



GREEN LEAF

ENVIRONMENTAL CAMP 2011

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Forty-three (43) very promising and vibrant youths, aged 12-16, along with a contingent of six (6) officers from the EPA and nine (9) teachers, on July 12, 2011, set off on a much anticipated journey to the Madewini Campsite, Soesdyke for the EPA's annual environmental camp, held under the theme, "Forests: Nature at your Service".

Participants of the three-day camp were drawn from nine (9) schools from Regions 2, 3 and 6. These were Skeldon Line Path Secondary, Tagore Memorial, J.C. Chandisingh Secondary, Berbice High, Vrymans Erven Secondary, Stewartville Secondary, Uitvlugt Secondary, Anna Regina Multilateral, and Cotton Field Secondary Schools.



Bird watching and measurement

Presentations and activities were geared at equipping campers with knowledge of forests and the services they provide. These included topics, Forests services, Climate Change and the role of forests, and Beyond the Trees. Campers especially enjoyed the scavenger hunt and bird watching exercises. Teachers were not left out of

the action, as they were engaged in mini workshops on



environmental education.

Above: Working on the Web of Life

Below: ARMS' skit at talent show

Editorial Note

During the International Year of Forests, the United Nations Food and Agricultural Organisation (FAO) has chosen to link the topic of forests to certain vital areas of human development every month. The focal issues chosen for the month of September are forests and poverty, and forests and tourism. As the world seeks to move towards a green economy, the focus must be moved from the primary production of wood, to more sustainable methods of using our forest resources.

One such method is nature-based tourism. Forests, with their myriad of benefits, offer many services to the tourism industry, and recreation has always been an important element of forest use. Tropical forested areas provide beautiful, and often breathtaking landscapes, that many travelers would not find at home. They offer the widest variety of flora and fauna on Earth, for tourists to either marvel at, or to study.

Additionally, nature-based tourism which is heavily dependent on forests, offers ecologically and economically viable alternatives to mass tourism, and has the potential to enhance the holistic development of surrounding communities.

The highlight of the camp was the talent show where students and teachers took part in singing, sharing jokes and poems and presenting skits as well as dancing.

On the last day, schools were given a chance to plan and present a workable and achievable environmental project for their respective schools. The camp was officially closed with the presentation of certificates of participation to each camper and special prizes were awarded to those who made outstanding contributions to Camp activities. Recipients included Zimeena Rasheed (Outstanding Camper), Marlon Joseph (Best Camper), Dimitri Benjamin (Most Congenial Camper), and the Best Group (The Capadulas).

PROTECTING GUYANA'S NATURAL HERITAGE

Guyana has long been committed to safeguarding its landscape and biodiversity as a means of ensuring the wellbeing of its present and future generations. Evidence of this commitment is shown through the LCDS and most recently, the enactment of Protected Areas Bill (July 07,2011).

This Act provides for the establishment and management of a National Protected Areas System (NPAS), a Protected Areas Trust Fund and for a Protected Areas Commission to be established to oversee the management, coordination, development and expansion of the NPAS. Areas included in the system are the Kaieteur National Park, Programme Site of the Iwokrama International Center for Rainforest Conservation and Development, previously declared protected areas, and urban parks including the Botanical Gardens and the Zoological Park.

Early policy and legal steps to safeguard our natural heritage consist of the ratification of the United Nations Convention on Biological Diversity (1994), the enactment of the Environmental Protection Act (1996), the implementation of the National Biodiversity Action Plan (1999) and the execution of the KfW Small Grants Component of the Guyana Protected Areas System Project (2004).

The implementation of the NBAP identified five proposed protected areas: Shell Beach, Kanuku Mountains, Orinduik, Mount Roraima and the Southern Region, which has led to much of the conservation work in Guyana being focused in those areas.



From left: Shell Beach, Mount Roraima, Botanical Gardens

In 2004, the Environmental Protection Agency (EPA), with funding from the Government of Germany, through the Kreditanstalt für Wiederaufbau (KfW), undertook the execution of the KfW Small Grants Project. Activities encompassed the construction of multi-purpose buildings and guest houses for tourism, the provision of equipment and the fencing of farmlands to support crop diversification and sustainable agriculture.

These all laid the foundation for the Protected Areas Bill which has come at a time when the global and national efforts are increasingly being mounted to preserve biodiversity, maintain ecosystem services and foster human development. Coupled with green-economy initiatives such as the Low Carbon Development Strategy, protected areas offer one of the most significant ways to safeguard nature and encourage sustainable alternatives for development.

President Bharrat Jagdeo and Norwegian Minister of the Environment and International Development, Erik Solheim, signing an MOU for release of funds for forest protection.



Breath-taking view of Kaieteur Gorge

MINING WITH THE ENVIRONMENT IN MIND

The Guyana Geology and Mines Commission (GGMC) celebrated its ecosystems and human health. Interactive, educational games and 32nd Anniversary this year with the usual exciting mix of activities puzzles also attracted visitors to the EPA's Booth where they during 'Mining Week' during August 21 – 27. The educationally were meaningfully engaged by staff of the Agency. entertaining week of activities was launched with the Commission's Mineral Walk under the theme, "Evolving Methods, Embracing Excellence, Enjoying Success."

This "Mineral Walk" garnered the support of sector agencies and members of the public and sought to pique interest in mining and its contribution to Guyana's economy.

The Environmental Protection Agency (EPA) supported Mining Week by participating in the Mineral Walk and the 3-day Mining Exhibition held during August 22 -24 at the Ocean View Convention Centre . The exhibition highlighted the importance of adopting best environmental practices in mining Guyana's rich mineral resources. The Agency's display portrayed best environmental practices in gold mining operations including the safe use of mercury and its effects on

Activities such as the GGMC's Mining Week greatly assist in promoting sustainable use of resources and sound environmental practices.

Visitors pay keen attention to the materials displayed at the EPA booth during Mining Exhibition



KIDS LEARN ABOUT OZONE LAYER PROTECTION

International Ozone Day is observed annually on September 16 and commemorates the entry into force of the Montreal Protocol, which has been signed by over 180 countries, on September 16, 1987 to phase-out the production and use of ozone depleting substances (ODS). This year, International Ozone Day was celebrated under the theme: **“HCFC phase-out: a unique opportunity”** Full compliance with the Montreal Protocol will lead to the restoration of the ozone layer by 2050.

In observance of Ozone Day, the Environmental Protection Agency (EPA) engaged students from four (4) primary schools in the Georgetown area in games, video and interactive sessions.

Schools participating in the activity were Sophia Primary, Redeemer Primary, Graham's Hall Primary and Bel Air Primary. Approximately 130 Grade 5 students immensely enjoyed the **Ozzy Ozone Video** specially produced to teach children about the Ozone. They were able to make meaningful contribution to the discussion on the damage being done to the ozone layer and identify ways they can protect it.

These students were keen to learn about Chlorofluorocarbons (CFCs), a vast majority of them hearing the term for the first time, and ozone depleting substances (ODS). They were amazed to learn that items used everyday such as aerosols, fire extinguishers, refrigerants, and air conditioning units, among others had potentially harmful effects on the ozone layer if not properly controlled.

The students learnt new words through a word scramble at the end of the session which served to reinforce concepts learnt during the session. The award of tokens for accuracy and speed at this task served to fuel enthusiasm and competition as students vied for the tokens at stake.

The sessions were fruitful and meaningfully engaged students in learning about the ozone. It also served to equip them with knowledge to take protective actions against exposure to harmful ultraviolet radiation, foster responsible behaviour and make them aware of their role as stewards for the environment in which they live.



Students of Redeemer (left) and Graham's Hall (right) Primary Schools enjoying the Ozone sessions

YOUTHS FOR THE ENVIRONMENT

“August holidays” is a time when youths are out of school and there is not much to do. Many organizations, public and private maximize on the months of July to August, vie for youth participation in Summer Camps of different types. Camps are perceived to offer an interesting means for engaging young people in outdoor activities, giving them a chance to interact with the natural environment, learn new skills and make new friends.

Two such camps that embraced the task of moulding young minds for effective roles in conservation of natural resources and ecosystems, and promoted affinity to nature were the Taxidermy Camp hosted by the National Museum on July 27 and 29, and the Garden Camp, August 11 and 13, coordinated by the National Parks Commission.

The EPA made a significant contribution at both camps, infusing environmental protection, conservation, preservation and sustainability into the sessions delivered.

At the Taxidermy Camp, an informative and interactive presentation on “Climate Change: What you need to know” stimulated the interest of youths and urged them to action to help in the fight of this current issue. Participants were particularly interested in what they could do to make a difference.

The presentations on “Pollution and the Environment” and “Biodiversity and Forests” made to twenty-three children aged 6-12 at the Garden Camp held at the Botanical Gardens made participants aware of the different types of pollution and their effects on the environment. It was heartening to note that participants at this tender age were keen on ceasing negative actions and adopting positive practices to curb pollution and protect and care for biodiversity. An outdoor session was also conducted to highlight aspects of pollution and different types of biodiversity around the Botanical Gardens. Students made meaningful contributions and suggestions on dealing with issues of concern observed in the environment, an indication that the youths were positively motivated to action for a better environment.

GUYANA'S BIOSAFETY CLEARING HOUSE

Biotechnology, in the form of traditional fermentation techniques, has been used for decades to make bread, cheese or beer. It has also been the basis of traditional animal and plant breeding techniques, such as hybridization and the selection of plants and animals with specific characteristics to create, for example, crops which produce higher yields of grain.

The term '**biotechnology**' refers to any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for a specific use. The difference with modern biotechnology is that researchers can now take a single gene from a plant or animal cell and insert it in another plant or animal cell to give it a desired characteristic, such as a plant that is resistant to a specific pest or disease.

Biotechnology is a very new field, and much about the interaction of Living Modified Organisms (LMOs) with various ecosystems is not yet known. Some of the concerns about the new technology include its potential adverse effects on biological diversity, and potential risks to human health. Potential areas of concern might be unintended changes in the competitiveness, virulence, or other characteristics of the target species; the possibility of adverse impacts on non-target species (such as beneficial insects) and ecosystems; the potential for weediness in genetically modified crops (where a plant becomes more invasive than the original, perhaps by transferring its genes to wild relatives); and the stability of inserted genes (the possibilities that a gene will lose its effectiveness or will be re-transferred to another host).

Biosafety is a term used to describe efforts to reduce and eliminate the potential risks resulting from biotechnology and its products. While advances in biotechnology have great potential for significant improvements in human well-being, they must be developed and used with adequate safety measures for the environment and human health.

Extracted from: http://bch.cbd.int/protocol/cpb_faq.shtml#faq2

Under the Convention for Biological Diversity, to which the EPA is the National Focal Point, the Cartagena Protocol was established to support biodiversity conservation efforts as it relates specifically to genetically modified living organisms or living modified organisms (LMO) through modern biotechnology. More specifically, the Cartagena Protocol addresses the concerns of safe handling, transport and use of LMOs.

The Environmental Protection Agency recently coordinated a national training workshop from September 13 to 14 under the Continued Enhancement of Building Capacity for effective participation in the Biosafety Clearing House. This initial workshop targeted several stakeholders including University of Guyana, Food and Drugs Department, Ministry of Health, Guyana Sugar Corporation (GUYSUCO) and National Agricultural Research and Extension Institute



Participants of the Biosafety Workshop

(NAREI) with the overall aim of providing participants with a clear understanding of the importance of the Biosafety Clearing House as well as procedures for registering and publishing Biosafety related data and decisions to the Biosafety Clearing House Portal (BCH).

KIDS CORNER

Oceans of the world!

The global ocean is all of the world's marine (salt) water and has a total volume of 1.332 billion cubic kilometers. The planet is approximately 71% water and contains (5) five oceans. They are Arctic, Atlantic, Indian, Pacific and Southern.

Pacific (155,557,000 sq km)

The Pacific Ocean, the largest of the oceans, also reaches northward from the Southern Ocean to the Arctic Ocean. It spans the gap between nations such as Australia, Asia and the Americas.



Atlantic (76,762,000 sq km)

The Atlantic Ocean, the second largest, extends from the Southern Ocean between South America, Africa, North America and Europe to the Arctic Ocean.

Indian (68,556,000 sq km)

The Indian Ocean extends northward from the Southern Ocean to India, between Africa and Australia. The Indian Ocean joins the Pacific Ocean to the east, near Australia.

Southern (20,327,000 sq km)

The Southern Ocean is the ocean surrounding Antarctica and is partially covered in ice, the extent of which varies according to the season. The Southern Ocean is the second smallest of the five named oceans.

Arctic (14,056,000 sq km)

The Arctic Ocean is the smallest of the five Oceans. It joins the Atlantic near Greenland and Iceland.

Safety Tips: Do not eat or drink any of the materials used in this activity. Ask for guidance.

Experiment: Different Densities

Materials Needed

clear straws play dough

Salt eye droppers

blue, red and yellow food coloring

3 plastic cups filled with water

Instructions

1. Add a few drops of blue food coloring to one of the cups filled with water. Add red to the other cup and yellow to the third cup.

2. Then, add different amounts of salt to each cup. Add lots of salt to one color, a medium amount of salt to the other, and no salt to the last cup.

3. Using play dough, make a base for the straw. Stick the straw into clay to keep it standing straight.

Now, using the eye dropper, put drops of the different colored water into the straw. What happens?

Explanation

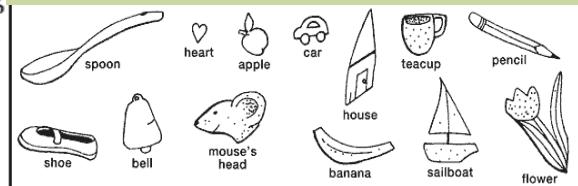
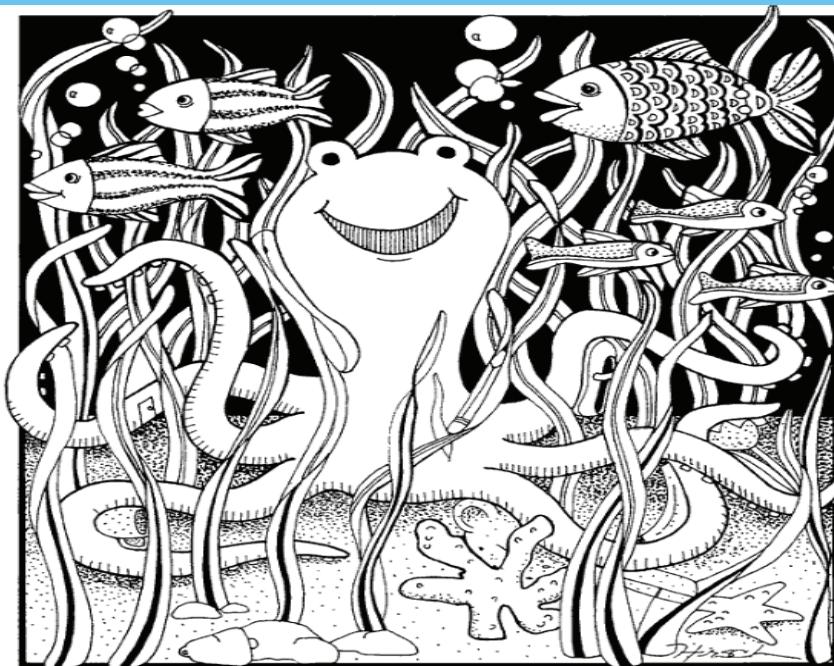
The different colors float on top of each other in the straw. That's because the more salt there is in the water, the denser the water is and the lower it will be in the straw. Density is one thing that makes things float. So, the color that floats at the top of the straw has the least amount of salt in it and is the least dense.

The color with the most salt in it is the most dense, so it stays at the bottom. The color with a medium amount of salt in it is medium dense, and the color with no salt in it is the least dense. Keep experimenting with density. Think of a question that you'd like answered. Like, "What would happen if I added different amounts of sugar to the water instead of salt?" Make a prediction, test it out, and then send your findings to eit.epaguyana@gmail.com.

Did you know?

Taking shorter showers saves between 5 and 10 gallons of water per minute.

Can you find all the hidden images in the image to the left?



ENVIRONMENTAL AUTHORISATIONS

The Environmental Management Division (EMD) grants Environmental Authorisation for various projects submitted to the Agency. This is done after a site visit is conducted to assess the potential or current environmental impact of the project. Large projects are usually required to submit an Environmental and Social Impact Assessment (ESIA) or Environmental Management Plan (EMP). Noise permits for various events and operations are also granted by the Agency.

A total of fifty-nine (59) applications for Environmental Authorization, were received for the period June to August, 2011. Twenty-three (23) of the applications received were for new projects, twenty-four (24) were for existing projects, nine (9) were for renewal of Environmental Authorizations, and three (3) for the variance of Environmental Authorizations.

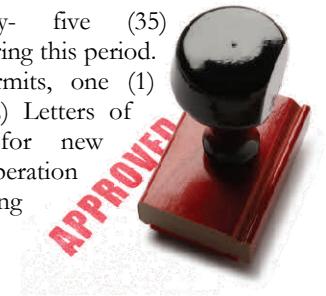
The Agency has completed reviewing the draft Environmental Social Impact Assessment (ESIA) submitted by ETK Incorporated, a Proposed Gold and Copper Mine located at Toroparu, Upper Puruni River. The Agency is also currently reviewing a revised ESIA submitted by Sherwood Forests Incorporated for a Logging Project located on the Right Bank Lyses River, Right Bank Essequibo River, Right Bank Berbice River.

An EMP was submitted for Demerara Distillers Limited for the Distillation Plant, Waste Water Treatment and the Biomethanisation Plant. Revised EMPs were submitted by: JOP Property Holdings for a Liquefied Petroleum Gas Storage and Bottling Facility and from Banks DIH Limited for the Riverfront and Thirst Park Facilities.

Forty-seven (47) Applications for Noise Permits were received and issued for this period.

The Division conducted twenty-one (21) site visits for new projects and twenty-seven (27) verification visits for existing projects/operations. Compliance/renewal audits were also conducted for forty-nine (49) operations that were issued with Environmental Authorizations.

The Agency granted thirty-five (35) Environmental Authorizations during this period. Sixteen (16) Environmental Permits, one (1) Construction Permit and two (2) Letters of Authorization were granted for new projects, and sixteen (16) Operation Permits were granted to existing projects.



CAPACITY BUILDING AT THE EPA

WELCOME

The EPA welcomes Mr. Stefon Rics- Technical Services Officer, Mr. Deuel Hughes- Environmental Officer, EIT, and a special welcome back to Mr. Sean Mendonca- Environmental Officer, EIT.

GOODBYES

During the 3rd quarter of 2011, the Agency bid farewell to:

Ms. Dominique Saheed- Senior Environmental Officer

Mr. Enrique Monize- GIS Officer

Mr. Tomas DeStaic- Environmental Economist

Mr. Renwick English- Environmental Officer II

Mr. Afazal Baksh- Office Assistant

Ms. Desiree Hopkinson- Environmental Officer

Ms. Ashiana Persaud- Executive Assistant

We wish them all the best in their future endeavors.

TRAINING

- Ms. Karen Alleyne, SEO, Hazardous Waste Unit, EMD, attended a workshop in Trinidad July 5-6 on “Implementation and Enforcement” under a project titled “Strengthening the

Legislative, Regulatory and Enforcement Capacity of Trinidad and Tobago and other Small Island Developing States”.

- Mr. Damian Fernandes and Ms. Marle Pantoja Reyes attended a Regional Workshop on “Updating National Biodiversity Strategies and Action Plans held in Quito, Ecuador, July 13-15.
- Ms. Chuvika Harilal SEO, Protected Areas Unit, NRMD, attended a Supervisory Management Workshop, August 30 – September 2.
- Mr. Victor Wills: Administrative Officer –Occupational Health and Safety during August 3-4.
- Mr. Kumar Samaroo: Office Assistant - Office Assistants Seminar on August 10 and 11.
- Ms. Aretha Forde attended a National Consultation on Non Communicable Diseases in Guyana, on August 29 at the Ocean View Conference Center.
- Ms. Stacy Lord, Ms. Diana Fernandes, Ms. Joanne Ford and Mr. Sean Mendonca attended a Biosafety Workshop at the University of Guyana during September 13-15.

VISITOR ARRIVAL CENTER OPENED AT KAIETEUR NATIONAL PARK

As Guyana's tourism industry continues to develop, initiatives are being undertaken to promote its tourism products. One such venture is the opening of a visitor arrival center at the Kaieteur National Park, Guyana's crown jewel. Built to the tune of G\$54 M, the facility marks another milestone to enhance facilities at Kaieteur and promote sustainable development not only at Kaieteur, but on a national scale.



The visitor arrival centre was first conceptualized in 1999 by the then Kaieteur Board but the lack of funding proved a major challenge. Its construction was made possible with funds from the Government of Germany (through KfW) under a small grants component of the Guyana Protected Areas System (GPAS) Project of which the Environmental Protection Agency was the executing agency. The building was designed to maximize natural lighting and ventilation, utilizing local materials, fully solar-powered and painted in earth tones and furnished with forest products. Inside the centre is a craft store, waiting area, dining area, restroom, improved

communication (radio and television), properly constructed footpaths and walkways to and from the waterfall. According to the General Manager of NPC, Yolanda Vasconcellos, the center's aim is to "promote a better understanding and appreciation of work in protected areas, and it will complement other revenue generating ventures aimed at sustaining the area".

The Visitor Arrival Centre was formally opened on Sunday, September 24 with Chairman of the Kaieteur National Park Board Shyam Nokta, Germany's non-resident Ambassador to Guyana, Stefan Schlueter, General Secretary of the PPP, Donald Ramotar, other government officials as well as Chenapau Toshao, Sylvester Joseph in attendance. Other plans for Kaieteur National Park, include the establishment of ecolodges and the training of wardens.

UPCOMING ACTIVITIES

The EPA initiates and undertakes continuous activities to ensure that the concept of environmental stewardship reaches to all parts of Guyana. Having successfully achieved the set goals in this regard for the third quarter of the year, planning and coordination have already begun to guarantee a varied and participatory approach to events planned for the next quarter.



Activity	Theme	Target Group	Date
Teacher Training Workshop	Integration of Environmental Education	Trainee Teachers– CPCE	Oct 13-16
Production of EPA 2012 Calendar	Greening our local economy	General public	
Greenleaf 4th Quarter publication		General public	Dec 30



**International Day for the
Preservation of the Ozone Layer**

HCFC phase-out: a unique opportunity
International Day for the Preservation of the Ozone Layer



Wildlife Spotlight

Did you know?

Black Spider Monkeys are of the genus *Atelès* which are New World monkeys in the subfamily *Atelinae*, family *Atelidae*. The genus contains seven species, all of which are under threat. Like other *atelines*, they are found in tropical forests of Central and South American regions like Guyana, Venezuela, Southern Mexico and Brazil.

Black spider monkeys have long, glossy black hair covering their entire bodies except their faces. Their long hair immediately distinguishes them from other species of spider monkeys, but there are other defining characteristics. Adults have red or pink-skinned faces which are bare except for very few short white hairs on their muzzles. Infants do not have pinkish faces like adults but rather dark skin on their faces which lightens as they age. Spider monkeys are long-limbed and somewhat gangly in their appearance especially in contrast to their characteristic pot bellies; the spidery appearance of their long arms, legs, and tails is indicated by the common name.

The head and body length of the black spider monkey is about 35-66 cm(14-26 inches) and it has a longer prehensile tail as compared to its body 60-80 cm(25-36 inches) which acts as a fifth limb making it the most agile and acrobatic monkey of its family. The weight of the monkey at birth is about 0.45 kg (1 lbs) and mature males is 10.8 kg (23.8 lb) while females weigh 9.66 kg (21.3 lb) on average.



Whenever, wherever possible, this monkey runs on all fours, even on the topmost branches of trees. If there is a distance between two trees, then they cover this distance by swinging or leaping from one tree to another. It is on very rare occasions that the spider monkey puts its feet on the ground. At that time, it mostly walks on its two hind legs with its tail straightened and stiffened upwards.

Every morning, the monkey group disperses in two or four smaller groups in search of food. Since it is quite large in size, there is no threat to its life from eagles or other such dangerous species and so, it does not require the protection of any large group. While feeding, the female monkeys keep in touch with other monkeys by loud calls. Along with fruit and nuts, these monkeys also feed on insects, bird's eggs, spiders, flower buds, and seeds.

This monkey species reaches its sexual age when it is five years of age and the female becomes mature at the age of four. There is no particular breeding season for the black spider monkey and the female gives birth to its younger ones after 232-235 days of conception. They give birth to only one offspring at a time and that too, after an interval of two to three years. These monkeys like to roam about in groups and are very active during the daytime. Their lifespan is quite long as compared to other species. They can live up to 20 years and in captivity, they may survive for more than thirty years.

For every square km of a forest, there are generally 18 black spider monkeys but the number can reach up to 100 if the food is available in good quantities.

However, an unfortunate part of the story is that the spider monkey is gradually becoming extinct because of constant hunting and rainforest destruction. Since it is a noisy and large animal, it becomes an easy target for arrows and darts. Moreover, its reproduction rate is very low and it matures slowly because of which, in some of the regions, it has been completely wiped out.



THE GREEN LEAF

The Green Leaf is published quarterly by the Environmental Protection Agency, Guyana.

This publication is intended to promote awareness on the work of the Environmental Protection Agency.

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About Our Logo...

Our logo is the Passion Fruit leaf. Yellow Passion Fruit (*Passiflora edulis flavicarpa*) is native to the Amazon. The passion fruit plant produces beautiful flowers and a sweet - tart fruit. It was named by the Spanish missionaries in South America. Passion Fruit is widely grown throughout the tropics and subtropics. The leaves are used in traditional medicine to settle edgy nerves. They are also used for colic, diarrhea, dysentery and insomnia.

