



GREEN LEAF

EPA CONDUCTS ENVIRONMENTAL EDUCATION WORKSHOP FOR TEACHERS ENROLLED IN CPCE'S ASSOCIATE DEGREE PROGRAMME

Inside this issue:

EPA Conducts Environmental Education Workshop For Teachers Enrolled in CPCE's Associate Degree Programme

1

Schools Take Action with New Dedication

2

New Guest House and Warden Building for Kaieteur National Park

3

Kwakwani Benefits from Environmental Awareness Outreach

3

Fire Safety Fair and Exhibition

4

EPA Highlights Its Role in the Energy Sector

4

Kids' Corner

5

Environmental Authorisations

6

Equipping Staff for Excellence

6

Upcoming Activities

7

Wildlife Spotlight

8

Trainee teachers participating in group work during the workshop.



Editorial Note

The '*International Year of Sustainable Energy for All*', draws to a close and the world now turns its focus to celebrating 2013 as the '*International Year of Water Cooperation*'. Like energy, water and its conservation is a critical environmental issue. It is one of the most important resources available to us here on earth, however, it is also one of the most threatened resources. By declaring 2013 the '*International Year of Water Cooperation*', the United Nations intends to raise awareness, both on the potential for increased cooperation, and on the challenges facing water management in light of the increase in demand for water access, allocation and services. Activities during the year will emphasize the fact that water is critical for sustainable development, including environmental integrity. Water is also key to the eradication of poverty and hunger, and is vital for human health and well-being and central to achieving the Millennium Development Goals.

The recognition of this year as the **International Year of Water Cooperation** will see all stakeholders: citizens, government, civil society, etc., recognising the importance of water and working together for its protection to ensure that everyone benefits from this vital resource.

education and twenty (20) teachers in Primary level education.

The workshop equipped trainee teachers with the knowledge of how to effectively engage in environmental education and advance the implementation of environmental education and awareness in schools. The use of case studies to increase the integration of environmental education and awareness in the school curriculum was also promoted during the workshop.

Sessions were delivered through a variety of interactive methods, using the natural environment extensively. These methodologies enhanced the teachers' analytical, investigative and communication skills and encouraged teamwork while promoting critical thinking. The sessions also helped the teachers to apply environmental education to various subject areas using simple but practical strategies. The teachers



Participants evaluating an Environmental Education tool

were also trained to creatively utilize the natural environment to deliver different concepts in their lessons to their students.

Over the four-day period, there were a total of fifteen (15) learning sessions, most of which integrated small group sessions to foster greater interaction and participation. Specifically, the sessions focused on:

- **Evaluating Environmental Tools:** Participants evaluated five (5) environmental education tools based on given characteristics of effective environmental education tools.

EPA CONDUCTS ENVIRONMENTAL EDUCATION WORKSHOP FOR TEACHERS ENROLLED IN CPCE'S ASSOCIATE DEGREE PROGRAMME

- Ranking environmental issues using the diamond ranking concept.
- Experiential learning, which focused on food preferences of ants.
- Infusing environmental education into various subject areas, etc.

The teachers also prepared lesson plans which incorporated environmental education into a subject area of their choice. These were graded and the teachers with the five (5) best plans were awarded prizes.

Non-academic items on the program included a talent night that allowed participants to use drama, songs and poetry to communicate environmental messages.

The EPA commends the Ministry of Education and the CPCE for recognizing the importance of the workshop as a way of promoting greater awareness of environmental issues and looks forward to the continued support of the College in the coming years.



Proud Participants displaying their certificates at the end of the workshop.

SCHOOLS TAKE ACTION WITH NEW DEDICATION

The Ministry of Natural Resources and the Environment has taken its 'Pick It Up Guyana' anti-littering initiative, to schools. Through "STAND" (Schools Taking Action with New Dedication), selected schools are undertaking projects which will instill sound environmental values, influence attitudinal change and lead to the adoption of environmentally sound practices.

The six pilot schools involved in the initiative are undertaking enhancement activities within the school and community in which they operate. They are also participating in the collection and separation of plastic bottles and aluminum cans as part of the recycling program being undertaken with the Faculty of Technology, University of Guyana.

There has generally been positive feedback from the administrators and students of all schools involved in the initiative. Two of the schools indicated that they intend to undertake more awareness sessions on waste management with their students. Notable improvements were reported in the aesthetics of the schools as well as change in behavior towards littering among the student population.

Students, under the guidance of teachers at the Eccles Primary School, have created posters with anti-litter messages and displayed these throughout the school. Enhancement of the school compound was also done and students have been responding positively to waste separation at the school.



Ms. Winifred Ellis, Deputy Headmistress of St. Joseph's High accepts the recycling bins from Mrs. Padmini Persaud-Roberts.

Redeemer Primary School was also enthusiastic about the project and reported remarkable progress in student attitudes towards waste disposal, environmental advocacy and both school and community enhancement projects.

In addition to behavioral change and school and community enhancement at Rama Krishna Primary School, the Parent Teachers Association of the school was also engaged in discussion and information sharing on the initiative and on proper waste management practices.

The three secondary schools involved in the project, Lodge Secondary, New Campbellville Secondary and St. Joseph's High, plan to undertake other environmental enhancement activities shortly.

As the schools continue to work for a cleaner, safer environment, they are participating in education sessions on waste management and composting. It is expected that STAND will not only play a meaningful role in changing attitudes and behaviours of students, but will also lead to the creation of a corps of youth environmental advocates actively engaged in influencing change among their peers, families and other members of society.

The Ministry of Natural Resources and the Environment will be taking the STAND Initiative to schools countrywide.

NEW GUEST HOUSE AND WARDEN BUILDING FOR KAIETEUR NATIONAL PARK

A new Guest House and Warden's Building estimated to cost G\$27 million, are to be built at Tukeit, within the Kaieteur National Park. Contracts for the construction and supervision of works were signed on November 09, 2012, between the Environmental Protection Agency (EPA), and Yusuf General Contracting and Innovative Engineering Consultancy Services, respectively. The guest house is expected to be completed in six months. The buildings are being completed under Phase II of the Guyana Protected Areas System (GPAS) Project, funded by the German Government through the German Development Bank (KfW). The GPAS Project is being implemented by the EPA, under the Ministry of Natural Resources and Environment. The EPA is being assisted with implementation of the Project, by GFA Consulting Group.

The Kaieteur National Park was established in 1929 and today,



Executive Director of the EPA, Dr. Indarjit Ramdass (second from the right), hands over the construction contract to Mr. Mohamed Yusuf, Yusuf General Contracting.

covers an area of 627 square kilometres (242 square miles). The Park is known for its rich biodiversity and the majestic Kaieteur Falls.

Currently, there is, within the Park, a Guest House located at Kaieteur Top which can accommodate up to ten persons. The Tukeit Guest House is located along the Potaro River in the Kaieteur Gorge and would provide additional rooms and hammock accommodation for twenty overland visitors. The Warden Building will provide suitable accommodation at Tukeit, for Park Wardens engaged in monitoring the Park.

In the recent past, KfW funded three other projects for the Kaieteur National Park which provided field kits for the Park Wardens; a boat and engine, to improve monitoring activities at Waratuk; and, a Visitor Arrival Centre, as a tourism hub for the Kaieteur National Park.

KWAKWANI BENEFITS FROM ENVIRONMENTAL AWARENESS OUTREACH

Community days are often held throughout Guyana and give residents of respective villages a chance to interact with each other and visitors in a friendly setting. Officers at the Environmental Protection Agency once again had the opportunity to participate in Kwakwani Village Day on November 05, and spread awareness about the environment.

Visitors to the Agency's booth were provided an opportunity to engage in interactive discussions and games on solid waste management and the work of the Agency. Also on display were posters, booklets and other educational materials, which residents were keen to learn about. The Agency's visit to Kwakwani was deemed a success due to the level of interest shown by visitors to learn more about caring for and protecting their environment.



Visitors to the Agency's booth at Kwakwani Day 2012

FIRE SAFETY FAIR AND EXHIBITION

Two officers of the Environmental Protection Agency commendably engaged members of the public in safety practices to be observed when dealing with hazardous materials in the home. This opportunity was provided by the Guyana Fire Service at their Annual Fire Safety Fair and Exhibition, held at the Fogarty's Water Street Pavement on October 12, 2012. The exhibits of the Agency focused on 'Safety and its importance' when dealing with hazardous materials in the home. Some of the safety tips portrayed through visual displays included:

1. Hazardous materials found in the home:

- Explosive material, e.g. aerosols (air fresheners, hair spray, bug killers);
- Flammable material, e.g. gasoline, kerosene, diesel, nail polish & remover;
- Corrosive material, e.g. car battery; and
- Toxic items, e.g. paint, paint thinners, adhesives, detergent (pine-sol, mistolin, etc.), toilet bowl cleaner, chlorine bleach, bleach - based cleaners (Clorox, etc.)

2. The rules to be observed when using these items were also discussed with visitors to the booth. Some of these included:

- Buy only the amount of product that you need to reduce the quantity of hazardous materials in storage.
- Follow use and storage instructions on the product's label. Mixing some products can create deadly poisonous fumes or cause fires, e.g. mixing



chlorine bleach with detergents such as pine-sol.

- Store hazardous materials in their original containers.
- Store flammable and toxic products - such as gasoline, kerosene, and paint thinner - away from the home.
- Never store flammables in direct sunlight or near an open flame or heat source.
- Store hazardous materials out of the reach of children and pets.
- Wear suitable protective clothing including gloves and eyewear as recommended by the product manufacturer.
- Follow disposal instructions on the product's label.
- Aerosol cans sometimes contain flammable or poisonous chemicals. If you dispose of them in the trash, they can be punctured and explode or start a fire.
- In the event of a spill, thoroughly clean the area and place disposal containers in a well-ventilated area. If you cannot control the spill, or are in doubt about cleanup and disposal, call the Guyana Fire Service.

3. Alternative cleaners such as baking soda, lemon, white vinegar and isopropyl alcohol can be used instead of chlorine bleach, detergents, etc.



EPA HIGHLIGHTS ITS ROLE IN THE ENERGY SECTOR

The 'International Year of Sustainable Energy for All' is swiftly drawing to a close. The annual Guyana Energy Week was celebrated from November 12-16 and culminated with a Guyana Energy Forum on Friday, November 16. The EPA once again was afforded the opportunity to participate in this year's activities through the delivery of a presentation on its work with sustainable energy. Mr. Colis Primo, (Environmental Officer II) Environmental Management Division, spoke of the Agency's work in the energy sector, and in particular the work of the Monitoring and Enforcement Unit and the Industry, Infrastructure and Energy Unit. Some of the major points of his presentation included EPA's input on the Amaila Falls Hydropower Project and the investigation of complaints in energy- related matters. He also spoke of public awareness efforts undertaken by the Agency such as articles on energy conservation and outreach to schools that link climate change and energy use. Other agencies that participated in the forum were the Ministry of Health, the Guyana Sugar Corporation and the Institute of Applied Science and Technology.



Environmental Officer, Mr. Colis Primo delivering presentation

KIDS CORNER

Some Interesting Facts

- Humans and giraffes both have seven vertebrae bones in the neck. It's not unusual for a mammal to have 7 vertebrae bones in the neck but it's interesting that the long neck of a full grown giraffe has the same number.
- There are no land snakes in New Zealand. It's part of New Zealand's biosecurity to keep all snakes out and if a person is aware of a snake, by law it must be reported.



- Almonds are members of the rose flower family or **Rosaceae** family. The peach is also a member of the rose family.
- Did you know that a slug has not only one nose but four? What a lot of people call a nose on a slug is actually a breathing pore called a **pneumostome**.
- Using the average 12 ounce soda or beer can, it would take about 33 empty aluminum cans to equal one pound.



- A person eats around 27, 215.54 kg (60,000 pounds) worth of food during his life which is the equivalent of six elephants. Incredible!

- The color of a hen's earlobes will usually determine the color of the egg shell. Farmers know hens with red or darker colored earlobes are most likely to lay brown eggs and hens with lighter colored or white earlobes will usually lay white eggs.



- Fires in the forest have been documented to move much faster up hill than down hill.

- Did you know** food scraps can be recycled into an excellent compost for gardening? Breads, vegetables, fruit peels, coffee grounds and even eggshells are just a few of the ingredients that can be used to strengthen your soil's fertility.



- Ants can pull about 30 times their own weight and lift about 50 times their own weight.
- The only animal with four knees is the elephant.
- Solar energy can only be produced during daylight to make electricity. That energy has to be used during the night but the production stops when the sun goes down.



Habitat Craft

Materials



- Shoe box with lid
- Blue paint (and other colors if you like)
- Scissors
- Glue
- Cellophane, cling wrap or wax paper
- Sand (you can substitute dirt from your yard if you don't have sand. Just make sure it's dry). Whole wheat flour works too.
- Pinecones or small toy trees (must fit inside the closed shoe box)
- Bits of dried plant material (dried moss, dried flowers, dried leaves, etc) or bits of ripped up green and brown tissue paper or crepe paper.
- Rocks or pebbles.
- Small toy animals that you would find in a forest (bears, deer)

Instructions

- Cut a hole in the center of one of the short sides to make a peephole.
- Paint the inside of the shoe box (including the inside of the lid).
- Take the lid and cut a square out of it. Leave enough of the lid intact so that it doesn't fold in.
- Glue or tape cellophane, cling wrap or wax paper onto the shoe box to cover the hole you just made.
- Glue these items in the following order: sand/dirt, pinecones, rocks/pebbles to the bottom.
- Glue crepe paper/tissue paper and/or dried plant material, etc. into the box to make bushes and plant life.
- Glue your animals into the bottom of the box. Put them near the peep hole.
- Let everything dry, then put the lid back on.

EPA GRANTS OVER FIFTY ENVIRONMENTAL AUTHORISATIONS IN THE FOURTH QUARTER

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 forty-four (44) Applications for Environmental Authorisation were received for the period September 11 to December 24, 2012, of which twenty-six (26) were for new projects, seven (7) for existing projects, six (6) for renewal of Environmental Authorisations, three (3) for the variance of Environmental Authorisations, and two (2) for transfer of Environmental Authorisations.

Sixty-one (61) Applications for Noise Permits were received and issued for this period.

The Division conducted fourteen (14) site visits for new projects and five (5) verification visits for existing projects/operations. Compliance/renewal audits were also conducted for eighteen (18) operations that were issued with an Environmental Authorisation.

The Agency granted fifty-one (51) Environmental Authorisations during this period. Twenty-four (24) Environmental Permits and twenty-seven (27) Operation Permits were granted to existing projects; no Construction Permit and Letter of Authorisation were granted for this period.

The Division continues to process the other applications received during this period to determine whether these projects will be required to conduct Environmental Impact Assessment (EIA) or prepare an Environmental Management Plan (EMP).



EQUIPPING STAFF FOR EXCELLENCE

During the fourth quarter, officers of the Agency benefitted from a number of workshops and meetings to enhance their technical skills to complement their work in environmental management. Officers provided with such opportunities included:

- Ms. Anzaleen Hoosein, EO II, EMD, attended a Stakeholder Workshop on National Integrated Water Resource Management Policy and Road MAP, which was held during the period October 11-12, 2012, at the Guyana International Convention Centre.
- Ms. Karen Alleyne, SEO, EMD, attended a Sustainable Solid Waste Management in CARICOM Member States (B) Programme in Japan, from October 17 to December 08, 2012.
- Ms. Jennifer Bentick, and Mr. Lancelot France-Cummings attended a workshop in Trinidad and Tobago on Regional Biosafety Inception, which was held during the period October 29 to November 02, 2012.
- Ms. Sonia Gumbs-Luke, SEO, EMD, attended a workshop in Miami, Florida on Global Reporting and Assessment of the State of the Marine Environment, which was held during the period November 12-20, 2012.
- Ms. Juliana Persaud, SEO (ag), NRMD, attended a workshop on Kanuku Mountains Community Reprehensive Group (KMCRG) and Strategic Planning for the Conservation Trust Fund.
- Ms. Darshini Seeram, EO I, GIS Unit, attended a workshop on Conservancy Adaptation Project, organized by the Ministry of Agriculture and the World Bank on November 19, 2012.
- Ms. Felicia Adams, EO II, EMD, attended a workshop on Design of a National Integrated Disaster Risk Management Plan and Strategy, which was held during the period November 01-02, 2012.
- Mr. Dhanraj Persaud, Mr. Lancelot France-Cummings, Ms. Geeta Singh, Ms. Felicia Adams, Ms. Julianna Persaud, Ms. Sharifah Razack and Ms. Candacie Brower-Thompson attended a 'Senior Staff in Strategic Planning Training' on December 05, 2012.
- Mr. Colis Primo, EO II, EMD and Mr. Deuel Hughes, EO I, EITD, attended a seminar on the Development of the Guyana Mining School and Training Centre on December 05, 2012.
- Dr. Indajit Ramdass, Ms. Sharifah Razack, Ms. Geeta Singh, Ms. Stacy Lord, Ms. Aretha Forde, Ms. Monique Williams, Mrs. Tejvarti Persaud and Ms. Savitri Itwaru attended a 2-day seminar on 'Sustainable Management of the Extractive Sector' hosted by the MNRE with funding from UNDP.

UPCOMING ACTIVITIES

Each year, the United Nations through its environmental programme and through activities globally, draws attention and promotes awareness of a particular environmental issue and to influence involvement in actions to address that issue. In 2013, environmental observances will be centered around the theme ***"The International Year for Water Cooperation"***. The objective of this International Year is to raise awareness, both on the potential for increased cooperation, and on the challenges facing water management in light of the increase in demand for water access, allocation and services. The Year will highlight the history of successful water cooperation initiatives, as well as identify burning issues on water education, water diplomacy, trans-boundary water management, financing cooperation, national/international legal frameworks, and the linkages with the Millennium Development Goals.



The following activities are planned for the first quarter of 2013:

Activity	Theme	Target Group	Date
World Wetlands Day	Wetlands and Water Management	Primary and Secondary school students	February 02
University of Guyana Career Day	TBA	University students and the general public	February
World Water Day	Water Cooperation	General Public	March 22
Nature School outreach		Primary school students	Jan-Mar
Regional Biosafety Project/National Consultation of Draft Biosafety Policy		Government, farmers, producers and retailers of chemicals, etc.	Feb-Mar



WILDLIFE SPOTLIGHT

Did you know?

The Guianan Cock-of-the-Rock (*Rupicola rupicola*)



The Guianan Cock-of-the-Rock (*Rupicola rupicola*) is a uniquely plumed bird that can be easily identified. Adult Cock-of-the-Rocks grow to roughly twenty cm. (eight in.) in height and have stout, almost rounded, bodies. Females have a dull-brown plumage, while the males are covered in orange throughout, except for a black streak through the perfect half-moon crest on their head, and black and white colourings on the wings and tail feathers. As indicated by their name, the species is endemic to the Guianan Shield with its preferred habitat being in humid forests near rocky outcroppings. The genus name *Rupicola* means rock dweller.

When in flight the birds are said to make a noticeable hissing sound that emanates from the remiges on their wingtips. They have a wide-array of sounds that range from a popping noise caused by the snapping of their bills to a call that is compared to a distressed cat.

Behaviour

To compete for a mate, males gather in communal leks, consisting of 40 or more individuals, where they display their crests and plumage. Within the lek, each male has his own territory that he defends as well as uses as a stage to display his bright colours while performing dances. The birds strut and hop about, bob their heads, spread their wings, ruffle their tail feathers, and let out a series of unique calls in order to attract the attention of the females. As there are often more males than females, competition is fierce, and only a few lucky winners will be rewarded with the chance to mate. Once a female has chosen a male, she pecks him on the rump indicating it is him that she has chosen.

The females, who raise the chicks without assistance from the males, often choose nesting sites that are near the leks, and it is not unusual for several females to build their nests in groups. The nests consist of mud, clay and various plant matter, and are usually built on cliffs or in crevices or caves near to or above a water source in a damp, shaded area to keep the nests from drying out and cracking. A typical clutch consists of two eggs, with an incubation period of 27-28 days. Chicks primarily are provisioned with fruit, but the occasional insect or small vertebrate is also fed to the young.

Predators

The primary predators of the Guianan Cock-of-the-rock are raptors such as harpy eagles, owls, felids such as jaguars; and snakes, such as the boa constrictor.

The Guianan Cock-of-the-rock usually avoids predation in larger lek groups due to the alertness of having several individuals on the lookout for predators. In the lek, the response to predators is the vocalization projected at the stimulus. Usually after such a call, the majority of the birds at the lek retreat 20-30 metres up into trees.

Cock-of-the-Rocks are also noted for contributing to the spread of local plant diversity. The birds are mainly fruit eaters, and they pass seeds undamaged through their digestive system allowing species of trees to grow considerable distances away from their parent trees.

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.

Editorial Committee:

Sharifah Razack

Padmini Persaud- Roberts

Candacie Brower- Thompson

Aretha Forde

Fareena Alli- Narine

Sean Mendonca

Deuel Hughes

E-mail:

eit.epaguyana@gmail.com

Mailing address:

EIT Division
Environmental Protection Agency
Ganges Street
Sophia
Georgetown.

Telephone #s:

225-6044, 225-6048, 225-5467-9,
225-0506, 225-6917, 225-1218,
225-2062

Fax # 225-5481

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.

