

Deforestation: The Unkindest Cut

Student Reading

The Earth is made up of many different ecosystems, but perhaps none more spectacular and life-sustaining than the forests. We depend upon the world's forests to regulate climate, clean air and water, conserve precious soil and provide habitat to much of the planet's wildlife.

Forests of all types are giving way to population pressures, causing irreversible damage to an integral part of our biosphere. The Earth's forests today cover about 3.5 billion hectares, a 23 percent decrease from the forest area in 1700. The total forested area continues to decrease by about 13.7 million hectares per year, an area about the size of Florida.¹



Trouble in the Tropics

Of primary global concern is the loss of the Earth's tropical rainforests. **Tropical rainforests** are defined primarily by two factors: location (between the Tropics of Capricorn and Cancer) and level of rainfall. Rainforests receive from four to eight meters of rain each year. The five meters of rain that falls on Borneo each year represent five times the rain that annually falls on New York City. Due to a constant climate, tropical rainforests grow all year long.

The effects of rainforest destruction are felt by every community in the world. Although tropical forests cover less than seven percent of the global land surface, they are home to more than half the species of all living things. Rainforests are a treasurehouse of foods, medicines, and other resources we have only begun to discover. Less than one percent of rainforest species have even been studied for their potential usefulness.

Tragically, 150 acres of tropical forests are destroyed every minute.² The Rainforest Action Network estimates that the planet loses 78 million acres of rainforest (an area about the size of New Mexico) every year to agriculture, ranching and timbering in Southeast Asia, Africa, and Central and South America. In fact, all the primary rainforests in India, Bangladesh, Sri Lanka and Haiti have been destroyed; the Ivory Coast rainforests have been completely logged out; and the Philippines and Thailand have depleted half of their rainforests since 1960. Of the 8 million square miles of tropical forests that once circled the globe, less than half remain, and these are being destroyed at an ever-increasing rate.

A Deep-Rooted Problem

What drives humans to deplete this precious ecosystem? The causes of rapid tropical deforestation are many and often interconnected. The initial and probably most devastating cause has been the lack of knowledge concerning the rainforest. A case study in Brazil illustrates this point. In 1969, Brazil enacted a National Integration Program with the goal of populating Amazonia with thousands of landless and unemployed people. This was in response to overpopulation and inequitable distribution of land and wealth. Another goal of the program was to get wealthy investors to clear the forest lands and raise cattle for export to the industrialized world. The program proved a disaster because the people implementing the project failed to realize that the richness of the once-cast Amazon forest is in its trees, not its soil.

Tropical rainforest land cleared by slash and burn techniques will support a farmer for a year or two before the soil erodes and the



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farmer is forced to relocate elsewhere to continue this destructive process. With some previous research, this program might not have been implemented, and vast amounts of Amazonian forests could have been saved. Because of this oversight, the Brazilian government's goals to create additional habitation and grazing land were not realized. This scenario has been repeated in different regions of the world.

Another leading cause of **deforestation**, particularly in parts of Africa and Asia, is the need for fuelwood. Two in five of the world's people depend on wood for fuel to cook and to heat their homes. The Food and Agriculture Organization of the United Nations estimates that nearly two billion people face fuel shortages, and that 100 million people suffer a "fuelwood famine" and are unable to meet their minimum fuel needs.³ The endless search for wood dominates the lives of millions of women and children who spend anywhere from 100 to 300 days each year looking for fuelwood.

Timber cutting is yet another major contributor to tropical deforestation. Tropical forests provide about one-fifth of all the wood exported worldwide for industrial uses. In the process of harvesting timber, industries build roads to facilitate retrieval of the wood deeper in the rainforest. These roads open once impenetrable forests to exploitation by miners, hunters, ranchers and farmers.

Some processes of cutting timber have more harmful impacts on the environment than others. When timber is **clear-cut**, all the trees on an area of land are cut down, and the habitat of all species living there is destroyed. Even if the land is replanted, it is usually with only one or two species of trees. The former wealth of **biodiversity** never returns.

Frequently, timber is harvested by selective cutting. That is, harvesters cut only the trees they wish to sell, leaving the rest of the forest intact. This process, while still destructive, is less harmful to the forest ecology than clear-cutting. Moving the fallen trees to the roads without disturbing the soil, carefully planning the roads that carry trees out of the forest, tak-

ing the time to cut all vines off of the selected trees, and directing which way they should fall can all help to reduce the impact of logging on the surrounding forest in addition to reducing waste for the harvesters.

Extent of U.S. Deforestation



Virgin Forests 1850



Virgin Forests 1995

Source: The Native Forest Council

Deforestation North American-style

While tropical rainforest destruction is a globally significant issue, the cutting down of **temperate rainforests** in North America, which are found in the Pacific Northwest from California through Canada and into Alaska, has developed into a serious controversy on this continent. Since the turn of the century, the U.S. Forest Service has been managing National Forests in the U.S., with a total of 155 national forests, covering 187 million acres.⁴ The Forest Service is mandated to manage the forests for multiple, often conflicting, uses, including timber harvest, recreation, wildlife habitat, wilderness, watershed

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protection and range management. However, it has been criticized for focusing too heavily on timber yields.⁵

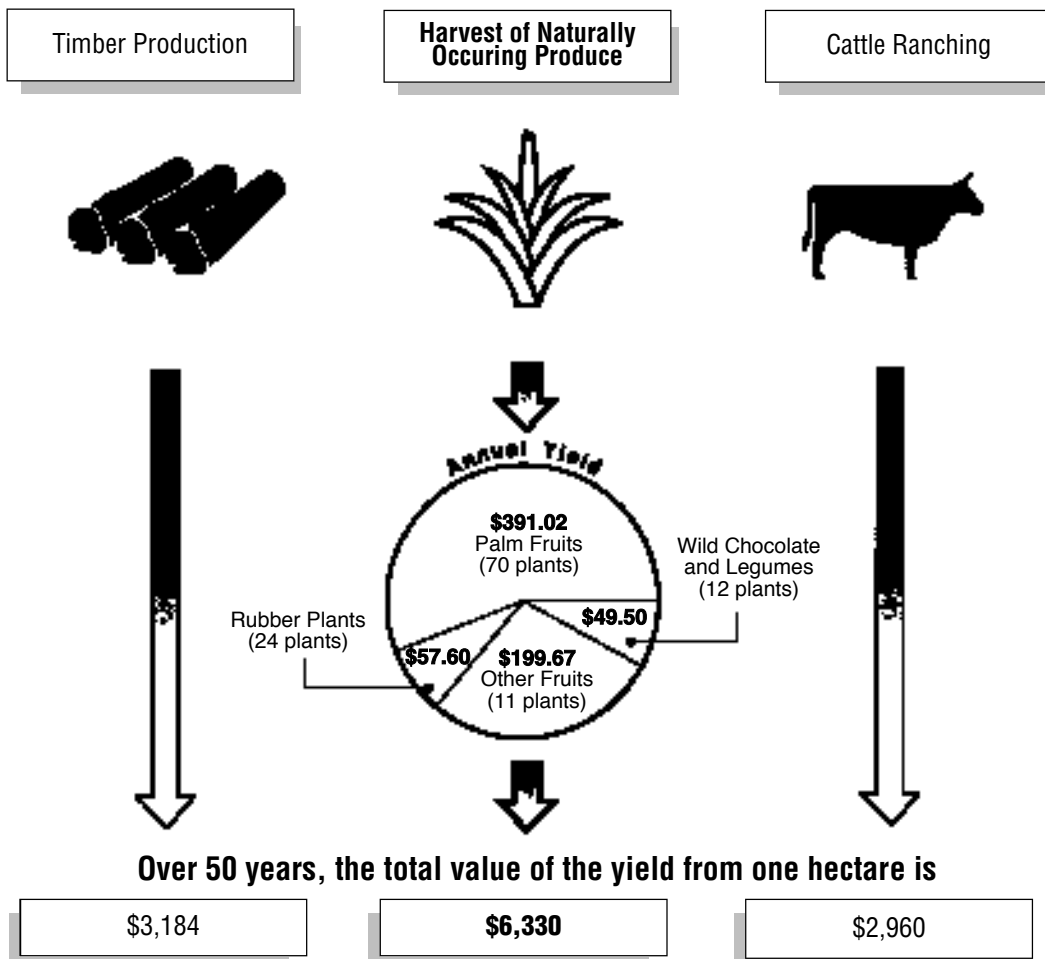
Much of the bitter controversy between environmental groups, the timber industry and the federal government has been directed toward the fate of the most ancient of the rainforests, also called **old growth**. At one time, old-growth rainforest covered some 15 million

acres in the Pacific Northwest. Today, less than one-sixth of this original forest remains.⁶ Some areas included trees ten feet wide, 275 feet tall, and 1,120 years old. But, because of their size and the quality and strength of their wood, old-growth trees represent valuable lumber to loggers. An estimated 90 percent of North America's temperate rainforest forest has been logged at least once, leaving only around 10

The Rainforest in Dollars and Cents

A scientific team from the New York Botanical Garden assessed, in U.S. dollars, the profits that could be made over a 50-year period from harvesting and selling the natural products of trees and plants found in an untouched hectare (2.471 acres) in the Amazonian rain forest in Mishana, Peru. Compared to the potential profits from using an equivalent area for cattle ranching or for timber production, the rain forest is twice as valuable if left standing.

One Hectare of Rainforest Can Be Used For



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percent of the original virgin forests.⁷ Furthermore, less than one percent of the nation's native forests are protected from logging.

The Canadian province of British Columbia has lost 65 million acres (26.3 million hectares) of forest since 1950, and logging continues at the rates of 568,000 acres (230,000 hectares) per year.⁸ Old-growth hardwoods once covered most of Canada's Atlantic zones, but today only a few pockets remain.⁹

After the Fall

Both tropical and temperate rainforests are rapidly disappearing because they are being logged and burned far faster than they are being replenished. Many of the effects of deforestation are the same for all types of forests. One of the catastrophic consequences of continued deforestation is mass species extinction, especially in the tropical rainforests, home to 50 to 70 percent of all the species on the planet. An estimated 20 to 75 species become extinct every day due to rainforest destruction. By 2015, six to 14 percent of all species on the planet today are expected to be extinct.¹⁰

Additionally, since the roots of trees and smaller forest cover stabilize the soil, deforestation allows potentially severe local damage from rainfall including erosion, flooding and landslides. Globally, deforestation affects the world's climate. A broad uprising of air follows the rainforests around the equator, driven, in part, by heat absorbed by tropical forests. This massive uprising helps drive the circulation patterns of the entire global atmosphere. Tropical deforestation can disrupt this process, resulting in reduced rainfall and altered weather conditions over a large portion of the globe.

All deforestation adds to the atmospheric pool of rising carbon dioxide emissions, hastening the onset of global warming. An intact forest naturally removes carbon dioxide from the air and stores it through the process of photosynthesis. When trees are cut down, this carbon dioxide is released into the atmosphere. Tropical deforestation releases 1.5 billion tons of carbon dioxide every year — that's 19 percent of the total global CO₂ emissions.¹¹

Pleas for the Trees

Old growth forests, as well as tropical rainforests, play significant roles on Earth. Fossil records show that the forests of Southeast Asia have existed for 70 to 100 million years. This all stands to be drastically changed if nations continue to sacrifice the Earth's long-term health for short-term profits.

Unless actions are taken soon to end the steady assault on the world's old forests, little of these ecosystems will remain for the next generation. Given the pressures of population growth, poverty and debt, saving these forests will pose a number of challenges. International cooperation is required to reduce wood demand and implement sustainable forest management. Solutions might include distributing forest land more equitably among indigenous people, reducing population growth, or harvesting only the forest's naturally occurring produce, such as fruit, chocolate and rubber. Over \$11 billion of these products are already traded internationally each year.¹² In the long term, this sort of forest management will reap greater profits than the limited returns of timber production and cattle ranching.

Governments and individuals need to educate themselves about the dangers of forest destruction, or ignorance will lead to further disaster. Above all, we need to realize that every acre of virgin forest that is destroyed takes centuries to replace.

Endnotes

¹ Cheri Sugal. "Forest Loss Continues." *Vital Signs 1997*.

Washington D.C.: Worldwatch Institute, 1997. Original source: *State of the World's Forests 1997*. U.N. Food and Agriculture Organization.

² Rainforest Action Network homepage: www.ran.org.

³ *State of the World's Forests 1997*. U.N. Food and Agriculture Organization.

⁴ National Forest Service homepage www.fs.fed.us.

⁵ *Environmental Almanac*. World Resources Institute. New York: Houghton Mifflin Co., 1993.

⁶ *Ibid.*

⁷ "What Is So Important About Rainforests?" National Audubon Society Fact Sheet.

⁸ *Op. cit.* note 5.

⁹ Environment Canada homepage www.doe.ca.

¹⁰ *Op. cit.* note 5.

¹¹ Cheri Sugal. "Forest Loss Continues." *Vital Signs 1997*. Washington D.C.: Worldwatch Institute, 1997.

¹² *Op. cit.* note 3.

To Log or Not to Log

Student Activity 12

Introduction:

As the U.S. population increases, so does the demand for lumber. Each year, every person in the United States uses in wood and paper products the equivalent of one 18-inch diameter, 100-foot tall tree. The need for more timber has led to a debate concerning the remaining **old-growth** forest. Old-growth refers to native forest land which has never been logged, where trees can be as much as 10-feet wide, 275-feet tall and 1,120 years old. Currently, only two percent of U.S. forest area has never been logged, and these remaining virgin forests are disappearing at an alarming rate. This course of action alarms environmentalists who see the old-growth forests as a biologically rich area, valuable to both our country and planet. Of special concern is the logging practice known as clear cutting, when all trees in a region are cut down at once, which leads to soil erosion, silted rivers and an altered wildlife habitat. The following scenario illustrates how interests conflict when attempting to regulate land use.

The situation concerning this trial occurs in Pineville, an imaginary small mill town in Northern California. Pineville is surrounded by a vast amount of virgin forest land, most of which is owned by Logs-R-U's, a large logging company. Of the 9,000 Pineville inhabitants, 40% have jobs connected to the lumber industry. In addition to the loggers, many town members work in the mill, refining lumber to be shipped to other areas of the state to accommodate the growing housing needs. A final consideration is that the area is known for its excellent hiking and fishing spots. Some of the town merchants depend on out-of-towners stopping for supplies before heading into the wilderness.

Some time ago, Logs-R-U's obtained a cutting permit from the State Department of Forestry and began felling trees in order to keep up with the growing demand for lumber from other parts of the state. However, Green Rage, a national environmental group, has filed a suit requesting an injunction to cease the logging immediately. According to Green Rage, the land should be designated a natural treasure and allowed to exist in its pristine condi-

tion. The group cites a state statute which stipulates that, "private land owners shall manage their land responsibly in such a manner as to minimize negative impacts on the greater community and environment."

In an effort to be realistic while still pushing their ideal goal, Green Rage has filed their injunction in such a way that it could be accepted on either of two different levels. Their first claim for relief is to ban all commercial logging. If this claim is denied, their second claim for relief is to ban clear cutting, the most destructive kind of logging. It will be up to the jury to decide which option, if either, seems most reasonable and in accordance with the statute cited. (Note: Such a civil trial would not usually have a jury, but in the interests of involving as many class members as possible, normal legal procedure has been modified for this activity.)

Procedure:

1. To begin, explain that the class will spend the next week participating in a mock trial about a case involving the fate of part of the U.S. native forest. Tell students that they will each participate in the trial and will have to research their roles in order to accurately play their parts. Then read the scenario in the introduction aloud to the students. You may also wish to distribute copies of the scenario and procedure for students to refer to during the activity.

Assign each class member a role to play during the mock trial and give each an applicable player's card. The activity is designed for 28 students. However, if you have more, you can add a bailiff, court reporter and members of the media. If you have fewer students, you can either reduce the numbers of lawyers by having one from each side question all witnesses or limit the number of witnesses, keeping the numbers for each side even, if possible. Ask students to read their roles and make a list of what they will need to do to prepare for their role. Encourage students to ask questions about their roles or the scenario.

2. Students should spend the next day or two researching their parts. Encourage students to make use of the Internet, library

Concept:

Competing interests are vying to control the future of the remaining native old-growth forests, a rapidly diminishing resource in the United States.

Objectives:

Students will be able to:

- Conduct research into an assigned role for a mock trial.
- Represent the interests of their selected role in a mock trial.
- Work with others to find mutually compatible solutions to difficult problems.

Subjects:

Social studies, environmental science, language arts, economics, government/civics

Skills:

Research, public speaking, persuasion, evaluation, critical thinking

Method:

By conducting a mock trial concerning the use of old-growth forests, students research perspectives of various parties in the case and learn about the complexities of trying to save forests for the "greater good."

Materials:

Role playing cards (duplicated from this activity)

Optional: A judge's gown and gavel

Optional: An instructional guide for mock trials, such as *Putting on Mock Trials*, published by the American Bar Association (see the "Mock Trial Resources" section on the next page for other titles). These guides offer hints on setting up a mock trial and provide simplified rules of evidence and court procedure for students to follow.

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Mock Trial Resources:
Putting on Mock Trials, compiled by the American Bar Association, is available for \$5.00 from the Special Committee of Youth Education for Citizenship, 750 North Lake Shore Drive, Chicago, IL 60611; 312/988-5555.

Street Law Mock Trial Manual by the National Institute for Citizen Education in the Law. Available for \$12.95 through the Social Studies School Services Catalog, 10200 Jefferson Boulevard, Culver City, CA 90232-0802; 800/421-4246.

resources, community members and/or relevant organizations. Lawyers need to formulate their opening statements and prepare their witnesses. (Closing statements are flexible since they should also sum up weaknesses in the other side's arguments). Witnesses need to research their parts so that during the trial they can speak with authority in their area. For example, the biologist should know the arguments concerning loss of biodiversity and ecosystems related to the destruction of old-growth forests. Members of the jury will not need as much time to prepare and may need to be kept occupied with another assignment; much of their work will be after the trial when they need to deliberate and report back to the court.

(Optional: you may wish to bring a local judge, lawyer, or law student in to speak to the students about legal procedure, or possibly serve as judge during the trial. It is important to get someone who is comfortable around young people and understands that the main goal of the trial is to learn about the old-growth forest debate, not memorize court room procedure to the letter. If you do use a guest judge, make sure to provide him or her with a copy of the scenario and role cards before the trial, and have the students contribute to the thank you note afterward.)

3. The mock trial itself will probably take between two and three class periods. If possible, move the desks and chairs in the room to resemble a real courtroom. For an added touch of authenticity, encourage students to dress for the parts that they will be playing in the case.

After the judge is seated, the lawyers for the plaintiff and then defendant make their opening statements. In the opening statement, each lawyer explains what he or she intends to prove during the trial and outlines the key facts which will support his or her side. They speak without interruption from the opposing attorneys.

Next, witnesses are called, first for the plaintiff, and then for the defendant. Each witness

undergoes direct examination from the attorney on the side he or she is representing and then cross-examination by the other side's attorney. During direct-examination, the lawyers are not allowed to ask questions which suggest the answer (e.g., you can't ask the president of the logging company, "Isn't it true that your company places environmental concerns as a primary goal in planning for the future?") However, during cross-examination, questions of this kind are acceptable.

After all witnesses have been heard, lawyers from both sides make their closing statements. This is when the lawyers really argue the case to the jury. They make a summation of all evidence and give a persuasive pitch for a decision in their favor. Finally, the jury deliberates and reports back to the class (or, for educational purposes, you could have the jury meet in front of the class so other students can see how the decision is made and which evidence is most persuasive). In civil cases, 9 out of the 12 jurors need to agree to have the verdict be binding.

Follow-up Activities:

1. After the trial, have students write reports about whether they agreed or disagreed with the decision of the jury, including what they would have done differently if they were an attorney for the plaintiff or defendant. Discuss ways the case might have been settled and negotiated out of court. Also, students could plan a field trip to the local court and see a real trial in action.
2. Students should look into land use in their area. Find out if there are any conflicts of interests between local parties. Does one party seem to be more concerned about short-term profits while another is concerned about the long-term consequences? How would students feel if one of the main sources of income in their community was shut down? The entire trial could be reworked, using a different land-use scenario appropriate to the local situation, as a supplement or adaptation of this activity.

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ROLES

Attorneys for the Plaintiff:

Green Rage hired members of the Environmental Legal Defense Group to represent them in this trial. The following lawyers are a part of the team:

Plaintiff Attorney #1: Opening Statement

At the beginning of the trial you inform the jury of the nature and facts of the case, without interruption from the defense. You summarize key facts each witness will bring out in testimony. Finally, you explain what you are asking the jury to decide (e.g., to stop all commercial logging of this old-growth forest).

Plaintiff Attorney #2: Direct Examination

You question all witnesses in favor of banning the logging. Your purpose is to present the evidence necessary to convince the jury to decide in favor of Green Rage. You want to present your witnesses in the best possible light and establish their credibility.

Plaintiff Attorney #3: Cross Examination

You question witnesses called by the defense (i.e., those in favor of logging). Your purpose is to obtain admissions from these witnesses which tend to prove your case and to discredit these witnesses. (Hint: "Yes or no" questions tend to be more effective than questions which ask the witnesses to explain in their own words.)

Plaintiff Attorney #4: Closing Statement

You summarize the highlights of the testimony as it supports your case and undermines Logs-R-Us' case, using actual examples from the trial that you have written down. Persuasively request that the jury decide in favor of Green Rage to stop the logging.

Witnesses for the Plaintiff:

Biologist

As an expert in the field of biology, you need to educate the court about the importance of old-growth forests in the biosphere. You should emphasize the loss of biological diversity when an entire ecosystem is destroyed.

Environmentalist for Green Rage

You believe that people need to look beyond short-term gains and protect the environment for the good of future generations. Try to emphasize the "big picture" loss if old-growth forests are destroyed.

Chairperson of Outdoor Enthusiasts Club

As one who appreciates the exceptional beauty of this wilderness area, your testimony should illustrate an alternate use of the forest which will inflict far less damage than clear cutting the land.

Native American

Your ancestors have lived in harmony with the land for many years before the white man came and began destroying the forests. Your testimony should illustrate that land ownership should not necessarily involve the right to damage something that belongs to everyone.

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Attorneys for the Defense:

Logs-R-Us has hired a prestigious legal firm, Powers and Dinero, from San Francisco to try the case. The following lawyers are a part of the team:

Defense Attorney #1: Opening Statement

You speak at the beginning of the trial after the plaintiff's opening statement. Your purpose is to deny that Green Rage has a valid claim and, in a general way, outline the facts from the standpoint of Logs-R-Us. You will not be interrupted by the plaintiff during this speech.

Defense Attorney #2: Direct Examination

You question all witnesses in favor of continued logging. Your purpose is to present the evidence necessary to convince the jury to decide in favor of Logs-R-Us. You want to present the witnesses in the best possible light and establish their credibility.

Defense Attorney #3: Cross Examination

You question the witnesses called by the plaintiff (i.e. those opposed to logging). Your purpose is to secure admissions from these witnesses which will be favorable to your case and discredit the witnesses. (Hint: "Yes or no" questions tend to be more effective than questions which ask the witnesses to explain in their own words.)

Defense Attorney #4: Closing Statement

You summarize the highlights of testimony as it supports your case and undermines Green Rage's case, using actual examples from the trial that you have written down. Persuasively request that the jury decide in favor of Logs-R-Us and allow the logging to continue.

Witnesses for the Defense:

Developer

You need to fulfill a contract to build new houses in the Los Angeles area and you were counting on this lumber from Logs-R-Us. You should speak of the growing demands for housing and other wood products in the state.

Pineville Chamber of Commerce Representative

Since a large percentage of Pineville's citizens depend on the logging industry, you are concerned for the future of the town's economy if the major source of revenue is removed. You should speak of the numbers of jobs lost, and the probable fate of those who are untrained in other professions.

President of Logs-R-Us

You need to convince the jury that your use of the land is acting for the greater good of the community and environment. You might want to talk about services your company provides to the community and efforts the company makes to replant logged forest areas.

Pineville Mill Worker

If Logs-R-Us is prevented from logging, your mill will undoubtedly close and you will be out of a job. You have a family of five to feed and don't want to go on welfare. Also, since Pineville will be economically depressed, you will probably have to move your family to another town, leaving your neighborhood and friends.

Members of the Jury

Members of the Jury (twelve students)

You need to listen carefully to all points of view represented in the trial since it is your job to determine the facts in the case. After everyone has finished, it will be up to you and the 11 others to decide in favor of either Green Rage or Logs-R-Us and tell your decision to the court. In order to reach a valid verdict, at least 9 of you must agree on the final recommendation to the court. (Hint: Your decision will be influenced by how you interpret the state statute cited in the case, which reads, "Private land owners shall manage their land responsibly in such a manner as to minimize negative impacts of the greater community and environment.")

Go for the Green

Student Activity 13

Introduction:

Tropical rainforest destruction is an alarming issue, commanding the attention of scientists, environmentalists, and politicians worldwide. There are no easy solutions because deforestation is occurring for many reasons. Governments, banking institutions, indigenous people, loggers and other groups differ on how the rainforests should be used. The pursuit of “green” currency may place the “green” ecosystem in jeopardy. The following game illustrates the difficulty of maintaining an ecological and economic balance when addressing rainforest issues.

Preparation:

The game is best played in groups of 3 to 5 students. You will need to reproduce the game board as well as the Choice and Risk cards so that each group has all three. (Note: Copying the Choice and Risk cards on different colors of paper avoids confusion.) Each stack of cards should then be placed face down on the game board. You also need to decide what you will use as game pieces. This could range from pen caps to something you may have in your room that is related to the subject (i.e., rubber bands, sticks of gum, nuts, etc.).

Rules of the Game:

1. Each player will be responsible for keeping track of his/her points through each round. Before the game begins, make a chart on a piece of paper with two headings —“Environmental points” and “Wealth points.”
2. Each player will start with 4 environmental points and 400 wealth points. *The winner of the game is the first player to get 10 environmental points and 1,000 wealth points.*
3. The players may place their markers anywhere on the game board to start. Movement around the board is in the clockwise direction. They can roll the dice to determine the order of the turn.
4. Each player will roll the dice and move around the board for the designated spaces. After landing on a space, follow the directions given on the board.
5. If you are required to pick a Choice or Risk card, pick from the top of the pile and put the card at the bottom of the pile when you are through.
6. A player may not choose an option on a Risk or Choice card which would put him/her into debt. For example, if a player has 300 wealth points and he/she picks a Choice card that has an option to lose 400 wealth points, this option cannot be chosen because the player does not have enough wealth points. But, if a card requires a player to pay 300 wealth points and the player only has 200 wealth points, that player will be in debt for 100 wealth points. In other words, a player cannot voluntarily choose to go into debt.

Note to the Teacher: If you find there is no winner by the end of the allotted time, reward each player 100 wealth points for each environmental point and total each player's wealth points. The player with the highest number of wealth points will be the winner. It is advisable not to tell the students of this rule because it may change their strategy when playing.

Follow-up Activities:

1. Lead a discussion on the outcome of each group's game and what students learned from their choices.
2. Have students research one of the specific areas discussed on the Choice or Risk cards (for example, the effects of rainforest destruction on the indigenous peoples).
3. The class together could choose a specific rainforest of interest and conduct an in-depth study of all the aspects of the controversy. The students could be broken into groups and assigned specific subtopics to research.

Concept:

The earth's rainforests are irreplaceable ecosystems that hold a significant place in the global environment. However, economic interests often pose obstacles to rainforest preservation.

Objectives:

Students will be able to:

- Make decisions based on qualitative criteria.
- Present the rationale behind their decisions to fellow classmates.

Subjects:

Social studies, environmental science, biology, economics

Skills:

Decision making, strategizing

Method:

Through the playing of the board game that accompanies this activity, students are presented with various scenarios that help them gain an appreciation for the complexities of making decisions that serve to protect rainforest lands.

Materials:

Choice and Risk cards and game board (duplicated from this activity)

Dice

Game pieces (be creative)

Game

Game

Go for the Green

Game Cards

Choice Card

You are the Minister of Agriculture for Thailand. Your job is on the line due to the lack of progress your country has made in dealing with the problem of feeding an increasing population. You can:

- Decide to tear down rainforest land as a desperate measure to plant more crops for food (- 1 environmental point, + 250 wealth points) **or:**
- Make a controversial political move and propose seeking assistance from industrial countries and thereby going deeper into debt (+ 100 wealth points) **or:**
- Make a stand for the environment and resign from the job, stating your opposition to destroying more rainforest and emphasizing the need for a comprehensive population policy (+ 3 environmental points, - 200 wealth points).

Choice Card

You run a small-scale mining operation in the Amazon region, bulldozing and dredging stream banks in search of gold ore. The government has recently enacted new environmental regulations on mining practices in your region. In order to comply with these regulations your company would have to forfeit almost one year's profit. You can:

- Follow the regulations to the letter and write your money off (+ 2 environmental points, - 250 wealth points) **or:**
- Use a favor you have with local officials to postpone an inspection of your operation, giving you a year or so leeway (+ 1 environmental point, - 100 wealth points) **or:**
- Go deeper into the forest and set up a secret mining operation illegally, disregarding all environmental or health regulations (- 2 environmental points, + 250 wealth points).

Choice Card

You are aware of the increased energy needs created by a rapidly growing population. As a graduate of a prominent Brazilian engineering university, you have two job offers in the energy field. You can:

- Work with a low-paying, non-profit group, designing and building an experimental solar energy system resting in the rainforest canopy (+ 2 environmental points) **or:**
- Work on the operation and maintenance of a hydroelectric dam which generates large amounts of electricity, but also damages the surrounding rainforest (- 1 environmental point, + 350 wealth points).

Choice Card

Giggley's Gum, Inc. has offered to double its order for chicle latex (used to make chewing gum) next year. However, your land is currently producing as much chicle latex as possible and you are unable to fill the order. You can:

- Tell Giggley's you are unable to provide that amount of product (+ 1 environmental point) **or:**
- Slash and burn surrounding rainforest to cultivate new plants and promise Giggley's you will fill the order within a year or two (- 1 environmental point, + 200 wealth points).

Go for the Green

Game Cards

Choice Card

Due to an increased number of espresso drinkers worldwide, demand for the coffee beans from your land has risen dramatically. You can:

- Meet the demand by over-planting and cutting down surrounding land. Although this process will destroy the land within five years, you will have made enough money to retire (- 2 environmental points, + 300 wealth points) **or:**
- Maintain production schedule, hoping that the demand will continue indefinitely, and allowing the land to survive for other uses (+ 2 environmental points, - 150 wealth points).

Choice Card

You go to the grocery store for your weekly items. You see that many of the store brand products are cheaper, but you usually shop environmentally by paying attention to packaging and looking for products harvested from the tropical rainforests. You can:

- Purchase the store brand items to save some money (- 1 environmental point, + 50 wealth points) **or:**
- Spend the extra money on the sustainable products and support the rainforest region (+ 1 environmental point, - 50 wealth points).

Choice Card

You live in North America and raise exotic birds. Much of the rainforest habitat of your favorite species has been destroyed, due to increased demands on the forest caused by overpopulation and irresponsible practices. The bird is in danger of becoming extinct. You can:

- Stop importing the birds from the rainforest where they have been captured and removed from their natural habitat (+ 1 environmental point) **or:**
- Create a private bird sanctuary and continue importing and breeding these birds, figuring you can provide a safer environment than the decreasing forest (+ 2 environmental point, - 150 wealth points) **or:**
- Capitalize on their increasing rarity by importing and breeding the birds to sell for profit (- 1 environmental point, + 200 wealth points).

Choice Card

You own a small cashew plantation. The large American company Nifty Nuts, Inc. has decided not to renew your contract for cashew shipments. You can:

- Hold on to your land, forgo the money from this year's harvest, and hope for better luck next year (+ 1 environmental point, - 150 wealth points) **or:**
- Join forces with several other small farmers, combining land so that you can share profits and losses (+ 50 wealth points) **or:**
- Sell the land to a big cattle rancher who needs more grazing room (- 1 environmental point, + 150 wealth points).

Go for the Green

Game Cards

Choice Card

You are a manufacturer of rubber wetsuits in Los Angeles. You have two options for sources for the raw rubber. You can:

- Buy from small farmers, who extract the rubber sustainably, at a higher price (+ 1 environmental point, - 100 wealth points) **or:**
- Buy from large plantations who have cleared forest for their rubber crops (- 1 environmental point, + 150 wealth points).

Choice Card

The government of the Democratic Republic of Congo has offered you a contract to build a road into one of the rainforests to facilitate commercial game hunting. You can:

- Refuse the job, explaining that large-scale commercial hunting leads to extinction and that the road construction will completely disturb the ecosystem (+ 2 environmental points, - 300 wealth points) **or:**
- Accept the job, reasoning that otherwise someone else will do it, and people need to eat (- 2 environmental points, + 300 wealth points).

Choice Card

A new plant species has been discovered on land you own in the rainforest. Scientists believe the plant may have healing powers. You can:

- Sell the land to the government who intends research this plant — although you cannot be assured this government will stay in power to conduct the necessary research (+ 150 wealth points) **or:**
- Keep the land in its natural state and receive a small stipend from an international science group to conduct its own research (+ 1 environmental point, + 50 wealth points) **or:**
- Continue to slash and burn the land for profit (- 2 environmental points, + 300 wealth points).

Choice Card

As a National Geographic photographer assigned to capture the beauty of Indonesia's rainforest, you are determined to travel deep into the heart of the forest. When making travel plans you can:

- Take a plane operated by a large-scale developing company, lasting about an hour (- 1 environmental point, + 1 extra turn) **or:**
- Hire a guide, buy provisions, and travel the distance by river and on foot, taking two extra weeks (+ 1 environmental point, - 75 wealth points).

Go for the Green

Game Cards

Choice Card

You are a leader of a group of migrant peasants in the Ivory Coast. Due to population pressures and overuse of rainforest land, your people are forced to travel from area to area within the forest for fuel, food and shelter. Now environmental and government groups are pressuring you to give up your lifestyle so the land can be preserved. You can:

- Accept their arguments that your practices are harming the rainforest and move your people to an area where you do not know how to survive (+ 2 environmental points, - 300 wealth points) **or:**
- Continue to live off the land as long as you possibly can and petition to continue your way of life (- 1 environmental point, + 150 wealth points).

Choice Card

You are the president of Sunny Drinks, Inc. Your company's product, Truly Fruity, is not selling because it doesn't have enough tropical fruit flavor. You can:

- Use "incentives" to encourage his tropical fruit supplier to triple the output of their crops without having to purchase extra land (- 2 environmental points, + 250 wealth points) **or:**
- Spend the extra money on fruit which is sustainably harvested, basing a new ad campaign about the rainforests and the need to preserve them (+ 1 environmental point) **or:**
- Cut your losses and abandon the line altogether, concentrating on your popular Prunetta Punch (+ 50 wealth points).

Choice Card

You are a young entrepreneur and have successfully opened a small furniture shop. A salesman comes into your shop with beautifully made mahogany desks, asking an unbelievably low price. You can:

- Refuse to purchase the items because mahogany comes from the rainforest and you boycott such products (+ 1 environmental point, - 100 wealth points) **or:**
- Purchase many of the desks to sell in your store (- 1 environmental point, + 200 wealth points).

Choice Card

You are a cocoa supplier for Sweet Dreams, Inc. which is coming out with a new product called Choco-Caramel Delight. The company has strong indicators that this will be a smash so they want to increase production. You can:

- Increase land for planting cocoa by destroying an area of rainforest you had set aside for public relations reasons (- 2 environmental point, + 250 wealth points) **or:**
- Continue to produce the same amount of cocoa and send Sweet Dreams elsewhere for the additional need (+ 1 environmental point).

Go for the Green

Game Cards

Choice Card

You have handled guns your whole life. One day at the shooting range, you are approached by two businessmen who proposition you to go to Central Africa and commercial game hunt. You can:

- Decide to go because the money is good and you love hunting. However, the numbers they are asking you to kill could have a detrimental effect on the survival of several species (- 2 environmental points, + 300 wealth points) **or:**

Strike a bargain with the businessmen and agree to kill a certain quota of game that will allow the species to continue to survive (+ 1 environmental point, + 50 wealth points) **or:**

- Decide to decline the offer in hopes of stopping the possible wholesale slaughter of several game species. (+ 3 environmental points, - 300 wealth points)

Choice Card

You have won the state lottery and decide to go on your dream vacation to the Malaysian rainforests. When making your travel arrangements you have two options. You can:

- Take advantage of a “budget deal” offered by your local travel agency, which charters an American plane and uses American guides (- 1 environmental point, + 150 wealth points) **or:**

- Pay more for an “eco-tour” which emphasizes learning about the environment and ensures money goes to the local economy, lessening economic pressures to cut down the forest for natives (+ 1 environmental point, - 150 wealth points).

Choice Card

A world-famous Indian chef has realized the missing ingredient in one of her new specialties. All she needs is a spice that is found in a plant indigenous to the Madagascar rainforest. This plant is on your rainforest land, but has been preserved because a specific species of lemur feeds only on this plant. You can:

- Let your stomach do the talking and extract the spice from the plant at the expense of the lemur (- 2 environmental points, + 300 wealth points) **or:**

- Send the chef elsewhere which will certainly please the lemur (+ 2 environmental points) **or:**

- Allow the chef to extract the spice from a portion of your land, thereby preserving the lemur (+ 1 environmental point, + 100 wealth points).

Choice Card

You have received a large sum of money from a film distributor for a documentary you made about the plight of the tropical rainforests. You can:

- Give the money back to the countries where you shot the film, by setting up conservation and service groups (+ 3 environmental points, - 200 wealth points) **or:**

- Keep the money and buy yourself some well deserved treats (+ 200 wealth points)

Go for the Green

Game Cards

Risk Card

You are a subsistence farmer struggling to make a living off your plot of rainforest. A large cattle rancher is urging you to sell your land in order to tear down your plot for grazing. If you have 500 wealth points, you are able to resist (+ 1 environmental point). However if you have less than 500 wealth points, you are forced to sell out (- 1 environmental point).

Risk Card

Due to improper maintenance, a fuel storage tank for logging equipment leaks toxic substances into the water supply. You lose 2 environmental points unless you have 500 wealth points to take care of the problem before significant damage is done.

Risk Card

A huge forest fire is raging throughout Indonesia's East Kalimantan. If you have virgin/unlogged forest (5 environmental points or more), you are okay. If you have logged forest, you lose it all (- 300 wealth points).

Risk Card

A North American zoo would like to find a mate for their female macaw. They want to breed the species because it is considered endangered. If you have enough unlogged forest (5 environmental points or more), you can take advantage of the zoo's offer to pay 400 wealth points for a male macaw.

Risk Card

A heavy rainfall floods your land and causes tremendous erosion because you were forced to live on marginal ground due to overpopulation. You lose 150 wealth points.

Risk Card

An International Global Warming Coalition is offering financial assistance to those who have demonstrated dedication to preserving the rainforests. If you have 5 or more environmental points, you get 200 wealth points.

Risk Card

An elderly, eccentric landowner is offering to sell a large tract of rainforest to someone willing to commit to preserving the land. You may trade 150 wealth points for 2 environmental points, if you want to do this.

Risk Card

Large amounts of curare are found on your segment of the rainforest. (Curare is used as a muscle relaxant for surgery). A hospital chain from Europe gives you 150 wealth points for your supply.

Risk Card

A wealthy European perfume manufacturer is interested in extracting oils from some rainforest plants (bay oil, camphor oil, eucalyptus oil, patchouli oil, rosewood oil, sandalwood oil, and ylang-ylang). If you have 5 or more environmental points, you receive 100 wealth points from this company.

Risk Card

You are throwing a large party and want to serve some ecologically sound food, however you have financial concerns to consider. If you have 400 or more wealth points, have a "rainforest caterer" deliver nuts, dried fruits, palm hearts, etc. (+ 1 environmental point) or: if you have under 400 wealth points, forgo the environmental snacks and buy pretzels.

Go for the Green

Game Cards

Risk Card

You and your family are attacked by guerrillas fighting civil war in Mozambique. Unfortunately, your son is severely hurt. If you have 400 wealth points, he can get the necessary medical attention. However, if you do not and he should die, your number of laborers will be too low and you will be forced to sell your rainforest land to the loggers (- 2 environmental points).

Risk Card

Your deforestation practices in the Himalayan mountains helped contribute to the 12 million acres of damaged land in India (- 1 environmental point).

Risk Card

This is your lucky day! On your way to an important conference on saving the rainforest, you are seated next to a famous rock star on the plane. You convince her not only to attend the conference, but to promote your cause on her next album (+ 2 environmental points).

Risk Card

Your new line of "rainforest cosmetics" is a big hit. Not only is it selling well (+ 100 wealth points), but it is raising awareness of rainforest destruction and promoting sustainable harvesting (+ 1 environmental point).

Risk Card

As a wealthy alumnus of an Ivy League university, you are approached by a group of students trying to start a conservation biology program. If you want to support their efforts, you may trade 150 wealth points for 2 environmental points.

Risk Card

You have clear-cut the rainforest to provide pastures for your cattle. However, within a year, the land is invaded by toxic weeds which kill all your cattle (- 1 environmental point, - 100 wealth points).

Risk Card

Congratulations! Your proposed "debt for nature" trade between a U.S. bank and the government of the Democratic Republic of Congo was adopted (+ 1 environmental point).

Risk Card

You have developed a series of rainforest preservation T-shirts which have become a huge success with teenagers (+ 1 environmental point, + 100 wealth points).

Title

Student Reading