that helps solve global environmental problems.

To make a donation to help Dr. Sato and the Manzanar Project plant more mangrove trees around the world, checks may be sent to: Plant a Mangrove Tree—Feed a Family, The Manzanar Project, P.O. Box 98, Gloucester, MA 01931."

Dr. Gordon Sato passed away in 2017. To read more about his accomplishments from his life, refer to the UC San Diego In Memoriam (https://biology.ucsd.edu/about/news/article_042417.html).

Brief History of Eritrea

Eritrea is a small East African country on the coast of the Red Sea. Its capital is Asmara. It is bordered by Djibouti, Ethiopia, and Sudan. As of 2020, its estimated population was 6.08 million people.

Eritrea is the site of some of the earliest humans and society has existed there since 1000 BCE. Italian colonization of Eritrea lasted for 52 years, from 1889 to 1941. Roughly one-half of Eritrea's population is Christian (mainly Roman Catholic due to Italian colonization), while the other half is Muslim. Most pastoralists, like those in *The Mangrove Tree*, are Muslim. Eritrea is also a multi-ethnic nation, the largest ethnic groups being Tigray and Tigre.

After Italian rule, Eritrea was a somewhat independent nation, but in 1962 was annexed by Ethiopia. Thus began a 30-year Eritrean War of Independence until 1991, and Eritrea gained lawful independence in 1993 (<https://www.britannica.com/place/Eritrea>).

The Manzanar Project

The Manzanar Project, led by Dr. Gordon Sato, was created in order to plant whole new forests of mangrove trees in vast areas of the world in order to create renewable resources for communities. Mangrove trees would fix the carbon dioxide issues by photosynthesis and improve sustainability and quality of life in communities that need additional food sources (<https://www.ser-rrc.org/project/eritrea-the-manzanar-project-mangrove-afforestation-near-massawa/>).

Additional Information & Resources

Check out the research-based read aloud and paired text lessons for *The Mangrove Tree* created by the staff at the award-winning, non-profit ReadWorks.org (<https://www.readworks.org/lessons/grade4/mangrove-tree>).

BEFORE READING

Prereading Focus Questions

(Reading Standards, Craft & Structure, Strand 5 and Integration of Knowledge & Ideas, Strand 7)

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1 and 2)

Before introducing this book to students, you may wish to develop background knowledge and promote anticipation by posing questions such as the following:

- What are the positive impacts trees have on humans? What kinds of trees do you know about? Where do you see them?
- Have you ever planted a tree? What did you do? What did you do to care for the tree after it was planted?
- What do you know about world hunger? How does that make you feel?
- What kinds of things do you do to help your community? How do you do them? How does that make you feel?
- What do scientists do? What kinds of scientists do you know about? What are the different roles that a scientist has? What famous scientists do you know about? What were their accomplishments?

Exploring the Book

(Reading Standards, Key Ideas & Details, Strand 1; Craft & Structure, Strand 5; and Integration of Knowledge & Ideas, Strand 7)

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1 and 2)

- **Book Title Exploration:** Talk about the title of the book, *The Mangrove Tree: Planting Trees to Feed Families*. Then ask students what they think this book will most likely be about and whom the book might be about. What do they think might happen? What information do they think they might learn? What makes them think that?
- **Read Cindy Trumbore's Biography:** Read about Cindy Trumbore on the jacket back flap as well as on her website (<http://cindykane.net/>). How do you think Cindy Trumbore gets inspired for her books?
- **Read Susan L. Roth's Biography:** Read about Susan L. Roth on the jacket back flap as well as on her website (<http://susanlroth.com/>). How do you think Susan L. Roth creates her collages? What kinds of materials do you think she uses?
- Encourage students to stop and jot in their reading notebooks during the read-aloud when they: learn new information, see a powerful image, have an emotional reaction or an idea, have a question, or hear new words.
- Have students quickly write a feeling in their notebooks during reading. After reading, ask students why they wrote down that feeling and have them write a journal entry about it.

Setting a Purpose for Reading

(Reading Standards, Key Ideas & Details, Strands 1–3)

Have students read to find out:

- how does the title fit the theme of the story?
- find out about the ways mangrove trees helped the people of Hargigo
- learn about specific techniques and science involved in planting mangrove trees
- how Dr. Gordon Sato's mangrove tree-planting project changed an impoverished village into a self-sufficient community
- how Dr. Gordon Sato and the people in the community worked together to utilize their resources and make people's lives better

Encourage students to consider why the author and illustrator, Cindy Trumbore and Susan L. Roth, would want to share this story with young people.

VOCABULARY

(Reading Standards, Craft & Structure, Strand 4)

(Language Standards, Vocabulary Acquisition & Use, Strands 4–6)

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1 and 2)

The story contains several content-specific and academic words and phrases that may be unfamiliar to students. Based on students' prior knowledge, review some or all of the vocabulary below.

Encourage a variety of strategies to support students' vocabulary acquisition: look up and record word definitions from a dictionary, write the meaning of the word or phrase in their own words, draw a picture of the meaning of the word, create a specific action for each word, list synonyms and antonyms, and write a meaningful sentence that demonstrates the definition of the word. For additional words and their definitions, refer to the Glossary in the back of the book.

Content Specific

Red Sea, Eritrea, Hargigo, mangrove tree, nitrogen, phosphorus, nutrients, carbon dioxide, oxygen, protein, shepherds, flocks, Mexico, Peru, Somalia, Sahara, Atacama Desert

Academic

sprout, seedlings, sturdy, fertilizer, plump, gobbled, nutritious

AFTER READING

Discussion Questions

After students have read the book, use these or similar questions to generate discussion, enhance comprehension, and develop appreciation for the content. Encourage students to refer to passages and/or illustrations in the book to support their responses. **To build skills in close reading of a text, students should cite textual evidence with their answers.**

Literal Comprehension

(Reading Standards, Key Ideas & Details, Strands 1–3)

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1–3 and Presentation of Knowledge & Ideas, Strand 4)

1. Where were the mangrove trees planted in Eritrea? What were the conditions there?
2. What was happening to the people in Hargigo?
3. Why did Dr. Sato decide to plant the mangrove trees in Hargigo?
4. How did Dr. Sato's initiative help women in Hargigo?
5. How did the mangrove trees survive in salt water?
6. Who planted and cared for the trees? How did planting mangrove trees benefit them?
7. What special things did the planters have to do to ensure that the trees would thrive?
8. How did planting mangrove trees help the sheep and goats of Hargigo? How did this help the shepherds?
9. How did planting mangrove trees help end hunger in Hargigo?
10. How did the mangroves help the fishermen?
11. Where else would Dr. Sato like to start planting mangrove trees?

Extension/Higher Level Thinking

(Reading Standards, Key Ideas & Details, Strands 2 and 3 and Craft & Structure, Strands 4 and 6)

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1–3 and Presentation of Knowledge & Ideas, Strand 4)

1. What does the title *The Mangrove Tree: Planting Trees to Feed Families* mean to you after reading the book? Why do you think the author chose this particular title?
2. Why was the process of planting the mangrove trees so unique? How did Dr. Gordon Sato and the people, particularly women, in the community work together to preserve Hargigo? How can this be used as a model for other projects around the world?
3. What impact did the community have in the planting of the mangrove trees? How did they demonstrate that the entire community, and not just Dr. Gordon Sato, could contribute to the health and survival of the people in Hargigo?
4. What did you learn from Dr. Gordon Sato's mangrove tree-planting project? How did their work and collaboration inspire you? What can you do differently after reading about the

- women in Hargigo, Dr. Gordon Sato and their dedication to helping revive the community?
5. How did mangrove trees also help other aspects of the environment, such as the lives of the goats and the sheep? How did this in turn create a spiral affect and change the lives of everyone in Hargigo?
 6. How did the mangrove trees help the environment in Eritrea? What would happen to the environment in Hargigo and Eritrea if the mangrove trees weren't planted?
 7. Describe the environment in Hargigo. What makes Eritrea different, or similar, to where you live? Why?
 8. Why is it important that the people of Hargigo use every part of the mangrove tree? How does doing this help them? How does it help the environment?
 9. How do you think the people of Hargigo feel about Dr. Sato? Find some passages in the book to support your answer.
 10. Why do you think Dr. Sato is motivated to help people around the world? How could his work benefit other communities?
 11. Why is it important that scientists like Dr. Sato use low-cost solutions like mangrove trees to help fight poverty and hunger?
 12. Explore the structure of this text. Does the story describe events chronologically, as comparison, cause and effect, or offer problems and then solutions? Why do you think the author structured the text the way she did? How does this story compare to other texts you have read?

Reader's Response

(Writing Standards, Text Types & Purposes, Strands 1-3 and Production & Distribution of Writing, Strands 4-6)

Use the following questions and writing activities to help students practice active reading and personalize their responses to the book. **Suggest that students respond in reader's response journals, essays, or oral discussion.** You may also want to set aside time for students to share and discuss their written work.

1. What is one big thought you have after reading this book? Think about the women in the community who helped to plant the trees as well as Dr. Gordon Sato's mission to help the Hargigo village. What is your takeaway from this book? What would you tell a friend about this book?
2. What do you think is Cindy Trumbore's and Susan L. Roth's message to the reader? Think about possible motivations behind Cindy Trumbore and Susan L. Roth's intentions for creating this book. What do you think they wanted to tell her readers?
3. Have students make a text-to-self connection. What kinds of connections did you make from this book to your own life?
4. Have students make a text-to-text connection. Did you think of any other books while you read *The Mangrove Tree: Planting Trees to Feed Families*? Why did you make those connections?
5. Have students make a text-to-world connection. What kind of connections did you make

between this book and what you have seen in the world, such as online, on television, or in a newspaper? Why did this book make you think of that?

6. What does caring for your community mean to students after reading? After reading *The Mangrove Tree: Planting Trees to Feed Families*, how did students' perspectives change about what it takes to maintain and preserve a community nearing danger?
7. What does community mean to you after reading this book? How did the Eritrean community come together to help their people? How can this model be used around the world?
8. Describe a time when you or someone you know did something to take care of the environment. What was causing harm and how did you or the other person solve that problem? What can people do at home to help take care of the environment?

ELL Teaching Activities

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1–3 and Presentation of Knowledge & Ideas, Strands 4–6)
(Language Standards, Vocabulary Acquisition & Use, Strands 4–6)

These strategies might be helpful to use with students who are English Language Learners.

1. Assign ELL students to partner-read the story with strong English readers/speakers. Students can alternate reading between pages, repeat passages after one another, or listen to the more fluent reader.
2. Have each student write three questions about the story. Then let students pair up and discuss the answers to the questions.
3. Depending on students' level of English proficiency, after the first reading:
 - Review the illustrations in order and have students summarize what is happening on each page, first orally, then in writing.
 - Have students work in pairs to tell what they learned about one of the poems. Then ask students to write a short summary, synopsis, or opinion about what they have read.
4. Have students give a short talk about what they learned about planting mangrove trees and how they can help their own communities.
5. The book contains several content-specific and academic words that may be unfamiliar to students, and several words are printed in bold. Based on students' prior knowledge, review some or all of the vocabulary. Expose English Language Learners to multiple vocabulary strategies. Have students make predictions about word meanings, look up and record word definitions from a dictionary, write the meaning of the word or phrase in their own words, draw a picture of the meaning of the word, list synonyms and antonyms, create an action for each word, and write a meaningful sentence that demonstrates the definition of the word.

Social and Emotional Learning

(Reading Standards, Key Ideas & Details, Strands 1-3 and Craft & Structure, Strands 4-6)

(Speaking & Listening Standards, Comprehension & Collaboration, Strands 1-3 and Presentation of Knowledge & Ideas, Strand 4)

(Writing Standards, Text Types & Purposes, Strands 1-2 and Production & Distribution of Writing, Strands 4-6)

(Language Standards, Vocabulary Acquisition & Use, Strands 6)

Social and emotional learning involves being aware of and regulating emotions for healthy development. In addition to understanding one's own feelings, strong socio-emotional development allows individuals to develop empathy for others and to establish and maintain relationships.

Use the following prompts to help students study the socio-emotional aspects of this book.

1. How does the community, including the women and Dr. Gordon Sato, demonstrate problem-solving in *The Mangrove Tree: Planting Trees to Feed Families*? What were some of the obstacles that they came across and how did they come up with solutions? How was the community inspiring how they confronted different issues along the way?
2. Choose an emotion that interests you: happiness, sadness, fear, anxiety, frustration, hope, perseverance and so on. Illustrate or act out what that emotion looks like in *The Mangrove Tree: Planting Trees to Feed Families*.
3. Have you and your family ever struggled before? If so, how did that make you feel? If not, have you and your family ever tried to help others going through tough times?
4. How do you think the people of Hargigo feel about Dr. Sato's work? Is there someone who has helped you overcome a problem? How did that person help you? How did you feel about that person?

INTERDISCIPLINARY ACTIVITIES

(Introduction to the Standards, page 7: Students who are college and career ready must be able to build strong content knowledge, value evidence, and use technology and digital media strategically and capably)

Use some of the following activities to help students integrate their reading experiences with other curriculum areas. These can also be used for extension activities, for advanced readers, and for building a home-school connection.

English/Language Arts

(Reading Standards, Key Ideas and Details, Strands 1-3, Craft and Structure, Strands 4-6, Integration of Knowledge & Ideas, Strands 7-9, Range of Reading of Text Complexity, Strand 10)

(Writing Standards, Text Types & Purposes, Strands 1-3, Production & Distribution of Writing, Strands 4 and 6, Research to Build & Present Knowledge, Strands 7-9, Range of Writing, Strand 10)

(Speaking and Listening Standards, Comprehension and Collaboration, Strands 1-3, Presentation of Knowledge and Ideas, Strands 4-6)

- **Have students read other Lee & Low titles about community and environmental preservation. These books include *Parrots Over Puerto Rico* (leeandlow.com/books/parrots-over-puerto-rico), *Prairie Dog Song: The Key to Saving North America's Grasslands* (<https://www.leeandlow.com/books/prairie-dog-song>), *Puffling Patrol* (<https://>**

www.leeandlow.com/books/puffling-patrol), *Everglades Forever: Restoring America's Great Wetland* ([leeandlow.com/books/everglades-forever](https://www.leeandlow.com/books/everglades-forever)), *Only the Mountains Do Not Move: A Maasai Story of Culture and Conservation* (<https://www.leeandlow.com/books/only-the-mountains-do-not-move>), *Cycle of Rice, Cycle of Life* (<https://www.leeandlow.com/cycle-of-rice-cycle-of-life>) and *Sacred Mountain: Everest* (<https://www.leeandlow.com/books/sacred-mountain>). What do these areas of the world have in common? What are their differences? How do people work together to preserve the wildlife and environment? What are the different obstacles they face to make sure that animals and the ecosystem are preserved? Have students write an essay about their findings.

- **Ask students to read through the text as well as the Afterword to create an informational poster about the mangrove tree-planting project in Eritrea.** Using this information and additional research, students can create the posters using photographs, facts, diagrams, and informative captions. What does the mangrove tree look like? Where do they thrive? What does it need to survive and grow? Students can share their posters with small groups, the whole class, or the school at large.
- **The book has a statement at the top of the spread, similar to a poem, and narrative prose in the main text.** How is each of these an example of nonfiction writing? Which type of writing do you think is more effective in explaining complex information? Which is more enjoyable to read? Which type helps a reader retain information better? Why do you think the author and illustrator, Cindy Trumbore and Susan L. Roth, chose to employ several nonfiction writing styles to present the story of the mangrove tree and how it helped the community in Hargigo and Eritrea?
- **Conduct a Cindy Trumbore and Susan L. Roth author and illustrator study with their other Lee & Low titles *Parrots Over Puerto Rico* ([leeandlow.com/books/parrots-over-puerto-rico](https://www.leeandlow.com/books/parrots-over-puerto-rico)), *Prairie Dog Song: The Key to Saving North America's Grasslands* ([leeandlow.com/books/prairie-dog-song](https://www.leeandlow.com/books/prairie-dog-song)), and *Butterfly for a King: Saving Hawai'i's Kamehameha Butterflies* ([leeandlow.com/books/butterfly-for-a-king](https://www.leeandlow.com/books/butterfly-for-a-king)).** Make connections among the texts. What themes do Cindy Trumbore and Susan L. Roth's books have in common? How are the topics similar? How are they different? What do you think Cindy Trumbore and Susan L. Roth's message is to their readers across all her books? What do you think their interests are? How do the illustrations vary across all of the titles?
- **Have students write an essay answering the following questions: do you think it is important for people to save communities in danger?** Why do you think so? What might happen if we don't promote children's education programs or create safe places for wildlife and to help communities survive? Have students share their beliefs with a partner, small group, or whole class.
- **Provide students the opportunity to explore the cause-and-effect structure of the text.** Students can create a graphic organizer with "cause" on the left-hand side and "effect" on the right-hand side. Have students start with the big text on the top of the spread as a model. How does the text on the left-hand side affect the text on the right-hand side? What is the cause, and what is the effect? Then, students can examine the finer details in the text at the bottom of the spread for more details. Have students share their findings with a partner or

small group.

- **Have students thoroughly read the Afterword about Dr. Sato and the Manzanar Project.** Students should then research further about Dr. Sato's youth in a Japanese Concentration Camp as well as his other scientific achievements. How did this affect Dr. Gordon Sato? Why did he name the mangrove tree-planting project The Manzanar Project? How was he able to overcome racism, discrimination, and other adversity to become a world-renowned scientist? How did Dr. Gordon Sato use his life experiences to create the Manzanar Project (<http://www.sonsofdewittcolony.org/manzanar/>)? Students can share their findings in an essay.
- **How was reading a picture book different from reading a newspaper article about Dr. Gordon Sato's mangrove tree-planting project?** Have students read the article, "Eritrea's mangroves show way to fight hunger" (<https://www.reuters.com/article/idUSL19568436>). Then, students can create a Venn Diagram with the headings, "Picture Book Nonfiction: The Mangrove Tree" and "Expository Nonfiction: 'Eritrea's mangroves show way to fight hunger.'" Students can compare and contrast the different formats of the texts and the information they learned in both.
- **Tell students to imagine they will be interviewing the women of Hargigo for a local newspaper or talk show.** Ask students to develop a list of five interview questions they want to ask. What do they want to learn about their daily work, their planting of the mangrove trees, and more? Lead a class discussion, creating a combined list of questions and then narrowing that list down to ten questions.
- **Come up with questions to interview the author and illustrator, Cindy Trumbore and Susan L. Roth.** What was their process behind creating *The Mangrove Tree: Planting Trees to Feed Families*? What was their inspiration for writing the story about Dr. Gordon Sato and his mangrove tree-planting project in Eritrea? Read the Afterword with students and have them discuss what they learned and how it made them think about the book differently. Why did you think they created this book written for young readers? What was it like to collaborate on their other books? Consider reaching out to Cindy Trumbore and/or Susan L. Roth for a virtual author and or/illustrator visit (<http://cindykane.net/>) (<http://susanroth.com/>).

Science

(2-LS4-1 Biological Evolution: Unity and Diversity: Make observations of plants and animals to compare the diversity of life in different habitats; 3-LS4-4 Biological Evolution: Unity and Diversity: Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change; MS-LS2-5 Ecosystems: Interactions, Energy, and Dynamics: Evaluate competing design solutions for maintaining biodiversity and ecosystem services).

- **Encourage students to research a part of their community in need of preservation in their state or particular area of the country.** For example, students could research about pollution near a beach, a park that's turning into a parking lot, and more. What's happening in this area of their community? What is being done, if anything, to restore this part of their community and environment? Have students brainstorm with a partner, small group or whole class about ways to help this particular area in their neighboring environment and create signs to hang bringing people's attention to it.

- **In groups, have students make a board detailing the steps to Dr. Sato's project and the results.** Using evidence from the text, have students create a step-by-step guideline of how Dr. Sato executed the mangrove tree-planting project. Students can refer to the resources and Glossary in the back of the book for more information. Afterwards, students can create posters or other visual presentations providing details about the steps and connect it back to the scientific method. What was Dr. Sato's hypothesis? What were his next steps? How did he execute his vision?
- **There are many opportunities for diagramming in this story.** Encourage students to create a simple carbon dioxide-oxygen diagram showing the roles of both plants (mangrove trees) and animals/humans. Afterwards, students can diagram the nitrogen, phosphorus, and iron that provide nutrients to trees in addition to the carbon dioxide and oxygen diagram. For a reference to a carbon cycle diagram, refer to Carlton College's "Living in a Carbon World" (<https://serc.carleton.edu/eslabs/carbon/1a.html>).
- **Have students conduct a study on the mangrove tree.** Have students list the conditions necessary for mangrove trees to survive as well as other qualities, such as their physical appearance. Where can mangrove trees grow? What do they do to help their environments? Then, let students investigate whether or not those conditions exist where you live. If not, have students find out where in the country mangroves live, how they affect and are affected by those specific environments. For additional information, consult the Smithsonian's Mangrove page (<https://ocean.si.edu/ocean-life/plants-algae/mangroves>) and Florida Museum's Mangrove Species profiles (<https://www.floridamuseum.ufl.edu/southflorida/habitats/mangroves/species/>).

Social Studies/Geography

(Reading Standards, Key Ideas and Details, Strands 1–3, Craft and Structure, Strands 4–6, Integration of Knowledge & Ideas, Strands 7–9, Range of Reading of Text Complexity, Strand 10)

(Writing Standards, Text Types & Purposes, Strands 1–3, Production & Distribution of Writing, Strands 4 and 6, and Research to Build & Present Knowledge, Strands 7–9, Range of Writing, Strand 10)

(Speaking and Listening Standards, Comprehension and Collaboration, Strands 1–3, Presentation of Knowledge and Ideas, Strands 4–6)

- **Have students research the geography of Eritrea.** What is the climate like? What physical features does Eritrea have? What kinds of plants and animals live there? What makes Eritrea unique from other countries in Africa? What are Eritrea's resources and most popular exports? Students can present their findings with photographs in a visual presentation format of their choosing (<https://www.britannica.com/place/Eritrea>).
- **Learn about environmentalist Wangari Maathai and her efforts to plant trees in Africa (<https://www.greenbeltmovement.org/wangari-maathai>).** Dr. Gordon Sato's project had Eritrean women planting trees and helping the mangrove trees thrive in efforts to improve the environment. Dr. Wangari Maathai is another famous African scientist who planted trees in Kenya and created the Green Belt Movement. Have students read *Seeds of Change: Planting a Path to Peace* (leeandlow.com/books/seeds-of-change) and consult other resources about Dr. Wangari Maathai to learn more about her life and work (<https://treesisters.org/blog/the-brilliance-of-wangari-maathai>). How were Wangari Maathai and Dr. Gordon Sato similar in their efforts? How did Wangari Maathai change the world and pave the way for women in science? Students can write about their findings in an essay and also share what

they learned from reading *Seeds of Change* and consulting other books and online resources.

- **Encourage students to research a local park where they can plant trees.** Students can research in their local community where trees need to be planted. What kinds of trees are indigenous to their environment? What parks need trees to be planted? Students can reach out to local parks or offer to plant trees at the school. Students can also investigate what goes into planting a tree: what kinds of seeds do they need? How often do the seeds need to be watered? How quickly do the trees grow? Students can share their experience with the class afterwards about what it was like to plant trees in their own communities.

Arts & Media

(Reading Standards, Key Ideas and Details, Strands 1–3, Craft and Structure, Strands 4–6, Integration of Knowledge & Ideas, Strands 7–9, Range of Reading of Text Complexity, Strand 10)

(Writing Standards, Text Types & Purposes, Strands 1–3, Production & Distribution of Writing, Strands 4 and 6, Research to Build & Present Knowledge, Strands 7–9, and Range of Writing, Strand 10)

(Speaking and Listening Standards, Comprehension and Collaboration, Strands 1–3, Presentation of Knowledge and Ideas, Strands 4–6)

- **Susan L. Roth's chose to use collages for *The Mangrove Tree: Planting Trees to Feed Families*.** Have students create a paper collage illustration of trees. Students can study Susan L. Roth's style and arrange paper as best they see fit to encapsulate the ways they want to present their trees. Students may create collages to accompany their own tree poems using materials such as construction paper, old newspapers, magazines, cloth, and other recycled materials.
- **Have students create an artistic representation of a tree.** Students can choose an artistic medium that they prefer. What did they select to put in their art piece? What do they want to show people about trees? What's important to convey about trees and their importance in our world? Have students share their artwork with a partner, small group or whole class.
- **At the top of each spread in *The Mangrove Tree: Planting Trees to Feed Families*, there is a verse of poetry.** Have students read through the story again, but just focusing on the words at the top of each spread. How does the story read differently when students concentrate on the entire poem? Afterwards, students can create their own poem in response to *The Mangrove Tree: Planting Trees to Feed Families*. What do they want to convey in the poem? How did the story make them feel?

School-Home Connection

(Reading Standards, Integration of Knowledge and Ideas, Strands 7 and 9)

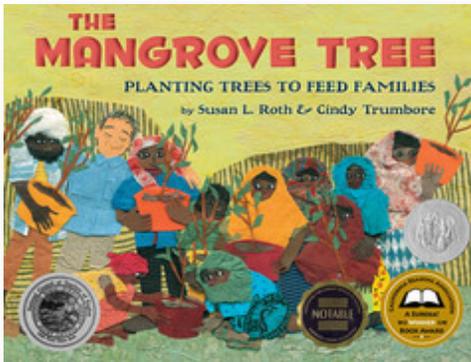
(Writing Standards, Text Types & Purposes, Strands 1–3, Production & Distribution of Writing, Strand 4, and Research to Build & Present Knowledge, Strands 7–9, Range of Writing, Strand 10)

(Speaking and Listening Standards, Comprehension and Collaboration, Strands 1–3, Presentation of Knowledge and Ideas, Strands 4–6)

- **Dr. Gordon Sato and the people in Eritrea working to preserve their environment demonstrate a lot of persistence and commitment.** Ask students to interview their caregivers about a time they faced a significant obstacle. How did they overcome it? What made them persist in reaching for their goal? What advice do they have for someone who must tackle a challenge? Why is persistence important? Students should write the answers

from the interview and be prepared to share in class.

- **If possible, have students look at The Manzanar Project with their families at home.** Consult the Society for Ecological Restoration's description of The Manzanar Project to learn more (<https://www.ser-rrc.org/project/eritrea-the-manzanar-project-mangrove-afforestation-near-massawa/>). Ask students what they learned with their grown ups from researching The Manzanar Project at home.



Ordering Information

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leeandlow.com/books/the-mangrove-tree

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 **By Fax:** 212-683-1894

By Mail:

Lee & Low Books, 95 Madison Avenue,
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ABOUT THE CREATORS

Cindy Trumbore has been involved with young people's literature for most of her career. A former editor in children's book publishing, she now writes children's books, edits books for classrooms, and teaches writing. She has collaborated with her friend Susan L. Roth on several award-winning titles, including *Parrots Over Puerto Rico*, which won the Robert F. Sibert Medal for Nonfiction; *The Mangrove Tree*; and most recently *Prairie Dog Song*. She lives with her husband in Delaware. You can visit her online at cindykane.net.

Susan L. Roth vibrant, unique, mixed-media collage illustrations have appeared in numerous outstanding picture books, including *Parrots Over Puerto Rico*, winner of the Robert F. Sibert Informational Book Medal; *Prairie Dog Song*; *The Mangrove Tree*; and most recently *Every Month Is a New Year* and *Malala Yousafzai: Warrior with Words*. Roth and her husband live in New York. Visit her online at susanroth.com.

REVIEWS

"An extensive afterword, containing many photographs of Sato and the people of Hargigo, brings their hopeful story into sharp focus." —*Publisher's Weekly*, **starred review**

"In addition to Roth's stunning, full-page color-saturated collage and mixed-media artwork, photographs of Dr. Sato and the Hargigo community at work illustrate this stunning book." —*School Library Journal*, **starred review**

"Young readers of all ages will be inspired by this picture book about solving crushing world problems by thinking outside the box and following through. . . . Susan L. Roth's stunning mixed-media collages celebrate this story of hope and fulfillment." —*The Chicago Sun Times*

ABOUT LEE & LOW BOOKS

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