

## FROM THE STATE DIRECTOR'S DESK

The recent episode of the protests by conservationists against KINFRA's proposed sea reclamation project is a landmark in many ways. It was a real eye opener, in the sense that, it really showed how careless and carefree developers can be when it comes to 'development vs environment'. Many saw the proposal as a really 'bizzare' idea and that too especially for a state like Kerala. The project proposal was initially brought to light by EQUATIONS and then the protests were ignited and led by Kerala Swathantra Matsya Thozhilali Federation (KSMTF) and that too in association with various other like minded individuals and institutions including WWF. The episode proved how vigilant we should be against such so called 'development projects' put forward in the name of providing housing, recreation etc for the expanding international airport terminal. The way in which it was justified was also very interesting. KINFRA's project proposal stated that, this method of reclamation is recommended to avoid wetland reclamation along the landward side. There, what it ultimately shows is that, KINFRA or our other developers do not have any idea about the vast wealth of ecosystems, its associated resources and their values and functions. In this case, no one has to go into any other details to justify protection of the coastal and marine ecosystem, but to understand the vast wealth of fisheries resources which forms a staple food in our day to day diet and also earns much foreign revenue. During the

initial protests itself, people justifying the project argued that the feasibility study should be conducted and then a final decision taken. This argument also failed because there was no justification to the huge costs involved in carrying out such a study for a project proposal which gives more doubts than promises in the minds of even the common man. The other positive aspect was that, this episode really brought people together for conservation. Irrespective of institutional affiliation, designation, attachment to political party and other such parameters, people from different walks of life came together – understanding the impending disaster if such a project would materialize, realizing its harmful impacts on the ecosystem and on the local people i.e. mainly the fishermen and other coastal dwelling communities. Different modes of protests were also used in this case. Protest march towards offices of the decision makers, discussions and debates in visual media, publishing articles in the print media, press conferences etc. Finally, understanding their mistake, the Government very quickly set into action and the Industries Minister very quickly came out with the statement about scraping the project, even the proposal to conduct the feasibility study. This again proves that, it is the responsibility of each and every citizen to protect the environment. We need to be vigilant and react against any act by anyone to harm nature and environment.

**Renjan Mathew Varghese**, State Director

## IMPORTANT NEWS ON ENVIRONMENT AND NATURE

### GLOBAL

#### New dinosaur species found

Scientists have confirmed for the first time that Australia was once home to a dinosaur that was big, fast and terrifying, and they have named it like something from an Arnold Schwarzenegger movie. Meet the *Australovenator*. The beast was a 500 kg

meat-eating predator with three slashing claws on each of its powerful forelimbs that stalked the outback 98 million years ago, researchers said in a report published on Friday. Fossilised remnants of its limb bones, ribs, jaw and fangs were found – along with bones of two other new species of gigantic, long-necked herbivores weighing up to 20 metric tonnes – in Queensland State over the past three years. The finders nicknamed the 5-metre long carnivore, *Australovenator wintonensis*, "Banjo." The other two finds – 16-metre long herbivores – were previously unknown types of titanosaurs, the largest dinosaurs that

ever lived. The giraffe-like *Wintonotitan wattsi*, was nicknamed "Clancy" and the hippopotamus-like *Diamantinasaurus matildae* has been nicknamed Matilda. All three lived in the mid-Cretaceous period which extended from 145 million years to 65 million years ago (*The Hindu*, 04.07.09).

## Two-thirds of world species may disappear in 21<sup>st</sup> century

A biologist from the United States said in Beijing on Sunday that two-thirds of the world's species may disappear in the 21<sup>st</sup> Century and "a great majority" of them may be gone before they are even identified by human beings. Peter Raven, president of the Missouri Botanical Garden, said in his keynote speech at the 23<sup>rd</sup> International Congress for Conservation Biology (ICCB) that species on the earth are disappearing at a rapid rate due to habitat destruction, climate change and a wide spread of invasive alien species caused by expanding human activities. "Currently, several thousand species are lost every year," Raven said, "and very soon the number could rise to more than 10,000." The 23<sup>rd</sup> ICCB, co-organised by the Society for Conservation Biology, the Chinese Academy of Sciences and the State Forestry Administration of China, opened here Sunday will last for five days. To prevent the rapid loss of world species, Raven proposed that information on the species be collected and disseminated as fast and as much as possible to raise public awareness on wildlife protection. He also called for expansions of parks and nature reserves and more cooperation within the international community to develop new technologies for maintaining biological sustainability, allowing a fair number of the population to live where they like and setting acceptable consumption levels for individuals (*The Hindu*, 13.07.09)

## NATIONAL

### Slender-billed vulture bred in captivity

The Vulture Conservation Breeding Centre in North Bengal has successfully bred the critically endangered slender-billed vulture. This is the first breeding of the species in captivity the world over, claims the centre. "This is a major boost to our captive breeding programme as we hadn't expected to achieve success this early," said Sachin Ranade, centre manager and senior research fellow of the Bombay Natural History Society. The chick, born in this February to a pair brought to the centre from Assam in 2006, was doing well. The centre, at the Rajabhatkhawa forests

near the Buxa Tiger Reserve, one of three such facilities run by the BNHS, aims to release 200 vultures into the wild by 2021. The programme tasted success in 2007, when a white-backed vulture chick hatched in the facility at Pinjore in Haryana. Of the nine species recorded in the subcontinent, the slender-billed, long-billed and white-backed vultures have been declared critically endangered by the International Union for the Conservation of Nature (*The Hindu*, 26.07.09)

### World Tiger Summit in Ranthambore next year

"Rajasthan will host the World Tiger Summit at Ranthambore next year in October or November. About 200 experts from across the world are to participate in the summit, including those from the world renowned organisation, Global Tiger Initiative," Minister of State (Independent charge) for Environment and Forests Jairam Ramesh told PTI. The Ranthambore Tiger Reserve, having over 44 royal cats, would be showcased as a role model to the delegates. The summit is being held for the first time in the country, which is home to around 1,400 endangered species. The summit is likely to seek strengthening and expansion of a patchy system of tiger reserves across 13 countries, including India, Indonesia, Thailand, China and Russia, that are home to the world's rapidly diminishing tiger population. Mr. Ramesh said that during the summit, the tiger census, based on new methodology, would be released. "We plan a three-tier system exclusively based on a scientific system to carry on the tiger estimation work." (*The Hindu*, 10.08.09).

### 353 new Himalayan species discovered

A flying frog, the world's smallest deer and the first new monkey to be found in over a century are among 350 new species discovered in the eastern Himalayas in the past decade, the WWF said Monday. In a report released here Monday, it said climate change, deforestation, overgrazing by domestic livestock and illegal poaching and wildlife trading threatened one of the biologically richest areas of the planet. The WWF said 353 new species were discovered in the region between 1998 and 2008, among them a red-footed tree frog known as a "flying frog" because its large webbed feet allow it to glide when falling. Another new species was a kind of caecilian, a limbless amphibian that resembles a giant earthworm and lives underground — a significant discovery because caecilians are among the planet's least-studied creatures. Other highlights were the world's smallest deer — a miniature muntjac standing just 60-80 centimetres (25-30 inches) tall that was found

in northern Myanmar — and the first new monkey species to be discovered in over a century. The WWF said the new species of macaque was one of the highest-dwelling monkeys in the world, living in India's Arunachal Pradesh state at between 1,600 and 3,500 metres (5,000 and 11,500 feet) above sea level. Among the 242 new plant varieties discovered was an ultramarine blue flower found by two intrepid Chinese botanists who descended into a gorge in Tibet that is twice as deep as the Grand Canyon in places. The WWF described the rare bloom as "dramatic in both colour and form" and said its colour changed with the temperature, making it particularly remarkable (*The Hindu*, 13.08.09)

## STATE

### Plan to take 5,000 ha from sea

Fish workers in the city are gearing up for an agitation against a proposal by the Kerala Industrial Infrastructure Development Corporation (KINFRA) to reclaim 5,000 hectares of land from the sea off the Veli-Thumba stretch of the coast. KINFRA has invited bids for consultancy to prepare a pre-feasibility report on the project that seeks to create space for expansion of the international airport and provide for housing and commercial development along the waterfront, with leisure, recreation and entertainment facilities. The Kerala Swathantra Matsya Thozhilali Federation (KSMTF) has threatened to mobilise coastal communities for a movement against the proposal. Addressing a press meet here on Monday, KSMTF President T. Peter and Secretary Anto Elias said the project would deprive thousands of fish workers of their livelihood. Mr. Peter said the reclamation would also impact on the marine environment and deplete fish stocks. "It would also be a violation of the Coastal Regulation Zone norms," Mr. Peter said. According to the bid document prepared by KINFRA, the study would review the existing coastline profile, taking into account the economic impact and ease of reclamation. The consultants will also assess ecological sustainability of land reclamation and propose different shore protection concepts and systems. (*The Hindu*, 14.07.09)

### Black spotted deer photographed

A black spotted deer has been photographed in the wild at the Parambikulam Wildlife Sanctuary. The animal was photographed by Sanjayan Kumar, Wildlife Warden of the sanctuary, on Sunday. The black coat is presumed to be due to the presence of high melanin pigmentation in its hair and skin. A close examination of the coat showed that the typical spots

of spotted deer were hidden by the excess pigmentation, Mr. Kumar said. Spotted deer is the most common deer species in Indian forests and it also inhabits Sri Lanka, Nepal and Bangladesh. Its coat is reddish fawn, marked with white spots, and its belly is white. The department plans to track the rare animal. (*The Hindu*, 21.07.09)

## SPECIES OF THIS ISSUE

### Little Cormorant (*Phalacrocorax niger*)

Common and widespread bird species categorised in 2008 IUCN Red List. It is a member of the cormorant family of seabirds. It breeds in tropical south Asia from southern Pakistan through India and Sri Lanka east to Indonesia. It is resident but undertakes some limited seasonal movements. It breeds in freshwater wetlands and on coasts. 3-5 eggs are laid in a nest in a tree or long grass.

This is a small cormorant, 55 cm in length. Its rectangular head profile and short bill are distinctions from the somewhat larger Indian Cormorant. Little Cormorant is mainly glossy black in the breeding season, with white head plumes and a whitish throat.



The wing coverts are silvery, and it has a longish tail. The sexes are similar, but non-breeding adults and juveniles are browner and lack the head plumes.

The Little Cormorant can dive to considerable depths, but usually feeds in shallow water. It frequently brings prey to the surface. A wide variety of fish are taken.

## CHILDREN'S CORNER

Match the following

You know, each state has its own state animals. Below is the list of few states and animals.

No	Animals	State
1	Gaur	Tamilnadu
2	RedPanda	Meghalaya
3	Nilgiri Tahr	Pondicherry
4	Lion	Orissa
5	Clouded Leopard	Tripura
6	Indian Giant squirrel	Goa
7	Wild Buffalo	Manipur
8	Butterfly Fish	Chhattisgarh
9	Mithun	Maharashtra
10	Sangai	Gujarat

Answers: 1.Goa, 2.Tamilnadu, 3.Tripura, 4.Gujarat, 5.Meghalaya, 6.Maharashtra, 7.Chhattisgarh, 8.Pondicherry, 9.Orissa, 10.Manipur.

## ISSUES OF GREAT CONCERN

### Clearing of Valanthakad Mangroves

#### Background

Mangrove ecosystem and its biodiversity is receiving greater attention in view of the Convention on Biological Diversity and is one among the most threatened ecosystem due to global climatic changes. Mangroves are well known for their faunal and floral diversity. The mangrove plants have several specific adaptations to the dynamic coastal environment. Mangroves also serve as a nursery, feeding and spawning grounds for several commercially important fishes. Mangrove ecosystem has various known and unknown functions and values to the planet and to the society, many of which cannot be quantified.

As the development and management of mangrove ecosystems are given high priority the world over, the existing Valanthakad mangrove ecosystem of Cochin also deserves special attention in terms of conservation. Kerala, which once used to have vast extents of mangrove vegetation across the State, now has only small patches left mainly in Kannur district. The major chunk has been replaced by development activities in various forms. Hence, it is very much the

need of the hour to identify the leftover mangrove ecosystem and conserve it for the betterment of humankind. In this direction also, these islands of mangrove vegetation has high significance.

Geographically the area lies within the boundaries at latitudes 9°55'10.24" North and longitudes 76°19'51.98" East, coming under Maradu Panchayat. The area is hardly 5 -6 km from the heart of Kochi city, alongside the National Highway (bypass 47). This mangrove exists as fringing vegetation distributed along the sides of the Cochin backwaters in Vembanad Lake. This island has around 44 families with a total population of 125. Majority of them seek out a living from fishing from nearby waters in a sustainable manner. It has to be stressed that majority of them belong to scheduled community. Among the existing mangroves ecosystems of Cochin backwaters, Valanthakad Island is one of the untouched patches of mangrove vegetation with rich biodiversity.

### Biodiversity of the region

Important mangrove flora of the island include about 8 true mangrove species and 16 associated species. The true mangrove species include *Acanthus ilicifolius*, *Avicennia officinalis*, *Bruguiera gymnorrhiza*, *Excoecaria agallocha*, *Rhizophora apiculata*, *R. mucronata*, and *Sonneratia caseolaris*. Among this, the most dominant mangrove species are *R. mucronata*. Major associated species are *Acrostichum aureum*, *Alstonia scholaris*, *Barringtonia racemosa*, *Caesalpinia crista*, *Calophyllum inophyllum*, *Cerebera odollam*, *Hibiscus tiliaceus*, *Thespesia populnea*, *Pongamia pinnata* etc.

This area is considered as a promising brackish water fish seed resource and 22 species of fishes have been identified in this area. The presence of *Lutjanus argentimaculatus* (Mangrove snapper) and *Scatophagus argus* (Spotted butter fish) is an indicator species of the well being of the mangrove ecosystem especially with *L. argentimaculatus* which occur only in productive mangrove waters. The other common fish species of the island include *Mystus gulio* (Long whiskered catfish), *Clarias batrachus* (Walking catfish), *Hyporhamphus limbatus* (Half beak), *Etroplus* (Karimeen), *Oreochromis mossambica* (Tilapia), *Mugil cephalus* (Mullet), *Glossogobius giuris* (Gobi), *Anabas testudineus* (Karipidi), *Channa striatus* (Pullivaral), *Channa punctatus* (Varal), *Anguilla bicolor* (Malangil), *Gerrus filamentosus* (Pranjin), *Liza parcia* (Kanambu), *Liza tade*, *Lutjanus spp* (Snapper), *Leignathus brevirostris* (Short nose ponyfish), *Siganus canaliculatus*, *Scatophagus argus* (Butter fish), *Ambassis commersoni* (Arinjil), *Gazza minuta* (Silver bellies). Four species of commercially important prawns namely *Penaeus indicus* (Naran

Chemmeen), *P.monodon* (Kara Chemmeen), *Metapenaeus dobsonii*, *Macrobrachium rosenbergii* (Konju), and crab species like *Scylla serrata*, *Portunus pelagicus* have been identified from this area.

The adjoining lake has a rich resource of clam namely *Villorita* sp. and is a major bread earner for the islanders. The gastropod species include *Cerithidea cingulata*, *Cerithidea obtusa*, *Nassarius jacksonianus*, *Telescopium telescopium*, most common being *Telescopium telescopium* and *Nassarius jacksonianus*. Totally seven species of birds both native and migratory have been identified in the region. The thick canopy of mangrove provides an ideal location for nesting of the birds.

### Conservation Issue

The biggest tragedy is that, in the name of development, there is now a proposal to convert this mangrove paradise into a techno city. In such scenarios, in spite of every rich scientific information available, action is usually initiated only after irreversible destructive damage has occurred. In view of this critical situation, adoption of several preventive measures is essential to protect the local dependent communities and to conserve this precious coastal ecosystem. Such defensive measures should cover all the activities of the past, present and future, bearing in mind that the cumulative impact of these activities should not affect the existing biodiversity in any way. The activities can include:

1. Value assessment of the mangrove forest in terms of the diversity in flora and fauna
2. Alternate livelihood activities like crab fattening, ranching of clam seeds, oyster & mussel farming which would help in the livelihood enhancement of the people inhabiting the island, whose present occupation is fishing and related activities
3. A living model depicting resource sustainability and livelihood

To achieve these goals, we urge the authorities concerned to take necessary action in protecting this as a community reserve.



## Background paper on opposing the project proposal by KINFRA for sea reclamation along Thiruvananthapuram coastal belt.

### Introduction

Kerala Industrial Infrastructure Development Corporation (KINFRA) under the Government of Kerala has called for Expression of Interest from consultants for undertaking pre-feasibility study for the proposed project titled '*Preparation of a Pre-feasibility Report for a Land Reclamation Project in Thiruvananthapuram District*'. The real issue is that the proposed land reclamation is 'reclamation of land from the sea' rather than from wetlands or paddy fields, even though is destructive and illegal is actually happening in a wide extent in our State. And this proposal is the ultimate in this chain of anthropogenic activities harming nature and the environment.

### The Proposed Project

KINFRA actually proposes to reclaim about 5000 ha of coastal waters into land around the Akkulam – Veli precinct for the ultimate purpose of addressing the need for developable land and yet simultaneously resolve the conflict of interest between the need for urban expansion. They envisage that the proposed reclamation is intended to create the required area for the expansion of the International Airport, in addition to providing for housing and commercial development along the waterfront with attractive leisure/ recreation/ entertainment facilities and open spaces.

### Why we oppose the project proposal

Prima facia, the proposed project does not seem to have any potential to achieve the said goals and objectives. Secondly, more than optimism, the proposed project raises doubts and concerns in the minds of people about every aspect of it:

1. *Violation of CRZ norms* – The proposed activity of sea reclamation and its ultimate objective of land for housing and recreation are clear violations of the Coastal Regulation Zone guidelines.
2. *Technological feasibility* – Marine and coastal ecosystems are very dynamic and sensitive ecosystems. And many a times, they are unpredictable too. The proposed site along the Veli – Akkulam coastal belt is one of the deepest and roughest coastal waters. How such a reclamation project can be successfully carried out, maintained and managed is a big question. And when you say reclamation, it is not to reclaim it just above the present water level, but looking at the average tidal fluctuations of maybe over 50 – 100 years, the

---

reclamation land should have adequate clearance over the highest tide reported. And then also, in the wake of the tsunami, it does not hold any promise that the tides would not rise over this levels. Also, previous reclamation projects have always proved that, wherever land is reclaimed, the adjoining areas will be lost to the sea through severe erosion. This is a normal balancing mechanism of the marine ecosystem. Kerala Coast is one of the most densely populated stretches in the country. So reclamation of the coastal waters into land would totally destroy the adjacent coastal areas leading to loss of habitation and livelihood of the traditional fishermen community.

3. *Economic feasibility* – The implementation of this kind of a project would require huge capital investment. For this the government would have to go in for loan schemes from international agencies which would ultimately surrender the sovereignty and security of the country to such external forces.
4. *Environmental feasibility* – The various heavy activities with regard to the proposed project would very much harm the marine and coastal ecosystem and the living and non-living forms inhabiting these waters. We have not yet fully understood our ecosystems and its living forms. So we cannot say anything for sure. It would be very dangerous and risky to make assumptions and give recommendations and go ahead with the project harming the ecosystem and the abundant wealth of fisheries and other marine and coastal resources. The key ecological issues with respect to the proposed reclamation and dredging in the sea could be both direct and indirect on a range of habitat and communities. Impacts may arise from destruction of the seabed during reclamation. During the heavy activities of the project, there may be disturbance and release of sediment at the sea bed leading to increased levels of suspended solids. At the sea bed such increases in suspended solids levels may smother benthic species, particularly sedentary species. Sedentary species may also be affected by incidences of reduced dissolved oxygen, which often accompany elevated suspended solid levels. Increased suspended solids will reduce the sunlight penetration into the water column, thus potentially decreasing the light intensity required for phytoplankton and algal photosynthesis. Impacts on juvenile fishes will typically be greater than for adults. The water quality in the areas around the reclaimed area will be affected during the construction period through, inter alia, release of contaminants due to resuspension of sediments

(e.g., when dredging is carried out), increased runoff of stormwater from building sites, and road construction which increases the turbidity of the water.

5. *Social feasibility* – Without any doubt, one can say that, the coastal ecosystem and the valuable fishery resources would be severely affected by this project. There are several species of fishes which occupies only these coastal waters. And also there is traditional fishermen community who does fishing along these coastal waters. All this will be adversely affected. Also loss of habitation will be a serious issue once erosion eats up the coastal land adjoining to the reclaimed land.
6. *Security issues* – We have the high priority security installations of Brahmos Aerospace and VSSC along the coastal areas. The reclamation of the coastal waters for housing and recreation would leave the installation vulnerable to various domestic and external threats.

### **The way forward**

Under these circumstances, we urge KINFRA and the Government of Kerala to revoke the tender for the pre-feasibility study and shelve the project proposal. Presently, land is not a scarce commodity that we need to reclaim sea for developmental activity. Let us judiciously use the land resources already available with us and try to complete the ongoing projects for which land and funds has already been made available, but then also the progress is on a snail's pace.

Renjan Mathew Varghese, State Director  
&

Dr Vinod M.,  
Senior Co-ordinator, Marine Programme

## **ACTIVITIES OF WWF-INDIA KERALA STATE OFFICE**

### **Friday Forum – July 2009**

The regular interaction platform for students and experts – Friday Forum was organised in the months of July and August 2009. In the month of July, unlike normal presentations, the Friday Forum was arranged on the 3<sup>rd</sup> of the month as a Quiz Programme for the participants titled 'Quiz on Nature and Environment'. Mr. Vishnu M.J., student of Integrated M.A. in Development Studies and a Master Quizzer conducted the quiz for the students. The students accepted it with great enthusiasm and thoroughly enjoyed the programme.

The Friday Forum in the month of August was arranged on the theme of 'Marine Biodiversity'. Dr. Bijukumar, Lecturer, Dept of Aquatic Biology and Fisheries, University of Kerala led the session. About 150 students attended the programme. The students really benefited from the presentation and the interaction session which followed.



### Teachers Training Workshops

The second programme of the Teachers Training Workshop series 2009-2010 organized by WWF-India, Kerala State Office and supported by CPR Environment Education Centre, Chennai was held at Holy Cross Higher Secondary School, Cherpunkal, Pala on 14<sup>th</sup> July 2009 with the participation of 45 teachers from different schools of Kottayam District. The workshop was inaugurated by Rev.Fr.Mathew Malepparambil, former Principal of St.Thomas College, Pala and an eminent personality both in education and conservation movement of Central Kerala. The inaugural session was chaired by Smt.Marykutty, Principal of Holy Cross Higher Secondary School, Cherpunkal. The technical sessions were handled by Dr. Jomy Augustine, Sri A.K. Sivakumar and Sri Mathew M. Kuriakose. Group discussion also followed.



The third workshop was held at Thalassery, Kannur District on 13<sup>th</sup> August, 2009 with the participation of 40 teachers from different schools of Thalassery educational district. The workshop was inaugurated by Sri.Raju Master, Vice President of the Chittariparamba Grama panchayat in the function that

was presided over by Smt.Santhakumari, Headmistress of UP School, Kannavam. The technical sessions were led by Mr. C. Sunilkumar, Senior News Photographer, Mathrubhoomi and Member, Wildlife Board, Government of Kerala and Mr. A.K. Sivakumar, Education Officer, WWF-India. Activity session and Action plan preparation exercise were also part of the one day programme.



The fourth Teachers Training Workshop was held at UP School, Kannavam in Kannur district. This workshop was a follow up workshop with the participation of 42 teachers from different parts of the district who participated in the workshops conducted in the last two years. The workshop was inaugurated by Sri.K.P.Mohanan, MLA who is also the member of Environmental Committee of Kerala Legislature Assembly in the function that was presided over by Sri. Renjan Mathew Varghese, State Director of WWF-India, Kerala State Office. Sri.Sahilraj, Coordinator of the BRC of Sarva Siksha Abhiyan (SSA) felicitated the workshop and appreciated WWF-India and CPREEC in organizing the follow-up programmes also. The technical sessions were handled by Mr. C. Sunilkumar, Mr.A.K. Sivakumar and Mr. Renjan Mathew Varghese, State Director, WWF-India. Mr. Renjan also conducted a general quiz on Nature and Environment. The participants participated in the quiz with great enthusiasm and team spirit. The planning and action plan preparation session followed.



### EDITORIAL BOARD

Mr. A.V. George

Mr. Renjan Mathew Varghese

Mr. A.K. Sivakumar

## NEAT AND CLEAN PREMISES ARE ACHIEVABLE

Segregate degradable and non-degradable wastes  
and store separately at source  
(houses, office, shops, markets, institution, auditoria etc.)

Avoid throwing waste on roadsides, public places,  
water bodies, drains etc.

Recycle/reuse plastic, rubber, glass, metal, paper etc.

Compost or make bio-gas out of degradable waste or  
hand over to collection service engaged by local bodies.

The care we give to our State,  
Our beautiful, bountiful State,  
Will be returned to us manifold.



**KERALA STATE POLLUTION CONTROL BOARD**  
(under the Department of Environment of the Government of Kerala)  
PATTOM P.O., THIRUVANANTHAPURAM - 695 004

Head Office: Pattom P.O., Thiruvananthapuram-695 004. Tel: General: 0471-232910, 2318153, 2318154, 2318155  
e-mail: [kspcb@keralapcb.org](mailto:kspcb@keralapcb.org) Fax: 2318152 web: [www.keralapcb.org](http://www.keralapcb.org)

Published by WWF-India, Kerala State Office, Moolavilakom, Vanchiyoor P O, Thiruvananthapuram-695035

Phone:0471-2302265, E-mail: [wwfklso@gmail.com](mailto:wwfklso@gmail.com), Web:[www.wwfindia.org](http://www.wwfindia.org)

Computer Graphics: Soft and Soft, Sasthamangalam, Phone: 9447451314, Printed at: G.K.Printers, Kochi