

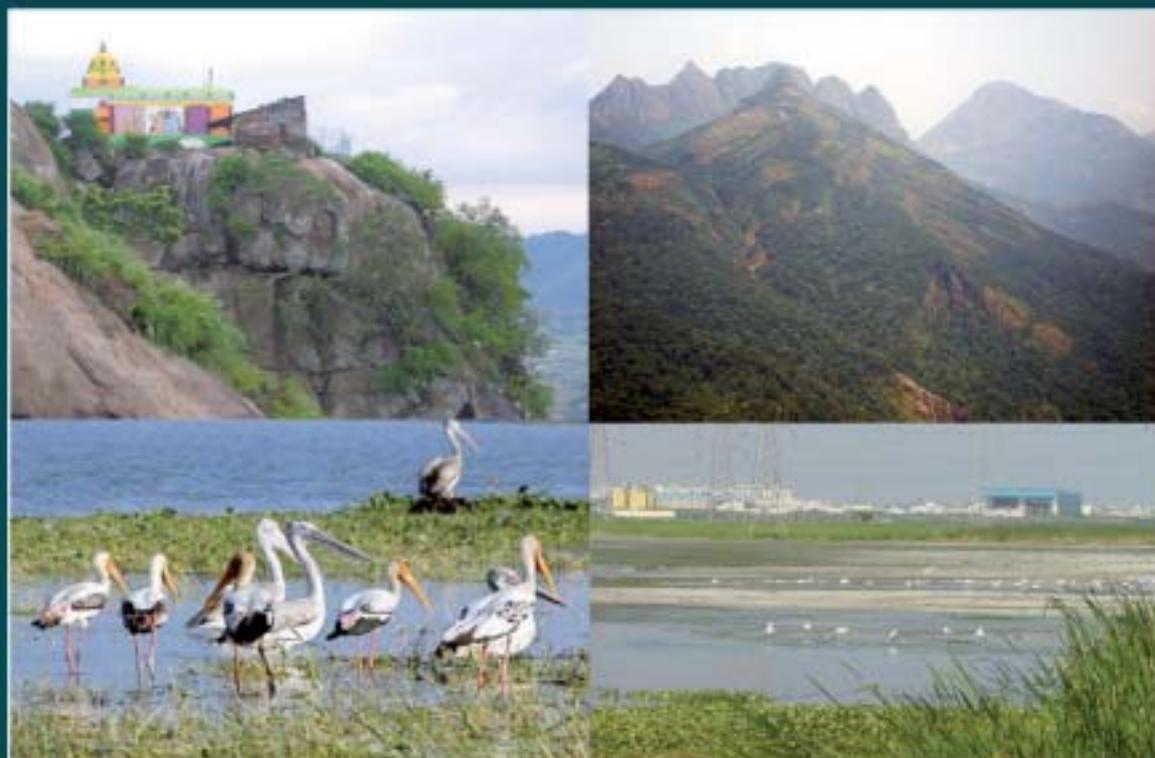
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Special issue – Natural Heritage sites of South India

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Heritage may be natural or man-made. Both are protected by the government. Both are exploited : the former for its wealth, the latter for its tourist potential.

Natural heritage belongs to everybody. But how many people can recognize it - the village grove, the fresh water lake, the forested hill and so on.

Once, all of India was natural heritage. Then, as the population grew, agriculture expanded. Forests were cut down to grow cereals. Hills were denuded or terraced, destroying indigenous plants and wildlife. Today we are left with pockets of natural heritage - a hill here, a wetland there, a forest as an afterthought.

This is all that is left of our natural heritage that once covered the whole country. Valmiki's Ramayana is all about forests from Ayodhya to Lanka. Today, Dandaka Aranya is limited to a small part of Central India.

This special issue is dedicated to South India's natural heritage sites. It is not possible to cover all, so we selected a few sites that are known, yet unknown for their natural wealth. Each has a raison d'être that has saved it - till now - from destruction.

A natural heritage site can also be a learning experience. We have taken students and teachers and seen the joy and expectation on young faces. This is how learning can be a source of happiness and fun.

Nanditha Krishna
Editor

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EDUCATIONAL INTERPRETATION IN NATURAL HERITAGE SITES

U.T. Arasu

A natural heritage site has been defined in many ways: as a natural area with existing high biological diversity; playing a role in carrying biological wealth to future generations to come; and that which is under threat from human influences are generally designated as natural heritage sites

The General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO) meeting in its seventeenth session adopted the "Convention concerning the protection of the world cultural and natural heritage (1972)". Article 2 of the convention document defines natural heritage sites as:

- ❖ natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;
- ❖ geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;
- ❖ natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.

"A system made up of core natural heritage features and areas, linked by natural corridors are necessary to maintain

biological and geological diversity, natural functions and viable populations of indigenous species and ecosystems. These systems can include lands that have been restored and areas with the potential to be restored to a natural state."

Article 27 of the Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention) envisages the importance of education programmes supporting world heritage conservation sites including natural heritage sites. It states that "The States Parties to this Convention shall endeavor by all appropriate means and in particular by educational and information programmes, to strengthen appreciation and respect by their peoples of the cultural and natural heritage". Based on that, UNESCO has built up many educational interpretation programmes around the world.

Educational interpretation of Natural Heritage Sites

Interpreting natural heritage sites for the purpose of learning poses several complexities. An educator who tries to bring the importance of a natural heritage area has to plan activities in coordination with others, since the area may be designated by international or national agencies considering its natural importance. The site may also be locally/regionally considered as an important natural heritage area.

The process of educational interpretation involves a series of methodical steps and supporting activities:

- ❖ Identifying the area
- ❖ Creating a platform of educators
- ❖ Involving all stake holders
- ❖ Planning activities in coordination with other local/regional/national/international players in heritage conservation
- ❖ Interpretation Need Analysis for various target groups
- ❖ Supporting learning material/literature design and preparation
- ❖ Modular execution of the programme
- ❖ Evaluation and feed back analysis.

Meticulous planning and precise execution assumes greater importance in the light of less importance attached to educational interpretation of natural heritage areas. The international experience of many agencies received little enthusiasm or response from many member states.

To visualize a synergetic effect, heritage conservation programmes may be designed to accommodate interest of all parties.

Multi - stakeholder Natural Heritage Congress

Surrounding the natural heritage areas, people, administrators, experts and children have to be brought to a common platform to address concerns of heritage protection. All stakeholders can be invited to the congregation to discuss the various issues involved and the threats faced by the site. The challenges of the site in conserving plant, animal and habitat have to be discussed in detail with dimensions like social, cultural, ecological and economical aspects.

The major objective of the congress should be to evolve a consensus approach in prioritizing the conservation issues and protecting natural heritage site in totality.

Expert- learner interaction modules

Based on the concerns and priorities arrived, experts of various fields should meet the learners with strategies and approaches. The whole process of learning may be divided in to different modules for different age groups. This approach has imminent advantage of diverting the interested to the specific focus groups. Interested learners can further advance to skills training. Cross over and, flip-flop among the learner groups are permitted to encourage continuance and further learning.

Focus groups

Expert-learner interaction will lead to formation of focus groups in different areas of natural heritage conservation. Focus groups such as wonders of medicinal plants, traditional conservation practices, insects, vanishing animals, traditional festivals, colors of soil, water and sacredness may be formed to motivate the learner groups.

Follow-up activities in formal and non-formal education systems

Once the direction for natural heritage conservation is conceived, the interpretation activity may be further extended to the formal and non-formal education systems. The activities may be taken up at five levels:

1. Skills training for non-formal educators and school teachers:
 - ❖ Workshop for teachers and non-formal educators
 - ❖ Consultative forums for nature heritage educators

2. Educative forums for learner-society interface:
 - ❖ Youth forums around the natural heritage sites
 - ❖ Nature Heritage site interpretation centre
3. School - based/institution - based programmes:
 - ❖ Cluster school programme
 - ❖ Holiday camps for children
 - ❖ Season camps for kids
 - ❖ "Plant Your Health"- programme for Adolescent learners.
4. Non-formal community based initiatives:
 - ❖ Skills development for youth
 - ❖ Programmes for women
 - ❖ Skills training for artisans
 - ❖ Revival of heritage programmes for various groups
 - ❖ Rejuvenation of Traditional Health Practices
5. Action - oriented conservation initiatives
 - ❖ School gardens
 - ❖ Community herbal garden
 - ❖ Establishment of model heritage plots
 - ❖ Creating natural heritage registers
 - ❖ Partnership conservation activities

To carry out the above - mentioned activities, we may need enormous human and economic resources. To support the activities, design and production of educational materials is important. The

educational materials should be need-based and target specific. A complete package of need analysis for pilot testing have to be taken up before finalizing the materials for larger use and circulation.

The methodology of transforming the knowledge should also be based on the learner requirement and ease of learning. Multi-media and self learning materials will bridge the gaps in learner centric approach.

UNESCO World Heritage Sites - An international effort in conserving cultural and natural heritage sites

United Nations Educational, Scientific and Cultural Organization (UNESCO) designated many cultural and natural sites as protected heritage sites based on the Convention Concerning the Protection of the World Cultural and Natural Heritage (adopted by UNESCO in 1972).

Apart from cultural, historical and archaeological sites, UNESCO has also designated Natural Heitage sites which possess outstanding biological, physical, geological formations and habitats of threatened species. The popular UNESCO designated Natural Heritage sites in India are Manas Wildlife Sanctuary, Kaziranga National Park, Keoladeo National Park, Sundarbans National Park, and Nanda Devi and Valley of Flowers National Parks

UNESCO -Young People's World Heritage Education Programme (WHE Programme) is an UNESCO initiative to bring a synergetic effect among heritage experts, educators, historians, environmental specialists, developmental actors and other stake holders. The programme is spread over 130 member states through through 1000 UNESCO Associated Schools (ASPnet).

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Kolleru Lake- Andhra Pradesh

R.Sabesh

Kolleru is one of Asia's largest fresh water lakes, spread over an area of 90,100 ha. and located between the Godavari and Krishna river basins of Andhra Pradesh. The lake serves as a natural flood-balancing reservoir for these two rivers. The lake receives water from the seasonal Budameru and Tammileru streams and it is connected to the Krishna and Godavari systems by over 68 inflowing drains and channels. It serves as a habitat for a variety of flora and fauna including several species of migratory birds. It supports the livelihood of fishermen and riparian population in the adjoining areas. The lake was notified as a Wildlife Sanctuary in November 1999 under the Wild Life (Protection) Act, 1972 and was designated

as a wetland of international importance in the international Ramsar Convention. Abutting the lake there are about 75 villages spread over nine mandals in Krishna and West Godavari districts. Kolleru Lake is rich in aquatic life. From time immemorial, Kolleru has provided a habitat where there is a harmonious coexistence of aquatic organisms, birds, people and life-supporting water. The resources of the lake Tammileru, Ramileru and Budameru and the many rivulets which brought in the floodwaters were being used by the local communities for fishing, agriculture, etc. History reveals that people from Orissa and other nearby places migrated to the Kolleru region for their livelihood.

Ecological Heritage Issues and Concerns of Kolleru Lake

Two early Pallava copper plates found in the lake trace its history to Langulya Gajapathi Raju, an Orissa king. According to the legend, the Gajapathi fort was located at Kolleti Kota on the eastern islands of the Kolleru Lake. The enemy general “Muhammadan” encamped at “*Chiguru Kota*” located on the shores. The lake protected the Odissi forces. The enemies finally tried to excavate a channel (modern day Upputeru) so that the water of the lake would drain into the sea and the level would fall, enabling them to attack the Gajapathi fort. The Odissi army general sacrificed his own daughter to propitiate the gods and ensure his success against Muhammadan. Her name was Perantala Kanama and therefore the channel was called Perantala Kanama.

This fragile wetland eco system is under severe threat due to human interventions in the lake and in the upstream catchment area as well as in the downstream Upputeru River estuarine system. Approximately 50% of the lake area has been converted into fish ponds and 42% into paddy fields.



Migratory Birds in Kolleru Lake

86,000 ha of the surrounding agricultural lands are prone to flooding due to the reduced storage capacity of the lake. The lake is polluted by pesticides, fertilizers, sewage and industrial waste, resulting in an excessive growth of weeds and hyacinth. Salt water intrusion due to reduced outflow and breached distributaries in the Upputeru River are some of the serious issues of the Kolleru Lake.

At present, thousands of fish tanks dug up inside the wetland have made the lake into an unsustainable aquaculture pond. Apart from this, the farmers have changed the land use pattern, resulting in pollution and drinking water shortages for the local people. In 1982, the Andhra Pradesh government set up the Kolleru Lake Development Committee, which had set up a Rs 300-crore master plan for Kolleru lake restoration. It also called for the creation of a Kolleru Lake Development Authority to check encroachments, regulate and monitor pollution, clear the lake of weeds and to use it as compost and raw material to produce biogas. Later, the fishermen’s association also filed a Public Interest Litigation in the court claiming that the ecosystem was degraded not due to the fish tanks but due to the sewage coming out from industries and residential areas. The court gave preference to the ecology of the lake. In 2006, the Central Empowered Committee (CEC), appointed by the Supreme Court directed the state to remove all encroachments including the fish tanks. The government is undertaking several projects to restore the glory of the lake.

Table-1: DETAILS OF WETLANDS OF ANDHRA PRADESH**Natural wetlands**

Name of the District	Name of the Wetland	Name of nearest village/town	Area (ha)	Ecological Category
Guntur	Nizamapatnam	Nizamapatnam	1,000	Brackish water
Krishna and WestGodavari	Kolleru	Eluru	90,000	Fresh water
Krishna and WestGodavari	Interu Swamps	Bantumilli	2,651	Brackish water
Nellore	NeelapattuLake	Neelapattu	453	Brackish water
Visakhapatnam	Kondakarla Lake	Anakapalli	600	Fresh water
Warangal	PakhalLake	AshokNagar	2,400	Fresh water
Adilabad Reservoir	Kajam	Nirmal	25,000	Fresh water
Chittoor Reservoir	Araniar	.	200	Fresh water

Man-made wetlands

Cuddapah	BadvelTank	Badvel	610	Fresh water
Cuddapah	PoliTank	Rajampet	120	Fresh water
Cuddapah	Porumamilla	Porumamilla	750	Fresh water
Karimnagar	Lowermaniar	Karimnagar	8,105	Fresh water
Kurnool	SrisailamReservoir	Srisailam	61,700	Fresh water
Nalgonda	Rendli Pakale	Rendli	280	Fresh water
Nalgonda	Surla DeviCheruvu	Hazugudam	250	Fresh water
Nalgonda	UraCheruvu	Burugadda	150	Fresh water
Nalgonda	JusiReservoir	Suryapet	533	Fresh water
Nalgonda	Nagarjunasagar	Mandi Gonda	28,429	Fresh water

Impact of Aquaculture Boom

Between 1992 and 1995, aquaculture has been practiced on a large scale in and around Kolleru Lake. The major problem is that it requires saline water to flourish and bore wells have been sunk in the lake bed to pump out saline water for the aqua ponds. The lake bed level has sunk. The tides bring in more and more saline water into the lake since the banks have also sunk. Prawn seed is cultivated for one month in small ponds and then transferred to larger ponds with saline water. Both fish and prawn cultivation require use of chemical fertilizers, gobar manure, chicken waste, etc. Once the harvest is over, this water stagnates and pollutes the surrounding water. Unscientific

and illegal aquaculture coupled with agricultural runoff, which also contains chemical residue, untreated water from neighboring industries and domestic sewage from areas like Vuyyuru, Hanuman Junction, Gudivada, Eluru, and Tadepalli Gudem, etc. flow into the lake and contribute to its pollution. The consequences of this pollution are the frequent killing of fish, scarcity of safe drinking water in many villages and contamination of groundwater around the lake in Krishna and West Godavari districts.

Conclusion:

There is an urgent need for strong advocacy to highlight the issues associated with the

Kolleru Lake, including mobilizing public opinion across the globe to support and assist the local efforts to stop further damage to the lake and restore its original ecological health. The native fishermen must be motivated to practice freshwater fish culture so that the lake slowly regains its past glory; but they are unable to do much on account of various reasons like lack of unity, political strength and so on. The Government of Andhra Pradesh must recognize the urgent need to stop further degradation of this fragile ecosystem. It should initiate a rehabilitation package for dismantling the fish ponds below the 5.0 m contour of the Lake. The Government should also facilitate a strategic and integrated management action plan for a sound ecological basis for interactions among various sectors, integrated water resources management, and the development of a sustainable plan to conserve and maintain the Kolleru ecosystem.

Detailed study and analysis associated with the geomorphology, land use and land cover, hydrology, aquatic chemistry, sedimentology, ecosystem, biodiversity conservation, biological weed - management, pollution, information systems socioeconomic aspects, community participation and legal framework will help us to find out holistic and sustainable solutions. Strict implementation of the AP High Court order directing the authorities to ensure removal of encroachments in the lake bed will bring back the Kolleru Lake's pristine glory.

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Enugu Mallamma Konda – Horsley Hills

P.Sudhakar

Horsley Hills is a part of the Nallamalai Range at 4,152 feet in Chittoor District South West Andhra, an undeveloped rustic hillock. According to a local legend, a spiritual woman called Mallamma used to live on the top of the hill where she was protected and looked after by a tusker (*enugu* in Telugu). She used to heal the tribal people on the hills. She suddenly disappeared. The local people believed her to be a goddess and built a temple. The indigenous Chenchu tribes symbolically called the place, 'Enugu Mallamma Konda'.

Around 1840-43 W.D. Horsley, the Collector of Cuddapah district, visited this place. He fell in love with the natural beauty of the hill and built his summer residence here in 1870. The name also changed from Enugu Mallamma konda to Horsley Hills.

Horsley Hills may be one of the few places in India that calls a tree by a name. Near the Horsley Bungalow, a 150-year old eucalyptus named Kalyani planted by Horsley is now a giant size tree, 35 metres high, spread over a radius of 43 metres.

Trees like sandal wood, flame of the forest, pipal, teak, deodar eucalyptus, jacaranda, allamanda, gulmohar and mango trees can be seen in this hill. The hill station also boasts of rich fauna like leopards, bears, wild boars, birds and butterflies.

The hills are largely inhabited by a group of tribals called the Chenchu tribes.

The origin of the Chenchus is linked with Lord Mallikarjuna of the Srisailam temple, who is a personification of Lord Shiva. The Chenchus live in bee hive shaped tiny huts with wattle walls. They are good climbers. The Chenchus are referred to as one of the ancient tribal communities that are still dependent on forests and do not cultivate land but hunt for a living. They are non-vegetarians but abstain from eating beef.

Chenchus live in the forest areas. They move in groups in the forests searching for fruits, roots, tubers and honey. They make leaf cups and leaf plates out of tobacco leaves, tamarind, *mahua* flowers and sell them in the local market, where they are in great demand. They also make use of the *mahua* flower in making liquor. Chenchus are good hunters; they hunt for animals like deer, wild boar, rabbit, jungle fowl, rat and birds. They use bows and arrows for hunting. They keep the famous Pungannur cows, known for their high milk yielding capacity.

Chenchus worship a number of deities. They mainly believe in Bhagaban Taru who lives in the sky and looks after the Chenchus in all their doings. Another deity they worship is Garelamai Sama, who is the Goddess of forests. She is believed to protect them from danger, especially when they are in the jungle.

The lush forests around Horsley Hills are ideal for nature walks, picnics and drives. The most famous attraction is *Gali Bandalu*, a windy rock that derives its name from the gusty winds that blow nearly all day.

There is an Environmental Park to educate the common man about the importance of saving the environment and encourage eco tourism.

People often confuse the name Gurram Konda with Horsley Hills which is 40 km from Horsley Hills, between Madanapalle and Raichoti. Literally, Horsley Hills was so named because its steep pathway was once accessible only on a horseback.

A variety of factors threaten the sacred mountain environment and its traditions. Policy makers dealing with natural resources and cultural issues do not attach importance to sacred cultural beliefs. While importance is attached to man-made sacred sites such as temples as valuable cultural resources, natural sacred sites are neglected. Increasing population has led to the encroachment of the sacred mountain.

Mountains are held sacred for different reasons. This often results in conflict between groups, as all aspects of sacred beliefs cannot be directly linked to conservation practices. Sometimes cultural practices or spiritual beliefs are in conflict with natural resource conservation and environmental preservation. The construction of the temple is an instance when traditional conservation practices and modern spiritual developments collide.

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Parvatamalai – Eastern Ghats

M. Amirthalingam

Parvathamalai is a part of the Javadhu hills of the Eastern Ghats and situated 25 km from Polur in Thiruvannamalai District. The height of the hill is about 3500 feet from mean sea level. There is a temple for Lord Shiva temple at the top. Lord Shiva appears under the name of Mallikarjunaswamy. It is popularly believed that Lord Shiva is worshipped by the Devas and spiritual beings from other world and siddhars every night. The hill is considered to be very auspicious, with powerful vibrations. People refer to Parvathamalai as Southern Kailasam. Sri Bramarambigai was enshrined by Sri Bhogar, one of the eighteen Tamil siddhars. The whole mountain is believed to be protected by Vanadurga and Veerabhadra.

Many siddhars lived once and practiced their mystical powers on this hill, which is covered with medicinal plants. It is believed that Parvathamalai was formed when a piece of rock fell from the Sanjeevini hill, carried by Sri Anjaneya, and thus the hill got its name Sanjiva Parvatamalai. The scented herbal breeze on this hill is believed to cure even incurable diseases. During the *pournami* (full moon) day, it attracts a lot of devotees.

History of the hill

The history of the Parvatamalai hill can be traced from the Sangam period. It is believed that the King Nannan would come to this hill and worship Lord Mallikarjuna. When

Lord Shiva came to the southern part of Tamil Nadu from the Himalayas, he placed his first foot step on this hill. As in Thirukalukundram, here too one can see three eagles circling the Pappathi hill. At midnight, the villages around the hill can hear the sounds of melam, sangu, tharai and thappatai. Guru Namashivayam and Guhai Namashivayam lived on Parvathamalai and attained their youth by consuming herb called Karunochi, according to popular belief.

Kanchi Sri Sankaracharya saw the hill in the shape of a Shiva linga and therefore never placed his foot on it the circumambulated and worshipped it. Every month, during *pournima* people start the Girivalam (circumambulation of the hill) at 7pm.

Temples in the Parvathamalai

There are several temples of on the hill, including the Pachaiamman in the Pachaiamman temple; Lord Veerabhadra temple with its herbal park; Renugambal temple situated in front of the herbal pond known as 'Agaya Gangai'. If one bathes in the water of this pond it is believed that one can get cured of all body pain and fatigue; the Vana Durga temple situated on the way to the main hill temple; the siddhar's temple on the way; and the Kadaparai Shiva temple, the last temple situated on the way to the hill top temple. Those who cannot climb the hill perform their pooja here and turn back. Before reaching

the hill top temple one can find symbols of lord Shiva's feet.

The major festival of the temple is *chitra pournami* (full moon day), *Kaarthikai dipam*, *Shivraratri* and *Panguni Uttram*. Wearing white, yellow and saffron coloured dresses and worshipping the God by offering milk is said to auspicious.

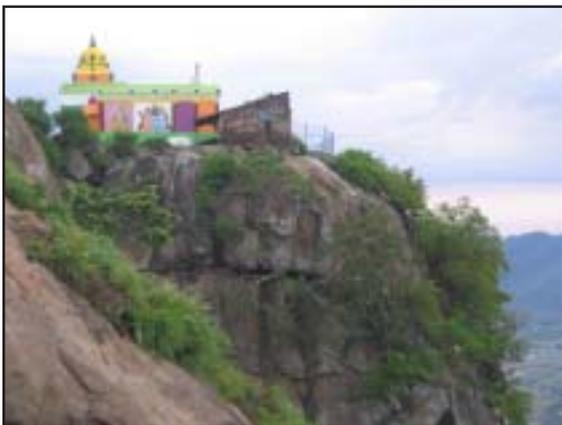
Temple Tanks

It is believed that there is an underground whirlpool which heals all diseases. Old people believe that there is a lotus pond and plantain field, inhabited by a holy cow and sages.

Biodiversity of Parvathamalai

The Parvathamalai Forest is an undisturbed portion of the Eastern Ghats, all of which was once densely forested. There are many small temples in the forest area between the Parvathamalai hill and Munnurmangdam village. This is an important protected area, the hills of which are considered by the people to be the "Southern Himalayas". The area is also of heritage and historical value with its plants well known for their medicinal value.

The entire Parvathamalai is protected as a reserve forest. There are about 152 plant



Courtesy : www.chennaitrekkers.org

species recorded in this hill. Very rare herbal plants found on this hill include: *peyviratti* (*Anisomeles malabarica*) *karunthulasi* (*Ocimum sanctum*), *karunochi* (*Justicia gendarussa / Gendarussa vulgaris*), *karu umathai* (*Datura fastuosa*), *karunelli* (*Phyllanthus reticulatus*), *civanar vembu* (*Indigofera aspalathoides*), *mahavilvam* (*Limonia acidissima*), *vellerukku* (*Calotropis procera*), *orithazh thaamarai* (*Lonidium suffruticosum*) and plants. However, these plant species are characteristic of this area only. As far as fauna are concerned, there are about 128 species of animals, of which there are 17 species of mammals, 22 species of reptiles and 89 species of birds. Some of the animal species are IUCN-categorized animals, including the Star tortoise, the Orange-breasted green pigeon and Slender Loris that belong to the rare animal species and the Barheaded goose, Black buck and Civet cat that belong to the threatened and endangered category.

Conclusion

A variety of factors threaten the sacred mountain environment. The forest stretches leading to the temples are degraded due to the disposal of polythene materials (bags, cups, etc) by devotees and due to the clearing of vegetation by the pilgrims to keep away the poisonous snakes from the path.

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Mukurthi National Park – Nilgiri Biosphere Reserve

M. Kumaravelu

Tribal people have respected and worshipped all forms of nature. They have also traditionally identified and attached special attributes to certain ecologically sensitive areas and designated them as sacred places. In that tradition, trees, groves, water sources have been protected with religious fervour. Each region and landscape has had a special meaning and has offered livelihood to the local communities. In such a tradition, many mountain ranges and hills have been treated as sacred. Usually such sacred mountain tops have some kind of 'temple-like' structure with some form of a deity, be it a formless stone, a crudely chiseled idol, or a well sculpted one. Traditionally, these places have been associated with the cultural practices and religious beliefs of the people. These religious and spiritual values have greatly influenced the lives of the inhabitants of the area. In India, mountains served as natural fortresses and gave people a sense of security, both physical and spiritual. A mountain range and its surrounding areas are naturally viewed as a life-sustaining ecosystem for water, food requirements, and well being. If a mountain is left undisturbed, it remains pristine and as a lifeline to all life forms.

Mukurthi as a Sacred Mountain for the indigenous community:

The mountain ranges of the Nilgiris, are an important part of the Western Ghats of Southern peninsular India. The Nilgiri ranges are determined to be older than the Himalayan ranges. The Mukurthi peak, along with the Nilgiri, Kolleribetta, and Kudiakadubetta, are situated in the south-western corner of the Nilgiris, in the Kundah range. These appear majestic, impregnable, and command an impressive view over the surroundings. The Mukurthi peak is the third highest peak in the Nilgiri ranges. From a distance, the summit appears to be oddly shaped, like the nose of some gigantic human being, stuck at an odd angle. This very appearance of the peak has given rise to many myths and beliefs.

Mukurthi and its surrounding areas are significant to the oldest inhabitant community of the upper plateau, the Todas. In the past, when the Todas were literally a pastoral people moving to various places of the Kundah range during their annual migration with their buffaloes, the Mukurthi peak and its surroundings had a very special importance. For instance, the belief is that

from the dizzy summit of the Mukurthi peak, the souls of men and buffaloes leap together into the netherworld. Also, it was said to be a taboo for women to cross the Pykara River that originates from the slopes of this peak.

At an average altitude of 2400 m, the terrain of the Mukurthi area is primarily grasslands interspersed with numerous isolated, compact, sharply defined montane wet temperate mixed forests locally termed as 'Sholas'. The Sholas are normally present in the folds of the mountain and the valley floor, and contain beautiful brooks. They have savannah woodlands, and evergreen trees which are more stunted than those in the lowland evergreen forests.

Biological Importance

Apart from the cultural significance, this area is also a major source of water. It is in fact the main catchment area for the whole district. This is because it is in the path of the South West Monsoon winds, the main source of rain for this area. The ecology of the hillsides is also vital as the grassland-Shola ecosystem is an integrated one and a major water resource. The grasslands act as a spongy layer that absorbs the rain water, preventing it from flowing away in the deluge. The absorbed water is released in trickles to form rivulets, streams and rivers in the Sholas on the edge of the grasslands. This ensures that the streams and rivers have water throughout the year, not only during

the monsoons. The Mukurthi hillsides are the source for the Pykara River. The other important rivers originating from the slopes of the surrounding areas are the Kabini, Chaliyar and Bhavani.

This area has an incredible number and variety of plants, animals, birds and other life forms. The threatened mammal species that live here include Nilgiri Tahr, Tiger, the very rare Nilgiri Marten, and Nilgiri Langur. There are Leopard, many deer (Sambar deer, Barking deer, Mouse deer), Jungle cat, Small indian civet, Wild dog, and many others.

Out of this impressive list, the most important animal is the Nilgiri Tahr, a species endemic to the Western Ghats. The Nilgiri Tahr, an ungulate, is a highly endangered, grassland-dependent species. As the Tahr inhabits grasslands at altitudes over 1500 m, this area is one of its last refuges, and only a few hundred individuals can be found.

Avian fauna includes many hill birds, including the threatened Nilgiri Laughing Thrush, Whistling Thrush, and Nilgiri Pipit. These ranges are known to be home to the winter migrants such as the Himalayan Woodcock, Kashmir Flycatcher, Pale and Marsh Harriers and many species of Wagtails. The bird list includes 16 species endemic to the Western Ghats, and one species endemic to the Nilgiris – the Nilgiri Laughing Thrush, not found anywhere else in the world. Its numbers have been estimated at around 2000.

The area is home to many species of reptiles, including an endemic species, the Horsfield's Spiny Lizard (Nilgiri *Salea Salea horsfieldii*).

Some amphibians found here include the Common Indian Toad (*Duttaphrynus melanostictus*), *Bufo beddomii*, *Bufo microtypanum* and many species of Tree Frogs like *Micrixalus opisthorhodus* and *Rana limnocharis*.

Butterflies with Himalayan affinity like the Blue Admiral, Indian Red Admiral, Indian Fritillary, Indian Cabbage white and Hedge blues are seen here.

There are more than 200 grassland plant species in this area, of which 80 are endemic to South India, 22 to the Nilgiris, and some that are found only in these ranges.

Mukurthi has the highest number of the Scapigerous *Impatiens* found in any single place in the world. *Alchemilla Indica* and *Hedyotis Verticillaris* are found only within or on the fringes of this area. *Cyathea Crinita* is a rare tree fern, endemic to the Western Ghats, and found in only three places, Mukurthi being one of them. Many types of beautiful orchids can be seen here, including *Eria Albifolia*, *Oberonia Santapauli*, *Aerides Ringens*, *A. Cispa*, *Coelogyne Odoratissima*. There are also many types of lichens and moss.

Conclusion

After the advent of the British in the Nilgiris in the 1800s, more and more immigrants

have come and settled in the hills. Modernity in all walks of life has taken root in the hills, and this has given rise to inescapable and inevitable changes in the life of the indigenous tribes, such as the Todas, Kotas, Irulas and Badagas. Over a period of time, the beliefs held by the people of the area have been diluted. In spite of this, some of the cultural traditions and practices continue to be followed by the people.

This incredible biodiversity and abundance of rare, endangered flora and fauna signify the existence of a unique combination of physical, climatic and geographic factors. Being the main source of water for not only the Nilgiris, but other regions in the plains, this peak in the Western Ghats assumes great importance. Realising the importance of this, the first Biosphere Reserve created in India was the Nilgiri Biosphere Reserve (1986). The Mukurthi area is a Hotspot and a core area in the Biosphere Reserve. The Mukurthi National Park has been created to protect the Nilgiri Tahr (the state animal of Tamil Nadu), with the Mukurthi peak and its surroundings being the pivotal point. Needless to say, when one species is protected, all other life forms in that area get automatic protection. This in turn preserves and conserves the entire region.

I wish to record my sincere thanks to Mr A.C. Soundararajan, EC Member of NWEA for his valuable inputs regarding the biological wealth of Mukkurthi.

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Agastya Malai

Dr. T. Sundaramoorthy

Sacred sites are found throughout the world. They are intrinsically linked to the local people and their culture. Trees, groves, gardens, water bodies, caves, landscapes and mountains are respected as sacred. They are called 'natural heritage'. These sacred forms derived from natural objects are often symbolic (Witcombe, 1998). Most sacred sites are rich sources of cultural heritage.

Mountains have long been regarded as sacred by many people around the world. In Tibet, Mount Kailas, one of the tallest peaks in the Himalayas near the source of the Ganges, is a pilgrimage site for Hindus, Jains and Buddhists. Buddhists regard this mountain as a mandala (Witcombe, 1998). The important sacred mountains of India are the Govardhana at Brindavan in Uttar Pradesh, Simhachala near Visakhapatnam, Tirumala in Andhra Pradesh, Vindhya of Madhya

Pradesh, Palani, Marudhamalai and Thiruvannamalai of Tamilnadu, Sabarimala and Agasthyamalai of Kerala.

A sacred mountain plays a vital role in the conservation of local ecology and the environment. A variety of themes are often found within sacred mountain traditions. The beliefs demonstrate an important link between the community's cultural identity and traditional patterns of land conservation. Sacred mountains are distinguished from other sacred sites by virtue of being exceptionally comprehensive ecosystems.

The pristine nature of the sacred mountains and sacred sites within mountains is well maintained by the local communities. The indigenous communities have realized the value of natural resources within mountains. It is also protected as it is a source of water and timber for plants and animals and for other forest minor produces.

Agastya Malai



Courtesy : skyscrapercity.com

Agastya malai (known as Pothigaimalai in Tamil and Agastyakoodam in Malayalam) is situated on the southern end of the Western Ghats. It has been associated with Sage Agastya and is revered as sacred. It falls both in Tamilnadu and Kerala. Agastya malai's profile bears an uncanny resemblance to "Mount Kailash" and this has perhaps led to its appearance in many myths (Lockwood, 2005).

Cultural History

The cultural history of the mountain relates to Sage Agastya and the marriage of Lord Shiva and Parvathi in Mount Kailash. When the wedding was announced, all the gods, rishis and people migrated to the Himalayas. As a result, the earth went off balance and became dangerously wobbly. With disaster looming, Shiva asked Agastya to go south and balance the situation through meditation. He meditated and prayed on the mountain that now bears his name and placed the world in balance. Thus the hill is named as Agastyamalai (Lockwood, 2005). Sage Agastya is depicted with a small stone

crusher in one hand and a vessel on the other, indicating that he is associated with herbal remedies. Agastyamalai is not only a place of pilgrimage but is also known for its abundant medicinal plants (Gopalan, 1997).

It is the home for the 'Kani' tribe. Their knowledge of medicinal plants is connected to the myths of Agasthya, who is thought to have bestowed healing powers to them. A plant named *Arogyapachcha* (*Trichopus zeylanicus*) grows wild in the Agasthyamalai hills and is known for its invigorating properties that reduce fatigue. The best guides of the Kalakadu Mundanthurai Tiger Reserve (KMTR) are the Kanis (Lockwood, 2005). Studies indicate that the Kani tribes have genetic links with the aborigines of Australia.

Biodiversity of the sacred mountain

Agastyamalai plays an important role as a watershed and repository of biodiversity. Many rivers originate from the forests of Agastyamalai including the perennial river, Tamaraparani. Agastyamalai has a range of 1868 metres and is spread over Tirunelveli and Kanyakumari districts of Tamilnadu and Trivandrum district of Kerala.

The habitats of Agastyamalai include southern tropical thorn forests, southern tropical moist deciduous forests, tropical semi-evergreen forests, southern tropical wet evergreen forests, subtropical montane forests and grasslands at high altitude (Henry and Subramanyam, 1981). Endemic plant species of southern peninsular India are

abundant in Agasthyamalai. In and around Agasthyamalai, almost all the endemic animal species of the Western Ghats also found. The hill harbours 2,000 endemic plant species as well as 150 localised plant endemics and 50 rare and endangered species such as *Paphiopedilum druryi* orchid (Henry et.al., 1984). Nearly 30 new plant species have been discovered in recent years (Johnsingh, 2001). Many wild relatives of common food plants are also found here, and they are Amomum (Hardy Gingers), Amorphophallus (Elephant yam), Atylosia (Wild kulthi), Canavalia (Bay bean), Cinnamomum (Cinnamon), Coffea (Coffee), Dioscorea (Wild yam), Elettaria (Cardamom), Garcinia (Malabar tamarind), Mangifera (Mango), Musa (Plantain), Myristica, Oryza (Rice), Piper (Pepper) and Rauwolfia (Gopalan, 1997).

There are about 77 species of mammals, 33 species of fish, 37 amphibians, 81 reptiles and 273 bird species recorded (Johnsingh, 2001). The rare brown palm civet (*Paradoxurus jerdoni*), the Malabar spiny dormouse (*Platacanthomys lasiurus*) and the Nilgiri marten (*Martes gwatkinsi*) are found in the Ashambu hills area. Also found are five primate species including the lion tailed macaque (*Macaca silenus*), the Nilgiri langur (*Trachypithecus johnii*), and the slender loris (*Loris lydekerianus*). The Nilgiri tahr (*Hemitragus hylocrius*), the rare mountain goat of the Western Ghats, is also found in the remote peaks of the Agasthyamalai. Apart from the diversity of the animal habitat, bird life is abundant in and around Agasthyamalai. Of the 16 species of birds endemic to the Western Ghats, 14 are found on this hill. The Oriental

Bay Owl, a very rare species, has been recorded from Sengaltheri (Nair and Ashish, 1991). There is a good population of the Broad-tailed Grassbird near Kodayar. The White-bellied Shortwing, another rare Western Ghats endemic, is found in the high elevation rainforests of Neterikal. Rare birds such as the Malabar trogon (*Harpactes fasciatus*), the grey breasted laughing thrush (*Garrulax jerdoni*) and the grey headed bulbul (*Pycnonotus priocephalus*) are also found.

Threats

The main threats to the Agasthyamalai are the human settlements due to hydel and irrigation projects, construction of hydroelectric dams in the middle of the Kalakad Mundanthurai Tiger Reserve (KMTR), poaching, exotic plants like eucalyptus and tea plantation. Apart from these threats, cultivation of plantation crops and increasing pilgrimage to the Agasthyakoodam area are also a concern for the conservation of biodiversity.

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My Date with the Birds of Chennai

Lalitha Ramadurai

As we walked quietly along an unpaved trail through the forested campus of the Indian Institute of Technology, I heard a ‘swoosh’ and looked up to see a yellow and black bird among the tree canopy. I was informed by Aruna that it was the Eurasian Golden Oriole. With its golden hue among the green leaves, the bird looked really stunning. Now that’s a ‘*sone ki chidiya*’, I said to myself. The Golden Oriole is just one of the many treasures that we discovered on the day of the bird race at Chennai, a city I always thought had just crows, pigeons and mynas for its avian diversity.



I first read about the Bird Race about two years back in the newspaper. My first reaction, like that of many other people, was – a bird race??...birds beings raced against each other...how inhumane??

Only when I read through the entire article, did I realise that a bird race is actually an 'enjoyable' event, where teams of 3-4 people, compete against each other in sighting, identifying and recording the most number of species (read again, species and not birds) within prescribed geographical limits.

So this year, in spite of not knowing much about birds, I registered myself for the race and was quite looking forward to the BIG birding day. The organisers - the Madras Naturalists' Society - contacted me a couple of days before the event and informed me about the team I'd be part of. The team was to be led by Ms.Aruna, a researcher studying plant-bird relationship in the Western Ghats. I had never met her or the other members of the team (Mr. Aroul, an avid bird watcher and Mr.Santosh - a fresher, just like me). I was actually a bit apprehensive about how I was going to explore the birds from dawn to dusk, with people whom I hardly knew. Our team was named the 'Greenish Leaf Warbler'. I googled immediately to find more about the bird. It was a small, insectivorous bird with a greyish green body and off-white underparts. I thought it was a bit dull-looking and just hoped that the race day would be in contrast very colourful and exciting. It turned out just the way and much more.

It was still dark, when we all met on the day of the race outside the Guindy Railway Station. We immediately decided on the day's plan. There was consensus that we would restrict ourselves to the

city in order to save time and fuel. We headed straight to the lush green campus of the Indian Institute of Technology. Armed with binoculars and 'The Book of Indian Birds' by Dr. Salim Ali a.k.a. the Birder's bible, we set out looking for birds to fill our log book. One of the first birds to advertise its presence was the Asian Koel with its repetitive 'koo-el-koo-el' call from tree tops. A flock of egrets flew above us. They looked beautiful. We also saw the pied wagtail, the green bee eater, the lesser Golden back Woodpecker and many other birds. Keeping the birds company the Sunday morning were the other winged beauties (the butterflies), the chirping crickets and the squeaking squirrels (whom I often mistook for bird calls). We also saw lots of chitals, some even foraging on plastic bags - the sight was quite depressing.

After the walk through the IIT campus, we went to Pallikaranai marsh, surrounded by greyish hillocks of garbage. The marsh is the official dumpyard of the city, in spite of its rich avifauna. Here we spotted Pelicans, the spot-billed ducks, moorhens, stilts, kingfishers, egrets and other water birds swimming, diving and squawking.

We then took a drive on NH45, stopping at few places near Vandalur zoo including a dense scrubland, where we spotted only a few birds (including the Prinia and the Greenish Warbler), but heard many more. This, I was told, is typical of scrub vegetation, where birds are generally shy and secretive during noon.



Our final stop for the day was the Guindy National Park. Most of us have been to the Snake Park and Children's Park, but believe me there is just a world beyond, comprising of forests and scrubland and small water pools. It was really hard to believe that we were still in Chennai. Only the sound of frequent aeroplanes reminded us that we were very much in the city, at its heart too!

As we looked up to check out a man-made Kingfisher descending to land, we spotted a couple of raptors (birds which hunt other animals) circling in the skies. After much

difficulty, it was announced by our captain that it was a black winged kite. We then spotted pariah kites, the Indian pitta, a Quail and many other birds. On our way back to the car, we were even rewarded with a surprise encounter with a Star Tortoise. This was the first time I was seeing one in the wild and got really excited.

It was at the Guindy National Park that we also spotted our team's bird of the day - the Asian Paradise Fly Catcher, a brown coloured bird with a whitish belly. The bird has a glossy black crown and crest, a bluish eye and bill. The most beautiful feature of the bird was its really long pair of tail feathers, looked just like a long, flowy cape. I was informed that the bird was a young male. I thought he looked stunning, a visitor from paradise! And just another glimpse of him is reason enough for me to fix a date with my (new found) winged friends very soon!!

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