Vol. 22, No. 1

ISSN 0975 - 9379
April - June 2017

ECO NEWS

Quarterly Magazine of CPR Environmental Education Centre

C.P.R. ENVIRONMENTAL EDUCATION CENTRE

The C.P. Ramaswami Aiyar Foundation
1, Eldams Road, Alwarpet, Chennai 600 018, Tamilnadu, India.
Phone : 91-44-24337023 / 24346526 Fax 91-44-24320756
Email : cpreec@gmail.com
Websites : www.econewscpreec.com / www.cpreec.org / www.cpreecenvis.nic.in
A Centre of Excellence of the Ministry of Environment, Forests & Climate Change, Govt. of India.

C.P.R. ENVIRONMENTAL EDUCATION CENTRE

Established in 1989

- ✯ **1980** - The C.P. Ramaswami Aiyar Foundation starts nature education for teachers and students.
- ✯ **1989** - C.P.R. Environmental Education Centre (CPREEC) established jointly by the Ministry of Environment and Forests and the C.P. Ramaswami Aiyar Foundation as a Centre of Excellence of the Ministry of Environment and Forests. Government of India.

Our Mission

- ✯ To increase knowledge, awareness and interest among the public about the environment in all its aspects
- ✯ To develop resource materials for environmental education and awareness raising
- ✯ To conduct training programmes for a wide cross-section of people
- ✯ To take up environmental projects for demonstration and research

Our Activities

- ✯ Training and awareness raising
- ✯ Awareness to and through action
- ✯ Awareness programmes in ecologically fragile areas
- ✯ Conservation of the ecological heritage
- ✯ Research and surveys
- ✯ Generation of resource materials
- ✯ Exhibitions
- ✯ Courses, seminars and symposia

Facilities

- ✯ Environmental Laboratory
- ✯ Library
- ✯ Computer Division
- ✯ Publications Division

Geographical Spread

CPREEC's activities extend to

- ✯ Andaman & Nicobar Islands
- ✯ Andhra Pradesh
- ✯ Goa
- ✯ Karnataka
- ✯ Kerala
- ✯ Maharashtra
- ✯ Orissa
- ✯ Tamilnadu
- ✯ Puducherry

NGO Network

CPREEC has an extensive network of about 600 NGOs. All educational programmes are carried out in partnership with select NGOs, Universities, Colleges and Schools.

Publications

- ✯ Activity and information books and pamphlets for children
- ✯ Environmental training guides and kits for teachers
- ✯ Researched Publications
- ✯ Colourful and informative posters
- ✯ *ECONEWS* - A quarterly magazine
- ✯ *Indian Journal of Environmental Education*, a peer-reviewed journal

Exhibitions

CPREEC designs three new exhibitions every year and has a bank of mobile exhibitions that travel all over India.

Environmental Education

- ✯ Green Schools of India (GSI)
- ✯ Training programmes for Teachers
- ✯ Training programmes for School and College Students
- ✯ Environmental Law Education

Special Projects

- ✯ National Green Corps (NGC)
- ✯ Biomedical Waste
- ✯ Biodiversity Conservation

Research and Surveys

- ✯ Sustainable Technologies
- ✯ Surveys of Natural Resources
- ✯ Socio-Economic Surveys
- ✯ Lab to Field Technology Transfer

Contents

Why is Environmental Education Important?

B. Tirumala

With a population of over 1.2 billion, India is soon set to dislodge China as the most populous country of the world. While India has one of the fastest growing populations in the world today, it is far behind most others when it comes to preserving the environment and the ecology. Today, our country is riddled with a number of environmental concerns which have only aggravated in the last few decades[1].

Many people recognise that environmental pollution is an extremely urgent problem. However, when placed in the context of seemingly more immediate problems such as poverty, crime, corruption and religious and social conflicts, the environment often loses. The inter-relationship between environmental degradation and many of India's serious problems is often over-looked. It is necessary to stress on the relationship between destruction of the environment on the one hand and social as well as health problems on the other. It is especially the poor and illiterate who are most exposed to environmental pollution[3].

Our nation's future relies on a well-educated public to be wise stewards of the very environment that sustains us, our families and communities, and future generations. It is environmental education which can best help us as individuals make the complex, conceptual connections between economic prosperity, benefits to society, environmental health, and our own well being. Ultimately, the collective wisdom of our citizens, gained through education, will be the most enduring and most successful strategy for environmental management[2].

Environmental education helps in creating awareness in people and helps them understand the effects of human activities on the environment and guide the society towards sustainable development. Education gives the right knowledge on how natural environment functions and how human beings can deal with various complex problems associated with environmental issues.

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) states that EE is vital in imparting an inherent respect for nature in the society and in enhancing public environmental awareness. UNESCO emphasises the role of EE in safeguarding future global developments of societal quality of life (QOL), through the protection of the environment, eradication of poverty, minimization of inequalities and insurance of sustainable development.

Environmental education has thus gained prominence across the world as it focuses on the importance of conservation, preservation and sustainability along with environmental awareness.

Environmental education is essential in India because most of the individuals are

disconnected from nature and are not even aware of critical environmental issues. It is now understood that urbanization, population and poverty and environment are all interrelated. Energy conservation in rural areas, waste management, empowerment of women in rural areas, soil management etc are the community issues in India. These have been addressed through environmental education which has proved effective to a great extent in solving both economic issues as well as environmental issues.

Environment Education has definitely empowered people with required skills and knowledge to take independent and collective actions to make the world a better place to live in. Environmental education should be a continuous process for the society as a whole and not confined to a specific group or community. Government must consider it as an investment which would give valuable returns over a period of time, and therefore, should encourage such initiatives.

Environmental education can lead to sound legislation, sustainable management, and responsible actions by individuals and communities, an important component of an effective policy framework for protecting and managing the environment

Curcuma longa (Turmeric) Curcumin is the primary pigment which is yellow-orange in colour. It is generally used in various food industries for colouring. It is mainly used in pickles, sausages, confectionaries, ice cream, bakery and savory products. It is used as an alternative to saffron. Apart from colouring, it is also used in skin care and hair care cosmetic products. It is also used in Ayurvedic medicine as an analgesic, antiinflammatory, antitumor, antiallergic, antioxidant, antiseptic, in treating anemia, diabetes, indigestion, gallstones, food poisoning and poor blood circulation.

***Indigofera tinctoria*:** (Indigotine) The blue colour obtained from flowers is mainly used to dye fabrics and is used to cure constipation, liver disease, heart palpitation and gout.

***Alkanna tinctoria*:** Alkanna is an astringent and a source of red pigment used in cosmetics. It is used traditionally in the treatment of skin wounds and diseases. Orally, alkanna root has been used for diarrhea and gastric ulcers.

Tagetes erecta (Mexican marigold): Lutein is a purified extract obtained from the petals of marigold flowers with organic solvents which changes from yellow to orange colour. It is used as a food colouring agent and nutrient supplement (food additive) in a wide range of baked goods, beverages, breakfast cereals, chewing gum, dairy products, etc.,

Vaccinium myrtillus (Bilberry): The fruit juice is red in colour and this turns blue in basic medium. The extract can be used for treating bladder stones, biliary disorders, scurvy, coughs, and lung tuberculosis. Bilberry leaf decoctions have been used to lower blood sugar in diabetic patients.

Crocus sativus (Saffron): The essential oil of saffron contains several terpenes (pinene, cineole) and carbonyl compounds. Saffron also finds use in medicine, as a food spice, and in the textile industry as a dye and in perfumery.

Natural food colours not only add flavour and good appearance to the food, but it also enhances health.

References

1. Chaitanya Lakshmi G. Food Coloring: The Natural Way, Research Journal of Chemical Sciences, Vol. 4(2), 87-96, February (2014).

2. F. Delgado-Vargas, A.R. Jiménez, O. Paredes-López: Natural pigments: carotenoids, anthocyanins and betalins—characteristics, biosynthesis, processing and stability. Critical Reviews in Food Science and Nutrition, 40(3), 173, (2000).

3. Mott MacDonald, Project Profile on Natural Food Colors – Marigold, Annatto, iNDEXTb (2000).

4. Vaccinium myrtillus (Bilberry), Alternative Medicine Review, 6(5), (2001).

5. Aura Sturzoiu, Marta Stroescu, Anicuþa Stoica, Tãnase Dobre: Betanine extraction from beta vulgaris - experimental research and statistical modeling, U.P.B. Sci. Bull., Series B, 73(1), (2011).

6. Bernard Weiss: Synthetic food colors and neurobehavioral hazards: The view from environmental health research, Environmental Health Perspectives, 120, (2012).

7. Richard Cantrill, Chemical and Technical Assessment (CTA), Lutein from Tagetes erecta FAO, 63rdJECFA, (2004).

Meghamalai Wildlife Sanctuary

T. Sundaramoorthy

Introduction

Meghamalai is a recently declared wildlife sanctuary of Tamil Nadu with a total area of 269 sq.km. It is situated in the Western Ghats area of Theni district of Tamil Nadu. This is one of the untouched hill stations in this region when compared to other hill stations like Ooty and Kodaikanal. The region has sprawling tea, coffee and cardamom plantations apart from natural forest area. Meghamalai has a very rich and unique floral and faunal diversity.

Meghamalai sanctuary is situated between the Anaimalai hill ranges to the north and the Sivagiri hill ranges to the south. It is one of the group of mountains in the Cardamom Hills region of the Southern Western Ghats. Brook's peak is the tallest point in this hill block (1,950 m). Brook's peak is also the second tallest peak in the Cardamom Hills, next only to the Kottamalai (1,985 m) located further south. To the east, the hills continue on to the Srivilliputhur hill range, and to the west are steep slopes and drops down to the Cumbum valley.

Meghamalai together with the Srivilliputhur hills are an eastern off-shoot of the Cardamom Hills, the main course of the Western Ghats. In fact, Meghamalai is at a biogeographically important cross-roads where this eastern off-shoot of the Western Ghats approaches the southernmost part of the Eastern Ghats –Sirumalai, near Madurai.

Meghamalai, like other taller peaks in the Southern Western Ghats are largely made up of igneous rocks, charnockite rocks and granite gneisses dating back to the Cambrian Era. Here and there, these waterways form large stagnant montane lakes, kept by check dams. The main such formations are the Manalar, Upper Manalar, Venniyar and Iravangalar which abuts the Kerala border. A 190 feet drop of the Suruli river creates the famous Suruli falls (or the cloud-land falls), a major tourist attraction of this region.

The weather of Meghamalai is typically cool and wet with more rainfall and lower temperatures compared to the dry and hot plains of the Cumbum valley.

Biodiversity richness of Meghamalai

Owing to the great height of the relief features and the increased rainfall, Meghamalai supports rich and luxuriant wet evergreen montane cloud forest vegetation. These forests and the interspersed grassland matrix are termed as *sholas* and are a characteristic feature of the hill tops in southwest India.

The major trees of the climax vegetation include *Hopea parviflora*, *Magnolia* spp., *Calophyllym austroindicum*, *Artocarpus hirsuta*, *Memecylon subramanii*, *Cullenia*

exarillata, Mesua ferrea, Palaquium ellipticum, Gluta travancorica, Nageia wallichiana, Garcinia rubro-echinata, Garcinia travancorica, Diospyros barberi, Memecylon subramanii, Memecylon gracile, Goniothalamus rhyncantherus, and *Vernonia travancorica.*

The typically stunted trees in the *sholas* include *Pygeum gardneri, Schefflera racemosa, Linociera ramiflora, Syzygium spp., Rhododendron nilgiricum, Mahonia nepalensis, Elaeocarpus recurvatus, Ilex denticulata, Michelia nilagirica, Actinodaphne bourdellonii,* and *Litsea wightiana*. These *shola* forests are interspersed with montane grasslands, characterized by frost- and fire-resistant grass species like *Chrysopogon zeylanicus, Cymbopogon flexuosus, Arundinella ciliata, Arundinella mesophylla, Arundinella tuberculata, Themeda tremula, and Sehima nervosum.*

Salim Ali Centre for Ornithology and Natural History (SACON) has recorded 63 species of mammals of which 24 are globally threatened and one critically endangered. Among the animal species, the elephant and gaur are very abundant and regular encounters in tea estates and plantations have been reported. Tigers are very rare in Meghamalai, but leopards are frequently sighted. However, the most enigmatic carnivore of these hills is the Malabar large-spotted Civet Cat (*Viverra megasplia*) originally discovered in Meghamalai and never again scientifically documented.

Other mammals such as the giant squirrel, mongoose, palm civets, Nilgiri marten, the sloth bear, the barking deer and the sambar deer occur here. Primates are also quite diverse with all five south Indian species being found – the common langur, the endemic Nilgiri langur, the bonnet macaque, the endemic lion-tailed macaque and the slender loris. Apart from the big cats, other carnivores include the wild dog, jungle cat, leopard cat and jackal. Salim Ali's fruit bat *(Latidens salimalii)*, an endemic bat species is reported only from this place.

The endangered Indian python and other venomous snakes like the king cobra, common cobra, krait, Russell's viper and pit vipers are found here. The Hutton's pit viper (*Tropilaemus huttoni),* a venomous snake, first discovered by A.F. Hutton in 1949 has not been re-sighted since then. This species has affinities only with Indo-Malayan pit vipers.

A rich life of reptiles including the Anaimalai Salea lizard and shield-tailed snakes (*Uroepltis* spp.) has been recorded. Lizards such as the famous flying lizard (Draco) and the endangered monitor lizard occur here. Endemic taxa of lizards such as the large-scaled forest lizard (*Calotes garndisquamis*) and the day geckoes (*Cnemaspis*) and the Anaimalai gecko (*Dravidogekko anamallensis*) and endemic genera of skinks such as cat skinks (*Ristella*) and blue-tailed skinks (*Kaestlea*) are found here.

Several amphibian species are found here, with many genera of endemic frogs such as the night frog (*Nyctibatrachus poocha*), torrent frog (*Micrixalus adonis*) and the litter frogs (*Indirana brachytarsus, Walkerana leptodactyla*). The false-Malabar flying frog (*Rhacophorus pseudomalabaraicus*), the giant tree frog (*Ghatixalus magnus*) and the bus frogs (*Raorchestes* spp.) also occur here. Very recently, an endemic species named the yellow-eyed bush frog (*Raorchestes flaviocularis)* has been reported exclusively in Meghamalai. Subterranean,

snake-like, caecilans like the *Ichthophis, Uraeotyphlus* and *Gegeneophis* also occur in this sanctuary.

Birds of this sanctuary include the famous pied hornbill, the endemic Malabar hornbill, Malabar trogon, Malabar black woodpecker, Malabar tree pie and blue-winged or Malabar parakeet. Many more colourful birds such as green pigeons, emerald dove, white eye, thrushes, robin, babblers, hill myna, black bulbuls, leaf birds (*Chloropsis*), fairy blue bird (*Irena puella*) and the vernal lorikeet (*Loriculus vernalis*) are found here. Birds of prey include hawk-eagles, serpent eagles, kites and many kinds of owls, including the scops owl, fish owl and wood owls.

Conclusion

The recently declared Meghamalai Wildlife Sanctuary of the Tamil Nadu Forest Department serves as an important wildlife corridor and amalgamating buffer zone within the Southern Western Ghats landscape. It connects Anaimalai-Parambikulam Tiger Reserves to the north, Periyar tiger reserve to the west, Srivilliputhur Wildlife Sanctuary to the east and the Agasthyamalai Biosphere Reserve to the west. The increasing human pressures including tourism, construction of dams, monoculture plantations and road networks to nearby well-visited pilgrim centres such as Sabarimalai are putting undue pressure on this fragile landscape.

Source

1. Tamil Nadu Forest Department
2. Technical Reports of Salim Ali Centre for Ornithology & Natural History (SACON)

Wipro-Earthian Sustainability Education Programme in Schools

U.T. Arasu

The people around the world face a great spectrum of environmental challenges in various forms every day. Be it in food, water, shelter, medicine and sustenance- the intensity of challenges grow day by day. The healthy and happy life has become a dream for many. Somewhere the change process has to start in the corners of every society. Education for sustainability was brought into fore by the Earth Summit in 1992. In the following decade, the World Summit on Sustainable Development, 2002, reiterated the importance of education and learning in further advancing the goals of sustainable development.

Sustainability Education or Education for Sustainability gained greater momentum with the UNESCO's decade on Education for Sustainable Development (2005-2014). Education for sustainability cut across the entire band of education and levels. Both formal and non-formal processes are crucial to promote 'change processes for establishing sustainability in the society. Rethinking, relearning, re-skilling and reconnecting our ways of approach to natural resources and patterns of life are necessary to find sustainable solutions to our present environmental challenges.

David Orr (1994) asserts that modern education contributes to destabilizing nature; it may also produce ecologically illiterate citizens. He further argues that if education in the twentieth century is the problem, "It is not education, but education of a certain kind, that will save us". Thus education for sustainability should aim for a "certain kind of education". There are many approaches going on in promoting sustainability thinking among young people. Project based education or skill learning is one of it. Wipro earthian believes strongly in Project based sustainability education which will give a "certain kind of education" as David Orr proposes. A case study of sustainability education in south India is presented here.

Wipro Earthian: Sustainability Education in Schools

Wipro 'earthian' was started in 2011 to build awareness on sustainability issues among the young population of the country. The earthian programme tries to address the environmental challenges that humanity faces and to find solutions to several sustainability issues like climate change, water scarcity, loss of biodiversity, etc. The programme aims to build skills, attitudes and values to create a sustainable future.

The Aim

Wipro earthian strives to integrate sustainability education into the school curriculum to critically engage students

in multiple skill based activities. It is to drive sustainability thinking and action through the learning process. Empowering teachers and learners to initiate change in their own contexts and environment is the core purpose of the programme. The programme is creative in promoting environmental thinking among school going children (Std. VII to XII) which is very relevant to the curriculum.

CPREEC: Technical Program Partner in Sustainability Education

CPREEC in collaboration with WIPRO – Earthian has taken up a Sustainability Education Programme in South India. The programme involves innovative project submissions on sustainability of water and biodiversity by groups of students guided by a teacher.

WIPRO Earthian - CPREEC Sustainability Education Programme Objectives

- To promote sustainability thinking and vision through systematically designed group activities in addressing the environmental challenges of our country through thematic areas of environment (biodiversity and water).
- To train teachers on the environmental challenges faced by the country and to prepare them for finding solutions through innovative thinking and by connecting dots in the larger matrix.
- To train teachers and teacher guides on sustainability education based on the Earthian Programme guidelines and to bring out unique and innovative theme based projects from groups of children across south India.
- To promote environmental skill learning among school going children of south India through group, peer and collaborative project learning methodologies.
- To encourage school students to think innovatively in addressing the environmental challenges through sustainability models and projects.

The geographical spread of collaborative venture between CPREEC and earthian

Nine south Indian states and Union Territories were reached through a joint sustainability initiative. Tamil Nadu, Puducherry, Karnataka, Kerala, Andhra Pradesh, Telangana, Odisha, Goa and Andaman & Nicobar Islands are being covered under this programme by using the existing outreach network, manpower and resource pool of CPREEC

State/UTs	District/s	Project Area
Tamil Nadu	Chennai	Chennai Greater Chennai
	Thiruvallur	Thiruvallur
Karnataka	Tumkur	Tumkur
	Hassan	Hassan
	Chitradurga	Chitradurga

State/UTs	District/s	Project Area
Kerala	Thiruvananthapuram	Trivandrum
	Palakkad	Palakkad
Tamil Nadu	Erode	Erode
	Nilgiris	Ooty
Andhra Pradesh	Guntur	Amaravathi
	Vishakapatnam	Vishakapatnam
Telangana	Ranga Reddy	Hyderabad
Odisha	Cuttack	Cuttack
	Ganjam	Berhampur
Goa	South Goa	Panjim
	North Goa	Panjim
Puducherry	Puducherry	Puducherry
	Cuddalore	Cuddalore
Andaman & Nicobar Islands	South Andaman	Port Blair
	Wimberlygunj	Wimberlygunj

CPREEC with its network in Tamilnadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Odisha, Puducherry, Goa and Andaman & Nicobar Islands has oriented school teachers on earthian sustainability education programme by organizing 20 exclusive workshops.

The Workshop for Teachers

The workshop for teachers aims at promoting sustainability thinking and initiate them to form groups of students in systematically carrying out designed group activities on water and biodiversity to address the environmental challenges of our country. A total number of 944 schools and 1078 teachers were reached through 20 Earthian teacher orientation programmes in nine states/ UTs.

The oriented school teachers formed project groups with the thematic focus on any one areas viz water or biodiversity, guided by earthian frame work in their school.

Supportive Resource Manuals

The earthian sustainability education programme is supported by two thematic manuals on biodiversity and water in English. The manuals give a structured approach in carrying out sustainability activities involving students. The Wipro earthian website has also the provision for downloading the soft version of the manuals along with enclosures.

Earthian Resource Manuals in vernacular languages

The earthian resource manuals in English on biodiversity and water were translated into Tamil, Malayalam, Telugu, Odia and Kannada by experienced science

translators in the respective regions and the soft copies were circulated to the teachers, participants and schools through the CPREEC network. The trans-adaptation of thematic manuals are to encourage rural schools to participate in the programme.

Student Conclaves

In addition to the school visits, follow-up and consultations, CPREEC has also organized three student project conclaves in Goa, Erode and Thiruvananthapuram for motivating the project groups of different schools. The student conclave was a CPREEC's exclusive initiative which has given direct experience to a group of students from many schools.

Water Testing

CPREEC offered its monitoring laboratory services to the interested schools and distributed free portable water testing kits to a cluster of schools.

Regional Evaluation Committees

Competent regional evaluation committees in nine States and Union Territories short listed 91 project submissions and the same were forwarded to the Wipro earthian national jury. The committee consists of environmentalists, activists, educationist and social workers.

The responses were generally good and project submissions were received from many of the participating schools. All the projects submitted through CPREEC to Wipro earthian received participation certificates for the students and guide teachers.

National earthian awards

The Wipro earthian national jury selected the 12 best project submissions as National Winners for the year 2016-17 from project submissions received from all over India. The National level winners have received rupees one lakh cash prize each and a unique opportunity to participate in a three years' continuous engagement programme.

In the year 2016-17, among twelve national winners, four schools from the CPREEC network in the states of Andaman & Nicobar Islands, Karnataka, Kerala and Goa have been awarded national level prizes. The national winners from the CPREEC network are

- ❖ L'ecole Chempaka International, Silver Rocks, Edavacode, Sreekariyam, Thiruvananthapuram, KERALA
- ❖ Kamaraj English Medium School, Sr. Sec. School, Brookshabad, Port Blair, ANDAMAN &NICOBAR ISLANDS
- ❖ Sree Gurukul, Siddarameshwara Extension, Batawadi, Tumakuru, KARNATAKA
- ❖ Mahalakshmi High School, Kudne, Sanquelim, GOA

Regional Recognition Events

Regional recognition events were organized in all the CPREEC network states and Union Territories to recognize and to honour the sincere efforts of project teams. In total, twelve regional events were organized. All the project teams who have submitted their project reports were given participation certificates and the regional winners were honoured with mementos and shawls.

Earthian Kit – A token of appreciation

The earthian kit forwarded by WIPRO was distributed to the participants in the regional events in order to directly encourage them to participate further in the programme.

Reference

1. *www.glos.ac.uk*
2. *www.wipro.org/earthian*
3. Davi.W.Orr., 1994. Earth in Mind-on education, environment and human prospect, Washington: Island press.

Nilgiri Biosphere Reserve (NBR) – Paradise of Birds

M. Kumaravelu

The Nilgiri Biosphere Reserve (NBR) can be divided into seven jungle reserves viz; Mudumalai, Sathyamangalam and Bandipur Tiger Reserves, Wayanad, Nagarhole and Silent Valley that represents its ecological importance which helps to sustain the bio-diversity of the area.

The elevation of the NBR ranges from 500 MSL to 2600 MSL. NBR is home to innumerable endemic flora, fauna, including many avian species and indigenous tribal communities. Though NBR is home to a large species of birds, the bird diversity of the NBR is yet to be addressed and classified scientifically.

The Mudumalai Tiger Reserve (MTR) and Bandipur Tiger Reserve (BTR) are host to around 350 bird species ranging from large birds like vultures and small bird like White-eye.

Commonly, warm-blooded birds are classified under three categories such as contour feathers or feathers covering the whole body. Secondly, down feathers are hidden by the contour feathers and thirdly, filo-plumes are covered by the contour and down feathers. These categories were classified by Salim Ali and Laeeq Futhehally (1967).

Role of Birds in Nature

Birds play an important role in nature, include supporting humankind directly and indirectly. These can be classified into three major categories. The first is controlling insects and vermin, the second is their role in pollination and the third is the role of birds in seed dispersal. In addition to these, certain birds like vultures, kits and crows play the role of scavengers in maintaining the cleanliness of the environment.

The increase in the population of insects poses a threat to other living beings. Besides, the farming sector faces serious threats and loss in yield due to the pest menace. The quantity of pesticides and insecticides that are used to control pests, insects and vermin in the farm lands is proving to be detrimental for soil health and environment. However, the natural control of insects, pests and vermin can be done by avian in a more effectively. Birds also play an ecological role in controlling the population of caterpillars, bugs and rodents. For example, sparrows feed on caterpillars and other soft bodied insects that in turn help to control the insect population; house sparrows bring food from 220 to 260 times per day (Austin, 1983).

Like bees and butterflies, birds play a vital role in cross pollination. This helps in good yield of farm crops. Birds play a key role in seed dispersal and germination of healthy plants including many tree species.

It is pertinent to note that during the dry season in Mudumalai Tiger Reserve (MTR)

and Bandipur Tiger Reserve (BTR), the flowering tree species such as flame of the forest, Cassia fistula, Gulmohur etc., support bird life in a commendable way. This ensures greater pollination and dispersal of healthy seeds to sustain jungle flora. It is proved that the seeds of many trees are consumed and pass through the excreta of birds which will in turn germinate healthier seedlings.

Bird Watching

Bird watching is not that popular even today amongst nature lovers. The lack of knowledge and interest in watching bird is still a lacuna that needs to be corrected. While there is considerable interest among the public on studies about big animals and tigers, it is imperative that certain mechanisms be evolved to attract people towards birding to spur interest among them and to help them gain knowledge on the geography, distribution, habits and behavior of

birds. This type of activity would go a long way in understanding the role of birds in nature. This will help in the conservation of birds and inculcate awareness among the public about their importance to mankind and their role in maintaining the ecological equilibrium.

To begin with, steps may be taken to observe common birds such as the sparrow, crow and myna and to enthuse the people, especially the youth, to show greater interest in birding to take lessons on nature. Bird watching should also involve observing calls and sounds of the each species and observing the type of flight classified as flopping, gliding and soaring (style of flight). Observation of nesting of birds will also help in a wider study of the behavior of each species.

Ideal season for Bird Watching

In MTR and BTR, the ideal season for bird watching is between December and April, the winter migratory period of birds. Moreover, the above said reserves encompass dry and moist deciduous forest, and many trees shed their leaves during this period with only seeds and fruits in the branches. Therefore, it is quite easy to observe the birds. A few winter loving trees like Cassia species, gulmohur, ficus, flame of the forests etc., are flowering during December and April which attract many birds to them. The climate advantage during these months is good for documenting and photography of the birds.

Conclusion

Birds are most affected by climate change, particularly micro climate change of each region. The breeding season and hatching habits are badly affected due to micro-climate change. The disappearance of

suitable habitats, particularly the growth of undesirable and invasive plant species, affect the birds. For example, due to the disappearing of tall trees such rose wood, jamun species, champak species and the hornbills find it difficult for nesting on the eastern slopes of the Nilgiris (Kumaravelu, 2016). Invasive species like wattle, eucalyptus, pine, etc., are not ideal for the formation of a perfect bird habitat. The use of pesticides in farm lands and use of veterinary analgesic like Diclofinac have proved to be costly for bird life.

Spreading awareness of birds and their habitat would go a long way towards avian conservation. Nature education should focus more on bird conservation as this, in turn, will help to protect nature and natural resources.

Reference

1. Salim Ali and Laeeq Futhehally, 1967, Common Birds, National Book Trust, India.
2. Salim Ali, 1979. The Book of Indian Birds, Bombay Natural History Society, Bombay.
3. Oliver L. Austin, JR, Families of Birds, Golden press, New York, 1983.
4. Kumaravelu M, Vulture, Eco News, July-Sep, 2016, Vol.21, No.2.

Karuppuswami – A Village Deity of Tamil Nadu

M. Amirthalingam

Abstract

In this article, I have dealt with an important village deity of Tamil Nadu, Karuppuswamy. He is a most popular deity known by different names and is considered protector from evil spirits, ensures a good harvest and protecting the native vegetation of the grove, both culturally and ecologically.

Introduction

In India, dedicating groves to local deities is a common practice of pre-agricultural, hunting and gathering societies. These groves safeguard many plant and animal species and also provide food and shelter for myriads of birds and insects which otherwise would have become extinct (Patnaik and Pandey, 1998). The deities protecting the sacred groves vary from state to state. The deity may be male or a female, animals and ancestors. Sacred groves have been traced from pre-agricultural, hunting and gathering societies. At the dawn of religious thinking, deities were imagined by primitive societies to reside in stones, trees, animals and woods.

In Tamil Nadu, sacred groves are guarded by folk deities and spirits *(vanadevathai)* such as Aiyanar – the guardian deity; Sastha, Muniyappa, swami, Veeran are the Kaaval teivam or protective deity, Andavar is believed to be a powerful wish-fulfilling deity; the goddesses Selliyamman, Kali, Ellaikali, Ellaipidari, Pechiyamman, Rakkachiyamman and Nagadevadhai are the deities of fertility and good health, and Sapta Kannis is the deity which is associated with streams that is the source of water (Amirthalingam, 1998). There are over 490 deities associated with sacred groves in Tamil Nadu alone. Of the 490 deities, 300 male deities, 185 female deities and 5 are represented by hero stones and stones.

In Tamil folklore, imaginative folktales (*kathai*) usually begin with the opening formula in a certain place like *oru urile*. This usually bears reference to the narrative world of fiction (Blackburn 2001). Unlike folktales, true stories about the deities can be linked to their immediate physical and social surroundings that strike a chord both with the narrators as well as the audience. These narratives can be linked to the analytical term "legend" used in folkloristic to mean a "traditional intermittent, highly ecological, restricted, historical rendering of past events told as believable in a conversational mode" (Tangherlini 2007).

Karuppuswami, one of the popular village deities of Tamil Nadu, is always depicted with a sickle and turned up moustache. The name literally means a black god. He is also known by several other names such as Karuppannaswami, Changili Karuppu, Chandana Karuppu, Chappani Karuppu, Karuppaiyah, Kalani karuppu,

Karumbayiram Kondavar, Karungal Mudimalaiaandi, Karuppanar, Karuppanna -samy, Kottai Karuppusami, Malaiyala Karuppu, Nondikaruppu, Odakkarai Karuppu, Padhakaruppu, Padhinettam-padi Karuppusami, Periya Ooraandi Karuppar, Periyakaruppuswami, Samaya karuppu, Sangili Karuppu, Settumalai karuppu, Sonai Karuppuswami, Srivalakkattu Karuppaswami, Uchimalai Karuppu, Vandikara Karuppuswami, Vaigai Karuppu and so on (Amirthalingam, 2012).

He is also reputed to be a short tempered god. There is a story connecting this God with Rama. It is said that Rama, after returning from the forests started ruling Ayodhya. One day, Rama visited the city and overheard a washerman criticizing him for having taken back Sita after she had lived in Sri Lanka. Accordingly, Rama banished Sita to the forests. Sita took refuge in the hermitage of Sage Valmiki, where she gave birth to a son called Lava. One day, Sita entrusted the baby Lava to sage Valmiki and went to take bath in the river. Meanwhile, the sage was in meditation. Hence he did not realize that Sita had taken back the baby after returning from the river. Thinking that Sita would be angered, the sage created a new baby from grass. From this time onwards, Sita began to consider the new baby, Kusa, as her own. After the Aswamedha Yaga, when the children were reunited with Rama, Rama wanted to find out who was his real child. Hence he put them to a test. He asked both the children to cross a fire. As soon as Kusa tried to cross the fire, his whole body turned jet black. As a result of this test, Rama made Kusa the security chief of his palace and gave him the name Karuppu. He also conferred several boons on him.

People believe that the original temple of Karupannachami is situated in front of Azhagar koil in Madurai. All other temples were established after taking mud from here. People affected by black magic consider him as their only protection. Goats and sheep are given in sacrifice to him. He is seen as a security God in a very large number of village God temples in Tamil Nadu. The famous Sabari Mala temple also has a Karuppuswami guarding it. Most of the Karuppannachami idols are accompanied by his hunting dog and his steed which is a lion or a horse. The people who follow tantric worship consider him as their greatest God.

One such Karuppuswami is Vaigai Karuppu situatated in Kandanur village, Karaikudi taluk in Sivaganga district. In this article, I have made an attempt to explore the role of the deity in protecting the grove both culturally and ecologically.

It is interesting to note as to why the sacred groves are offered to the local folk deities. This is because these deities are associated with the local people's socio-religious and socio-cultural life and thus these groves are protected with fear and faith. There is a commonly held belief that removal of any dead wood, felling of trees or killing of any animal will incur the anger of the presiding deity of the grove. Therefore people are loath to remove even a dry twig from the grove as they believe that this will result in the spread of disease and the failure of agricultural crops (Swamy, et.al., 1996). Therefore, many people will not even take dead wood out of sacred groves. Folklore plays an important role in conservation of sacred groves. Not only the tribal people, the rural people also preserve the sacred groves by their traditional customs, rituals, ceremonies and folk-beliefs.

Ecologically, the sacred groves play an important role in the conservation of

species diversity. The vegetation type of the district comprises of moderately dense and open forest types. Vaigai Karupppu grove comprises of about 143 plant species belonging to 58 families and 129 genera. The dominant genera of this grove is Justicia, Acacia, Albizia, Barleria, Bauhinia, Cardiospermum, Hibiscus, Indigofera, Jatropha, Ficus, Phyllanthes and Syzigium which represented about 10% of the flora. The threatened medicinal plants recorded from the study area include *Aegle marmelos*, *Strychnos potatorum* and *Madhuca longifolia*. The presence of the shrubby plant, *Calamus rotang*, an endemic species restricted to southern India was found in this grove.

Banyan (*Ficus benghalensis*) is the keystone species and offerings are made to a particular tree in the form of (like twining, hung girdles, cloths with some objects. Besides the banyan, other plants are also considered to be sacred and it is called a culturally keystone species. Peacocks are found to be roaming around the grove. Keystone species play an important role in biodiversity conservation mainly due to key functions that they perform in an ecosystem. These are socially and culturally valued and are useful in managing ecosystems and maintaining biodiversity. This is applicable both to natural and man-made ecosystems through prudent rehabilitation strategies along with peoples' participation (Jayapal, et. al., 2014).

They are also home to indigenous flora and fauna which contain some endangered, rare and threatened and indigenous medicinal plant species. Soil fertility is maintained by the decomposition of the leaves, wood, twigs and thus they maintain the nutrient cycle. Sacred groves control soil erosion and surface water runoff and thus help in retention of subsoil water and in recharging the ground water level. They also serve as a seed source through dispersal by birds for the ecological restoration of degraded landscapes. Sacred groves are the last remnants of native vegetation and it is the deities of the sacred groves that are protecting them for future generations.

Conclusion

Karuppuswami is one of the popular deities worshipped by the people in Tamil Nadu. The name literally denotes 'the black god'. The deity is called by many names in the villages of Tamil Nadu. The history of this deity goes back to the Ramayana period. People affected by black magic often pray to him for relief. He is also the object of devotion in tantric rituals. Ecologically, the sacred groves are playing an important role in the conservation of species diversity.

References

1. Patnaik, S., and Pandey, A, 1998. 'A study of Indigenous community based forest management system: *Sarna* (Sacred Grove)', in P.S. Ramakrishnan, Saxena, K.G. and U.M. Chandrashekara, (ed) *Conserving The Sacred: For Biodiversity Management*, Pp 315-321, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

2. Amirthalingam, M., 2012. *Sacred groves of Tamil Nadu and their management*, Forestry Extension Division, Department of Forest, Government of Tamil Nadu, Chennai.

3. Amirthalingam, M., 1998. 'Sacred Groves of Tamilnadu – A Survey', C.P.R.Environmental Education Centre, Chennai.

4. Swamy, P.S., Kumar, M. and Sundapandian, S.M., 2003. 'Spirituality and ecology of sacred groves in Tamil Nadu, India', *UNASYLVA-FAO*, pp. 53-55, UN Food and Agriculture Organization.

5. Blackburn, S., 2001. 'Moral Fictions: Tamil Folktales from Oral Tradition', FF Communications no. 278, Helsinki: Academia Scientiarum Fennica.

6. Tangherlini, T., 2007. 'Rhetoric, truth and performance: Politics and the interpretation of legend', *Indian Folklife*: A Quarterly Newsletter from National Folklore Support Centre: Serial no. 25. January, 8–12.

7. Jayapal, J., Tangavelou, A C.and Panneerselvam A., 2014. Studies on the Plant diversity of Muniandavar Sacred Groves of Thiruvaiyaru, Thanjavur, Tamil Nadu, India, *Hygeia.J.D.Med*, 6(1):48-62.

Google map of Vaigai Karuppu grove, Kandanur,
Karaikudi taluk, Sivagangai district

Vaigai Karuppu sacred grove, Kandanur,
Karaikudi taluk, Sivagangai district

Karupannaswami, Nakkambodi village,
Sendurai Taluk, Ariyalur District.

Food as Medicine

P.Sudhakar

"Let food be thy medicine and
medicine be thy food"
- Hippocrates

We eat to live and not live to eat. Eating habits differ among individuals and varies in countries, states, districts, etc. Each individual follows different eating patterns and consumed different food items. In many parts of the world, people still starve to death. We come across photographs of small children grazing at food items and restaurants. Many feeding mothers try to eat whatever they could to feed their infants. Some people fighting among themselves to share the food provided to them in refugee camps.

It is a general conception that food should be taken as medicine. Ayurveda and traditional Chinese medicine have been stressing to follow a strict diet to keep oneself healthy and prevent diseases.

At present, the health conditions of the people are directly linked with their diet and eating pattern. Most of the modern food available is with less nutrients and more toxic. With aging, our appetite diminishes and we consume fewer calories. According to a study conducted by John Hopkins University, it is estimated that 80% of cancer patients are malnourished. Heart diseases, diabetes, auto immune disorders like arthritis occur due to one's dietary habits.

In order to keep diseases at bay, listed below are the list of medicinal foods best suited for one's health.

1. Fresh and green vegetables

Green vegetables are a rich source of Vitamin C and vitamin K, magnesium, potassium, iodine and fibre and are less in calories. Anti-oxidants and phyto-nutrients restores the body's correct pH, reduces hunger and detoxifies the blood. Vegetables alkalize our body and prevent the occurrence of osteoporosis and reduce aging as the cells remain fresh.

2. Probiotic Foods

Probiotic food like yoghurt help in digestion, immunization and general health as indigestion leads to thyroid imbalances, fatigue, joint pains, psoriasis, autism and food allergies. Probiotic food also helps good bacteria and other microbes in the digestive system to replenish.

3. Omega-3 Foods

Omega-3 fats are natural anti-inflammatories that help counteract the effects of pro-inflammatory omega-6 fats which are high in present-day diet consumption. Diet with good fats

helps in controlling inflammation, cognitive health, hormone production, prevents cancer and weight loss. Walnuts, flaxseeds, fishes like salmon, tuna and mackerel are a good source of Omega-3 fats.

4. Healthy Fats

Healthy fats like avocado, butter, ghee, coconut oil and olive oil lower bad cholesterol and helps in weight reduction. Coronary heart diseases and cardio vascular diseases can be prevented. It also helps in maintaining hair and nails.

5. High-Antioxidant Foods

Bright coloured vegetables like beetroot, carrot and leafy greens berries are the best source of antioxidants which helps in delaying the aging process.

6. High Fibre Foods

Most of the people lack in dietary fibres that help in bowel movement. Fibre rich foods reduce cholesterol and triglycerides and regulate blood sugar. It also strengthens the colon wall and helps in growth of probiotic bacteria and influences immunity. Rich fibre diets are leafy greens, broccoli, avocado, coconut, starchy vegetables like tapioca, sweet potato, berries, nuts, seeds, sprouted legumes and small millets.

Conclusion

The genes vary from one person to another and react to certain foods. Even though a person follows a perfect diet, still they develop an illness. If a person practices eating a nutrient rich diet, he/she can cope up and overcome an illness.

Reference

1. Sears, Barry, and Camillo Ricordi. "Anti-Inflammatory Nutrition as a Pharmacological Approach to Treat Obesity." *Journal of Obesity* 2011 (2011): 431985. *PMC*. Web. 2 May 2017.

2. Schwalfenberg, Gerry K. "The Alkaline Diet: Is There Evidence That an Alkaline pH Diet Benefits Health?" *Journal of Environmental and Public Health* 2012 (2012): 727630. *PMC*. Web. 2 May 2017.

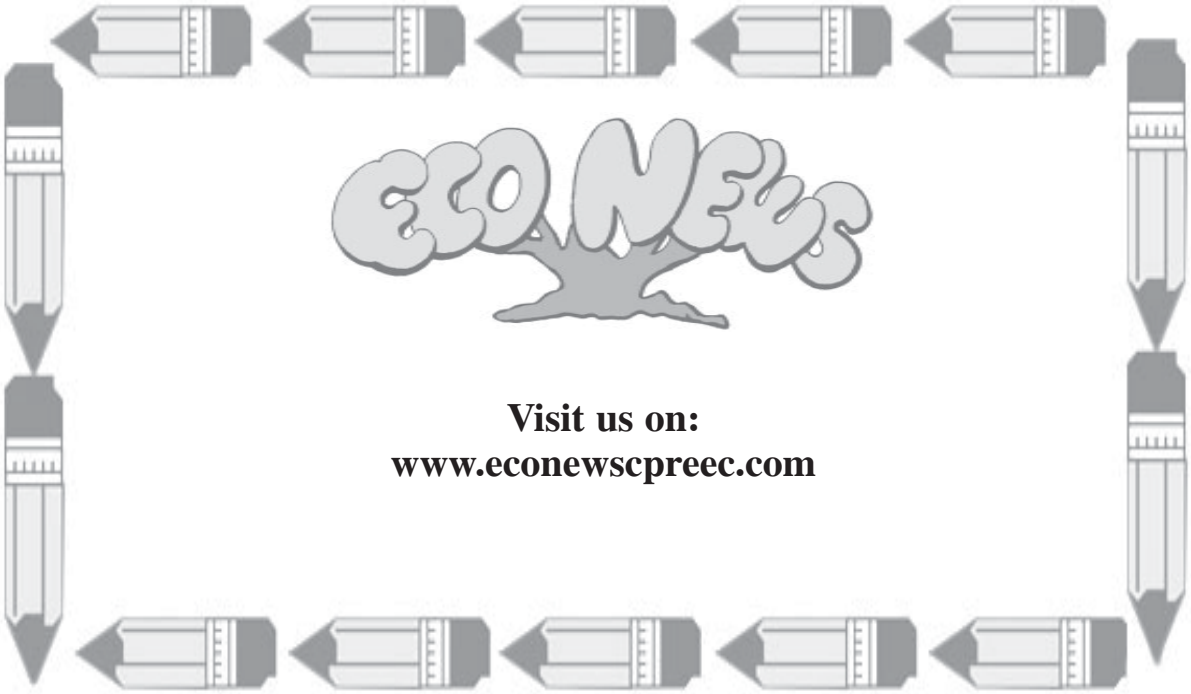
3. Asif, Mohammad. "The Prevention and Control the Type-2 Diabetes by Changing Lifestyle and Dietary Pattern." *Journal of Education and Health Promotion* 3 (2014): 1. *PMC*. Web. 2 May 2017.

4. Reid, Gregor et al. "Potential Uses of Probiotics in Clinical Practice." *Clinical Microbiology Reviews* 16.4 (2003): 658–672. *PMC*. Web. 2 May 2017.

5. Simopoulos AP. "Omega-3 fatty acids in inflammation and autoimmune diseases." *J Am Coll Nutr*. 2002 Dec; 21(6):495-505. Review. 2010 American Society for Nutrition

6. Siri-Tarino, Patty W., et al. "Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease." *The American Journal of Clinical Nutrition* (2010): ajcn-27725.

7. http://ghs.ucdavis.edu/



Visit us on:
www.econewscpreec.com

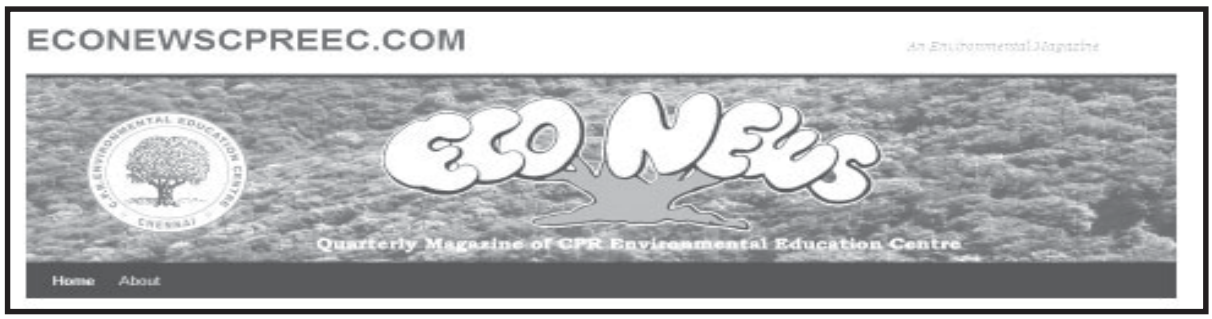
C.P.R. Environmental Education Centre is a Centre of Excellence of the Ministry of Environment, Forests & Climate Change, Government of India, established jointly by the Ministry and the C.P. Ramaswami Aiyar Foundation.

The Centre has been set up to increase consciousness and knowledge about the environment and the major environmental problems facing the country today. It has been conducting a variety of programmes to spread awareness and interest among the public, including, teachers, students, voluntary workers, educators, farmers, women and youth, on all aspects of the environment and ecology, with the purpose of promoting conservation of nature and natural resources.

Visit our website :

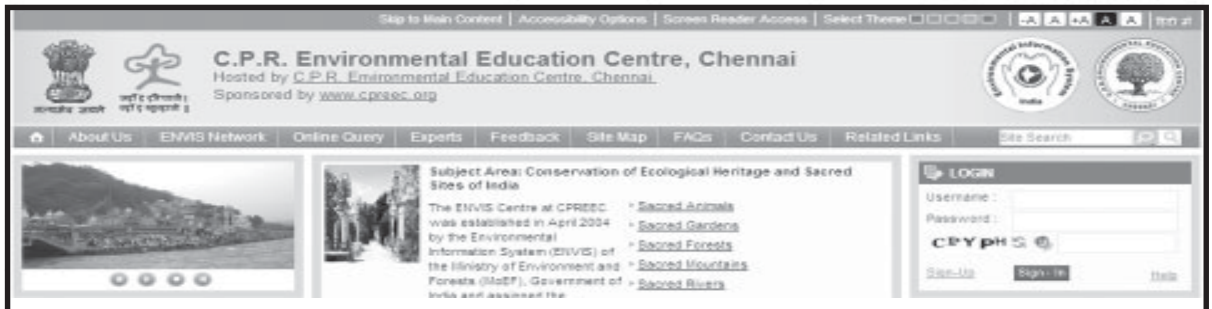
www.econewscpreec.com / www.cpreec.org / www.cpreecenvis.nic.in

Our Websites ...



www.heritageonline.in

www.environmentallawsofindia.com



www.cpreecenvis.nic.in

www.cpreec.org

CPR Convention Centre

(Fully Air-conditioned)
C.P ART CENTRE – 2nd Floor

1 Eldams Road, Chennai 600 018.
Phone : 24346526 / 2433 7023 Fax: 91-44-2432 0756
E-mail : cpreec@vsnl.com / cpreec@cpreec.org / cpreec@gmail.com

CPR Convention Centre is a new addition to Chennai. Situated amidst the lush green gardens of the C.P. Ramaswami Aiyar Foundation's vast campus in the heart of Chennai, it has already become one of Chennai's leading venues for conventions and celebrations. Several conferences, business meetings, etc. have been conducted here in serene surroundings.

CPR Convention Centre is an excellent multipurpose center, the perfect place to host seminars, meetings and conferences. It has a fully air-conditioned hall with modern interiors and comprehensive meeting and banquet facilities designed to accommodate up to 200 guests (theatre style).

Situated on the second floor, above C.P. Art Centre, Chennai's happening place, there are levitator (lift) facilities, state of the art sound and presentation systems, excellent acoustics, projection facilities and – wonder of wonders - ample car parking.

CPR Convention Centre provides the best facilities and services par excellence for all your convention needs. For more details contact Public Relations Officer, Mr.N.Srinivasan - 9444580641


Reception


Meeting Hall
(air-conditioned)


Dining Room
(air-conditioned)


Meeting Hall
(air-conditioned)