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## National Biodiversity Congress held at Thiruvananthapuram

Kerala State Biodiversity Board hosted the first National Biodiversity Congress which was held at Kanakakkunnu Palace, Thiruvananthapuram from December 21 to 30, 2012. The congress was organised for development of a strategic plan for the conservation of biodiversity and to chalk out conservation initiatives. Major attractions of NBC-2012 included National Biodiversity Conference, National Biodiversity Expo, Meetings of farmers and NGO's, Biodiversity popularisation programmes and Children's Ecological congress. NBC-2012 was inaugurated on December 27 by Dr. Shashi Tharoor, Union Minister of State for Human Resources Development. Dr. R. Chidambaram, Principal Scientific Advisor to Government of India, delivered the keynote address and Dr. Sam Pitroda, Chairman, Prime Minister's Innovation Council joined through a video link. Dr. Sam Pitroda announced a proposal to establish a National Innovation Council on Biodiversity. During his keynote address Dr. R. Chidambaram confirmed the establishment of a National Biodiversity Grid. Another important recommendation of NBC-2012 is the setting up of Biodiversity Information and Data Management Future Road Map, which will be a single window for Biodiversity information of the country. Dr.Balakrishna Pisupati, Chairman,NBA attended the inaugural function.National Biodiversity conference involved four days of scientific, policy and legal deliberations to make India a leader in translating the potential of biodiversity for sustainable national development and securing livelihoods of local communities. The Conference brought together twenty state biodiversity boards across the country to discuss issues in implementation of the Biological Diversity Act and Rules. NBC-2012 was supported by NBA and State Biodiversity Boards.



Dr. Shashi Tharoor, Union Minister of State for H.R.D inaugurating National Biodiversity Conference.

## National Biodiversity Expo attracted large crowd

National Biodiversity Expo 2012 held at Kanakakkunnu Palace Grounds, Thiruvananthapuram from 21 to 30 December was inaugurated by State Minister for Home, Thiruvanchoor Radhakrishnan, Minister for Health, V. S. Sivakumar chaired the meeting.

Dr.Oommen.V.Oommen,Chairman, KSBB and Dr. K. P. Laladhas, Member Secretary attended the inaugural function. The exhibition held in conjunction with NBC 2012 was unique in focusing on the myriad diversity of life on our planet and allowed the visitors to explore Earth's remarkable variety

of wildlife, habitats, and culture. The stalls provided an insight into biodiversity of India, bio-geographical



Chief Minister of Kerala, Oommen Chandy visiting the NBC Expo.

zones, critically endangered flora and fauna, biodiversity heritage sites, domesticated biodiversity, conservation measures, success stories, traditional varieties and breeds etc. About 50,000 people visited the Expo. Many dignitaries including Chief Minister Oommen Chandy also visited the Expo.The prizes for the best pavilions under various categories was awarded by Dr. Balakrishna Pisupati, Chairman, NBA to KMFRI, MSSRF, KUFOS, Soil Survey and Conservation Dept., Bioinformatics Centre and ATREE. Special award of excellence was given to NMNH, New Delhi.

## Warm welcome to the rainy season



**Dr. K.P. Laladhas,**  
Member Secretary, KSBB  
Chief Editor

*Welcome to the rainy season, welcome to the first patter of rains and fragrance from the parched earth, welcome to the heavy downpours which will leave the ground fresh and welcome to the profusion of insects, the croaking of frogs, to nature teeming with life.*

The rainy season is just around the corner, but will the rain play truant this year too?. After 66 years of Independence and after considerable investment in irrigation systems, Indian agriculture is still rain-fed. For millions of people in India, monsoons can make all the difference between meeting basic needs, or a year of poverty. Last year's south-west monsoon was deficient by 24 percent

and the state received only 1,551 mm of rain against a normal 2,040 mm of rainfall during the season. More alarmingly, rainfall is changing its character—when it rains, it pours with a vengeance leading to flash floods. The result- less useful water for farmers and less recharge of groundwater. It is high time we accept that the impact of climate change is being felt and it is important we change the way we deal with water. These so called vagaries of nature are mostly man made as we have forgotten how to live in harmony with nature. Our forests are cut down, our wetlands are converted, our water bodies, which store and recharge water are dumping grounds for waste, our underground aquifers are neglected, our cities are without drainage system and we lament over water shortage.



Rain is the lifeline of our country and it

is time we harness every drop of the rain and channelise it into aquifers for future use. Biodiversity is critical to sustain the water cycle and the inter-connected web of terrestrial and aquatic ecosystems has to be conserved properly to serve as a natural infrastructure to mitigate climate change. Our priority should be community care of rivers and streams, ensuring that the waterways are not dumps for garbage and the avoidance of buildings on river banks. Our water agenda should focus on lakes, ponds, wells, grasses, trees, wetlands and everything which slows the journey of that precious drop of rain to the oceans.

So, let us celebrate this season of life during the International year of Water Co-operation (2013), and pledge to safeguard our forests - the "bio shield" for mitigating climate change.

## Conservationists share their experience at Haritha Sangamam

In conjunction with NBC-2012, a "Haritha Sangamam" was organised involving more than 150 farmers and conservationists. Haritha Sangamam was inaugurated by Dr.P.Pushpangadan, former Director, NBRI and JNTBGRI. R.Hali, former Director of Agriculture was the moderator. The main objective of Haritha sangamam was to enable grass root level conservationists to present their dedicated efforts in

conserving biodiversity and to interact with likeminded individuals.

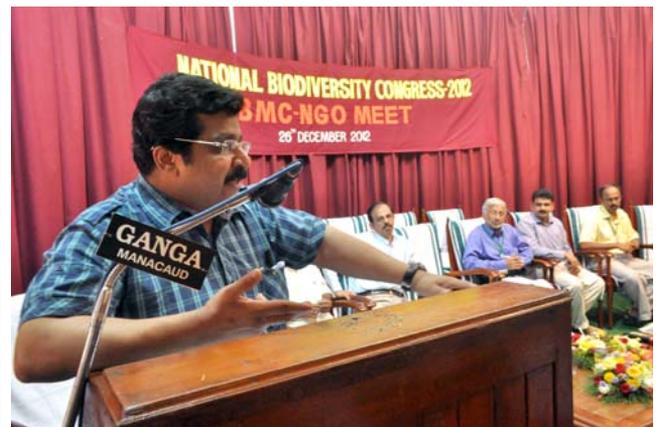
A BMC/ NGO meet was also organised involving BMC members, nature conservationists and NGO's. The meet was inaugurated by Minister for Local Self Government, Dr.M.K.Muneer.

Children's Ecological Congress was another major event of NBC. Nedumudi Harikumar, Director, Kerala Balasahitya

Institute inaugurated the congress. Participating children presented projects in three categories with the main themes- House hold medicinal plants, Biodiversity of my village and Local rice varieties and their traditional knowledge. The overall trophy was bagged by CKNS GHSS, Pilicode, Kasargod. Trophy with certificate of merit was given to the winners of the various competitions.



Jochi, a tribal healer from Wayanad speaking at Haritha Sangamam



Dr. M. K. Muneer, Minister for Panchayats and Social Welfare inaugurating the BMC-NGO Meet.



Dr. Oommen V. Oommen  
Chairman-KSBB

*"How inappropriate to call this planet Earth, when clearly it is ocean"*  
- Arthur C Clarke

The Ocean contains the largest animals ever to have lived on Earth and billions upon billions of the tiniest. The Ocean supports life right from the sunny top surface to the deep dark depths, a plenitude of ecosystems invisible to man. In 2011 a team of scientists suggested that 91 % of all marine species are yet to be discovered in spite of the huge efforts of the scientists who worked in collaboration on the Census of Marine Life. During the strategic plan of the CBD, 193 countries committed to conserve at least 10% of the coastal and marine areas through marine protected areas

## One Ocean- a plenitude of ecosystems

(MPA). A CBD (CoP10) decision also recommended that MPA's for conservation and management of biodiversity could, also be established as fisheries management tools contributing to biodiversity and habitat conservation. Today, the total number of MPA's stands at approximately 5,880, covering over 4.2 million km<sup>2</sup> of ocean. (1.17% of the world's total marine area (IUCN-WCPA, 2010). The Marine Protected Areas (MPAs) in India comprise a total of 31 marine sanctuaries and national parks, which cover an area of about 6,271.21 sq. Km. India's rich blue diversity includes Gulf of Mannar marine national park characterised by four ecosystems, with 120 species of corals, 79 species of crustaceans, 108 sponges, 260 molluscs, 100 echinoderms in addition to 13 species of mangroves and 160 species of sea weeds. Sunderbans has the largest mangrove diversity on globe with 81 plant species. Gahirmatha marine sanctuary

is the unique nesting ground of Olive Ridley sea turtles.

Kerala with a coast line of 580 km is inadequately represented in this network of MPA's. Many vitally important or threatened coastal ecosystems do not have protected status. Greater representation is required to address these gaps in coverage, and to ensure that critical ecosystems are conserved. Adoption of systems for community led management and acknowledgement of the management initiatives of local fishing communities, many of which are 'space-based' is necessary.

It is high time we act, to ensure a healthy and sustainable future for the environment that covers three quarters of the surface of our blue planet and let us hope that KSBB's unique initiative in preparing a Marine Biodiversity Register (MBR), the first of its kind in the country, will be a positive step in this direction.

## Earth Hour 2013 - Millions turned off lights to campaign against climate change

***On March 23, 2013, hundreds of millions of people in thousands of cities switched off their lights for one hour in a display of universal commitment to protect the one thing that unites us all—The Planet.***

More than 150 countries took part in the event, which also saw the Gateway of India in Mumbai, the Burj Khalifa in Dubai, Table Mountain in Cape Town and Times Square in New York turn off their lights. In the UK Elizabeth Tower, which houses Big Ben in the Palace of Westminster, the Southbank Centre for arts on the banks of the River Thames and Buckingham Palace all went dark at 8-30 pm for Earth Hour.

Delhi joined many cities across the globe to observe Earth Hour on Saturday with its important monuments such as India Gate, Qutab Minar and Humayun's Tomb along with government buildings switching off lights at 8-30 pm. for an hour. Several markets, residential areas and hotels too opted to stand up for asserting their commitment to preserving the environment by switching off lights. Kerala State Electricity Board (KSEB) switched off the power supply on March 23 for 15 minutes between 8-30 pm and 9-15 pm as part of Earth Hour campaign.

Earth Hour is WWF's global campaign that inspires governments, businesses, communities and individuals to take a stand against climate change. It is that one hour that unites people across the world to take a collective action of switching off non essential lights in celebration of life and our planet.



UN WATER  
World Water Day  
**2013**  
International Year of  
Water Cooperation

When you conserve water, you conserve life

WWF

## KSBB EVENTS

- ◆ 8<sup>th</sup> National meet of State Biodiversity Boards was held on 15<sup>th</sup> and 16<sup>th</sup> March 2013 at Chennai. The meet was inaugurated by Smt. Jayanthi Natarajan , Union Minister of State , Ministry of Environment and Forests. Dr. Balakrishna Pisupati , Chairman, NBA delivered the keynote address. Dr. Oommen. V. Oommen , Chairman and Dr. K.P. Laladhas , Member Secretary represented Kerala State Biodiversity Board in the meet.
- ◆ A Three day Workshop on “Management of People’s Biodiversity Register” was organised at KFRI, Peechi from 28<sup>th</sup> February to 2<sup>nd</sup> March, 2013 for District Co-ordinators and project fellows . M.P. Vincent, MLA inaugurated the workshop. Dr. Oommen. V. Oommen, Chairman, KSBB chaired the meeting. Felicitations were given by Dr. Ravishankar Thuppalli, Project Manager, UNDP-NBA, Chennai and Dr. R.V. Varma, Former Chairman, KSBB. Dr. K.P. Laladhas, Member Secretary, KSBB welcomed the gathering and vote of thanks was proposed by Prof. S. Justin Manohar Raj, Senior Programme Co-ordinator. The participants were taken to the Peechi-Vazhani Wild life Sanctuary for Biodiversity assessment.
- ◆ A meeting was organised by KSBB on February 22<sup>nd</sup>, 2013 at Trivandrum Hotel, to chalk out an action plan for Conservation of Pampa River at LSG level. Dr. K.G. Padmakumar, Former Head, RARS, Kumarakom, Prof. K.V. Jayachandran, KUFOS, Dr. Oommen. V. Oommen, Chairman, KSBB, Dr. K.P. Laladhas, Member Secretary, KSBB, N.K. Sukumaran Nair, Convenor Pampa Parirakshana Samithi, District Co-ordinators and Project Fellows attended the meeting. Suggestions regarding the Pampa action plan were included in the discussion. After incorporating these suggestions, a pilot project will be initiated in Pandanad, Mannar in Allapuzha and Vadasserikkara panchayats of Pathanamthitta.



Inauguration of workshop on “Intangible Natural Heritage” by K. Jayakumar.



Inauguration of workshop on “Management of People’s Biodiversity register” by M.P. Vincent, MLA .

- ◆ A workshop on “Intangible Natural Heritage” with focus on methodology was organised by National Museum of Natural History jointly with Kerala State Biodiversity Board , Centre for Environment and Development and JNTBGRI from 9<sup>th</sup> to 11<sup>th</sup> March 2013 at Vattiyoorkavu, Thiruvananthapuram. The workshop was inaugurated by Shri. K. Jayakumar, Vice Chancellor, Thunchath Ezhuthachan Malayalam University. Dr. Oommen. V. Oommen, Chairman, KSBB gave a presentation on “Preparation of Peoples Biodiversity Register”. On the second day, field visit cum PBR preparation at Kani tribal hamlets was organised.

- ◆ One day training was arranged on 12<sup>th</sup> March 2013 for Project fellows and District Co-ordinators at KSBB Headquarters, Thiruvananthapuram. Dr. K.P. Laladhas, Member Secretary, KSBB, Prof. S. Justin Manohar Raj, Senior Programme Co-ordinator, KSBB and Mithrambika N.B, Project Associate handled the training sessions.

- ◆ Kerala State Biodiversity Board produced a bilingual documentary on Attapadi Black Goats. Attapadi Black is one of the two native breeds of Kerala. This breed has been enlisted in the insecure category by FAO. The documentary covers peculiarities of this breed and the intimate relation between goats and tribes. The documentary was telecast through Asianet (News) Channel.

- ◆ Monitoring of fish diversity in 44 rivers of Kerala was done by River Research Centre, Thrissur. The study was funded by Kerala State Biodiversity Board. Study revealed that there is a drastic decline in fish diversity of the rivers due to various man-made and ecological factors.

- ◆ A team lead by Dr. K.P. Laladhas Member Secretary , KSBB, visited the tribal hamlet at Edamalakkudy for preparation of Peoples Biodiversity Register.



Visit to Edamalakkudy

## RED LIST

### Miss Kerala *Puntius denisonii*

One of the most popular ornamental fish species in international trade, the Denison Barb also known as Miss Kerala (*Puntius denisonii*) is an endangered and endemic fish of the Western Ghats.

It is a very attractive fish with silvery scales across the body, silvery-blue fins and bluish tail with black and yellow tip. The most distinctive feature of this freshwater fish is the black stripe that runs along the length of the body, as well as the striking red stripe that stretches from the snout to the middle of the

body. Like other barbs, the body is torpedo-shaped, with the base of the tail being relatively fat, while a pair



of barbels, equipped with taste organs, hang from the lower lip that are used to find prey in murky water. It reaches a maximum length of 15 cm. This egg-laying species spawns during the monsoon, between November and January, with the juvenile fish maturing from May to July the next year. It is likely that these fish have a lifespan of up to eight years.

This fish is known from only eleven rivers in the Western Ghats. The species is given endangered status in the IUCN-Red list.

## KSBB Prepares Marine Biodiversity Register



The Kerala State Biodiversity Board in association with Protsahan, a Thiruvananthapuram based NGO initiated a programme to prepare a Marine Biodiversity Register (MBR) documenting the underwater ecology of the inshore areas. The pilot phase will cover a 20-km stretch of the Thiruvananthapuram coast from Valiathura to Puthukurichy. The project team will record the demersal (fish living and feeding on or near the bottom of the sea) species around the reef areas and document traditional knowledge on navigation, bottom configuration of the seabed, ocean currents and wind patterns. It will also provide indicators to overfishing and marine resource depletion.

## Coastal walk in search of Marine Biodiversity

Coastal areas are environmentally unique and rich in biodiversity. A Trivandrum based NGO, "Friends of Marine Life" conducted coastal walk for recording coastal biodiversity.

Friends of Marine Life is a group consisting of coastal youth who are well-versed with coastal environment. Prior to coastal walk, a training class for the participants was taken by Dr. Vareethaia of Thuthur Christian College. On 23rd February, the twenty member group lead by Robert Panipilla, Metilda Cicil and Aneesha Ani performed coastal walk along the beaches of Mullur in Thiruvananthapuram and Kadiapattanam, Muttam and Enayaputhanthura in Tamilnadu. They identified and recorded various marine crabs, shell fishes and Sponges with the help of experts. Traditional knowledge of fisher men community was also utilized for identification. Samples for future study were collected from the coasts.

The valuable information collected during the coastal walk will be included in the Marine Biodiversity Register (MBR), being prepared by the Kerala State Biodiversity Board.



## Save the frogs day - 27 April 2013

- One third to one half of all amphibian species are threatened with extinction world over
- More than 120 species became extinct in recent years
- 66% of Indian amphibians are under the threat of extinction
- Causes for extinction are Habitat destruction, Alteration and Fragmentation, Introduced Species, Over-Exploitation, Climate Change, UV Radiation, Chemical Contaminants, Disease, Deformities, Synergisms
- Save Amphibians through Protection, Captive Breeding, Reintroductions and Non-native Species Removal

**"When we save the frogs, we're protecting all our wildlife, all our ecosystems and all humans."**

— Dr. Kerry Kriger, Founder & Executive Director of SAVE THE FROGS



# Grandma's Forest

Vana Mitra awardee Devaki Amma's homestead at Kayamkulam is a naturalist's paradise. Home to a rich variety of rare plants, trees and migratory birds, this green grove in Kandallur panchayat is a blissful sight. Spread over 4 acres, the homestead has about 600 species of plants.

Nature conservation has been a tradition for 78 year old Devaki Amma, who won the Indira Priyadarshini Vana Mitra Award in 2003. Devaki Amma belongs to a traditional agricultural family. Her family used to cultivate paddy and many other crops. During 1980 she had an accident, which restricted her from active participation in farming activities. Consequently, shortage of skill labourers forced her to stop paddy cultivation. There were many

trees, including coconut palms in her homestead. Devaki Amma had a passion towards trees and nature since childhood. Hence she decided to plant more trees and plants in the homestead. Devaki Amma has five children. They whole - heartedly supported the idea. Eldest of them, D. Thankamony, former professor of the College of Engineering, Thiruvananthapuram, is also a Vana Mitra award winner on behalf of CET. She helped Devaki Amma to



collect and plant many rare trees and plants in the compound. After three decades of earnest effort, the homestead became a man-made forest. The soil became covered with a thick layer of dried leaves. The microbial population multiplied fast and made the soil rich in humus.

Rare plants growing here include Neermaruthu (*Terminalia arjuna*), Panachi (*Diospyros malabarica*), Venga (*Pterocarpus marsupium*), Kallipala (*Euphorbium anticorum*), Kurumpala (*Ervatamea dichotima*), Neermathalam (*Crataeva religosa*), Ambazham (*Spondias mangifera*), Yachaki (*Crescentia cujetea*), Sausage tree (*Kigelia Africana*), Candle Tree (*Senna alata*), Manathakkali (*Solanum nigrum*) to name a few. Many types of birds and animals have made this forest their home.

For children in the family and neighbourhood, Devaki Amma's homestead is a 'grandma's forest', where they love to play or simply spend time.

## Coconut - Potential Carbon Sink

According to recent studies, productive and sustainable coconut farming ecosystems are potential "carbon sinks" that can minimise the effect of climate change.

Central Plantation Crops Research Institute, Kasaragod conducted studies in different agro-climatic zones to estimate the carbon stocks and sequestrations by coconut monocrop. In trees, biomass and the soil are the main carbon sinks. Researchers estimated the annual biomass production of coconut palms per hectare. About 45% of this was taken as sequestered carbon. Similarly the annual accumulation to the soil carbon stock was measured. Thus, the standing biomass and annual biomass production in coconut was studied by CPCRI. The net primary production (NPP) estimations of coconut monocrop in different agro-climatic zones indicated that annual carbon sequestration potential of coconut above ground biomass ranged from 8 T CO<sub>2</sub> per hectare to 32 T CO<sub>2</sub> per hac depending on variety, agro-climatic zone, soil type and management. The standing carbon stocks ranged from 18 T CO<sub>2</sub> per hac to 51 T CO<sub>2</sub> per hac.

The output on the net primary production of coconut in its economic life span of 60 years was also observed. Estimates indicate that long-term (about 60 years) carbon stocking in stem is more than 150 T CO<sub>2</sub> per hac. The carbon stored for short to medium period (2 to 5 years) was found to be 1350 T CO<sub>2</sub> per hac during the entire economic life span of coconut. Further, carbon storage in leaf and inflorescence, for short to medium duration (2-3 years) was estimated to be around 1000 T CO<sub>2</sub> per hac in the entire span of coconut.

## Wetlands



Wetlands have been called "biological super systems" because they produce great volumes of food that support a remarkable level of biodiversity. The combination of shallow water, high levels of nutrients, and high primary productivity (the amount of biomass produced) is ideal for the development of organisms that form the essential base of our planet's food web.

## New Face

\* Botanists at the Zamorin's Guruvayurappan College, Kozhikode, have reported a new species of Bryophyte (Moss) from the New Amarambalam Forests in Nilambur. Researchers have named the new plant *Symphysodontella madhusoodanii*. It is characterised by long, drooping primary branches, short secondary branches and two costate (ridged) leaves. It is confined to the New Amarambalam Forests and the Mukuruti National Park across the border in Tamil Nadu. The New Amarambalam forests is also the home of the Cholanaikar tribe.

(*PhytoKeys* 18: 39–44, doi: 10.3897/phytokeys.18.3314)

\* A group of researchers from St. Alberts College, Kochi, St. John's College Anchal, Zoological Survey of India, Pune and IISER, Pune discovered a new species of Stone Loach (fish) from Kunthi tributary of Bharathapuzha River inside the Silent Valley National Park in the Southern Western Ghats, christened as '*Balitora jalpalli*', ([Threatenedtaxa.org/ZooPrintJournal/2013/March](http://Threatenedtaxa.org/ZooPrintJournal/2013/March))

\* A new family of caecilians has been discovered in north-eastern India by a team of biologists from University of Delhi. This is the 10th caecilian family



to be identified, and the team named it *Chikilidae*, derived from the name used in the local Garo tongue. The females of this family incubate their young for several months without eating. DNA evidence suggests that the family split from its closest African relatives more than 140 million years ago, when the ancient super-continent of Gondwana fragmented, separating present-day India and Africa. (*Indian Bioscience*)



## Migratory birds population reduced

Annual water bird count was conducted at various parts of the state for providing data to help drive conservation of water bird populations and wetland habitats.

The survey, conducted by the Travancore Natural History Society (TNHS) in association with Club Mahindra at Ashtamudi lake, show a fall in the population of migratory birds and an increase in resident ones.

2,500 waterbirds from 23 species were sighted during the survey. One of the significant aspects of the survey was the sighting of 28 oriental darters (*Anhinga melanogaster*), a near-threatened water bird (IUCN). The water bird count at Kole wetlands included a total of 30764 birds during 2012, 7000 birds less than the count of 2011. Two Vulnerable species of birds, Indian Spotted eagle (*Aquila hastate*) and Greater

Spotted Eagle (*Aquila clanga*) were spotted during the survey.



Oriental Darter



Inauguration of NBC Expo 2012 by Thiruvanchoor Radhakrishnan, Minister for Home Affairs



NBC-2012 - Release of Book of Abstracts by Dr. R Chidambaram, Principal Scientific Advisor to Govt. of India



Inauguration of 5th Children's Ecological Congress by Nedumudi Harikumar



Dr. Sam Pitroda, Chairman, Prime Minister's Innovation Council joining NBC Inauguration through video link



Late D. Vinayachandran, renowned Malayalam poet, visiting NBC Expo



Students at NBC Expo



**SAVE EARTH**  
"Tomorrows earth is todays responsibility."

"We do not inherit the earth from our ancestors, we borrow it from our children."  
- Native American Proverb

**EARTH DAY** 22 APRIL 2013

In a Japanese village grew a great willow tree. For many generations, people loved it. In the summer, it was a resting place, in winter it was like a great half - opened umbrella covered with sparkling snow.

Heitaro, a young farmer, lived near this tree. He entered into a deep communion with the willow. It was the first object he saw upon waking, and upon his return from work he looked out eagerly for its familiar form. Sometimes he would burn a bathi beneath its branches, kneel down and pray. One night, while Heitaro sat under the great willow he suddenly saw a beautiful woman standing close beside him. Night after night they met under the old willow tree and soon they fell in love. The woman's shyness entirely disappeared. She was eager to hear Heitaro praising the willow under which they sat. One night Heitaro asked her, "Dear one, will you be my wife?"

"Call me Higo ("Willow") and please ask no questions about me. I have no father or mother, and someday you will understand." said the woman.

## The Willow Wife

Heitaro and Higo got married, and in due time they were blessed with a child, whom they called Chiyodo. They lived happily.



Once, a great news came to the village. The Emperor Toba wished to build a temple in Kyoto, and royal servants were sent throughout the country for timber. The villagers said that they

must contribute towards building the sacred edifice by presenting the great willow tree. Heitaro argued against this, but villagers didn't listen to him.

Heitaro went home and told his wife- "Oh, wife, they are about to cut down our dear willow tree."

That night, Heitaro was aroused by hearing a piercing cry. "Heitaro, they are cutting down the willow tree. I am the soul of willow tree. The villagers are killing me. Oh, how they cut and tear me to pieces! Dear Heitaro, the pain, the pain" -said his wife.

"My Willow Wife! My Willow Wife!" sobbed Heitaro.

"I am going now. Such a love as ours cannot be cut down, however fierce the blows. I shall wait for you and Chiyodo, My hair is falling through the sky! My body is breaking!" -said Higo in trembling voice.

There was a loud crash outside. The great willow tree lay broken upon the ground. Heitaro looked around for Higo, but his Willow Wife was gone.

## Medicinal Citron

In ancient times and in the middle ages, the 'Citron' (*Citrus medica* - Ganapathi) Narakam) was employed as a remedy for seasickness, pulmonary troubles, intestinal ailments and other disorders. New studies reveal more and more properties of this valuable fruit.

Study done by Tehran University of Medical Sciences revealed the anti-mutagenicity and anticancer effect of *Citrus Medica* fruit juice and the effects were higher in half-ripe *Citrus Medica* in comparison to the ripened one.

Juice of the fruit was given to the patients of primary as well as metastatic cancer. It improved patient's liver metabolism, gradually normalised



liver function, preventing recurrence, stopping further spread of disease, and decreasing tumour growth.

The anti-ulcer activity of aqueous extract of the fruits was reported by Department of Pharmacology, Nargund College of Pharmacy, Bangalore. Fruit Aqueous Extract of Citron possesses significant anti-ulcer activity. The

activity could be due to the presence of flavonoids, as these compounds have well documented anti-ulcer activity.

Research conducted at the Department of Pharmacology, Sudhakar Rao Naik Institute of Pharmacy, Pusad, Maharashtra proved the anthelmintic quality of Citron, especially against tapeworm. Department of Biotechnology, Southern Taiwan University of Technology, Republic of China conducted a study on anti-inflammatory value of citron. The study has led to the isolation of anti-inflammatory components xanthyletin, nordentatin, atalantoflavon and lonchocarpol.

Urgent measures are required to preserve and popularise this precious tree, which was once common in the homesteads of Kerala.



*That each day I may walk unceasingly on the banks of my water, that my soul may repose on the branches of the trees which I planted, that I may refresh myself under the shadow of my sycamore - Egyptian tomb inscription, circa 1400 BC*