



# EPA ANNUAL REPORT 2001



## Focus on Networking & Partnership



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## **Message from the Executive Director**

*During the year under review the Environmental Protection Agency continued to make steady progress in achieving its considerable mandate as the lead Agency in environmental management, sustainable utilization and conservation of natural resources.*

*The all encompassing nature of our mandate makes it imperative that we work very closely with a broad range of organizations both within the public and private sector. Indeed much of our success over the years can be attributed to this approach of close collaboration with existing institutions and benefiting from their experience and management frameworks.*

*It is in recognition of the many advances which we made through this strategic approach that our annual report this year presents our achievements through the theme **Networking and Partnership**. We trust that as we strive to build from the foundation which has been laid, we will be able to work with an increasing number of partners over the years to come. We hope that our mutual interest in protecting our environment and promoting the sustainable development of our economy will go a far way in improving the well being of our people. The rapidly unfolding environmental challenges of free trade and globalization in a world of increasing inter-dependence will require our steadfast resolve and mutual responsibility in working for an enhanced environment.*

*We thank you for your assistance and collaboration over the past year and look forward to yet another successful year ahead, together.*

*Bal Parsaud*

*Executive Director (Ag.)*

## Organizational Development

The year 2001 saw a critical review of the organizational structure with a perspective of better aligning the Environmental Protection Agency (EPA) to its wide mandate and to ensure that the functional Divisions within the Agency are properly structured and coordinated.

In September, a Natural Resources Management Division was established with four functional units: Biodiversity Research, Protected Areas, Wildlife and Climate Change. The Operations Division which previously incorporated some of these functions was renamed the Environmental Management Division with two primary areas of focus: permitting and response. Staff in this division were organized in functional teams to address the three broad sectoral areas of Agriculture and Fisheries; Mining, Forestry and Tourism and Industry, Infrastructure and Energy.

Two new Divisional Directors with considerable experience were recruited to head these divisions. Dr. Indarjit Ramdass heads the Natural Resources management Division and Dr. David Singh heads the Environmental Management Division.

Following on this restructuring the work programme of the EPA was fully reviewed and plans for the year 2002 developed.

Year 2001 also saw the conclusion of Phase I of the Environmental Management Programme supported by the Inter-American Development Bank (IDB) and negotiations and agreement for continuing support under Phase II anticipated to commence in 2002. This further assistance from the IDB follows on a most successful implementation of Phase I and is critical to the further enhancement of the capacity of the Agency.

The EPA wishes to record its appreciation to the IDB's country office for its enthusiastic support, programmes, staff compensation and *analysis of training opportunities/needs*. A detailed human resources strategy with training plans was developed for implementation in 2002 with support from the IDB under Phase II. It is anticipated that the implementation of this strategy would significantly enhance the skills, competencies, motivation and responsiveness of the staff and thus, better able the EPA to more effectively deliver on its mandate.

During the past year a number of staff has benefited from technical training, through both local and overseas courses. In-house training through mentoring programmes and closely supervised project work has led to a significant enhancement of skills and confidence. The EPA actively sought to encourage and promote the development of staff through postgraduate programmes to meet the critical need for an effective middle management team. A number of persons benefiting from such training are expected to through commitment and guidance *become middle managers* and the EPA looks forward to continue to work very closely with them in the implementation of Phase II.

## **Human Resources**

The EPA records with deep appreciation the services of its first Executive Director, Mr. Per Bertilsson who demitted office at the end of October and who provided outstanding leadership for the Agency since 1998.

Since then the Agency is being led by the Administrative Director, performing the duties of Executive Director.

Between October and November the human resources strategy for the EPA was developed through extensive review, analysis and discussions with staff and key stakeholders under the direction of a consultant. In this exercise the human resources strengths and weaknesses, the opportunities and threats, staff perspectives, the structure of the organization were addressed. The recommendations evolving from this exercise will be a main focus during the coming year.

## **Agency Financing**

The Agency benefited from an increase in Government's subvention from G\$30.million to G\$60.4 million in 2001. This enabled the recruitment of much needed additional staff and the enhanced execution of field activities.

The conclusion of Phase I of the IDB support resulted in residual funds being used for field equipment, information technology support and the acquisition of an additional field vehicle.

Spending against the UNDP project funds for education and public awareness was accelerated during 2001 with a significant increase in field activity with environmental clubs and training workshops.

Difficulties were experienced in the receipt of project funds from the World Wildlife Fund (WWF) due to the setback in executing field surveys which proceeded to be much more complex than anticipated and from the availability of experienced and skilled personnel.

The utilization of funds for the Caribbean Programme for Adaptation to Climate Change (CPACC) modules which were executed by the Agency were satisfactorily completed within the approved budgets and allowed for further activities to be planned.

## Networking with Sector Agencies

The EPA is responsible for charting the environmental policy direction of Guyana and values broad participation in the development of environmental policies and strategies. To this end the EPA partners and networks with Government Agencies, private sector and non-governmental organisations through a number of multi-sectoral committees.

### Policy Development

#### Climate Policy

The National Climate Committee (NCC) recommends climate policy, and serves in an advisory capacity to the EPA. The NCC is a multi-sector body comprising twenty agencies representing the health, water, finance, trade, agriculture, sea-defence, transport and harbours, energy, private, trade, academic and environmental sectors.

The major achievement of the NCC in 2001 was the finalisation of Guyana's *'Initial National Communication on Climate Change'*, in fulfillment of commitments under the United Nations Framework Convention on Climate Change (UNFCCC). This document is presently with the Natural Resources Environment and Advisory Committee (NREAC), for endorsement. This Initial National Communication represents the first collaborative effort, in Guyana, to address issues related to Climate Change.

*The Initial National Communication on Climate Change and the National Climate Change Adaptation Policy and Implementation Strategy were developed through an EPA - NCC - ICZM Committee collaboration.*

The EPA collaborated with Hydro-meteorological Service (Focal Point for Climate in Guyana) on Component 4: *Formulation of a Policy Framework for Integrated Adaptation Planning and Management* of the Caribbean Planning for Adaptation to Global Climate Change (CPACC) Project. This component supported the development of a policy framework for integrated planning and management for cost-effective response and adaptation to the impacts of global climate change. A *Country Issues Paper on Climate Change* and *Guyana's Climate Change Adaptation Policy and Implementation Strategy for Coastal and Low Lying Areas* were completed as part of CPACC component 4.



Part of Guyana's Coastal Zone

The Integrated Coastal Zone Management (ICZM) Committee developed the *Integrated Coastal Zone Management (ICZM) Action Plan*, which was approved by Cabinet on **29th May 2001**. The Action Plan for Integrated Coastal Zone Management is intended to guide the work of

stakeholders involved in Integrated Coastal Zone Management (ICZM) either directly or indirectly in an effort to foster a more coordinated and integrated approach to management of the coastal zone. It will serve as the backbone of an evolving plan for Integrated Coastal Zone Management in Guyana.

The EPA is the coordinating body that facilitates the implementation of the activities cited in the plan, which is implemented by the stakeholders in Integrated Coastal Zone Management. In the future the EPA will collaborate with:

- Hydro meteorological Service and NCC to:
  - finalize the draft '*National Climate Change Adaptation Policy*' for submission to Cabinet and then to the Regional Project Implementation Unit of Adapting to Climate Change in the Caribbean Program;
  - promote public awareness and education on coastal issues;
  - seek government's support for adaptation to the impacts of climate change and to implement actions set out in the Policy and
  - specifically define EPA's role in addressing climate change impacts in Guyana.
  
- ICZM Committee to:
  - develop and implement a work plan for executing actions identified in the ICZM Action Plan including developing projects and identifying funding sources for ICZM;
  - finalise the Memorandum of Understanding (MoU) between the EPA and the Ministry of Public Works and Communication.
  - implement the recommendations of the Final Report on Guyana's National Vulnerability Assessment;

## **Natural Resource Management Policy**

EPA, through the ICZM Committee collaborated with the Guyana Forestry Commission (GFC) to develop and finalize the ***National Mangrove Management Action Plan***, which is intended to guide the work of stakeholders involved in the utilization and protection of mangrove resources.

*EPA partnered with the ICZM Committee and NREAC to prepare a Mangrove Management Action Plan and Draft Protected Areas Regulations respectively.*

The plan is expected to foster a coordinated approach in planning, policy formulation, inter-institutional cooperation and implementation of actions and will serve as the framework of an evolving plan for mangrove management in Guyana. GFC will serve as the overall coordinating and implementing body regarding the activities cited in the National Mangrove Management Plan.

## Protected Areas

The Natural Resources and Environment Advisory Committee (NREAC) is a high level committee that advises the EPA on policy and its expertise was sought on Protected Areas. The EPA supports the establishment of a National Protected Areas System and in 2001 undertook a number of initiatives towards this end, namely:

- (i) Prepared a status paper on “Protected Areas in Guyana” for submission to NREAC.
- (ii) Prepared and submitted to NREAC a management plan for the Kaieteur National Park.
- (iii) Prepared Draft Protected Areas regulations.

## Wildlife

Draft Bio-Prospecting Regulations was submitted to the Attorney General’s Chamber for review. However, the EPA has advised the National Biodiversity Advisory Committee (NBAC), about some short-comings in these Regulations, and these are currently being addressed.

The draft Wildlife Management and Conservation Regulations underwent a technical review by NBAC followed by three consultations which targeted Sectoral Agencies, Wildlife Exporters Organisations and Conservation Non-Governmental Organisations. A proposal has been submitted to the World Wildlife Fund for Nature (WWF) for funding to conduct a fourth consultation targeting Hinterland Communities.

*Bio-prospecting and Wildlife Management and Conservation Regulations drafted*

## Capacity Building & Training

### Geographic Information Systems

The Geographic Information System Unit of the EPA provides the spatial framework to support environmental, natural resource and coastal zone management for informed decision making. The Unit has also collaborated with other agencies in providing and receiving various levels of support primarily in the areas of training, sharing GIS resources, and participating in national and regional GIS projects.

The Geographic Information System (GIS) unit partnered with the Project Execution Unit of the Guyana Sea Defences Department in the development of a *pilot application* called the Sea Defence Management Information System (SDMIS). This application formed part of Caribbean Planning for Adaptation to Climate Change Project Coastal Resource Information System (CRIS) as it modelled the

*Sea Defence Management Information System developed by EPA in collaboration with Guyana Sea Defences Department*

usefulness of a management system for Guyana's sea defences. SDMIS model of sea defence management in Guyana was presented on the 17<sup>th</sup> October, 2001 to the Sea Defence Board and at the Urban and Regional Information Systems Association (URISA) 2001 Annual Conference and Exposition in Jamaica on the 9<sup>th</sup> – 12<sup>th</sup> September, 2001.

GIS Presentations from the Unit were prepared for EPA officers, Pan-American American Health Organization (PAHO) officials and the Ministry of Health on the role of Geographic Information System in the Health sector. Technical assistance was also given in mapping of a pilot area for the Ministry of Health.

In partnership with the Guyana Environmental Capacity Development Project (GENCAPD), training was provided for twenty staff members on the use of Global Positioning System, software and application in a Geographic Information System. Practical training on the use of Global Positioning Systems was also provided to EPA officers.

*Twenty staff members trained in GPS and GIS as part of a GENCAPD Project*

Through Guyana Integrated Natural Resource Information System (GINRIS), one EPA was trained in Introductory Geographic Information System.

### **Wildlife Surveys**

The Development of Species Management Plan for Wildlife Trade in Guyana funded by the World Wildlife Fund for Nature (WWF) and the Government of Guyana was implemented by the EPA in partnership with Iwokrama. Capacity building was a primary goal of this project and nine (9) persons were hired with varying levels of qualifications and trained in use of computers and GPS, focus group methodology, species identification and capture techniques. Further experience was acquired by these persons in budget preparation, field logistics and consultations with various stakeholder groups such as wildlife exporters, transporters and trappers.

### **Ozone Depletion**

EPA supported the *National Ozone Action Unit* of Hydro-meteorological Service by providing resource persons at a 'Train the Trainers Workshop' for Customs Officers on Import/Export of Ozone Depleting Substances and also by supporting other workshops.

### **Delineation of the Coastal Zone**

The initiation process of defining the Coastal Zone begun at the first Coastal Zone Management Workshop held on the 31 August 2001 involving representatives of sector agencies. It was decided that integral to this process would be the adoption of the definition of Guyana's Exclusive Economic Zone (EEZ) for this purpose. This process will be advanced in 2002 through the usual consultations and legal proceedings.

## Regulations and Standards

Partnership with sector agencies is crucial in the formulation of regulations and standards. In 2001 the Environmental Protection Agency supported the GGMC in the development of Mining Regulations which are expected to be finalized in 2002. The EPA also collaborated with the Guyana National Bureau of Standards (GNBS) in the finalization of standards for industrial effluent, noise and air quality.

The EPA worked in collaboration with GGMC on a tailings management project to assist miners at Imbamadai and Konawaruk with the implementation of measures to reduce turbidity in the Mazaruni River.

Sulphur in gasoline regulations and water quality monitoring guidelines were drafted.

In the future attention would be focused on collaboration with relevant agencies and bodies in order to:

- Finalise noise, air and industrial effluent standards with the Guyana Bureau of Standards.
- Develop Forest Management Standards in collaboration with the Guyana Forestry Commission.
- Develop ambient water quality standards.

## Data Collection & Complaints Investigation

### Environmental Awareness

An environmental awareness survey was undertaken by the Environmental Studies Unit of the University of Guyana at the behest of the EPA-UNDP Environmental Education and Awareness Programme. This survey was a follow up to a similar one undertaken in 1999.

*Public knowledge of environmental issues and public concern for the environment is higher in 2001 as compared with 1999.*

The respondents were drawn from six target groups: - students, vendors, consumers, loggers, miners and household with a total 1671 persons drawn from all ten regions of Guyana. The survey found

the following:

- A general improvement in level of knowledge on environmental issues since previous survey
- Heightened concern for environment but low participation at individual and collective levels in actions to care the environment.

## Wildlife

Under the WWF funded Development of Species Management Plan for Wildlife Trade in Guyana, researchers collected data on trapping locations at Timehri, Corentyne, Essequibo Coast, Mahaica- Mahaicony-Abary, Cane Grove, Northwest District and Pomeroun. The data was used in the preparation of village *fact sheets*. Maps were purchased for use in future visits to these locations. A range of equipment purchased for these surveys would be transferred to EPA upon completion of the project.

Social surveys were carried out at Orealla and Essequibo with the purpose of gathering data on animals being traded and the economics of the trade.

A survey of the spectacled caiman (*Caiman crocodiles crocodilus*) was conducted in the Mahaica-Mahaicony-Abary area. The findings of this survey are captured in report entitled: *Spectacled Caimans in Mahaica-Mahaicony-Abary Area*.



*Caiman crocodiles crocodilus*

A preliminary analysis of Bush Meat trade in Guyana was undertaken and the Catch per unit Form was Prepared. Wildlife export data was also compiled.

As the project was proposed to be completed in December 2001, a proposal for an extension was submitted to WWF.

## Degradation of Mangroves

The EPA collaborated with the Project Execution Unit, Guyana Sea Defence to execute a Project to investigate the reasons behind the degradation of mangroves on the West Coast of Demerara. This project faced some constraints and the results of the soil surveys were only received in December of 2001. It is hoped that another data set would be obtained and that the Project be completed by mid 2002.

## Surface Water

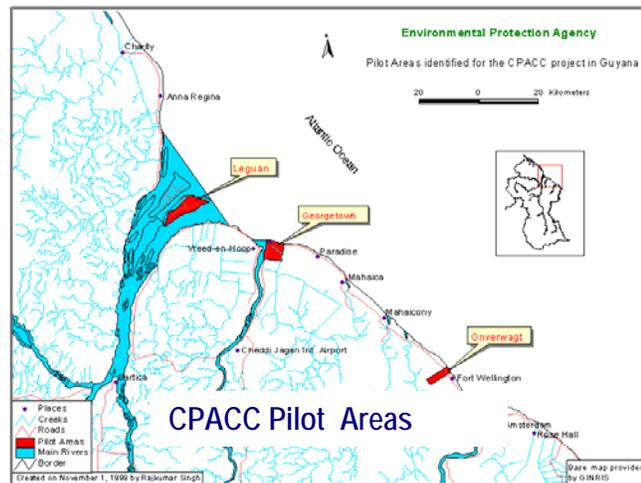
Throughout the year, baseline data on water quality were collected through surface water sampling and analysis of the Essequibo River. To create a mechanism for continued collection of water quality data, the EPA has entered into a partnership with the Faculties of Technology and Agriculture of the University of Guyana for the generation of baseline data through final year student research.

## National Vulnerability to Sea level rise

The EPA in collaboration with major stakeholders coordinated Guyana's vulnerability assessments of the impacts of sea level rise on coastal resources, through the CPACC Project. The project is coordinated in the Caribbean through the Regional Project Implementation Unit (RPIU), which is based in Barbados. This Coastal Vulnerability and Risk Assessment (Component 6) is aimed at conducting "an explicit assessment of the biophysical effects and socio-economic impacts of sea level rise in Guyana and consider the potential for adaptation. For the purposes of this study, three pilot areas on Guyana's coastline were selected. The areas are Leguan in Region 3, Georgetown in Region 4 and Onverwagt in Region 5.

As part of CPACC Component 6 – **Coastal Vulnerability and Risk Assessment** the following reports were completed:

1. *Final Report on a Socio-Economic Assessment of the Vulnerability of Guyana's Coast to Sea Level (1999)*
2. *An Assessment Of The Adequacy Of The Legal Framework To Cope With The Potential Effects Of Sea Level Rise In Guyana (December 2000)*
3. *Final Report on the Bio-Geophysical Assessment of the Vulnerability of Guyana's Coast to Sea Level Rise (June 2001)*
4. *Final Report on 'Guyana's National Vulnerability Assessment to Sea level rise (January 2002).*



National Vulnerability Assessments have concluded that Guyana is highly vulnerable to the anticipated impacts of climate change. The most serious consequence of sea level rise for Guyana will, no doubt, be flooding, especially in the populated coastal areas. A rise in sea level will inundate wetlands and lowlands, accelerate coastal erosion, exacerbate coastal flooding, threaten or destroy coastal structures, raise water tables and increase the salinity of rivers and aquifers.

*Guyana is highly vulnerable to effects of climate change - flooding and saltwater intrusion are expected to be major consequences.*

Most of the settlements on coastal rivers are located within a few tens of kilometers from the coast and within a few hundreds of meters from the edges of the rivers. Also the vast agricultural areas of the country are adjacent to coastal rivers. Based on scientific computations, these areas are well within the domain likely to be affected by salt/brackish water intrusion.

CPACC officially came to an end on 31 December 2001, *Adapting to Climate Change in the Caribbean (ACCC)* will be put into operation in the interim until *Mainstreaming Adaptation to Climate Change in the Caribbean (MACC)* a 5 year Global Environment Facility program comes on stream.

## Response to Complaints

There was an improvement in collaboration with other sectoral agencies in responding to complaints. Joint inspections were frequently carried out, and a number of complaints were referred to other agencies, GGMC, GS&WC, CH&PA, NDCs, GFC, etc. for action to be taken.

## Networking and Partnership with Regional Administrative Authorities

Regional Democratic Councils (RDCs) are the local government authorities in the ten administrative regions of Guyana. The responsibility of environmental management in the regions rest with the RDCs, and for this reason the EPA considers it a worthwhile investment to network and partner with these administrative bodies in the interest of conserving our country's environment.

## Public Awareness and Education

Under a Government of Guyana – United Nations Development Programme funded Environmental Education, Awareness and Capacity Building and Programme, eight

regional workshops were conducted. Presentations and activities at these workshops converged on the objective of building awareness and basic knowledge in Environmental



Management, Biodiversity Conservation and Coastal Zone Management. This capacity building is essential for our partners in environmental protection such as Regional and Neighbourhood Councils, Community Leaders and

Teachers. Equipped with information and skills our partners in the regions can generate solutions to local environmental problems relating to

solid waste, biodiversity and the coastal zone. To some extent the process of identifying solutions began at the workshops where the participants were engaged in developing frameworks for regional strategies for biodiversity and coastal zone management. In 2001 the workshops were spread across several regions and it is estimated that ten additional regional workshops on various environmental topics will be held in 2002.

## Regional Distribution of Workshops in 2001

Workshop	Location of Workshop	Subject of Presentations
<i>Environmental Management</i>	<i>Region 8</i>	<i>Solid Waste Management, Health Effects Associated With Mercury Use In Gold Mining, Environmental Impact Assessment Process.</i>
<i>Biodiversity Conservation</i>	<i>Regions 2, 4, 5, 6 and 9</i>	<i>Value Of Biodiversity, Threats To Biodiversity, National Actions For Sustainable Use Of Biodiversity</i>
<i>Coastal Management Zone</i>	<i>Regions 3 &amp; 4</i>	<i>Identifying and Inventorying Problems, Resources And Stakeholders In ICZM, Global Warming, Unplanned Coastal Settlements</i>

## Partnership with Industry

### Quality Control, Monitoring and Enforcement

### Environmental Permitting Process

The EPA interfaced with private sector on a continuous basis, receiving a total of fifty (50) applications for environmental authorization for the year 2001. Nine (9) projects were found to require an Environmental Impact Assessment before issuance of an authorisation and Environmental Management Plans/Systems were reviewed for five (5) of these. A total of twenty-one (21) Environmental Authorisations were issued for the year in the form of Environmental Permits, Construction Permits or letters of approval.

Environmental Permits, Construction Permits and Operation Permits are now distinguished by colour being green, grey and white respectively. All permits are now affixed with an EPA seal and Environmental Management Division stamp.

For the year, twelve (12) Consultants have registered with the Agency. The registration process will continue in the New Year.

### Registration and Verification

The EPA has used many strategies to bring businesses on board for registration for the purpose of pollution management. Since May 2001, public notices, press releases and individual correspondence have served to encourage 286

*286 businesses have registered with the EPA as part of the phased approach in the implementation of the Pollution Management Regulations of 2000*

businesses to be registered. The registration process is part of the phased approach being taken in the implementation of the *Pollution Protection Regulations (2000)*. The EPA will continue its endeavours in 2002 to bring on board some 400 current non-registrants. A database has been developed to track registrants.

The EPA engaged the Canadian consultant firm SENES to provide technical assistance and training for its officers in air quality assessment, hazardous waste management and environmental authorisation. As part of the training process, a list of ten (10) priority industries was developed for the pollution management verification process, using a phased approach.

*Three priority industries for implementation of Pollution Management Regulations are sawmills, rice mills and furniture manufacturing enterprises.*

Sector agencies willingly facilitated this exercise by making information available to the consultant and the EPA. The Agency commenced verification of three (3) priority industries: sawmills, rice mill and furniture manufacturing in October

2001. A promoter was hired to spearhead the verification process and a total of forty-three (43) industries were verified, reports were drafted and compliance schedules would be developed for each industry.

In the future the EPA will continue to work in partnership with owners of businesses to:

- Continue registration of non-registrants until the end of the first quarter of 2002.
- Conduct verification of all registered businesses and develop compliance schedules for these industries and upon compliance grant partnership environmental authorisations for environmental management.

The EPA will also collaborate with sector agencies to:

- foster greater collaboration with policy makers.
- review existing Memoranda of Understanding and to develop new ones with other organisations.

In order to facilitate its work in registration and verification the EPA will promote:

- the regulations and registration process thorough public awareness
- short term and long-term training in various aspects of environmental management and develop technical capacity to carry out its mandate
- institute fines and penalties to all non-registrants and operators who are in offence of the environmental protection regulations.
- assist in the development of a national water policy and implement a water quality management and monitoring program.

## **Complaints and Emergencies**

Approximately one hundred and twelve (112) site visits/field inspections were conducted to investigate cases of public complaints, performance assessment of sites proposed for development and monitor industries compliance with environmental authorizations. This figure reflects an increase from the previous years, which has been attributed to the introduction of compliance reviews.



EPA Officers having discussions with residents

The Division received eighty seven (87) complaints for the year, sixty eight (68) of which were investigated/inspected. A total of sixty six (66) have been closed, two(2) were pending as of the close of the year and 19 referred to other Sector Agencies for follow-up.

*Analysis of Complaints for 2001*

Complaints	Inspections	Status of Complaints		
		Closed	Pending	Referred
87	68	66	2	19

The EPA responded to two major emergencies during 2001, namely the incident of flooding at Cane Grove and molasses spill at Caribbean Molasses Company Inc. Reports on the investigation were forwarded to the Minister of Agriculture and Prime Minister respectively.

A significant number of complaints were related to dust, noise, odour and solid waste pollution. During or subsequent to the investigations the polluter was provided with recommendations to mitigate the problem. Three companies signed agreements with the Agency to implement various pollution control measures, and a cease order was issued to one company.



Investigating a complaint of dust and smoke associated with rice mills.

**Monitoring and Enforcement**

All environmental authorizations issued were scheduled for compliance inspection. Many of these operations were visited during 2000 and the system implemented allows for regular inspection of sensitive operations (as frequent as monthly in some cases and quarterly and biannually in others). Most significant was the procuring of field equipment, valued in excess of US \$15000 to put the Agency in a better position to manage pollution.

The Division continues to conduct compliance monitoring of Omai Gold Mines Ltd. operations through ground and surface water testing and review of quarterly environmental reports. The Agency also reviewed data on Guysuco's Sentinel



Agricultural Waste Treatment Plant, and significant progress was made in the development of a compliance monitoring schedule for Ashmin's Fun Park and Resort Inc. An environmental management system, which incorporated the compliance scheduled was submitted by GPL and reviewed by the Division. Finalization of this document and implementation of the plan will commence in 2002.

In 2002 it is expected that:

- Complaints handling procedures and a digitized complaint register would be developed in 2002.
- A monitoring programme for high priority areas will be elaborated and implemented. In addition, a programme for monitoring and enforcement with sectoral agencies will be refined and implemented.
- In keeping with the EPA strategy, a programme for self-monitoring of industries will be further refined and implemented. This will be managed and enforced through an improvement in the number of environmental officers and field staff and the procurement of additional field equipment to enhance the EPA monitoring programme.

## Research & Trade in Biodiversity

### Wildlife Chain of Custody

Meetings were held with the wildlife exporters to find out the chain of custody of the wildlife trade among other matters. In addition a meeting was held with the wildlife exporters of the three (3) wildlife organizations to discuss problems encountered during the year, market availability and quotas.

Some transporters/middlemen who were identified by the exporters and the Wildlife Division met with the researchers to discuss issues that affected them and the chain of custody.

Trappers were not licensed with the Wildlife Division as they live far from Georgetown. The researchers met with trappers when they visited the various areas for the socio-economic visits.

## Biodiversity Research in Guyana

Twenty seven (27) applications were reviewed by the National Biodiversity Advisory Committee (NBAC).

A Manual for Preliminary Review of Biodiversity Applications was approved by NBAC. This Manual would assist in reducing the time spent to process applications.

The NBAC also approved the Brochure for Biodiversity Research in Guyana. The Brochure was circulated to a number of embassies including New York, Washington, London, Suriname, China and Brazil through the Ministry of Foreign Affairs.

A list of Priority Areas for Biodiversity Research in Guyana was prepared by the EPA and was circulated to various stakeholders for comments, and prioritizing the list. A workshop would be held to have a consensus on this list and to identify responsible agencies and funding sources.

A paper justifying protection of the Red Siskin *Carduelis cucullata*, which is presently on the IUCN Endangered List and CITES Appendix I, was approved by the Wildlife Scientific Committee of the NBAC. This has been forwarded to the Management Authority for further action.

A draft paper on Monitoring Biological Diversity Loss in the Different sectors of Guyana – an Overview was prepared.

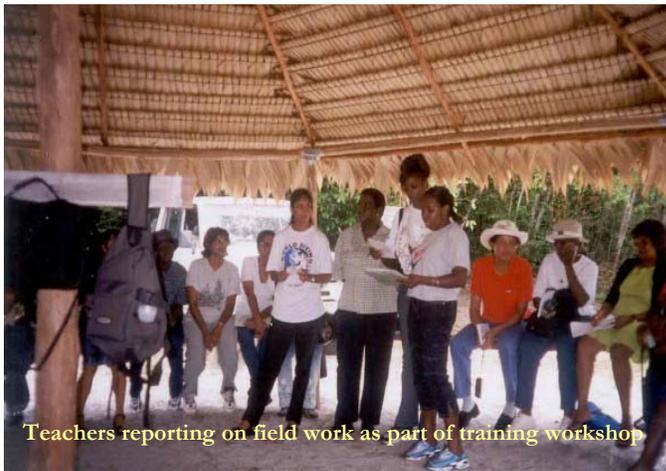


## Partnership and Networking with Schools, Teachers & the Ministry of Education

### Environmental Education Materials and Training for Schools

Teachers are the key to moulding the future generations and undoubtedly are a vital partner in any effort towards environmental conservation. Under a UNDP funded programme FOUR Environmental Education *Curriculum Supplements* were produced for Level Three of the Primary School. An audit of environmental education content informed the development of these modules in English, Mathematics, Science and Social Studies. To acquaint Level Three primary school teachers with the use of these modules, concepts of Environment Education and strategies for its effective delivery, a *One-Week National Workshop* was held in September 2001. Fifty-eight (58) primary school teachers from the ten regions of Guyana participated in the intensive training workshop

engaging in the process of development, modification and delivery of environmental education material for Primary Level 3.



The workshop provided an opportunity for teachers across the country to share ideas and to network with each other and the EPA. This network creates enormous opportunity for information dissemination and formation of environmental clubs and committees. In addition the multiplier effect of the training is expected to come into play as participants of the workshop conduct in-house training in school staff rooms and encourage school

and community environmental projects.

In the future the finalized material will be handed over to the Curriculum Division of the Ministry of Education for review and circulation to all primary schools in the country. The latter action has obvious cost implications and funding sources to support the printing of these materials for distribution by the Ministry of Education need to be sourced.

Funding for a program for monitoring and assessing the use and impact of materials on environmental literacy among students of Level three also needs to be sourced. The EPA annual Environmental Quiz no doubt can serve as one measure of impact but qualitative measurements are also needed e.g. membership and contribution to environmental clubs and school and community environmental projects.

## Environmental Clubs

The encouragement, development and creation of environmental clubs both within the formal school system and among social, religious and cultural groups is an ideal way of creating sustainable networks and partners in environmental action and management.

To this end, the EPA has worked closely with the Ministry of Education and various Regional Departments of Education in identifying secondary schools and community groups where Environmental Clubs could be developed. At the present time 55 clubs have been formed both within Secondary Schools and a number of communities covering nine of the ten regions of Guyana. They are all affiliated to the EPA.

*55 Environmental Clubs have been formed and affiliated to the EPA*

In general, clubs have been involved in clean up and beautification efforts in and around



Environmental Club Erecting Environmental Sign

their compound, spreading environmental education throughout the school through regular assembly talks on environmental issues; placing of signs with various environmental messages around the school and nearby community, the implementation of a “litter free” policy within their compounds; bird watching; nature walks etc. There is vast potential for greater community environmental awareness and educational messages to be carried by the clubs in their schools, regions

and homes.

The EPA/UNDP programme has borne the cost for travel and preliminary education material sent to the clubs (e.g. poster, brochures, booklets). In addition, a number of clubs have been invited to develop small-scale projects to be funded under this programme. The National United Nations Volunteer (UNV) attached to the EPA now has the responsibility of assisting clubs in clarifying, developing and implementing such projects.

Currently, most environmental clubs are concentrating their efforts and activities within their own school/Agency compound (e.g. clean up and/or beautification campaign). The expanded programme for the clubs envisages the exchange of programmes between clubs, collaboration among clubs on larger community projects, a greater involvement of other groups and adult agencies in the work of the clubs and the more activist and hands-on role for club members in environmental education and awareness and the monitoring and managing of their immediate environment and environmental activities within their communities and regions. Currently a National UNV serves as coordinator and adviser to the clubs under the supervision of the Director of Education Information and Training of the EPA.

**The challenge is to find additional support and resources from national and multilateral agencies to expand the network of clubs, broaden their range of activities and support and make sustainable their interest and programmes.**

## Networking with the Public

### Exhibitions

Exhibitions provide a good opportunity for the Agency to interface with the public and share information about its work in relation to environmental conservation and

management. At the seminar and Exhibition organised by the EPA on 22 May to mark **International Biodiversity Day** members of the public viewed exhibits and displays on Guyana's Biodiversity. The Environmental Exhibition organised by the EPA in June to observe **World Environment Day** afforded the Agency a unique opportunity to meet with the public on its own premises. This event created a high degree of environmental awareness for almost two thousand persons, through exhibits and poster displays. In October this year World Food Day EPA hosted a booth at a two-day exhibition held at the Uitvlugt Community Centre Ground.

## Media

Over the year the EPA has taken advantage of the use of both printed and visual media to inform the public of environmental issues and developments in environmental management in Guyana. TV advertisements on biodiversity conservation and solid waste and coastal zone management are aired regularly.

Every week EPA presents a topical issue on the TV programme Guyana Today and the newspaper column "Our Environment". Radio is also used as a medium for public information, for example, in observance of World Ozone Day in September this year, the EPA in collaborated with the Hydro meteorological Department of the Ministry of Agriculture to promoted awareness of ozone layer depletion through a series of newspaper articles, television and radio programmes.

Guyana Environment Week which is a week of heightened environmental awareness through a number of activities such as the Environmental Quiz, Environmental Exhibition and "Green Walk". The latter event is carried live both by TV and Radio while the other two events are given extensive coverage.



Green Walk In Georgetown

## The Green Walk

The *Green Walk*, an event that emerged for the first time in 1999 to launch *Guyana Environment Week* is a good example of EPA's endeavour to promote the environmental cause. This year EPA encouraged walkers to take responsibility for providing and designing their own T-shirts. The success of this event was evident as hundreds of people representing over thirty organisations,

agencies and businesses marched the route clad in *Green Walk* T-shirts of their own design.

This year for the first time, a "Green Walk" was organized by Environmental Clubs in Region 2. Over one hundred youths representing the seven secondary schools on the Essequibo Coast participated in the exercise.

## Brochure and Posters

With funding from the GoG-UNDP Public Education and Awareness Programme, the following materials were created and printed in bulk for dissemination to the public:

- A brochure on *Integrated Coastal Zone Management in Guyana*
- A poster titled *Guyana's Coastal Zone: Why is it important?*
- *A Booklet On Protected*

A poster of all the turtles found in Guyana was created in collaboration with the Guyana Marine Turtle Conservation Society as part of a Public Awareness drive. This poster is for distribution to the public.

## Document Centre

The Environmental Protection Agency through its Education and Training Division interfaces with the public on a continuous basis. Our Document Centre contains numerous titles on the subject of environmental conservation and management. The Centre also distributes brochures and posters created at the EPA free of cost to the public. At the moment 10 different posters and 10 informational brochures on environmental issues and EPA processes are available.

## Outreach

The EPA takes advantage of opportunities made available to reach the public and specific target groups. In 2001 the EPA collaborated with partners in the following outreach activities:

- Seminar to observe World GIS Day, November, 14<sup>th</sup>. The event was organized by the University of Guyana and at this forum GIS specialists demonstrated the specialized uses of Geographic Information Systems in government and non-government agencies. The audience comprised students, lecturers and other interested persons.
- Presentation on “Protected Areas Of Guyana” which was delivered to the “Friends of Iwokrama” programme organised by the Iwokrama International Centre for Rain Forest Conservation. This presentation was made at the University of Guyana’s Berbice, Campus.
- Workshop on “Biodiversity Reserves” where the EPA collaborated with University of Guyana, Guyana Forestry Commission and TROPENBOS Guyana Programme in presenting the activity.

- The Erection of a Turtle Post opposite the Umana Yana in Georgetown, featuring a Leather Back turtle. This was done in collaboration with the Guyana Marine Turtles Conservation Society (GMT). GMT also implemented a Community Awareness programmes on turtle conservation at Shell Beach.

## Partnering and Networking with Caribbean Regional Agencies

### Coastal Vulnerability and Risk Assessment

In keeping with its programme for Integrated Coastal Zone Management, the EPA is the Focal Point for coordinating Component 6 – ‘*Coastal Vulnerability and Risk Assessment*’ of the Caribbean Planning for Adaptation to Global Climate Change (CPACC) Project. The CPACC Project is being executed through the cooperative effort of twelve **CARICOM** countries and participating institutions. The project is financed by the **Global Environment Facility** (GEF) through the **World Bank** as implementing agency and is executed by the **Organization of American States** (OAS).

### Wildlife Trade Issues

A meeting was held in New Amsterdam with the Management Authorities of Suriname and Guyana to discuss issues related to the Wildlife Trade and to take measures to collaborate on working on problems.

## In-House Networking and Partnership

### Information Sharing

Information Technology (IT) and Technical Support is a key enabler in the efficiency and quality of everyday work at the EPA. The reliance on IT as a means of communication, document creation and management, complex presentation and analysis is high and is continually increasing. Cognizance of the importance of IT to the success of EPA has lead to the strengthening of its IT infrastructure. The networking infrastructure currently uses a fast internet enabled Local Area Network that provides file, print and database services.



The focal area in IT management currently is to promote the use of IT as a tool for organizational competitiveness and efficiency. IT services management is another focal area that seeks to address the levels of response as well as the services offered to the staff and partners of the EPA. EPA uses an expensive FAST Ethernet 10/100 network the has

3 powerful server computers – 3 DELL PowerEDGE computers each with 1Gb RAM and dual 900Mhz processors and a combined storage capacity of over 150Gb. The third server is an aged but still powerful Compaq Proliant 3000. All of these servers use RAID 5 hardware that provides data fault tolerance.

Careful management, informed refinements and upgrades are required to keep improving services as well as to maintain stability of the infrastructure. To achieve this, the need for certified IT professionals became apparent a requirement that the current IT management team satisfies being Microsoft Certified Professional (MCP). Microsoft certification status for IT staff is recognized as an asset to IT initiatives of an organization.

Intranet services have evolved into a core communication tool at the EPA. EPA uses a proprietary email software program to provide email and intra-mail. Databases such as the contacts management database and library catalogue and search database are accessible via the intranet. The latter is an initiative of the EPA Documentation Centre, the birthplace of modern computing and information sharing in the EPA. The intranet model in use at the EPA is based on a concept of making the Documentation Centre being a central repository of digital information accessible to partners.

Future plans include mainly service level improvements, integrated information systems, exploring other internet connectivity options and improving the fault tolerance of the servers, data storage and network infrastructure. EPA has contributed to INSAT 's and Tropenbos' web database solutions and is currently working on the Wildlife Surveys web database project. This technology transfer was first developed in leveraging the library search web database for the EPA Document Centre.

## Geographic Information System (GIS)

The Geographic Information System (GIS) strategy was completed in-house in 2001. Its vision is to *“efficiently manage all spatial related data and to empower EPA staff with the necessary GIS tools to assist them in making sound decisions.”*

Much of the geographic data collected by EPA officers and through collaboration with organizations are presented in GIS format for better decision making.

An internal GIS website (<http://epa-gis-svr/gis/>) was established to complement the needs of GIS users. The Geographic Information System website provides materials such as Global Positioning Systems (GPS), Map Projections and Remote Sensing. This website is updated regularly with news, articles and projects involving GIS application.

A digital Environmental Atlas was produced and placed in adobe format with network access. An online version was subsequently prepared and accessed via the GIS server. This online atlas registers the amount of visitors to each map. Users can copy these maps from the site without distortions. The Atlas contains maps that illustrate : EPA Environmental Network; National Monitoring Environmental Network, Locations of Environmental Clubs, Complaints taken, Permits granted, Municipal Councils and

Regional Democratic Councils, and Guyana Forestry Commission's field stations. Other maps provide visual descriptions of project areas and general land use activities, such as data from the wildlife surveys, potential landfill sites, hydropower sites, environmental clubs and others. In addition, air quality modelling was performed spatially for Georgetown as part of an air quality management system for monitoring.

In the context of geographic data management, a Draft user and Data needs assessment was conducted to address the requirements in database design for the inclusion of spatial components in the databases, and procedures for GPS data collection and storage was also implemented.

The assistance in the Wildlife Survey was extended beyond GPS training when the caiman surveys commenced in the Mahaica/ Mahaicony/ Abary area. The data collected was converted into GIS datasets and maps were prepared illustrating the visual correlation between vegetation type and number of caimans. Also, an electronic management system for wildlife information needs was conceived and will be integrated into a Geographic Information System/database system. This is currently being developed as a national wildlife project to manage and present wildlife data collected from the surveys and other information such as past and present researches, pictures, maps and other relevant information for the public.

## Workshops & Exhibitions

The repertoire of skills at the EPA is shared on a continuous basis for training and public outreach. During the year, directors, environmental officers and biodiversity consultant attached to the EPA have served as resource persons and facilitators at environmental management workshops, coastal zone management workshops and biodiversity management workshops.

The EPA encourages all round involvement of its officers and this has been very evident in 2001 where inputs were made from all areas into exhibits and activities for GuyExpo, Guyana Environment Week, World Food Day and Mining Week Exhibitions.

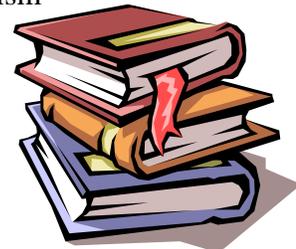
## Environmental Management Procedures

The skills of the legal officer and environmental officers engaged in monitoring and enforcement and quality control were pooled for the development of manuals on *Environmental Authorisation* and *Monitoring and Compliance*. Standard checklists, reports, public notices and letters contained in these manuals will serve as a reference and guide for officers in their everyday tasks of monitoring, enforcement and quality control.

Officers involved in monitoring , enforcement and quality control used threshold limits evaluated from a survey of project and impact scales to develop environmental applications screening procedures to determine scales for projects and fee structures for projects that require Environmental Impact Assessments.

Through a concerted effort of officers involved in monitoring, enforcement and quality control, operational guidelines were developed for the following categories of industries and businesses:

1. Environmental Management Plans for Resorts/Ecotourism
2. Fish Processing
3. Abattoirs/Slaughter houses
4. Hotels
5. Rice Mills
6. Poultry Processing
7. Wood Working Industries

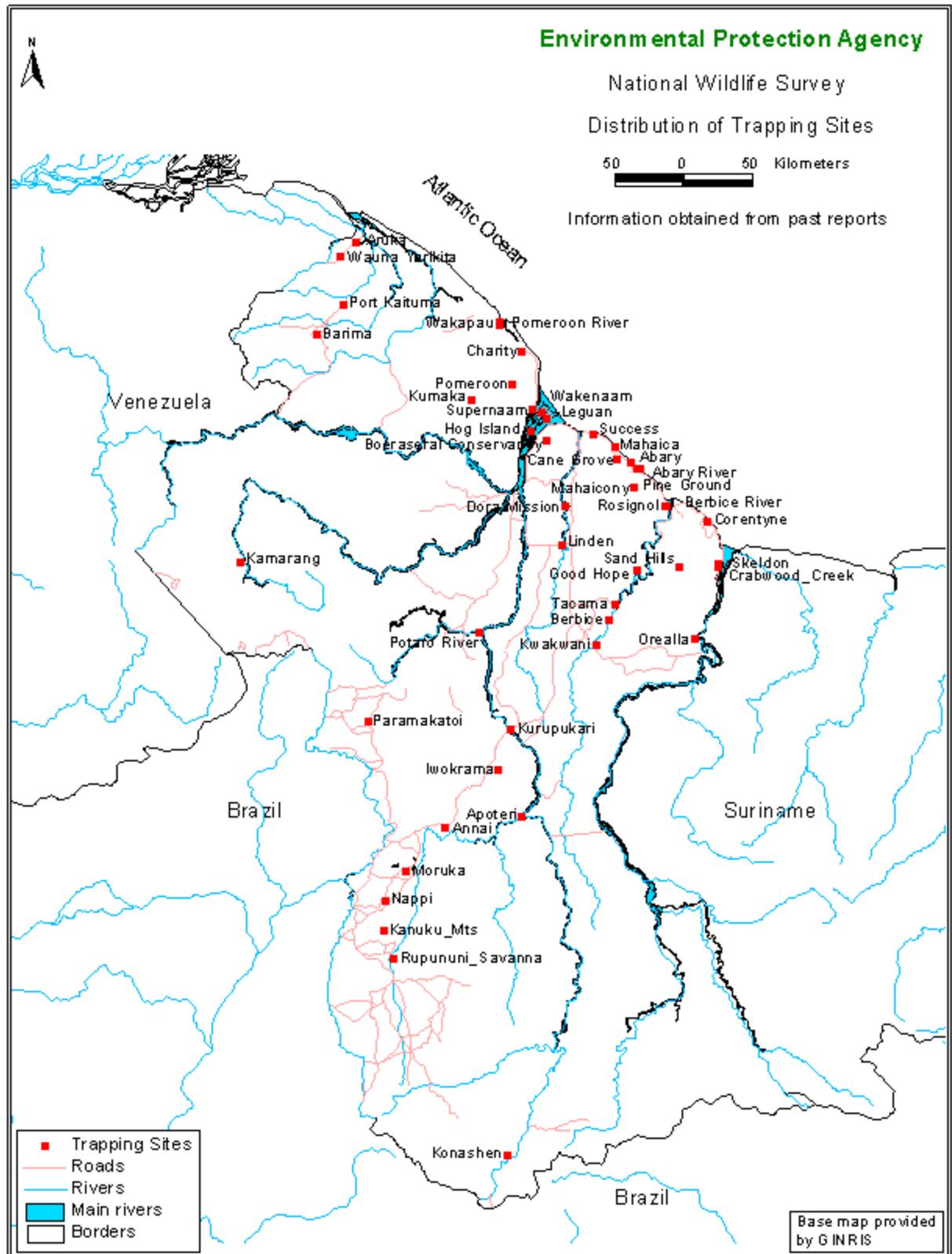


Collecting Water Samples

In the future guidelines will be developed for poultry rearing, aquaculture/fish farming, funeral homes, industrial estates and food processing. In addition efforts will be directed towards the development of a procedure for guidelines development incorporating sectoral review and the review of all existing guidelines

Senses Consultants Limited provided support for the EPA on the development of an environmental emergency response programme. An important factor in the development of this programme during 2002 is the involvement of both the public and private sectors.

A generic procedure for the handling of complaints was prepared and Officers have been exposed to training aimed at sharpening their investigative skills. Further, systems have been put in place to better deal with evidence collection, sampling and site inspections. A Certificate of Inspection has been introduced and the database for tracking pollution management has been enhanced.



## Partnering with Funding Agencies / Regional Programmes

- The Caribbean Development Bank offered a grant for “*Strengthening Of Institutional Capacity For Integrated Coastal Zone Management – Guyana*”. Approved in October 2001, this Project is expected to facilitate the establishment of a computerized information system and databank to effect improved decision-making and planning in Integrated Coastal Zone Management. The Government of Guyana and the Caribbean Development Bank signed the agreement with regards to the execution of the CDB/ICZM project which is expected to come on stream by June 2002.
- It was felt that an economic assessment of the projected impacts of Sea Level Rise on Guyana’s coast should be carried out since this area is the main hub of economic activity in Guyana. This has been tabled for early 2002.
- A proposal for a ‘Public Awareness Programme on Climate Change issues was prepared by EPA which prompted CPACC to allocate funding to the tune of US \$7,500 for the purposes of public awareness for Component 4, to be implemented during 2002.
- Funds were secured from United Nations Development Programme (UNDP) to continue the beach activities on “Turtle Conservation” at Shell Beach
- Funding proposals were submitted to Flora and Fauna International (FFI) for assistance with Shell Beach as a Protected Area.
- A concept paper on “ A Protected Area Strategy for Guyana” and submitted to the World Bank. A mission from the World Bank visited Guyana and held discussions with key members of the Protected Areas Secretariat on National Protected Areas System (NPAS) with a view of negotiating a consensus position on the matter.
- Collaboration and discussions continued throughout the year with several donor agencies: United Nations Development Programme (UNDP), World Wide Fund for Nature (WWF), Flora and Fauna International (FFI), Conservation International (CI) and Inter-American Development Bank (IDB).
- With the support of the Protected Areas Secretariat, Conservation International has initiated and completed the first phase of the consultation process for the Kanuku Mountains as a protected area.

- Four (4) manatees were loaned from the Guyana zoo to the Odense zoo in Denmark. This marks a partnership which is expected to provide the benefits of information sharing between zoos, training of local zoo staff and local university students and the construction of a cage to house Harpy eagles.



Freshwater Manatee

- The World Conservation Union (IUCN) evaluated the Kaieteur National Park as a World Heritage Site.

