ZOOS FOR PLANTS -- PLANTS FOR ZOOS

Report on Botanic Education Workshops held in S. India in Nov. 1995

Collaborators and Sponsors : British Council, South; British Airways Assisting Conservation; Commonwealth Foundation; Botanic Gardens Conservation International; Central Zoo Authority; Zoo Outreach Organisation

Hosts: Coimbatore Zoological Park, Coimbatore; Department of Horticulture, Lalbaug, Bangalore; and Forest Department of Kerala, Thiruvananthapuram

One could say that Botanic Gardens are "zoos for plants", just as we call zoos "animal parks" and "gardens of intelligence" and "zoological gardens". Everyone knows that Botanic Gardens contain many plants and (probably) that they SHOULD be used to educate the public about the diversity and utility of plant species and the importance of conserving them.

In many parts of the world, India included, many zoos are NOT effective in using even their animal collection as it should be so how does one even talk about plants ? If zoos are to educate the public meaningfully, e.g. to effect an attitudinal or behavioural change with regard to the environment, they have to tell the whole story, that is how the entire ecosystem works. You can't do that without talking about plants. And what better plants to talk about that the ones visitors can see before them.

If a zoo tells the whole story -- how the ecosystem works -- and tries to effect an attitudinal or behavioural change in the public, that is Environmental Education.

People need to know the whole story. How do you tell it ? First you have to become convinced of its importance. That is why the Zoo Outreach Organisation organised the first Botanic Educator Workshops to be conducted in India, bringing together zoos as well as botanic gardens, forest departments, NGOs and research institutes who want to tell the story of how the earth works.

Because Botanic Education is a new subject, we wanted an expert on Botanic Gardens Education. And what better person than the Education Officer for the Botanic Gardens Conservation International (BGCI) which is based at Kew Gardens, Ms. Julia Willison.

Julia was educated as a teacher and has taught in schools in UK and Columbia before becoming the Education Officer for BGCI. Since joining BGCI, Julia Willison has given workshops in China, and South America and has organised an International Zoo Educator Course along with Kew Gardens Education Department. She edits a bi-monthly magazine devoted to Botanic Gardens Education.

The Workshops

We wanted a variety of hosts for these workshops which traditionally take place in zoos in different states. This time we had a zoo (the Coimbatore Zoolgical Park), a Botanic Garden (the Lalbaug, Bangalore) and a forest department (the Kerala Forest Department, Thiruvananthapuram). At every workshop we suggested the host invite the other agencies for a good mix of participants.

The Workshops lasted for one day and followed the same basic format. The Workshop began with an audio-visual presentation: Environmental Education and plants, their importance/ relevance to botanic gardens, zoos, etc. Afterwards there was a presentation on biodiversity and implications for environmental education

Having set the stage with this information, we gave a description of the afternoon activity which consisted of Working Group to "brainstorm botanic education'.

In any approach to education there are certain strategic principles of organised planning which helps in the creation of a programme. These principles or steps were the tasks we gave all the working groups. They had to list the folllowing:

Tasks for Working Groups

1. Who ? List "target audience", who do you want to teach ?
2. What ? List "messages", e.g. what do you want people to learn?
3. List obstacles faced in educating the public about plants
4. List your resources for educating about plants ?

The Working Groups proposed were : 1. Forest, Wildlife and Zoo Group; 2. the Botanic and Public Gardens Group and 3. Other collections (including NGO's, research institutes, etc.) Group. The groups did not always divide so easily so for some workshops we had only two groups, a group composed of persons who had a site to work with and a group without a site. Comparing the groups, we found that it didn't make much different to the quality or variety of the ideas they came up with.

After brainstorming for some time we had Reports of the different Groups.

Later in the afternoon, Julia gave a presentation on precisely How to go about Starting a Botanic Education Programme demonstrating a flow chart as a map for making an education action plan. She discussed "tried and tested resources" from other botanic facilities all over the world. Finally there was a session on Agenda 21 and how educators could use it as a guideline for focusing their educational activities.

In the final session, we had an interactive session devoted to personal and institutional commitments, in which each participant was invited to make and announce a personal and/ or

institutional commitment to begin educating the public about plant biodiversity. After this, we closed the workshop

Importance of Teaching about Plants

Thousands of plant species could face extinction or will suffer serious genetic erosion within the next few years as a result of the enormous loss of biodiversity the earth is undergoing presently. The need to educate the public about the importance of biodiversity -- including plant species as well as animals is -- URGENT.

If we lose plant diversity and numbers, no animals -- including the human animal -- can survive on this earth. Plants provide necessities too numerous to name and luxuries which would fill volumes.

Numerous plant species are endangered in the wild, while many are surviving only under cultivation. Some more even have become extinct. There are Indian species listed in the IUCN Red Data Book and the Indian Red Data Book for plants comes to three volumes ! The need for concerted, cooperative and coordinated action is crucial.

Expertise is available in plenty but its export to the man on the street -- where at least a small portion is essential -- is scarce. We have to change that.

Botanic gardens, of course, are the places one associates with botanic education but other institutions which also might educate the public about plants are natural history museums, forest departments and wildlife wing extension divisions, botanic research institutes. medicinal plants nurseries, nongovernmental nature organisations, schools, etc. Zoological Gardens and Parks and Botanic Gardens are superb centres for biodiversity education. With their millions of visitors and the incredibly diverse collections of plant species they house, botanic and zoological gardens have the potential to influence public attitudes towards plant conservation, providing one of the most exciting educational tools, e.g. a "living collection".

Using zoos or simply animals to interpret plants has a tremendous potential itself because of the fascination animals hold for visitors. Plants are essential to survival of animals in ways that the average visitor may not have ever considered. That tigers eat grass to aid their digestion comes as an amazing fact to people. The role of plants in protecting and providing shelter to animals in the forest, in healing their illnesses, providing food, can be made extremely exciting by juxtaposing plants and animals. Plants are "home" to billions of insects which are themselves food for large, charismatic creatures as well as tiny ones, and who in turn perform thousands of essential services in keeping the soil in good condition and disbursing seeds. The story of how plants make the Earth work can be told much more convincingly when their relationship to various animal species is used in interpreting their manifold uses.

This workshop was not for arcane deliberations of great minds. It is intended to provide some of the fundamental skills and knowledge needed to transfer and translate the knowledge of those great minds into action which will create interest in their local educators to teach people to protect the environment.

The major objective of the Workshop was to act as a catalyst, to create an impetus to build new public outreach programmes focused on plants and their role in the ecosystem in their own botanic gardens and zoos and to investigate how botanic gardens and zoos and other institutions can together develop dynamic environmental education programmes focusing on plants.

Working Groups

The various working groups had different characteristics, such as those with a site to work with, such as a zoo or botanic garden and those who were educating "at large". All working groups had to follow the same activity pattern, e.g. to use "Groundrules for Group Interaction' in conducting their discussions (the same rules we use in CBSG and CAMP workshops), and to do four operations:

1. identify the potential auidience of people to educate about plants,
2. suggest the message or messages they would like to convey to the target audiences,
3. list the obstacles to their carrying out conveying the message, and
4. to list resources they had at their disposal.

In amalgamating the input from the differet groups in different cities, several factors emerged:

-- that there was no dearth of creativity or ideas or expertise
-- that obstacles faced by some groups were listed as resources by others, suggesting a possibilities for groups lacking resources
-- that establishing cooperative links between groups could enhance the ability of all to enlarge their target audience and achieve their educational objectives in a better manner.

In disucssion, a fifth operation emerged -- **Methodology** -- all are listed below:

TARGET
GROUPS TO TEACH ABOUT PLANTS

-- NSS and NCC Volunteers
-- Nature club members,
-- Kitchen garden club members and amateur gardeners
-- Guides/ scouts
-- Employees of companies, factories, workshops, estates and such institutions as a group.
-- Members of public clubs like sports clubs, service club (Rotary, Lions, Round Table, Officers Club, etc.)
-- Tourists from other states / districts/ abroad
-- Students of different classes of schools/ colleges.
-- Teachers and teacher trainees
-- Tribals (local inhabitants of protected areas)
-- Government policy makers
-- Scientists
-- Housewives and. ladies clubs.
-- Communities, FD health workers
-- Farmers, Village People
-- Industrialists and business people
-- Rural / tribal women who use the land
-- Urban poor
-- Inhabitants of -Industrial Areas
-- Traditional Healer
-- Economically Backward groups
-- Religious leaders and groups

-- Estate owners
-- Non - formal elders as well as village Panchiat leaders
-- Trade union
-- Media
-- Social Leaders
-- Drug manufacturers

MESSAGE
TO CONVEY TO TEACH PEOPLE ABOUT PLANTS

-- Resources are not inexhaustable
-- Increase renewable resources and conserve them actively (such as forest sreas)
-- Grow more medicinal plants
-- Promote urban forest
-- Protect Biological cycles in Nature
-- Avoid waste
-- Encourage alternate methodologies
-- Implement approved government policies on environment
-- Local traditions are important
-- Plant species diversity and their ecological role as well as economic value.
-- Plant animal interaction, vegetation types, etc., (zoos can do)
-- Aesthetic values medicinal properties,
-- Plant adaptations
-- Vegetation types
-- Minor forest products, economic values, etc.,
-- Species rarity, status (IUCN criteria) and Endangered/ Endemic value their conservation aspects.
- Biodiversity and Conservation
-- Local species
-- Environmental awareness
-- Knowing importance of species; propagation of species
-- Knowing distribution of species and its over exploitation
-- Conservation priority and usage of medicinal plants
-- Role of forest in environment
-- Sustainable uses of forest
-- Scientific basis for conservation; dependancy on plants by us
-- Conserving nature, its importance
-- Forests are necessary for sustainable agriculture and development.
-- Plants are life support systems.
-- Plants have intrinsic values and derived values.
-- Plants clean the environment.
-- Plants should be protected for our protection.
-- Some weeds and local plants have medical values too.
-- Traditional system of medicine is harmless and to be conserved.
-- Grow plants in your house hold.
-- Plant community is diverse.
-- Plants adapt to different conditions.
-- Plants are unique; some of them are rare and endemic.
-- Plants tell the story of evolutionary history of earth.
-- Intricate relationship exists between animals and plants.
-- Plants also have habitats.
-- Plants are primary produces in the ecosystem.
-- *In situ* communication is better than *ex situ.*
-- Traditional methods can be compatible with modernisation.
-- Preserve the unknown
-- We are genuinely concerned
-- Respect plants.
-- Role of scientists and botanists
-- Areas aliotted for gardens should be utilized for the purpose
-- Maintanence of existing gardens
-- Imporatance of indigenous and endemic variety
-- Wiid cultivars
-- Economic value of forests
-- Plants and asthetic value
-- Plants and biodegradation.

OBSTACLES
TO EDUCATING THE PUBLIC ABOUT PLANTS

-- Communalism
-- System of education
-- Greed and jealousy
-- Illiterecy
-- Lack of interest, awareness, communication
-- Committed people
-- Infrastructure/ support
-- Funds.
-- Too rapid industrialisation
-- Resources person with expertise; trained personnel
-- Reference of outside education.
-- Plant don't move
-- Lack of model resource material specific to India.
-- Lack of materialistic designed exhibits
-- Lack of Professional Educators
-- Lack of organised tours
-- Lack of nature trails
-- Lack of professional designers of education material
-- Hierarchy
-- Lack of educational resource material
-- Lack of Environmental Education in syllabus
-- Paucity of time apart from teaching syllabus
-- Lack of focus/ priority in Government Policy
-- Limitations imposed on individuals by Government
-- Lack of specific information
-- Lack of networking
-- Dominance of western knowledge
-- Fear of exploitation especially in rural areas
-- Access to funding for NGO's
-- Lack of green areas in urban centres
-- Bureaucratic interference and lack of accountability
-- Lack of entry fee (to our botanic garden)
-- Lack of a separate education department
-- Lack of autonomy and self sustaining set up
-- Closed minds
-- Apathy
-- Misguided values
-- Lack of motivation and interaction amongst the public
-- Lack of motivation and commitment of extension/ education staff.
-- Lack of experience in motivating and utilising volunteers.
-- Lack of creative communicating skills.
-- Lack of exposure to implementing agencies.
-- Paradoxical/ dual role of education and enforcement (in forest department)
-- Interference of politicians
-- Water problem

RESOURCES
AVAILABLE TO USE FOR EDUCATING ABOUT PLANTS

-- Special days: Vanamahotsava, Wildlife week, World forest day, World Environment day, Environment month, Harvest / sowing; Festivals among rural communities
-- A variety of exhibits/ education center
-- Amphitheatres/ resting places (gathering places)
-- Restaurants, movie theatres, airports, railway stations, other public places
-- Schools and colleges
-- Film producers - sponsors
-- Public gardens/ parks
-- Horticulture clubs
-- Research institutes
-- Sacred groves
-- Nature club networks
-- Demonstration farm for sustainable agriculture
-- Medicinal plant gardens
-- Supply of seeds
-- Climate as resource
-- Traditional indigenous knowledge
- Availability of specialised institutions
- Methodology skills to collect information
-- Cultural resources
-- Ancient heritage of environmental awareness
-- Indigeneous cultural forms
-- Drama, Songs
-- Dedicated people
-- Good resource persons
-- Voluntary organisations
-- Extension services having competent people
-- Sympathetic media
-- Coordination of forest Department and Scintific Community
-- Supply of seed samples
-- Natural education sites, with living collection of animals and plants,
-- Zoological parks with labelled plants,
-- Botanical gardens and city parks
-- Village diversity
-- Demonstration plots
-- Medicinal plants conservation plot
-- Concept of floral types in zoos.
-- Abundance of education material
-- Carrying and transport facilities
-- Financial support from government organisations and NGO's in education
-- Increased interest of religion organisations,
-- Conventions and treaties ratified by the government
-- Scientific and technical competence
-- Sufficient budget allocation
-- Site
-- Good Library
-- Resource persons
-- Films on Wildlife
-- Institutional funding
-- Plants in Botanic Garden
-- Diverisity of plants
-- Collection of ferms
-- A V Resource centre
-- University press
-- Man power

METHODS
TO BE USED FOR EDUCATING PEOPLE ABOUT PLANTS

-- Demonstrating value of plants
-- In school curriculum, daily use (examples of plants used daily)
-- Field Trips - for students to forests
-- Exhibitions
-- Slide and film show
-- Media - TV
-- School gardening
-- Starting of nature clubs and museums
-- Teaching students to culture plants in waste containers
-- Plant games and puzzles
-- Stickers
-- Note book covers
-- Kitchen garden
-- Planting suitable plants in government areas
-- Employ retired forest officials to establish and maintain gardens
-- Prepare video on plants
-- Slogans and posters
-- Eye catching slogans on cover of some daily-use items (like milk powder, etc.)
-- Labelling avenue trees (preferably local names)
-- Conduct seminars workshops, competitions
-- Nature photographic, painting competition
-- Teaching students recycling process using plant wastes
-- Incentive for gardening for house wives.
-- Involve government officials
-- Orientation course for teachers
-- Exhibition and publicity materials.
-- Herbarium,
-- Audio Visual facility
-- Exchange of information between different organisation of the same kind
-- Establish separate budget & btaff for the education department
-- Write to the policy makers regarding separate education department of states and control to give main emphasis on different education programmes on botanical and wildlife on mass media. i.e. T.V., Radio, Film, etc.
-- Scientific demonstrations and lectures
-- Outreach programmes
-- Games/ plays
-- Teach conservation through nature clubs to villagers
-- Practical class through field trips
-- Developing resource material.
-- Encouraging students to participate in environ. activities
-- Development of core fund specially for EE
-- New orientation for sectoral funding
-- Required educational formulation for including environment education in syllabus
-- Developing course material for the educations department to include in the syllabus
-- Identify agencies in trade
-- Environmental education networking
-- Establishment of more institutions with priority on Environmental Education for different levels and forms.
-- Create seperate Environmental Education cells in different Institutions on part of their main activities.
-- Get contributions from common users for conservation.

COMMITMENTS

to teaching about plants

In the Workshops "Teaching about Plants", participants were asked to make a personal or institutional commitment to carry out some new activity (perhaps related to things they learned in the Workshop) of teaching about plants. Listed below is a selection of commitments from the three workshops.

COIMBATORE COMMITMENTS

ZOO wil network botanists, gardens. institutions in India and abroad for educational material to form a reference base

BGCI- will promote Indian views and botanic activities in their publications, ROOTS for education and in the general publication BGCI Newsletter

Farhad will make a booklet on the inventory of resources for the Nilgiri Biosphere and outline the project

KFRI will intensify botanic gardens education at the Teak Museum, especially in preparation of labels -- will also help people select indigenous species supply seedlings

TBGRI students will create awareness through herbarium to the public and iden tify forest plants

CZP will educate the public about endemics of Nilgiri Biosphere Reserve

Ramachadran will organise an exhibition of medicinal plants and interface forestry as an approach to learn alternate resources

SACON will make a Nature Trail at Siruvani Forests.

Raveendran will organise nature studies for children in the Trichur zoo in the city

Native Medicare Trust will supply sapplings and seeds for Coimbatore Zoo as well as information on animal/ plant interaction of trivial knowledge.

Daniel will list plants most desirable for invertebrates in the Wildlife Protection Act.

Velmurugan will try to find resources for establishing a botanical garden in the college in Coimbatore

READS will collect. identify and exhibit al medicinal plants in Dharmapuri District. get sutdents involved in identification. make a nursery of medicinal plants for local community and make educational sheets of all plants in herberia.

BANGALORE COMMITMENTS

Fr. Saldanha will continue to support the educational needs of the Lalbaug Botanical Garden as a member of the governing council.

T. S. Umesh will recommend to move the Government thorough the Director for policy changes in the Lalbaug to enhance education.

Mahesh will organise a Drama/Song in local language, and extend in villages; he will also distribute plants.

Girish will educate rural community with wayside boards & street plays.

Shekar Reddy will provide enrichment to Srinivas Arboretum in the Zoo and use it to educate the publlic

Rao will improve herbal garden in the Regional Natural History Museum in Mysore and will provide Video cassettes to be lent to other organisations for a week if they require.

Susheela and Raghuram will plan and grow more plants at home.

Narendra will continue to serve in the Garden after his retirement

Mallikarjun will motivate industrialists to plant/maintain trees, and make auailable education material to industries.

N. Dasarai will serve as a contact person in Bangalore.for coordinating ZOO/ plant activities

G.N. Narayanappa will make available technical assistance in plant techniques.

Sachidanandamurthy Yadav will teach about local medicinal. plants as well as afforestatation

Basavaraj will intensify activities related to Botanic Education.

BIRDS will translating literature to local languages.

Julia will provide sheets of Activities and Games for teaching about plants. She will also try to find ways to bring down the amount for subscription of ROOTS and ways to get memberships sponsored.

Sanjay will work towards networking Botanic Gardens in india With help from BGCI.

THIRUVANANTHAPURAM COMMITMENTS

TBGRI will prepare teaching material specifically for Botanic Education for School Children.

Representative from Calicut University will create an Informationnal Brochure on a particular group of Plants

KFRI will continue to educate about importance of forests and rovide literature and plants for schools also ask/ initiate this.

Mehr Singh will draw something about Medicine Plants

Pandurangan will be a Resource Person

Unniyal will teach children in his neighborhood games

Zachariah will make the sacred grove an interpretation centre

Radhakrishan is starting a Newsletter on Environmental matters and will report on this workshop in the Newsletter

Karoor is setting up interpretation centre at Periyar and will send information about it to BGCI.

Shetty will publish information and messages from WS in Forest Department publications

Saaju Abraham from FRLHT will make slides/photos of Medicinal Plants

Binu will report on local health tradition after consulting head.

Vijaykumar will development more information on plants to give to schools

Rema Devi will make photos and slides for plants education.

Collaborators and Sponsors

Botanic Gardens Conservation International is a non governmental organisation which provides technical guidance, data and support for botanic gardens in almost 100 countries worldwide. It has a wide range of activities including the organisation of major meetings, workshops and courses, such as a series of international botanic gardens congresses, and training courses in China, Columbia and Mexico. It was founded to link botanic gardens as a cooperating global network for effective plant conservation and includes over 400 member institutions in 75 countries all working together to implement a worldwide Botanic Gardens Conservation Strategy and Action Plan for Plant Conservation. For more information and a list of publications contact BGCI, Descanso House, 199 Kew Road, Richmond, Surrey, TW9 3BW, United Kingdom.

The Foundation for Revitalisation of Local Health Traditions (FRLHT) is a Bangalore based non governmental organ-isation dedicated to creating awareness of the need to conserve India's medicinal plants and to promote their use by the population. FRLHT has sponsored the creation of a network of MPCPs and MPCAs (Medicinal Plants Conservation Parks and Medicinal Plants Conservation Areas as well as a variety of attractive educational materials such as brochures, posters and booklets. FRLHT helps agencies set up medicinal plants education corners in their premises.

British HIgh Commission's British Council Division, promotes cultural, educational and technical cooperation. It represents Britain in science and technology and in the arts and manages or supports technical cooperation projects for Britain's Overseas Development Administration and runs Britains largest network of libraries.

British Airways Assisting Conservation gives selective support to its Foundation Organisations which are recognised international scientific organisation and associated individuals working to advance specific wildlife conservation projects. Zoo Outreach Organisation is the only Foundation Organisation of BAAC which is registered outside the United Kingdom.

Commonwealth Foundation was established to promote closer professional cooperation in Commonwealth in different states of the Commonwealth. The Foundation's mandate aiso includes NGO's of a voluntary nature and culture, informatiion and the media, rural development, social welfare, disabled and the role of women.

Central Zoo Authority is the nodal organisation which monitors and coordinates the zoos of India. CZA inspects zoos, confers recognition, provides technical advice and financial assistance to zoos as well as organises training courses and publications. CZA has agreed to be a collaborator for these workshops to underline the commitment of C.Z.A. to environmental education in zoos.

Briefing Book for Teaching about Plants Everywhere

The Briefing Book for Teaching about Plants -- Everywhere is available for sale to our readers at cost. The materials in the Briefing Book were compiled from a variety of source, mostly from Botanic Gardens Conservation International Office. The Briefing Book contains articles on the following subjects: Cooperation and Conservation; Biodiversity and Conservation; Educational "How-to's" and Activities; and Useful and Medicinal plants. The Education section contains a large section from Environmental Education in Botanic Gardens: Guidelines for Developing Individual Strategies. The cost of this 250 page briefing book is Rs. 250/-. A detailed individual Reports from all the workshops and some of the materials presented will be available by January end. Cost Rs. 125.

History of Environmental Education -- Significant dates and events

These dates were assembled by Julia Willison for the Botanic Educator Course as well as her other teaching. It is interesting and useful to see how environmental education has evolved over the years with different conferences and plans. You can use this information to convince your government to provide better funding for your education programmes.

1969

UNESCO - "Biosphere Conference" in Paris. In a report following the conference, IUCN claimed that it was perhaps the first time the world was made aware of Environmental Education.

1970

IUCN/ UNESCO International Working Meeting on Environmental Education in the School Curriculum

1972

UN Conference on the Human Environment in Stokholm, Sweden. Recommendation 96 underlined the impor tance of Environmental Education.

1977

UN Intergovernmental Conference on Environmental Education at Tbilisi, Georgia.

The challenge set at the conference was for Envronmental Education to 'create new patterns of behaviour of individuals, groups, and society as a whole towards the environment.'

1980

World Conservation Strategy poduced by IUCN, UNEP and the World Wildlife Fund. This document stressed the interdependence of conservation and development.

Devoted a chapter to Environmental Education which began:

Ultimately the behaviour of entire societies towards the biosphere must be transformed if the achievement of conservation objectives is to be assured IUCN (1980)

1987

The World Commission on Environment and Development. Report gave new urgency to the debate over the role of education with respect to environment and development.

Until recently, the planet was a large world in which human activities and their effects were neatly compartment lized within nations . . . and within broad areas of concern (environmental, economic, social). These compartments have begun to dissolve. This applies in particular to the various global 'crises' that have seized public concern, particularly over the last decade. There are not seperate crises: an environmental crisis, a development crisis, an energy crisis. They are all one.

1992

UNCED, Rio de Janeiro -- Agenda 21 - represents the consensus reached by 179 states.

Achievements at the meeting:

1) Agenda 21

2) Rio Declaration on Environment and Development - a series of principles defining the rights and responsibilities of States in this area.

3) a set of principles to support the sustainable management of forests worldwide.

4) Two legally binding conventions - aiming to prevent global climate change and the eradication of biologically diverse species -- signed by representatives of more than 150 countries.

AGENDA 21

"Agenda 21", the popular name for the Agenda for the Twenty-first Century or global plan of action assembled and agreed by 179 nations at the Earth Summit or UNCED at Rio de Janeiro in 1992, is a vast document of 700 pages, embracing all areas of sustainable development. In this page, selected items with direct relevance to environmental educators are listed by Ms Julia Wilison who prepared this summary for the Botanic Education Workshops held in southern India in November 1995.

You can teach all these things in your zoo by using plants and animals to illustrate the need for sustainable use of resources. Zoos should be using their unique resources, e.g. living plants and animals to convince the large numbers of people who visit that their own survival and comfort depends upon everyone making changes in the way they live.

Chapter 11 : Combating Deforestation

- promote small-scale forest-based enterprises that support rural development and local entrepreneurship.
- develop urban forestry for the greening of all places where people live.
- promote the use of such forest products as medicinal plants, dyes, fibres, gums, resins, fodder, rattan, bamboo and works of local artisans.
- encourage low-impact forest use, such as planned and rational ecotourism

Chapter 15: Conservation of Biological Diversity

- encourage traditional methods of agriculture, agroforestry, forestry, range and wildlife management which use, maintain or increase biodiversity. Involve communities, including women, in conserving and managing ecosystems.

Chapter 27: Partnerships with NGOs

- Governments should involve non-governmental organisations in sustainable development plans, making the best use of their abilities in such areas as education.

Chapter 32 Strengthening the Role of Farmers

- help farmers share expertise in conserving land, water and forest resources, making the most efficient use of chemicals and reducing or re-using farm wastes.
- encourage self-sufficiency in low-input and low-energy technologies, including indigenous practices.

Chapter 36 Education, Training and Public Awareness

- make environment and development education available to people of all ages.
- work environment and development concepts, including those of population, into all educational programmes, with analysis of the causes of the major issues. There should be a special emphasis on training decision makers.
- encourage all sectors of society, including non-governmental organizations and community organisations to train people in environmental management.
- bring indigenous peoples' experience and understanding of sustainble development into education and training.

Chapter 40 Information for Decision Making

- more information about the state of urban air, fresh water, land resources, (including forests and rangelands), desertification, soil degradation, biodiversity, the high seas and the upper atmosphere.

Convention of Biological Diversity

Article 13. Public Education and Awareness. The Contracting Parties shall:

a) Promote and ecourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programmes, and

b) Cooperate, as appropriate, with other states and international organisations in developing educational and public awareness programmes, with respect to conservation and sustainable use of biological diversity.