

**SAVE THE
RAINFOREST,
INC.**

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“For in the end, we will conserve only what we love. We will love only what we understand. We will understand only what we are taught.”

-Baba Dioum,
Senegal

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Why a Newsletter?

Save The Rainforest has been working hard since 1988, to protect rainforests and help educators teach about rainforests. This is an extension of our education mission. Our hope is to provide information that can translate into better educational practices and allow for a method to let rainforest educators share their expertise with each other. We need to expand this circle of concerned teachers and citizens, and we hope that this newsletter is a step in that direction. Please share this with anyone and everyone and encourage them to send us their email address to add them to our list. Grab a Vine!



**Bruce Calhoun, President
of Save the Rainforest, on
the Galapagos Islands in
Ecuador.**

NEWS From Bruce Calhoun, President and Founder of *Save the Rainforest, Inc.*

Save The Rainforest, Inc. was founded in 1988, to involve educators and students in preserving tropical forests. There were many good reasons for protecting tropical forests. Tropical forests were the home of much of the world's biodiversity and many indigenous cultures. Tropical forests also protected local watershed quality and served as giant carbon sinks--a hedge against global warming.

Since 1988, global warming

has become an accepted fact, and its repercussions have begun to look scarier every year. That is why we are continuing to support the reforestation efforts of Fundacion Jatun Sacha (FJS) in Ecuador. FJS has hosted many of our teacher led student groups over the years and involved them in volunteer work planting trees. They have also instituted a special volunteer program that has recruited college-age students from Europe and the USA to work at several reserves in Ecuador.

Much of the volunteer work these students do in their one-month to one-year internship is directly related to reforestation.

Reforestation is one of the key remedies to global warming because growing trees absorb more CO2 than they give off (mature forests simply store carbon, they do not absorb more carbon than they emit). Reforestation in the tropics is especially useful because trees grow so much faster there. It is also cost (continued next page)



Save the Rainforest Lodge in Panama

"Rainforests are the finest celebration of nature ever known on the planet."

-Norman Myers



"Two roads diverged in a wood, and I--I took the one less traveled by, and that has made all the difference."

-Robert Frost

Bruce Calhoun: continued

effective, since land and labor are cheap. In addition to reducing global warming, reforestation in the tropics also rehabilitates watersheds and benefits local populations because some of the trees planted provide nutritious nuts and fruits, and wood that can someday be harvested.

If you are thinking about taking a group of students to Ecuador, you will see first hand the great reforestation work of FJS. If you are not taking a group, perhaps you have a student or two who would be interested in the volunteer program for individuals. For more information on this program the student can visit the FJS site at

www.jatunsacha.com and click on the volunteer page. Another alternative for helping out is to send in a donation to Save The Rainforest for reforestation. We will earmark it for FJS and send you a certificate of thanks for any donations of \$50 or more.

Al Gore's, *"The Inconvenient Truth"*, would be a good program to show your students in regards to this issue. The graphics he uses are great, and he is saying the same thing we were in 1988. While Al Gore was still a Senator, some of our students who had taken Save The Rainforest courses testified in front of a Senate committee chaired by him. What they told him

was what he already knew, and what more Americans now know: Global warming is a major threat to the well being of our planet and ourselves, and it's time we do something about it.

Bruce Calhoun's book, *"Close Calls and Foolhardy Romances: The Maturation of an Environmentalist"* is available through Amazon.com.



Save The Rainforest Class Trips—

It's not just an Adventure, it's a Call to Action.

STR offers trips, courses and travel to the tropics for school groups since 1989. Teachers who lead an expedition will travel free. Students will learn about different cultures and tropical ecosystems, AND participate in conservation projects that will enhance their college resumes.

We have coordinated trips for over 8,000 people without incident. Your trip with us will be safe, fun, educational and truly inspirational. If you have never taken students overseas we will make it easy for you. If you are a

veteran group leader we may have a program you want to try. Prices Include international airfare, food/lodging, instruction/transport. Please check the website or contact Save the Rainforest for exact price.

*Mexico: Tropical forest, Pacific beaches, colonial cities. 10 days

* Belize: Tropical forest, Mayan ruins, Caribbean reefs. 12 days

* Costa Rica: Tropical forest and Pacific beaches. 12 days

* Panama: Tropical forest, Indigenous culture, Coral

reefs. 14 days
* Galapagos and tropical forest of Ecuador, Indigenous culture. 14 days
* Bali: Tropical forest, Hindu temples and coral reefs. 14 days

Contact us for available summer dates or to set up dates over your spring break. Contact Butch Beedle (beedle@eishome.com) for a free CD that provides a QuickTime movie of each trip and answers most of your questions.

Save The Rainforest, Inc. Background Information

Save The Rainforest, inc. (STR) is a charitable 501(c)(3) organization that was founded in 1988 by teachers and students in Dodgeville, Wisconsin. From its inception, STR has involved schools from around the United States in projects that educate people about the rain forest. It has also provided opportunities for students and teachers to actively campaign for rainforest conservation. It has worked as part of the International Children's Rainforest Network, helping to create rainforest reserves in Costa Rica, Ecuador, Panama and Belize. Today, it is one of the largest groups sending students on rainforest educational adventures. STR is governed by a board of directors that consists primarily of practicing teachers throughout the United States.

Bruce Calhoun was teaching his Wisconsin biology class about rainforests from his firsthand experiences. The students were surprised to find out that the information that Mr. Calhoun shared with them was not to be found in their textbooks. They came to realize that students, teachers, the general public, and even textbook publishers were not informed about what was actually happening to rainforests. They decided to do something about it. For their class project, the students created an information packet about tropical rainforests and sent it to every high school science teacher in the United States. They also asked those teachers if they wanted to join a new club called Save The Rainforest and receive additional information. To their amazement, they received over 10,000 positive replies.

STR began educating the public about the importance of rainforests. Children learned that rainforests are an essential ecosystem in our world. They learned about conservation, geography, culture, biology, botany, and how the earth's systems and cycles work. Learning about rainforest became a mainstream educational topic.

STR created some of the earliest "Adopt-An-Acre" an acre programs to protect endangered rainforests. STR was instrumental in the development of the First International Children's Rainforest in Monteverde, Costa Rica. Through STR's continued efforts and cooperating groups in Japan, Germany, Canada, Netherlands, and England, over 42,000 acres were protected in the Monteverde rainforest by 1994. The international cooperative endeavor expanded their efforts and created a series of international children's rainforests.

E.O. Wilson said that, "the better an ecosystem is known, the less likely it will be destroyed". There is no better way to study an ecosystem than to travel to it and experience its richness first hand. Therefore, the next logical step in the evolution of rainforest education was to allow the students to visit the very rainforests they had protected.



In 1989 STR began organizing teachers and students to visit Monteverde and the other children's rainforest sites. The international efforts continued as they raised money to build educational lodges in the forests and design wonderful educational programs. STR is the pioneer in sending students on ecotourism trips to the rainforest. We have sent over 8,000 educators and students on courses throughout Latin America. STR has evolved from a class project to a nonprofit organization run by volunteer teachers to foster education and conservation of tropical rainforests.

We have expanded our trips to include Panama, Ecuador (including Galapagos), Costa Rica, Panama, Mexico, and Belize. Our trips are affordable, educational, fun and safe. We have a perfect safety record, and a long list of people who praise the courses for their educational value, low cost and culture sensitivity. In each country STR works with a nonprofit partner organization. The partner organization provides staffing for teaching the course and handling logistics. These nonprofit organizations are on the front lines of rainforest conservation, education and research. The students get an educational opportunity of a lifetime but the organizations benefit from the students too. Their payment gives the environmental organization money that they can use to do their important conservation work. So going to the forest is actually help saving them too. Past course participants return home with a profound understanding of the issues affecting rain forest conservation, and a great enthusiasm to educate others.

Where Did *Your* Chocolate Come From?

By Maggie Eisenberger

I have a couple bars of the best-tasting chocolate in the world in my fridge, just waiting until I am in serious need of comfort food. I brought it back from my Save The Rainforest trip to Panama this summer. It may seem to you that a trip to Panama is the hard way to get chocolate, but you may be interested to know there *is* no easy way!

Chocolate comes from a tree called cacao, or *Theobroma cacao*. It was spread throughout Central America by indigenous peoples who cultivated it but it prefers to live within 10 degrees of the equator in constant year-round humidity. It needs 150 cm of rain per year, spread out so no month gets less than 10 cm. Chocolate not only tastes good, it has good taste!

Cacao is an understory tree, tolerating considerable shade and only growing to 6 or 8 meters. Herein lies the problem. Large corporations seeking to farm chocolate plantation-style have extremely low rates of pollination and seed-setting and great difficulty fighting the fungus and thrips which attack the trees when they are grown as a monoculture.

The flower of the cacao is really forty to sixty tiny, odorless, white flowers, growing right on the side of the trunk rather than at the tips of new twigs, as on our familiar fruit trees. A large number of flowers are produced but if they are not pollinated in 24 hours, they fall off. At the beginning of the season pollination success is only 2% to 3%, increasing somewhat through the season but rarely getting into double digits. As if that weren't enough, few pollinated flowers actually set seed.



Cacao pods

Recently it was discovered that the pollinator is a ceratopogonid, or biting midge, but other small crawling insects may also be helping. The midges live in large

numbers only where the leaf litter is fairly deep and moist. Plantations tend to keep such litter cleared out, as it can also harbor the destructive fungi. In a diverse forest, the litter is not a problem because the cacao trees are dispersed throughout the forest at some distance from each other, making it harder for fungi and insect pests to spread from tree to tree. plantation growers that are restoring the litter layer to the forest floor can end up increasing their use of fungicides and pesticides to protect their cacao trees.

In "the wild," the cacao tree has a different kind of problem, one of seed dispersal. The large football-shaped pods take 4-5 months to grow and another month to ripen. However, once ripe, they never fall from the tree or split open, which means the cacao is completely dependent on animals to chew open the pods and release the 50-80 seeds each one contains. Bats, rats, squirrels, and monkeys, as well as Amerindians, are more than willing to perform that service, as they are rewarded with the sweet, white, mucilaginous pulp surrounding the seeds. It is impossible to remove it all from the seeds, so when chocolate is harvested commercially the brown seeds are left to sit for 3 days while the sticky stuff ferments. Then it can be removed and the seeds are spread in the sun to dry for up to 9 days.

This brings us to yet another paradoxical difficulty with the cultivation of cacao. In the moistest climates, as in the Amazon basin, cacao is most successfully pollinated but the beans quickly rot and only the pulp is used for food or beverages. In the drier seasonal forests of Central America, the beans can be successfully sun-dried but conditions are not good for the pollinators. As a result, many cacao flowers are painstakingly hand-pollinated by workers in those places, and some cooperatives have managed to build kilns that are fired with wood or solar energy to dry the seeds when it is too wet to do it outdoors.

The next step is to toast the seeds to separate the paper-like covering on the outside. After the skin is off, the seeds are ground in a hand grinder like my grandmother used to have for grinding steak into hamburger. The seed and its cocoa butter, which is very oily, creates a bowlful of moist, dark brown, and very bitter chocolate. The chocolate can be formed into balls about the size of a tennis ball and allowed to dry and harden. Then it can be stored and transported.

If you buy chocolate in this form, you can easily make hot chocolate from it. Just drop one of the dry balls into a pot of boiling water, add some raw sugar and stir. Bribri Indians, living along the border between Panama and Costa Rica, don't put sugar in their chocolate drink. They alternate eating a bite of cooked, very sweet plantain with a sip of unsweetened chocolate and let their tongues do the mixing! Yum. Or you can just buy one of the delicious chocolate bars made by the indigenous groups around Bocas del Toro that are for sale in the airport and grocery stores along the main street of town when you take your trip with Save The Rainforest!

"It is nothing short of scandalous that we probably only know one out of every ten species on earth, let alone where they are or, various aspects of their biology."
—Reith Lecture, *Biodiversity*, 2000.

Rainforest Resources

As rainforest educators, we are frequently asked for our favorite resources. We will continually keep you informed about rainforest education. In this issue we will submit teacher background books and websites. If you have your own favorites, please send them to us with a brief review. Next issue we will concentrate on student books and videos.

Useful Rainforest websites:

-Rainforest Action Network

<http://www.ran.org/ran/>

-Rainforest Alliance

<http://www.rainforest-alliance.org>

- Forest Conservation Portal

<http://forests.org/>

***Huge** archives of news and features stories about rainforests collected from press around the world.

-Mongabay

<http://rainforests.mongabay.com/>

*Very good site. A lot of well organized introductory information and news.

-Cloud Forests Alive

<http://www.cloudforestalive.org/>

-Dr. Blythes Rainforest Education site

<http://www.rainforesteducation.com/>

<http://www.savetherainforest.org/>

<http://www.picadome.fcps.net/lab/curr1/rainfor/default.htm>

Elementary/Middle School research site

<http://edtech.kennesaw.edu/web/rforest.html>

Lists of children's sites and teacher lessons

-**CLICK** to save the rainforest every day for free. This is a new and novel approach to saving the rainforest. You and your students can click on these website to protect many square feet of endangered rainforest every day. TRY IT!

<http://rainforest.care2.com/>

<http://www.therainforestsite.com/>

<http://clickandsave.8k.com/>

Teacher Background Material

Close Calls and Foolhardy Romances: The Maturation of an Environmentalists –Bruce Calhoun-Founder and President of STR

A Neotropical Companion: An introduction to Animals, Plants, and Ecosystems of the New World Tropics-John Kricher (Princeton University press)

Tropical Rainforest: A world survey of our most valuable and endangered habitat with a blueprint for its survival-Arnold Newman (Facts on File)

The Primary Source: Tropical Forests and Our Future-Norman Myers (W.W. Norton and Company)

Tropical Nature: Life and Death in the Rainforests of Central and South America-Adrian Forsyth and Ken Miyata (Charles Scribner's Sons)

Tales of a Shamans' Apprentice-Mark Plotkin (Viking)

A Belizean Rain Forest-Robert Horwich and Jonathan Lyon (Orang-utan Press) *available through Howlers Forever

The Last Rainforests-Edited by Collins (Oxford University Press)

Jungles-edited by Edward Ayensu (Crown Publishing)

Savages-Joe Kane (Vintage Books)

The Rainforest Book-Scott Lewis (Living Planet Press)

Portraits of the Rainforest-Adrain Forsyth, Michael Fogden and Patricia Fogden (Camden House)

Lessons of the Rainforest-essays edited by Suzanne Head and Robert Heinzman (Sierra Book Club)

Diversity and the Tropical Rain Forest-John Terborgh (Scientific American Library)

Four Neotropical Rainforests-Alwyn Gentry (Yale University Press)

Monteverde- Nalini Nadkarni, and Nathaniel Wheelwright (Oxford University Press)

Costa Rican Natural History-Dan Janzen (University of Chicago Press)

Earthly Goods-Medicine Hunting in the Rainforest-Christopher Joyce (Chapter on Ecuador takes place near our trip)

Tropical Rainforest-Chris Park (Routledge)

An Introduction to Tropical Rainforests- T. C. Whitmore (Oxford University Press)

Tropical Rainforest Ecology-Egbert Leigh, Jr. (Oxford University Press)

RAINFORESTS 101:

Biodiversity Facts

- Only 1.4 million animals and plants have been named.
- A Smithsonian scientist estimated that there may be between 20 to 30 million different kinds of insects in the rainforest alone.
- Ecuador, which is the size of Colorado, has 1300 species of birds. That is twice as many as many as all Canada and US combined. Five hundred of those birds are only found in small patches of forests in Ecuador and no place else in the world.
 - In Costa Rica 1,234 different species of butterflies were identified within two square miles.
 - Dr. Terry Erwin counted 163 different beetle species in one tree in Panama. From his study he estimated that there are eight million beetles alone.
 - One survey has counted at least 300 different species of trees in one hectare (2.4 acres)! By comparison, a hectare of temperate forest in northern latitudes will usually contain approximately 20 tree species.

Tropical rainforests are not just a bunch of trees. They are a complex relationship between plants and animals that depend on one another in numerous, and many times, unknown ways. If one link is removed, the whole balance of the system can be dramatically changed, and often not for the better.

Rainforests are basically forests that have broadleaf trees that do not lose their leaves at the same time. In these forests, it is warm all the time and rainfall is abundant and constant. Rainforests are found around the equator in the tropic zone.

Rainforests cover about 6% of the surface of the earth. That is about as much area as the lower 48 states. Conditions in rainforests are very constant. There is little change.

A tropical rainforest will have these conditions:

Lots of rain. They don't call it a rainforest for nothing. Most rainforests get over 100 inches of rain a year. Some places have recorded over 400 inches! That is averaging more than an inch of rain everyday for an entire year.

Lots of heat energy. Because rainforests are located near the equator they have warm temperatures all year long. Places near the equator get more solar energy than other places. It is estimated that a square inch of land near the equator will get twice as much solar energy as a place in the temperate zone.

There is very little seasonal change in temperature. It will be nearly the same in December as it is in July. The average temperature is around 77°.

The greatest amount of biodiversity in the world. Biodiversity means having many different kinds of life. Scientist figure that half or more of the plant and animal species that are in the world can be found in

the rainforest. Scientists have figured out the more biodiversity a place has, the fewer of each kind of species there is. The rainforest has many different kinds of butterflies, but very few of each kind. Going to a rainforest is very cool because there are so many different things to see, but having very few of each kind can be problematic. If an area of rainforest was destroyed, having a few of each species makes it easier for them to become extinct than having a great many. Many plant and animal species have yet to be discovered in the rainforest. The fear is that they could become extinct before they are even known.

Rainforests have poor soil. Many people look at a tropical rainforest and make the seemingly logical conclusion that the soil is wonderful because of the wealth of plant life. But the soil is very thin because of the heavy rains. Many times it is only 1 to 3 inches deep. The rains wash away the soil and nutrients that the plants need to survive. Cutting down the rainforest for farming or logging has become a big problem for the rainforest soil. Once the trees are gone the heavy rains can easily wash away the soil through erosion.

Farms don't last very long in the forest.

Rainforests are a very complex ecosystem and we are just beginning to understand it.





“The worst thing that can happen, will happen, is not energy depletion, economic collapse, limited nuclear war, or conquest by a totalitarian government. As terrible as these catastrophes would be for us, they can be repaired within a few generations. The one process ongoing in the 1980’s that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly that our descendants are least likely to forgive us.”

-The Diversity of Life-E.O. Wilson

GRAB A VINE!



This is our initial newsletter. We plan on doing it a couple times a year. To make a true educational community, we need your participation. Share your favorite rainforest activities or resources. Tell us about your Save The Rainforest trips. Share trip suggestions. Write your own article or suggest one. Next issue we will be sharing student books and videos. If you have some good ones please let us know.

Forward this newsletter to everyone. Please send us the email of anyone you think maybe interested in our newsletter. Let’s build up a huge base of connected rainforest educators.



SAVE THE RAINFOREST BOARD MEMBERS

- Bruce Calhoun, New Mexico
- Maggie Eisenberger, Missouri
- Dan Patrick, Texas
- Mark Blackbourn, Wisconsin
- Steve Daily, Indiana
- Butch Beedle, Wisconsin



“It is good to realize that if love and peace can prevail on earth, and if we can teach our children to honor nature's gifts, the joys and beauties of the outdoors will be here forever.”

-Jimmy Carter

Save The Rainforest Bracelets Available

Save the Rainforest has designed one of a kind bracelets that can be used as promotion, education, or fund raising. These bright green bracelets have Save The Rainforest embossed on them. Your cost is \$1.00 each. You may sell them for \$2-3 to raise money for your projects or trips. Thousands have been sold through out the U.S. and Costa Rica. Order at beedle@eishome.com.



The best way to teach about rainforests is to take the students there. Plan a trip to the rainforest with Save The Rainforest. Lead teachers go free. Order your free CD of information or go to www.saverfn.org.

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Fine Print: If you do not want to receive future mailings, please email us.