



GREEN LEAF

Planting Trees in Observance of World Forest Day

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World Forest Day is part of the “Celebrating Forests for People” campaign promoted by the United Nations in support of the ‘International Year of Forests,’ which began on 24 January, 2011.

World Forest Day (WFD) is celebrated on March 21, each year and has been celebrated for 30 years by the United Nations Environment Programme (UNEP) to raise awareness on the importance, sustainable management, development and conservation of all types of forests.

More than 1.6 million people rely on forests for their livelihoods. Forests are home to 80 percent of our terrestrial biodiversity. They add oxygen and reduce carbon dioxide in the atmosphere, play a key role in curbing climate change and provide homes to 300 million people.

According to UNEP, forests once covered 60 percent of the earth's land area, but they now cover



Students of Sophia Primary School (above) and Annandale Secondary School (left), planting their trees.

only 31 percent; 13 million hectares of forests are being destroyed annually.

“This Year, which succeeds International Year of Biodiversity, represents an opportunity for evolving our work on sustainable forestry to a higher plain,” Achim Steiner, UN Under-Secretary General and UNEP Executive Director, said in a statement.

The Environmental Protection Agency (EPA), in support of the objectives of International Year of Forests, collaborated with the Guyana Forestry Commission (GFC) to conduct several activities. One such activity was a Tree Planting exercise held on Friday March 25 which targeted 18 schools in Region 4. Each school conducted a brief ceremony, during which the integral role of Forests in maintaining life was highlighted and the trees planted.

Flamboyant and Saaman plants were provided for the exercise, by the Guyana Forestry Commission (GFC), while EPA spearheaded the activity and prepared a booklet with ideas for teachers to use the planted tree as a learning tool. A similar tree-planting activity will be conducted with 8 schools in Region 6 in April.

Editorial Note

This being the International Year of Forests, much of the Agency’s environmental awareness activities will support the theme: “Forests for People” to raise awareness on sustainable management, conservation and sustainable development of all types of forests.

The United Nations Environment Programme (UNEP), coordinator of the International Year of Forests celebrations, has already released supporting themes for International Wetlands Day, International Day of Biological Diversity, and World Environment Day.

During the first quarter, the Agency conducted a range of activities to raise awareness of Forests, and Forests and Wetlands. In the next quarter, efforts will focus on Forests and Biodiversity and for World Environment Day on Forest Services.

The Agency is steadily making progress in its efforts to expand its reach to various Administrative Regions of the country. While in the first quarter outreach activities were conducted in Regions 4 and 5, in the next quarter Region 6 and 9 will be targeted. Efforts will continue throughout the year towards reaching other regions of the country.

The Agency will also continue to collaborate with other relevant organizations and Agencies towards extending the range of environmental awareness activities in observance of the International Year of Forests.

Forest Message Taken to UG Open/Career Day

The Environmental Protection Agency (EPA) took the opportunity to raise environmental awareness and highlight careers in Natural and Applied Sciences at the UG Career Day 2011. The event was held at the University of Guyana, Turkeyen Campus, on 18 February, 2011 and highlighted prospective career opportunities in various disciplines, especially those offered by the University. A number of organisations took the opportunity to display their operations under the theme “*Showcasing Our Services; Unlocking Your Potential*”.

The EPA’s display consisted of a wide array of educational materials which included posters, brochures, flyers and booklets on various environmental issues. The central feature of the booth were posters and PowerPoint presentations on the operations of the EPA which included the process, procedure and prerequisites for employment, existing vacancies and benefits of working with the Agency, among others. The EPA also conducted activities to raise awareness on the careers available in the environmental field in a fun and interactive way with the use of a “career tree”.

In addition, the EPA capitalised on this opportunity which attracted hundreds of students from Educational Institutions across the country as well as the general public, to raise awareness on Forests since this year has been declared “*International Year of Forests*” by the United Nations. Attention was focused on sustainable management, conservation and sustainable development of all types of forests. The activities included a “*Forest Pie*” which highlighted the different forest types in Guyana and the percentages of each type. Persons were required to match the percentage to the appropriate forest type and through this activity, people were engaged in a stimulating and exciting discussion and learnt about forests.



Visitors participating in activities - Forest Pie (Above); Windows to Action Trivia (Above Right); Speed Drawing (Below Right).

There was also a quiz on issues surrounding forests and a “*Window to Actions*” activity that tasked students with going to a specific window depending on their question to find an action oriented message to take away. There was also a “*speed drawing*” competition which was a big attraction. Two students at a time were given a specific topic to depict in 2 minutes using pictures only. The drawings were then used to generate discussions. Tokens were awarded as a form of motivation for all of the activities.

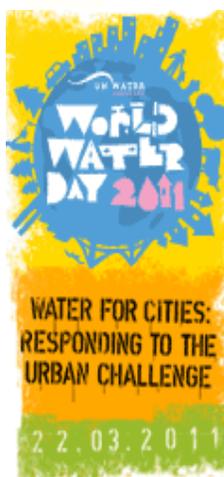
The UG Career Day was a great success which fostered considerable interaction and gave opportunities for public awareness and further collaboration. It is hoped that through activities like these, people will be motivated to embrace, practice, and promote sound environmental values.

Observing World Water Day

Worldwide, the urban landscape has undergone explosive growth over the years and today, cities are still continuing to grow. For the first time in human history, **most of the world's population live in cities which collectively house a whopping 3.3 billion people!** This places increasing demands on water resources in cities, as users compete for what is available to meet their needs.

World Water Day 2011 focuses international attention on the impact of rapid urban population growth, industrialisation and uncertainties caused by climate change, conflicts, and natural disasters on urban water systems.

The Environmental Protection Agency, in promoting awareness of this life-giving resource and its importance and issues in cities, prepared educational materials and collaborated with the Guyana Water Inc. for the observation.



An activity booklet centred on the theme for the year, was developed for students of Grade 7. A number of copies of these were distributed to secondary schools in Region 5.

The Water Activity Booklet included experiments, a crossword, a water cycle challenge and fast facts on water. These activities were tailored to pique the interest of young people, to give guidance on water conservation practices and to aid the understanding of issues involving this precious resource. Additionally, an article on Water was published in the Guyana Times on March 17 and a TV Panel Discussion was broadcasted. A Walk-a-Thon, co-ordinated by the Guyana Water Inc, was planned but had to be cancelled due to heavy rains.

A Guesthouse for Maruranau Tourism Development

The construction of a Guesthouse, under the KfW-EPA: Guyana Protected Areas System Project, in Maruranau Village is expected to enhance the livelihood of the residents and increase revenue obtained from visitors and tourists. The estimated Project cost was G\$12,129,800, with G\$1,010,600 being community contribution.

Maruranau Village is a Wapishana community of approximately 800 individuals located about one hundred and ten (110 miles) south east of Lethem or forty (40 miles) east of Dadanawa Ranch. It is also one of the eleven titled villages that border the Kanuku Mountains.

The main economic activity in Maruranau is currently subsistence farming, which has limited economic prospects because of the lack of markets for produce. This Project will therefore seek to diversify local livelihood options through tourism development. In addition, jobs will be created, tour guide and natural resource management training will be provided and local culture through



displays of traditional skills and craft production will be fostered.

In 2008, accommodation had to be provided for approximately 50 visitors. These visitors included tourists, volunteers, church groups, and researchers, each with an average stay of 3 nights. The volume of visitors is expected to increase over the next year as the guesthouse is established. Revenue generated from this venture will be utilised for future development projects in the Community.

An incentive for Maruranau residents, through this project, will be provided to conserve their forests and associated natural areas. With Maruranau striving to conserve their tourism product, this project will also contribute to the conservation of the Kanuku Mountains Study Area and the larger Kanuku Mountains ecosystem. The conservation of these forests and its biodiversity is critical in an attempt to effectively manage the proposed Kanuku Mountain Protected Area and the wider eco-region.

Learning about Wetlands at the Nature School

The EPA continues to collaborate with the Nature School of the Guyana Zoological Park through the National Parks Commission to conduct outreach with visiting schools. The Nature School has an ongoing programme which seeks to educate Primary School students about basic concepts on biodiversity in an effort to develop positive attitudes at an early age.

Each school term, the EPA selects a relevant topic for presentation at the Nature School. During the first school term of this year, the opportunity was taken to educate the visiting schools about Wetlands, in observance of World Wetlands Day which was observed on February 2 under the theme “Forested Wetlands”.



Students of Patentia Primary proudly displaying their Dragonfly Face Masks

The Sessions, conducted on Wednesdays, included an interactive presentation on the types, importance, threats and protection of wetlands, and an activity where students made dragonfly face masks. The students were also given the opportunity to identify wetland animals found in the Zoo to better grasp the concept.

Approximately 312 students from 10 schools participated in these sessions during the first term.

In addition to the outreach at the nature school, the EPA also published an article in the Guyana Times and prepared information packages on wetlands for the visiting schools.

Wetlands are ecologically diverse areas and are very vulnerable. They are threatened by many interventions such as conversion of wetlands due to commercial development, drainage schemes, mineral and peat extraction, over-fishing, tourism, siltation, pesticide discharge from intensive agriculture, toxic pollutants from industrial waste, and the construction of dams and dikes, often in an attempt

at flood protection.

However, proper management of wetlands will ensure their survival while providing for present and future generations.

Greenhouse Gases & Climate Change

Greenhouse gases are naturally found in the air. They include carbon dioxide, methane, water vapour and nitrous oxide. They trap heat in the atmosphere and keep the Earth's surface much warmer than it would be if there was no atmosphere. This warming effect is called the natural greenhouse effect. Unfortunately, in the last 200 years, the amount of greenhouse gases in the air has been increasing due to human activities. Mankind has been releasing increasing amounts of carbon dioxide, methane and nitrous oxide in the air, and has even been adding completely new greenhouse gases to the atmosphere such as Chlorofluorocarbons (CFCs), which also destroy the ozone layer.

When we burn fossil fuels such as gas, coal or oil, carbon dioxide is released into the atmosphere. While in the natural carbon cycle, carbon dioxide is absorbed by plants, there is a limit to the rate at which this can be done. Our use of fuels releases an excess of carbon dioxide which has been trapped under the earth's surface for millions of years. As we burn more and more fossil fuel, we are releasing carbon dioxide in amounts and at rates that are too high for the plants to cope.

The effect of the excess carbon dioxide in the atmosphere is that the overall temperature of the planet is increasing; this is called **global warming**. While the average global temperature is increasing on a day-to-day basis, the climate is changing in unpredictable ways resulting in severe floods, hurricanes, heat waves and droughts.



Understanding your footprint

The food and products you buy, as well as the transportation you use have an effect on your carbon footprint. The more energy-intensive the process of creating the food and products you buy, and transporting them to your door, the more fossil fuels are burnt and therefore, more carbon dioxide is released. However, measuring these indirect emissions accurately on a day-to-day basis is very difficult. It is easier to measure the direct emissions from our activities, e.g. the amount of gas and electricity we use in our houses and the amount of petrol or diesel we burn in our cars.

Now that you know what the carbon footprint is, the next step is to reduce yours. Reducing your carbon footprint involves making changes in your everyday life. That means you need to lessen the amount of energy you use in your home. One way to conserve energy is to cut down on its use. The following are ways in which you can individually reduce your carbon footprint:

Electricity

- Fluorescent lamps provide far more light than incandescent ones. A 4-watt fluorescent lamp would save about 140 watts of electricity over a seven-hour period.

- If you use incandescent bulbs, you can save energy by switching the light off when you leave the room. If you use fluorescent lighting, turn them off only if you would be gone for more than 15 minutes. This is because fluorescent lights use as much energy starting up as during 15 minutes of operation.
- Improve your lighting efficiency by keeping lights and fixtures free from dust and grime. As much as 20 percent of the light generated can be lost to 'hazing dust'.
- Unplug any appliances that are not being used and try to buy more energy-efficient models.
- Make sure you always close your refrigerator door and keep the temperature between 36-38 degrees Fahrenheit.
 - Keep the refrigerator away from heat - stoves, ovens, windows, heating ducts - since direct exposure to heat forces it to work harder and use more energy.
 - Open the refrigerator door as seldom as possible. Take out everything you need at one time and save energy and money.
 - Leave hot food out to cool to room temperature before placing it in the refrigerator.

Water

- Always turn off running water when you are brushing your teeth, washing your hands or doing the dishes.
- Only wash clothes when you have a full load.
- Repair any dripping faucets and toilet tank leaks.
- Try to avoid flushing unnecessary waste down the toilet.

Automobiles

- Make sure your car gets routine maintenance checks to extend its life and improve gas mileage.
- Ride a bike or walk to work if you live close enough.
- Inflate your car tires to the recommended pressures.
- Avoid unnecessary idling, excessive speeds and heavy braking.
- Use the heating and cooling system sparingly.
- Plan trips ahead of time to avoid traffic delays.

Kids Corner

The Floating Egg

What you'll need:

- One egg
- Water
- Salt
- A tall drinking glass

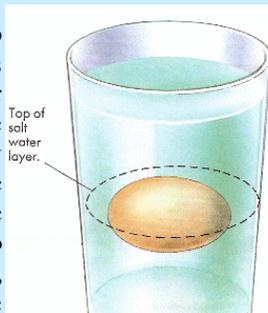


Instructions:

1. Pour water into the glass until it is about half full.
2. Stir in lots of salt (about 6 tablespoons).
3. Carefully pour in plain water until the glass is nearly full (be careful not to disturb or mix the salty water with the plain water).
4. Gently lower the egg into the water and watch what happens.

What's happening?

Salt water is denser than ordinary tap water. The denser the liquid, the easier it is for an object to float in it. When you lower the egg into the liquid, it drops through the normal tap water until it reaches the salty water, at which point the water is dense enough for the egg to float. If you were careful when you added the tap water to the salt water, they will not have mixed, enabling the egg to amazingly float in the middle of the glass.



The Dead Sea

The Dead Sea is not really a sea. It is actually a land-locked lake between Israel and Jordan and it is extremely saline (salty).



There are no fish or any kind of swimming, squirming creatures living in or near the water. The water in the Dead Sea is deadly to most living things. Fish accidentally swimming into the waters from one of the several freshwater streams that feed the Sea are killed instantly; their bodies are quickly coated with a preserving layer of salt crystals and then tossed onto the shore.

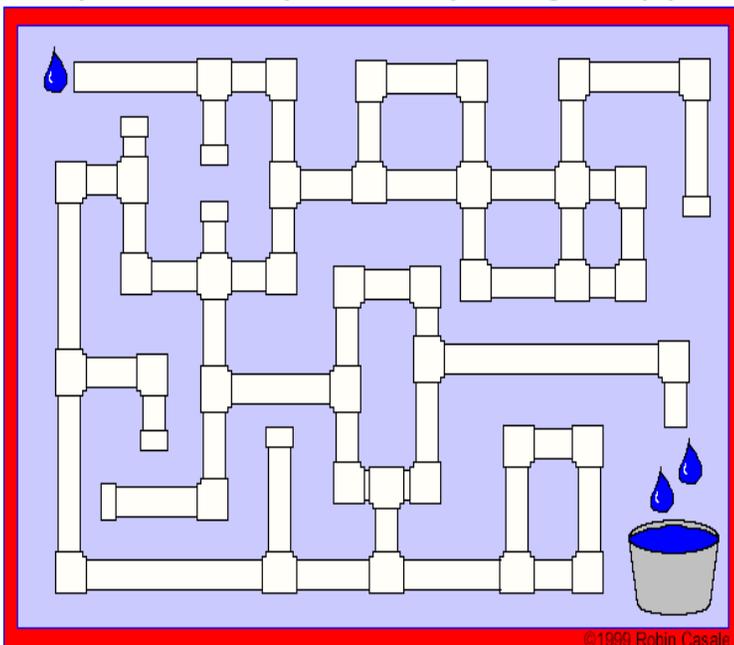
The extremely high concentration of dissolved mineral salts in the water causes its *density* to be more than that of plain fresh water. In fact, you cannot sink in the Dead Sea because our bodies are less dense causing us to be buoyant. Most people like to just kick back in the water and read.

The Dead Sea is continually fed water from the rivers and streams coming down off the mountains that surround it. However, there are no rivers to drain out of the Dead Sea. The only way water gets out of the Sea is through evaporation. And does it evaporate! This part of the world gets really hot. When the water evaporates, it leaves behind all the dissolved minerals in the Sea, making it more salty. In fact, it is through the dual action of continuing evaporation and minerals salts carried into the Sea from the local rivers that makes the Sea so salty. The fact that the water doesn't escape, the Sea just traps the salts within its shores.

The Dead Sea is considered to be the world's largest 'natural spa'. The high concentration of minerals and thermo-mineral springs along the shore are said to impart a relaxed feeling, nourish the skin, and ease rheumatic discomfort. Many visitors to the Dead Sea have been known to cake themselves in the black mud for its therapeutic benefits.



Help the water drop find its way through the pipe!



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 sixty-three (63) applications for Environmental Authorisation were received for the period January - February, 2011.

Twenty-seven (27) of the applications received were for new projects, five (5) for existing projects, twenty-four (24) for renewal of Environmental Authorisations, two (2) for the transfer of Environmental Authorisations, and five (5) for the variance of Environmental Authorisations.

During this period, a revised ESIA was submitted by Chaitram, Parasram Timber (CPT) Inc. for a logging project located on the Left Bank of the Cuyuni River and the Right Bank of the Pomeroon River, Region 2. An EMP was submitted by Concrete and Aggregates Inc. for the preparation of pre-cast concrete products and the storage of white sand located at Coverden, East Bank Demerara

Nineteen (19) Applications for Noise Permits were received, five (5) of which were for renewal of long-term Noise Permits and fourteen (14) short term permits were issued.

The EMD conducted eighteen (18) site visits for new projects and fourteen (14) verification visits for existing projects/operations. Compliance/renewal audits were also conducted for twenty (20) operations that were issued with Environmental Authorisations.

Twenty-eight (28) Environmental Authorisations were granted for both existing and new projects/operations. Sixteen (16) were Environmental Permits, one (1) Letter of Authorisation for new projects, three (3) Operation Permits, and one (1) Letter of Authorisation for existing projects. Six (6) Renewed Environmental Authorisations were granted to projects that were previously authorised by the Agency and one (1) transference of Environmental Permit was granted during the period under review.

Details of these Authorisations can be obtained from the EMD at the Environmental Protection Agency through the Register for Authorisation.



New Unit Established to Address Hazardous Waste

The EPA established the Hazardous Waste Material and Air Quality Management Unit (HW/AQ) in an effort to strategically address some of the major issues facing environmental management. This Unit, which is an arm of the Environmental Management Division (EMD), was established on February 1, 2011. Currently, the focus is on strengthening the unit for its functions which includes, defining an action plan, procedures, guidelines and mechanisms and capacity building of staff. Thus far, the Unit has developed several draft documents which are being reviewed.

In an effort to build capacity among staff members and stakeholders to assist the staff of the HW/AQ Unit in fulfilling its mandate, training on HW was conducted during March 7-8, 2011. The workshop was facilitated by two consultants from SENES

Consultants Limited and saw participation from key stakeholder groups including the University of Guyana, Ministry of Local Government and Ministry of Public Works.

The training was very comprehensive and was geared to assist the EPA and Guyana to garner the

necessary skills to effectively manage HW. The main focus areas were:

- Policy Development and Regulatory Framework for HW managements
- Technical elements such as quantification, characterisation, testing, sampling, storage, etc.
- An effective Management System for Guyana – regulatory requirements, approval & permits, reporting, monitoring, etc.
- HW Treatment and Disposal – treatment technologies, disposal & recycling, HW landfills.
- Implementation strategy, approaches and measures for HW management in Guyana, among others.

Guyana now has a cadre of young professionals with the requisite knowledge to move the country forward in the management of its Hazardous Waste beginning at the industrial level.



Upcoming Activities

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



The interesting mix of activities planned for April – June include the following:

Activity	Theme	Target Group	Date
Youth Forum	Forest Biodiversity	Secondary Schools in Region 6	April 13
Environmental Club Supervisors Training	Sustaining Your Environmental Club	Primary and Secondary Schools in Region 6	April 13 –14
Wildlife Festival	Our Culture, Our Nature, Our Future	Wildlife Clubs of North Rupununi	April 15 - 18
Earth Day	A billion Acts of Green	Environmental Clubs	April 22
Seminar	Forest Biodiversity	Trainee Teachers CPCE	May 23
Film Show/Presentation		Selected Schools in Georgetown (8)	May 10 - 19
Exhibition (National Library)		General Public	May 18 – 25
Media: News Feature Guyana Today Press Release Newspaper Spread (dependent on approval from Guyana Chronicle & Guyana Times)		General Public	May 18 - 22

June

Activities for the month of June will commence with the observation of World Environment Week.

The Green Walk, scheduled for June 5, a Ride-for-the-Environment and the Annual Environment Camp are the highlights of this month.

The Agency’s activities are intended to bring greater awareness, educate, and influence positive behavioral change in citizens to equip them to adapt to a continuously changing global environment.



WORLD ENVIRONMENT DAY
Forests: Nature at Your Service
In support of the UN International Year of Forests



Wildlife Spotlight

Did you know?

The Piranha (*Pygocentrus nattereri*) is a carnivorous freshwater fish known for its sharp teeth and a voracious appetite for meat. Piranhas belong to the subfamily Serrasalminae, which also includes closely related omnivorous fishes such as pacus (*Colossoma macropomum*). Traditionally, only the four genera *Pristobrycon*, *Pygocentrus*, *Pygopristis* and *Serrasalmus* were considered to be true piranhas, due to their specialised teeth.

They inhabit South American rivers through regions such as the Amazon and Orinoco Basins, and the rivers of Guyana, Paraguay, and Venezuela.

Their colour ranges from yellow to steel-grey to bluish to partly red to almost black. Adult piranhas are normally about 15 to 25 centimeters long (6 to 10 inches), although reported individuals have been found to be up to 41 centimeters (24 inches) in length. They have a bulldog-like face with a very large lower jaw and many razor-sharp teeth. When a tooth breaks off, a new one grows in its place. All piranhas have a single row of sharp teeth in both jaws that are tightly packed and interlocking and used for rapid puncture and shearing. Individual teeth are flat, typically broadly triangular, pointed and blade-like.

These fishes are opportunistic carnivores. They eat aquatic and land animals that are in the water including fishes, mollusks, crustaceans, insects, birds, lizards, amphibians, rodents and carrion (carcasses). They are diurnal (most active during the day) and feed communally. Feeding frenzies are triggered when there is a shortage of food or the presence of blood in the water.

Piranhas reproduce by laying groups of eggs in rivers and lakes. They change colour during spawning with the red belly of the Piranha getting more intense and the whole piranha becoming slightly lighter. The female lays clusters of eggs into a bowl shaped nest created in the sediment. These are around 4 or 5 centimeters in depth and 15 centimeters in diameter. The eggs will then be fertilised by the male and would hatch after two to three days, depending on the water's temperature. The pair would defend their spawning territory including their eggs and brood. Females are most fertile during the rainy season in April and May.

While many humans fear these fish, there are thousands of natives that swim in the same bodies of water and go unharmed. While Piranha schools can reach over a thousand in count and bites do happen, there are no documented reports of someone being killed in a piranha attack.

Piranhas have a reputation as ferocious predators that hunt their prey in schools. Recent research, however, which started off with the premise that they school as a means of "cooperative hunting", discovered that they are timid fishes that school for protection from their own predators, such as cormorants, caimans, and dolphins. Piranhas are "basically like regular fish with large teeth".



THE GREEN LEAF

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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.

