

GREEN LEAF

EPA undergoes organisational restructuring

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The EPA has embarked on a process to reorganise itself to optimally deliver on its vision to be a results oriented, adaptable organisation with adequate resources and equipped staff to deliver on its mission. While the EPA has recorded successes in delivering its mandate over the last two decades, it has recognised the need to restructure to meet the growing demands for its services in the country.

With guidance from the Department of Environment, the EPA has reorganised itself to deliver its services via ten new Programmes. Four of these programmes are dedicated to the management of environmental media, namely, air, water, land and biological resources. There are also dedicated programmes for waste management, analytical services, ecological and human health risk,

legal services and communication, education and awareness. Subsequently, a programme area to focus on research and development will be integrated.

With the reorganisation, Senior Environmental Officers will lead eight of the ten Programmes. This change provides the opportunity for SEOs, many of whom have Masters level qualifications, to apply and strengthen their management and analytical skills. These SEOs are expected to among other tasks, provide sound evidence-based decisions on the potential impact of new development projects and the impact of existing development projects. Additionally, a Technical Secretariat was established to coordinate the various programme areas and enhance the efficiency of the system. This unit is currently an arm of the new Executive Director (ag.), Mr Kemraj Parsram's Office.

A dedicated focus on specific environmental media, waste, environmental risk, etc., is expected to also strengthen the capacity of environmental officers in these particular areas. This, in time, will lead to environmental officers in each programme area becoming "specialists." This approach will also allow the EPA to focus its sourcing of training opportunities to link to specific programme areas. Such training will further augment the skills of environmental officers towards the goal of creating specialists.

The reorganisation is also intended to benefit the EPA in its efforts to gather and compile data on specific environmental media, e.g., air, water quality, etc. Programme areas will now consciously plan to build data on the various environmental media as they conduct routine site visits and compliance inspections. Further, each programme area can plan to be more rigorous in its inspections and to collect a wider range of data.

As part of the reorganisation, it is expected that the Analytical Services and Research and Development Programmes will also grow to boost the EPA's capability to assess and analyse data for sound environmental decision-making. On another front, the Communication Education and Awareness Programme is intended to create greater literacy on, and buy-in for, the EPA's legislation, processes, etc., while boosting citizen environmental literacy as a whole.

Editorial Note

2017 is the International Year of Sustainable Tourism for Development with the main goal being to celebrate and promote the contribution of the tourism sector to building a better world. Among the five key areas that will be promoted by the UN this year, is resource efficiency, environmental protection and climate change. While tourism is an industry known for its economic benefits, it also has a big impact on the environment. Not only is tourism a significant contributor to air emissions largely for air from transportation but it also is associated with high water use that puts pressure on water resources. Tourism also puts pressure on certain natural habitats due to high and frequent use by tourists and may lead to land degradation as land is cleared to build recreation facilities.

This international year also brings into focus opportunities for the tourism industry to thrive while reducing its impact on the environment. Among such measures are waste reduction and recycling; water conservation, habitat management and restoration, energy conservation, etc.

Tourism locally in Guyana tends to be labelled eco-tourism, however, some argue that nature tourism is a more accurate description. This point is made since eco-tourism not only has a low impact on the environment and culture but must also financially directly contributes to environmental conservation.

Here in Guyana, tourism facilities are required by the EPA to adequately dispose of waste and hotels with more than ten rooms are required to apply for environmental authorisation. Authorised facilities are also required to self-monitor and submit annual Report to the EPA, which it will then verify.

EPA undergoes organisational restructuring cont'd

As the EPA reorganises to effectively create specialists and develop strong environmental baseline data etc. the process has to be adequately supported by the requisite financial, human, and technological resources. The EPA is keen to contribute the different level of decision-making to the planning for its long-term relevance and efficiency.

EPA takes climate change awareness to Kuru Kuru

EPA continues to work with youths to increase their environmental awareness and literacy. At the Kuru Kuru Training Centre, the live-in setting provides a unique opportunity for students and teachers to exchange knowledge and join forces to tackle environmental issues like climate change. For the second consecutive year, EPA conducted climate change awareness sessions with students of the Centre. Over the course of two half-days, fifty participants were immersed in interactive sessions focused on the causes, impacts, and actions to address and adapt



to climate change. These students were given the opportunity to creatively

demonstrate their understanding and share their opinions on the issues addressed at the workshops through skits, poems, songs, etc.

As part of sustaining potential initiatives, the participants were also introduced to the EPA Environmental Club Programme and were informed on how to initiate an environmental club at the institution. The students were eager to be a part of this wider network and await further engagements with the Agency.

Meanwhile, students in Grades 5 and 6 at the Kuru Kuru Primary and Grade 9 at Dora Secondary were also introduced to concepts on climate change in half-day sessions. The primary school sessions were based on an EPA climate change booklet for children, consisting of various worksheets. The Secondary school students were engaged in presentations and activities that challenged them to apply the knowledge gained.



Technical Writing Workshop



The Environmental Communication Education and Awareness Programme (ECEAP) area of the EPA (formerly the Education, Information and Training Division) conducted an in-house training session on “*Technical Writing*”. Twenty-nine (29) Staff from the various programme areas participated in the one day session, which focused on improving and developing technical writing skills. This training was timely since it helped to not only build staff capacity, but also aligned with the Agency’s re-structuring process intended to emphasise development of staff as technical officers that become specialised in specific technical programme areas.

The training workshop focused on attributes and skills of technical writing that participants can employ when preparing documents for internal and external purposes. Emphasis was placed on how to assess personal work before the final output, e.g., ensuring that a document’s purpose is met and that it is appropriate for the intended audience.

From feedback obtained, the session was deemed a success since it met its objectives of enabling participants to develop and build on their abilities to write and communicate effectively in the conduct of the Agency’s work.



Exhibitions

Exhibitions are an excellent way of interacting directly with members of the public. In such interactions, the EPA strives to ensure that the experiences are fun and educational. This is achieved by employing a diverse number of activities including trivia, and puzzles.



During the first quarter of the year, the Agency participated in three exhibitions, two of which were targeted on career guidance in the environmental field, and exposing visitors to the work of the Agency. Basic field equipment used by the EPA was

displayed and a customised environmental trivia game attracted scores of students to the booth despite the unfavourable weather.

The other exhibition was conducted on World Wildlife Day on March 03, 2017.



Water, Sanitation and Hygiene Training

According to the Center for Disease Control “most of the 2.6 billion people around the world without basic sanitation are living in rural areas”. Further, “88 percent of diarrheal disease is attributed to unsafe water supply, inadequate sanitation and hygiene”. Water and sanitation are intricately linked and potable water and adequate sanitation is integral to developing healthy and productive communities. Consequently, the Basic Needs Trust Fund (BNTF) with support from Caribbean Development Bank executed Water, Sanitation and Hygiene Training in 6 rural communities. The training targeted communities which were beneficiaries of wells and water treatment facilities constructed under the project. Three (3) day training activities were conducted at Fort Wellington, Bartica, Moruca, Annai, Lethem and Karasabai with surrounding communities converging at these central locations. This was a collaboration between the Basic Needs Trust Fund, the Environmental Protection Agency (EPA), Guyana Water Inc. (GWI) and the Rural Electrification Programme. Facilitating a major component of the training, the EPA addressed several public health related issues and their relationship with the environment and focused on environmental issues both local and global which can impact water quality and quantity.



Access to adequate water and sanitation is an essential driver in sustainable development. Therefore, capacity of participants is pivotal in the boarder context since their action or inaction can influence the sustainability and effectiveness of the water treatment facility. This is especially pertinent to rural communities which have suffered greatly from various forms of pollution and often have limited access to potable water. Therefore, it is imperative for residents of rural communities to understand how they can be affected by limited access to potable water but also how their actions can aid in the conservation and protection of water supply. The goal of this intervention is to empower members of communities to take action on environmental issues, to influence attitudinal change and encourage sound practices

for a safe and healthy environment.



These interactive and informative sessions incorporated games, case studies, role play, presentations and discussions centred on water conservation, sanitation, waste management, climate change and creating a green community. The participants were also engaged in practical sessions on water purification and care and maintenance of the photovoltaic system. The EPA embraces opportunities for collaboration with agencies and organisation and welcomes requests to conduct session to increase awareness on environmental issues.

Revitalising Environmental Clubs

ECEAP is working towards renewing its efforts to revitalise Environmental Clubs throughout the country. A strategy has been formulated and increased contact with the clubs has been initiated. In addition, a monthly newsletter, “The Eco Echo” was launched in March to report on club accomplishments as well as suggest appropriate activities for upcoming months. Another approach is to intensify the involvement of clubs in ECEAP programs such as environmental day observances e.g. Earth Day jeopardy, World Environment Day Concert, International Wetlands and Water Day. A pretest, to determine the starting level of knowledge and attitudes, has been designed and will be administered to new clubs. Pretests are brief but include questions that measure factual knowledge, ability to reason and attitudes concerning the environment. The results of these pretests will enable ECEAP to evaluate and report on progress in club members as well as make suggestions for clubs that correspond with their interests and needs.

Environmental Observances



Numerous environmental observances are celebrated throughout the year to raise awareness about global environmental issues and ensure the local population responds to calls to action to address these issues. In the first quarter, the EPA coordinated in some instances and collaborated with sister agencies in others in the observance of four environmental Days. Issues addressed included sustainable management of wetlands, reduction and reusing of wastewater, youth involvement in wildlife conservation and climate change.



For World Wetlands Day, celebrated on February 02, a tour to the Golden Grove-Belfield Mangrove Reserve was coordinated for students from six (6) schools: Covent Garden Secondary, Cummings Lodge Secondary, President's College, St. Joseph's High, North Georgetown Secondary and Dolphin Secondary. Additionally, a tour of the Zoological Park was facilitated for students of five (5) Primary schools: Graham's Hall Primary, Enterprise Primary, Winfer Gardens Primary and St Sidwell's Primary. Both activities sought to raise awareness on the Wetlands Day theme:

“Wetlands for Disaster Risk Reduction” and taught students of the importance of wetlands as an ecosystem and their role in resisting and fighting natural disasters.



On World Wildlife Day, celebrated on March 03, the Agency participated in an Exhibition coordinated by Wildlife Management Authority given the theme “Listen to the young voices”. Here, interactions were made with students of various schools who were able to play games and engage in fun, learning activities that reminded them that young voices are important in effecting positive actions towards wildlife conservation. Our booth included wildlife bingo, highlighting conservation activities. What Am I, Where Do I live? A game created specifically for this exhibition, allowed participants to learn more about wildlife by describing them and identifying their habitat on the world map.

The Agency switched its focus away from schools for World Water Day, by holding a Forum for government and private sector organisations, as well as tertiary educational institutions on the need for sustainable management of freshwater resources and the impacts of wastewater on the environment. The focus of the Forum was to share information on the technologies that can be applied to reduce and reuse wastewater in various sectors, viz. tourist sites, beverage manufacturing and rice production. The Forum was held on March 22 at Regency Suites. To cater for the next generation, the Agency also delivered presentations to students from Sophia, Graham's Hall and Bel Air Primary Schools on the importance of water, how wastewater is generated in homes, industries, agriculture and public buildings and how they can help in reducing the amount of wastewater that enters the environment.



Complaints and Response Management

Twenty five (25) new complaints were investigated for the quarter. These matters were related to nuisances caused from the operation of spray painting workshops, furniture workshops and use of a generator. Eight of these complaints were closed based on invalidity at the time of the inspection.

Eighteen (18) follow-up inspections were conducted for the period. The purpose of these inspections was to determine compliance with recommendations previously issued by the Agency to reduce/mitigate nuisances caused. Five of the matters were closed based on compliance with the Agency's instructions, which mitigated the nuisance caused.

One (1) Prohibition Notice was issued for the month of March, 2017 prohibiting the discharge of water containing alkyl sulphonic acid into waterways.

Kids Corner

Set up your own Water Treatment Plant!

A key focus for this quarter was wastewater and how we can adopt actions to reduce wastewater and possibly reuse it.

Even children can play a role in reducing wastewater in their homes. Simply set up your own home-made water treatment plant and save the environment from dangerous water pollution.

Ensure you have adult supervision to protect your health and safety!

Materials Needed:

- Water Bottle
- Scissors or Knife
- Cotton Balls or fabric
- Sand or charcoal
- Gravel
- Large gravel or small rocks
- Cup to hold filtered and non-filtered water.

Procedure

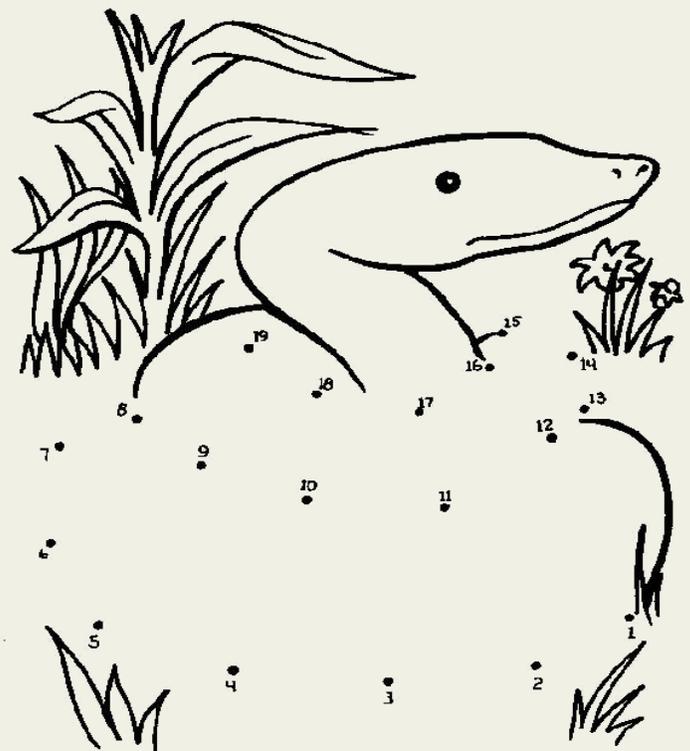
1. Use your scissors or knife to cut off the bottom of the water bottle
2. Make a small hole in the centre of the cap. Make sure the cap is on tight!
3. Stick the cotton balls or fabric through the hole and down by the cap.
4. Fill up to about two (2) inches with sand or crushed charcoal
5. Next, add your gravel into the bottle. Around 2 inches of gravel should be enough.
6. Finally add your larger gravel or small rocks into the bottle. Again, 1-2 inches is enough.



Your water filter is now complete! Just put the filter over your cup for filtered water.

Pour in your dirty water and see the difference after it has passed through your mini-treatment plant.

Connect the dots then colour



Where we stand with Biodiversity

Guyana is endowed with rich biodiversity and high endemism, and is home to unique flora and fauna by virtue of being a part of the Guiana Shield and Amazon Basin. However, Guyana is also dependent on the extraction of its natural resources for socio-economic growth and development. Mining contributes as much as 11% of Guyana’s GDP (2015, figures) but it is also the main driver of deforestation, forest degradation and associated biodiversity loss. Of note is that small and medium-scale mining have increased significantly over the past fifteen (15) years and the impacts of illegal mining are widespread and significant.

The Global Environment Facility (GEF) Project titled, “*Enhancing Biodiversity Protection through Strengthened Monitoring, Enforcement and Uptake of Environmental Regulations in Guyana’s Gold Mining Sector*”, was conceptualised to provide long-term solutions through enhancing institutional and individual capacity for the implementation of gold mining practices that support conservation of Guyana’s biodiversity. The Project is aimed at strengthening monitoring and implementation of biodiversity-friendly practices in Guyana’s gold mining sector so as to reduce biodiversity loss and maintain ecosystem functionality.

The Environmental Protection Agency (EPA) and the Ministry of Natural Resources are executing partners of the project, with support from the United Nations Development Programme (UNDP). The Project which started in June 2014 is now in its final year of implementation. Expected outcomes of the project are: strengthened enabling environment for monitoring and enforcement of mining-related environmental regulations and codes of practice, and enhanced capacities for uptake of mining practices that promote biodiversity conservation. The project supported several consultancies and capacity development activities in order to achieve the outcomes of the project. Consultancies and training were conducted that aimed to enhance capacity of relevant officers from EPA, GGMC and GFC in mining regulations and monitoring and enforcement. Seminars were also conducted with mines officers and miners on codes of practice and mining regulations. The project also developed training manuals and supported the mining school to enhance capacity of miners.

Additionally, the project supported the review of the legislative framework, draft regulations of the mining sector and institutional mandates of the GGMC and GFC, towards the strengthening of monitoring and enforcement of biodiversity within the sector.

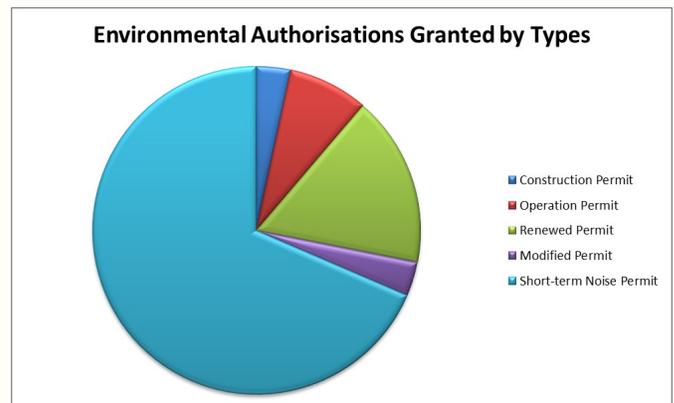
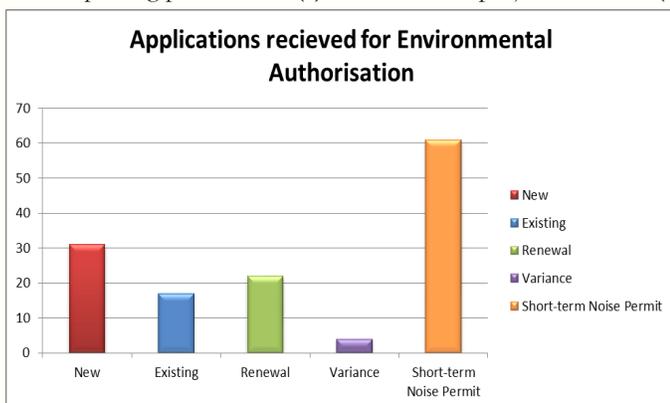
The Project outcomes are expected to contribute to Guyana’s development of a “Green State”, through the sustainable management of natural resources, better monitoring and enforcement of mining activities with integration of biodiversity concerns. The Project is the first step to mainstream biodiversity into the mining sector and will contribute to a larger project titled, ”Strengthening the Enabling Framework for Small and Medium-scale Gold Mining in Guyana and Uptake of Practices to Reduce Biodiversity Loss, Mercury Use, Deforestation and Forest Degradation”, which aims to strengthen the regulatory framework and institutional capacity for the management of small and medium-scale gold mining and promote greater adoption of environmentally-friendly mining techniques in Guyana.

Environmental Authorisations

One hundred and thirty-five (135) Applications for Environmental Authorisation were received for the period January to March, 2017. Thirty-one (31) of these Applications were for New Projects, seventeen (17) Applications were for Existing Operations, twenty-two (22) for Renewal, four (4) for Variance and sixty-one (61) for Short-term Noise Permits were also received for this period.

Seven (7) Environmental Authorisation Inspections were conducted for the reporting period. Five (5) were for New projects and two (2)

for Renewal audits that were issued with an Environmental Authorisation. The Agency granted ninety-six (96) Environmental Authorisations during this period. Seven (7) were granted for New Projects, three (3) for Construction Projects, seven (7) for Operation Projects, fifteen (15) for Renewal of Operations, three (3) for Modification of Environmental Authorisation and sixty-one (61) Short-Term Noise Permits.



Building Staff Capacity

A number of staff attended local workshops and meetings to enhance their technical skills to better contribute to the work of the Agency. These included:

- Mrs. Aminah McPherson-Damon attended a CIVIL PROCEDURE RULES (CPR) 2016 Orientation Programme on January 4, 2017 at the Regency Suites Auditorium on Hadfield Street, Georgetown.
- Mr. Ronn Sullivan attended training in Biological Waste Water Treatment and Managed Aquifer Recharge for Water and Wasterwater Treatment on January 9 -13, 2017 at the Millenium Manor Hotel. The training was coordinated by the Guyana Water Inc.
- Mr. Joshua Muridall attended a training on Public Procurement Modernisation & Financial Management Strengthening – UNDP/CIPS Certificate Course Level 2 in Public Procurement. The training was held at the Regency Suites Hotel, Georgetown, during the period January 16 -19, 2017.
- Ms. Savitri Itwaru, Ms. Makini Hackett, Mr. Joel Gravesande, Mr. Vidyanand Mohabir and Mr Dillon Charles attended an Oil Response Training on February 16, 2017 at the Duke Lodge. This workshop provided an insight into some of the key complexities that may be faced during an oil spill incident and the resources available to overcome these issues.
- Mr. Frank Grogan attended a two-day capacity building workshop for the Technology Needs Assessment for Climate Change in Guyana. The workshop was held at Herdmanston Lodge on February 14, 2017 and focused on the preparation of Technology Action Plans.
- Mr. Delon Earle attended the First Webinar - Caribbean Climate Smart Agriculture Forum for Innovative Coordination. The Webinar was facilitated by the Inter-American Institute for Cooperation on Agriculture (IICA) on February 14, 2017 in their boardroom.
- Ms. Karen Small and Mr. Frank Grogan attended a workshop which was held by the Protected Areas Commission (PAC), with support from Frankfurt Zoological Society (FZS) at the Guyana Forestry Commission Multipurpose Building on February 28, 2017. The objective of the workshop was to develop ecological and threat monitoring protocols for National Protected Areas System (NPAS).
- Mr. Colis Primo attended a Sensitisation and Validation Workshop on Sustainable Land Management and Development Project Concept. The workshop which was held on March 2, 2017 at the Guyana Marriott Hotel was organised by the Guyana Lands and Survey Commission.
- Mr. Ronn Sullivan attended a workshop which was held by Inter-American Development Bank (IDB) from March 29-31, 2017 for the implementation of the Sustainable Agriculture Development Programme. The workshop was held in the Boardroom of the Ministry of Agriculture.
- Mr. Rayner Mc Andrew and Ms. Anastasia Chandra attended a three day inception workshop on the European Union funded project “Promoting Integrated Ocean and Participatory Governance in Guyana and Suriname: the Eastern Gate to the Caribbean” from March 29 - 31, 2017 at Grand Coastal Hotel. The workshop was organised by the Protected Areas Commission.

Upcoming Activities

The EPA initiates and undertakes activities on a continuous basis to pursue its mandate.. Having successfully achieved the s e t goals for the first quarter of the year, planning and coordination have already begun towards its planned objectives for the next quarter.

Activities scheduled for April - June, 2017, include the following:



Activity	Theme	Target Group	Date
Earth Day	Environmental and Climate Literacy	Secondary schools	April 04-06 & 28
Int'l Day for Biological Diversity	Biodiversity and Sustainable Tourism	Secondary Schools	May 22
World Environment Day	<i>Connecting People to Nature</i>	General Public	June 05

WILDLIFE SPOTLIGHT

The West Indian Manatee (*Trichechus manatus*)

The West Indian manatee (*Trichechus manatus*) also known as the sea cow is the largest surviving member of the aquatic mammal order Sirenia (which also includes the dugong and the extinct Steller's Sea Cow). These manatees have a wide distribution, from the mid-Atlantic region of the United States, throughout the Caribbean Sea and Gulf of Mexico, south to coastal parts of northeastern and central-eastern South America.

Appearance

The West Indian manatee is a large, rotund, aquatic mammal. The tough skin is grey-brown with sparse hairs covering the body and many bristles on the muzzle. The front limbs are short flippers and the body tapers to a flat, paddle-shaped tail that distinguishes this species from the related dugong (*Dugong dugon*), which possess a fluke-like tail. A unique feature (amongst mammals) of the manatee is the constant replacement of molar teeth; new teeth enter at the back of the jaw and replace old and worn teeth at the front. Recent evidence suggests that manatees may possess a unique sixth sense that enables them to detect pressure changes through sensory hairs. These large sea cows weigh in at approximately 1300 lbs. (600 kg) and measure in at around 4 metres (13 ft.) with the females being larger than males. Despite their large size, manatees are graceful swimmers. Although they usually move along in slow motion, they can also cruise, or swim at a steady pace, at five miles (eight kilometers) an hour. In short bursts they can even top 15 miles (24 kilometers) an hour!



Habitat

The species is known to withstand large changes in water salinity, hence it has been found in shallow rivers and estuaries. It can live in fresh, brackish, and saline water. It is limited to the tropics and subtropics due to an extremely low metabolic rate and lack of a thick layer of insulating body fat.

Diet

Manatees feed on about 60 plant species, which include sea grasses as their major food source. They also consume some fish and small invertebrates. While many manatees are known to eat a large quantity throughout the day, the amount they eat depends on their body size and activity level. Because manatees feed on abrasive plants, their molars are often worn down and are replaced many times throughout their life, so they are called "marching molars".

Reproduction and Nesting

Although female West Indian manatees are mostly solitary creatures, they form mating herds while in estrus. Most females first breed successfully between the ages of seven and nine; they are, however, capable of reproduction as early as four years of age. Most males reach sexually maturity by the time they are three or four. The gestation period is 12 to 14 months. Normally, one calf is born, although on rare occasions two have been recorded. The young are born with molars, allowing them to consume sea grass within the first three weeks of birth. On average, manatees that survive to adulthood will have between five and seven offspring between the ages of 20 and 26. When a calf is born, it usually weighs between 60 and 70 pounds and is between 4.0 and 4.5 feet long. Males aggregate in mating herds around a female when she is ready to mate, but contribute no parental care to the calf.

Interesting Facts

- Manatees are gentle animals. They rarely fight, and they have no natural enemies.
- While cruising, manatees push themselves forward by moving their strong tails up and down. They steer with the help of their flexible flippers. When in shallow water, manatees use their flippers to walk, slowly placing one in front of the other.
- While swimming, manatees take in air every three or four minutes. When they are resting, they can stay underwater for up to 15 minutes.

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.