



KERALA STATE BIODIVERSITY BOARD

Glimpses





Kerala State Biodiversity Board is an autonomous body of the State Government and comes under the Kerala State Environment Department. With the Head Quarter at Thiruvananthapuram the Board falls under the provisions of the Biological Diversity Act 2002, Rules 2004 and Kerala State Biological Diversity Rules 2008. The KSBB is dedicated to conservation and protection of the agro, plant, animal as well as ecosystem diversity of the State. The State Biodiversity Board (KSBB) was established in 2005 in accordance with the provisions of Biological Diversity Act, 2002. In 2008, Kerala State Biodiversity Rules were framed. The major function of KSBB is to advise the State Government on any guidelines issued by the Central Government on matters relating to the conservation of biodiversity and promote sustainable use of bioresources and fair and equitable sharing of benefits.

2005 Kerala State Biodiversity Board Established

2005 Biodiversity Act 2002 and Rules 2004 in regional language

2008 Kerala Biological Diversity Rules formulated

2008 Kerala Biodiversity Strategies And Action Plan formulated

2009 Rare endangered and threatened species notified as per section 38 of Biological Diversity Act 2002

2009 Kerala Government Environment Policy

2010 Kerala State Organic Farming Policy, strategy and action plan

2011 Kerala Govt order for constituting BMC in all Grampanchayats/Municipalities/Corporation

2011 Kerala Govt order for fund utilization for PBR preparation in Panchayats / Municipalities Corporation

2012 Kerala State Biodiversity Fund constituted

2012 Kerala Govt order to prepare PBR in Grampanchayat by implementing a Panchayat Plan

2012 KSBB participates in CBD COP11 at Hyderabad

2012 Kerala constitutes BMC in all LSG's

2013 Kerala Govt order for access to PBR

2013 Kerala Govt order authorizing BMC to function as Environmental watch group

2013 Kerala Govt order for PBR fund revision (Panchayats- Rs 1,25,000/-, Municipalities- Rs 2,50,000/-, Corporations- Rs 5,00,000/-)

2014 KSBB participates in CBD - COP-12 at South Korea

2015 First set of applications for accessing biological resources from Kerala received

2015 Guidelines for operationalization of BMC in regional language

2015 Kerala Govt order for reconstituting BMC



Statutory BMC at all LSG's



BMC at Grampanchayath



BMC at Municipality



BMC at Corporations

Enforcements and establishments

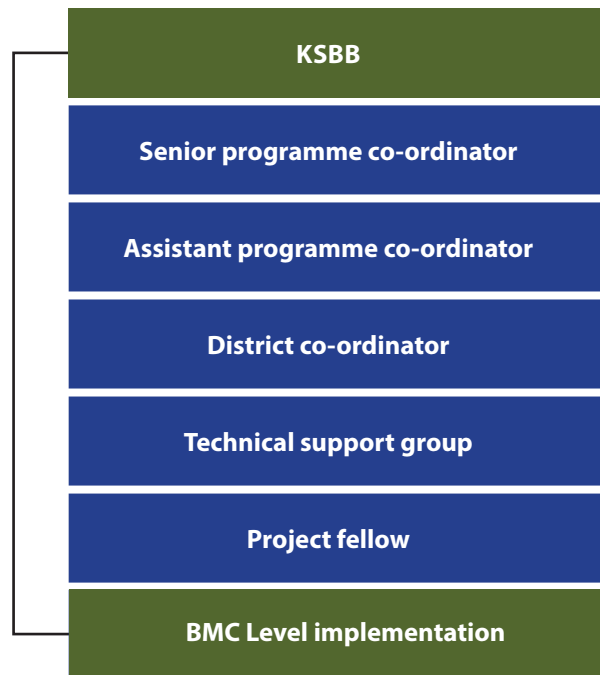
Kerala Biological Diversity Rules 2008,
Amendments 2015

State Biodiversity Fund

BMC authorized to function as Environmental watch groups

Rare endangered and threatened species notified as per section 38 of Biological Diversity Act 2002

Programme implementation



Expert committee constituted



Technical Support groups



Financing Biodiversity Conservation

Rs 200.98 Lakh secured from NBA and externally aided funds (UNDP, NMPB) from 2012-2016

Rs 29.73 Lakh provided by KSBB to BMC's through Local Biodiversity funds for conservation projects

74 institutions supported for conducting awareness programmes from 2011-2016

Biodiversity Conservation – Utilisation of Plan Fund

2010-11	155 lakh
2011-12	180 lakh
2012-13	225 lakh
2013-14	250 lakh
2014-15	295 lakh
2015-16	384 lakh

Biodiversity Documentation

Vellayani, Sasthamkotta Biodiversity Register
Marine Biodiversity Register



People's
Biodiversity Register



People's Biodiversity
Register completed in LSGs

Statutory Biodiversity Registers

People's Biodiversity Register: PBR chronicling the local biodiversity at Panchayat, Municipality and Corporation was prepared for 805 LGS's. The process of digitization of the PBR so as to facilitate storage of data is underway and digitization of 35 PBR is completed. KSBB in participation with NBA has embarked on a special initiative "PBR as a textbook and Panchayat as classroom to increase awareness of biodiversity in school children.

Biodiversity registers of Ramsar sites & water bodies of Kerala : As part of Biodiversity assessment of water bodies of Kerala, Biodiversity Register of Sasthamkotta and Vellayani Lake were prepared. The biodiversity register of Sasthamkotta includes 6 species of Amphibians, 30 species of fishes, 7 species of mammals, 12 species of odonates, 89 species of birds, 6 species of reptiles, 41 species of butterflies and 177 species of plants. KSBB has initiated a continuous assessment of Ashtamudi, Vembanad and Pookode Lake.

Marine Biodiversity Register : The underwater ecology of inshore areas of Thiruvananthapuram was documented. MBR documents the traditional knowledge systems of fishermen.



Communication , Education & Public Awareness

Jaivavaividhya Ratham

A mobile biodiversity exhibition set up on a remodelled Kerala State Transport Corporation bus was initiated by KSBB. The mobile exhibition showcases the rich biodiversity of Kerala through attractive panels providing information on status , trends and threats to biodiversity of Kerala. In addition, the bus also has models of unique ecosystems of Kerala.

2 National Biodiversity Conferences

167 PBR trainings - District level

21 Capacity building programmes for BMC

4 BMC State level meet

2 Organic farmers meet

2 Traditional healers meet

14 Awards annually

8 Children's Biodiversity Congress

1 State Biodiversity Fest

3 Biodiversity Exhibition

1200 Biodiversity Clubs





2 International books on Biodiversity

7 Books on Biodiversity

6 Documentaries on Biodiversity

15 Handbooks

9 Issues of Green Life (KSBB newsletter)

20 Brochures

8 Manuals

32 Research Papers

Publications



Biodiversity Research

Biodiversity Research Centre : KSBB has been approved as a research centre for Environmental Science under Kerala University

Biodiversity information system : A database of flora and fauna of Kerala including species checklists, species images, habitat, conservation status, distribution, endemic and threatened species is developed with financial support of NBA

Research fellowships : KSBB has awarded 10 Junior Research Fellowships and 2 Post Doctoral fellowships for promoting research on Biodiversity

Research projects undertaken :

- * Study of flora in agro ecosystem
- * Diversity and community structure of ground surface dwelling arthropods in agroecosystem
- * Study on benthic fauna and soil chemistry in selected wetlands of Palakkad
- * Pesticide residue in organic and conventional farms
- * Riverine fish monitoring
- * Estimation of pesticide loads in fresh water fishes of Kerala



Plant diversity & conservation

Floral Diversity

Kerala constitutes only 1.18% of the geographical area of India but it accommodates 28.41% of the flowering plants occurring in the country of which 237 species distributed in 47 families are exclusively endemic to Kerala

Seed Bank : A state of the art Seed bank for long term and medium term storage of local landraces , wild relatives and farmers varieties of priority crops is established in association with Kerala University . Seed bank will serve as a nodal centre for research and conservation of endemic species and landraces of crop plants.

Conservation of notified species under Biological Diversity Act

As per provisions of Biodiversity Act, 26 species of plants have been notified to be on the verge of extinction in Kerala state. To rehabilitate and conserve the notified species along with collaboration of JNTBGRI , Thiruvananthapuram KSBB has taken up propagation of eight species including *Pahpffiopedilum druryii*, *Vanda wightii*, *V.thwaitesii* , *Agasthyamalaya pauciflora*, *Garcenia imberti*, and *H. bourdillonii*.

Santhisthal

A protected man made forest in educational institutes supported by KSBB for conservation of rare and endangered species.

Faunal diversity

Vertebrate diversity of Kerala is represented by 1,847 species in 330 families and 81 orders with fishes (freshwater and marine) the most diverse group of vertebrates (905 species), followed by birds (500 species), reptiles (173 species), amphibians (151 species) and mammals (118 species).

Conservation of Faunal diversity

Heronry conservation: In association with Kottayam Nature Society a project “Kottila samrakshanam” was initiated in Alappuzha and Kottayam districts. The program estimated the number of heronry, species of birds, number of adults and young, nesting tree, GBH of the nesting trees and the height of the nesting trees in the project area. The identified heronries were conserved by providing timely incentives to the land owners willing to protect them.

Documentation and survey of birds: Documentation of avian fauna was carried out at Punchakari-Vellayani wetlands, Thiruvananthapuram and Wayand to obtain information on water bird population in wetlands, identify population sizes and determine number in sizes and distribution and changes in relation to climate.

Documentation and survey of butterflies at Wayand: In association with Forest and Wildlife Department documentation of butterfly diversity of North Wayand in three forest ranges under the North Wayanad forest division and each forest range under Wayanad Wildlife Sanctuary and South Wayanad forest division was undertaken.

Turtle conservation at Thaikadappuram: Conservation of Turtles at Thaikadappuram in association with Naythal involving local communities, was taken up with the main aim of identification of threats to turtle nesting, study of decadal trends in nesting, monitoring and protection of nests and rearing of eggs in hatchery, and rescue of injured turtles.



Conservation of Marine Biodiversity of Kerala

Tropical marine ecosystem of Kerala coast includes lagoons, mangrove swamps, sandy and rocky shores and open sea front.

People's Artificial Reef's For Sustainable Natural Resource Management

Two artificial reefs emulating a natural ecosystem and constructed of naturally available materials were deployed at Thiruvananthapuram coast. Monitoring was done by local people and resources managed by fisherman ensuring equitable sharing of benefits. Main beneficiaries were groups of selected fishermen from Valiathura, South Indian Fishermen development society.

Aquatic Biodiversity

Riverine fish monitoring : An extensive survey of all 44 rivers of Kerala was launched to monitor the fish fauna and document status of fish diversity

Study on monsoon fishery: The programme was carried out in districts of Wayanad, Thrissur, Pathanamthitta and Kottayam and studied the monsoon breeding migration of fresh water fishes.

Conservation of indigenous fish diversity of Vellaynai lake : To enhance biomass as well as fish diversity of the lake seedlings of native varieties of prawn (3500 no) and Pearl spot (20,000 no) were released into the lake.

Conservation of native inland fishes: One of the main threats to population of fishes is monsoon migration of fishes "Ootha elakkam". A project targeted to replenish the population of selected species of native fishes (Kaari" (*Heteropneustes fossilis*), "Varal" (*Channa striata*) and "Manjakoori" (*Horabagrus brachysoma*) in their habitat by rearing the juveniles in ponds and releasing them back in riverine ecosystem.



Unique ecosystems of Kerala

Riparian Forest

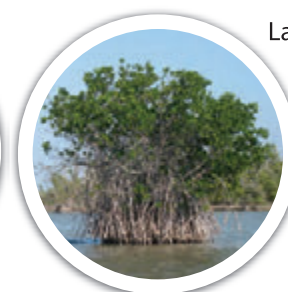
Myristica Swamps

Tropical Hill Valley swamp forests

Fresh water swamps

Mangroves

Laterite Hills



Conservation of mangroves

A programme on participatory mangrove plantations along Korappuzha river banks was launched by the BMC at Atholi grama panchayat, Kozhikode for conservation of mangroves and fish diversity

The Asramom mangrove, Kollam along the coast of Ashtamudi lake a Ramsar site, is a biodiversity rich area with about 110 sps of plants including the critically endangered *Syzigium travencoricum*, and 62 species of Birds including 6 species of migratory birds. The mangrove vegetation of this area is under severe threat due to construction of Boat jetty, Golf course, Port godown ,Timber depot etc. A nursery of mangrove plants was raised and about 1000 saplings were planted at Asramom, Kollam.





Ecosystem conservation through Joint Biodiversity Management Committee

Sasthamkotta : Sasthamkotta lake, a Ramsar site is a rain fed lake and the lake catchment includes parts of Sasthamkotta, West Kallada and Mynagapally Panchayats. A joint Biodiversity management committee was constituted and a comprehensive catchment management of the Lake by afforestation for soil and water conservation was taken up. Afforestation with about 2000 saplings of various species of bamboo, canes, neem etc was undertaken as part of programme.

Pamba river : A Joint Biodiversity management committee of 26 panchayats of Alapuzha and Pathanamthitta was constituted. A Pilot Study at three GPs - Koipram , Pandanad and Mannar incorporating the status of the river and major threats identified was prepared and an action plan for biodiversity management is being prepared.

Wetland Mapping of Kerala : A wetland map of Kerala of the scale 1:12,500 with administrative boundaries was prepared in collaboration with KFRI. The programme aimed to prioritize wetlands and develop conservation strategies.

Monitoring of waterfowl population : Since waterfowl is one of the best indicators of wetland ecosystem functioning a district wise census of waterfowls was initiated in collaboration with Kerala Forest department.

Urban Biodiversity enhancement programme : Conservation of urban natural ecosystem, ponds and other water bodies, and bringing eco friendly approaches for planned green development in urban areas through BMCs of Corporation/Municipalities and Resident's Associations were undertaken. Under this programme 14 ponds were renovated in Thiruvananthapuram. The renovation work involved cleaning of the pond, solid waste management, landscaping, planting medicinal plants, biofencing by vetiver, release of fingerlings of native fishes etc.





Terrestrial ecosystem conservation

Ecorestoration of Ambalapara quarry : Amabalapara quarry is spread over an area of 12 hectares. Developing the abandoned quarry was taken up with community participation by BMC of Thrikkakkara municipality. Butterfly garden, medicinal plants garden and birth star garden were established. Biofencing along Edapally canal by planting 1200 riparian plants was done. Around 2000 vetiver plants and 2000 saplings of 150 different species were planted.

Ecorestoration of Aduppukuttanpara

Greening Palakkad Gap : Community afforestation in the rain shadow region of Palakkad with the help of Biodiversity club, Social Forestry division, Forest dept. As part of the programme the BMC of five panchayats has initiated afforestation with saplings of avenue trees and 25,000 saplings were planted.

Greening of rain shadow regions : A tree planting programme in the rain shadow region of Kerala at Karunapuram panchayat of Idukki district was undertaken wherein 20,000 saplings were planted by NSS volunteers.

Vellayani Lake conservation : For development of a green belt on the catchment areas of Vellayani Lake as part of afforestation programme saplings of *Garcinia gummigutta*, *Elaecarpus serratus*, *Syzygium cuminii*, *Mimusops elengi* were planted.





Domesticated Biodiversity

Kerala has been delineated into thirteen agro-climatic zones. The diversity of the 142 crop plants grown in Kerala is much high and is represented by 104 genera in 43 families. The tropical evergreen forests of Western Ghats are home to two major spices- black pepper and cardamom. It is also a secondary centre of origin of cinnamon. Jackfruit is indigenous to the rainforests of the Western ghats.

Agro biodiversity Conservation programme: A pilot experimental model for implementation of organic farming policy strategies and action plan of State was implemented at Erimayoor Panchayat in Palakkad. KSBB with Kerala Agriculture department, promoted organic farming in 100 acres and farmers were given training on organic farming.

Conservation of Tuber diversity of Wayanad : The project implemented through the BMC of Edavaka panchayat succeeded in establishing a Community level gremplasm centre at Edavaka, conservation of 52 varieties of tuber crops and germplasm centre in two schools

Conservation of rice landraces : Financial assistance to Kuruchiya tribal community member was provided for establishing community seed bank and field level germplasm conservation centre for 41 local varieties of rice.

Conservation of tuber diversity at Onattukara : The programme promoted conservation of land races of tubers through BMC of Onattukara by supplying planting materials of ten landraces of tubers procured from Wayanad. The beneficiaries included 127 farmers belonging to Chennithala, Thazhakkara, Mannar, Chettikkulangara, Thekkekkara and Mavelikkara.

Conservation of local banana varieties : Cultivation of planting materials of 18 local banana varieties in Kalliyoor panchayat was promoted. The project benefitted 444 farmers.

Organic farming at Vattavada : Organic farming in 10 acres at Vattavada was promoted through BMC.

Native Breeds in Kerala-

Cattle : Vechur, Kasaragode, High range dwarf ,Vadakara dwarf, Kuttanadu water buffalo, Cheruvally cattle, Thattekkadu dwarf, Kuttampuzha Kullan, Wayanad spotted cows

Goat : Malabari, Attapady black

Pig : Angamali

Fowl : Naked neck, Tellicheri, Kuttanad ducks

Conservation of Cheruvally and Vechur cattle: Conservation of native breeds of cattle was initiated with Vechur conservation society. The three year programme supported establishment and strengthening of germplasm centre at Neendoor. The other key achievements of the project are birth of pure bred calves and multiplication of animals in farmers herds, Production and processing of semen of Cheruvally and Vechur cattle for conservation, Microchipping of animals and pedigree certification. Three breed associations were started and training in production and marketing of value added products imparted

Conservation of high range dwarf cattle at Elappully : Assistance was provided for rearing of Highrange dwarf cattle through BMC of Elapully panchayat.



Sustainable use of bio resources

Wetland biodiversity enhancement through sustainable use of wetland resources in Kole wetlands, Ponnani and Malappuram: The two year action-oriented programme promoted paddy and fish cultivation and organic vegetable cultivation in households in 200 acres. The programme resulted in the enhancement of biodiversity of wetland along with livelihood improvement.

Resource Augmentation, Sustainable Harvesting and Value Addition of Medicinal Plants Resources” through Biodiversity Management Committees (BMCs) : To conserve local bio-diversity of medicinal plants a project funded by National Medicinal Plants Board is implemented at Wayanad for promoting sustainable sourcing and harvesting of medicinal plants and development of infrastructure for semi processing of medicinal plants and value addition. A common processing facility including a warehouse and drying yard was established as part of programme at Thavinjal, Poothadi, Thirunelli and Noolppuza. Training for medicinal plant cultivation, value addition and semiprocessing is underway.

Munnar Landscape Project : The UNDP funded “Munnar Landscape Project” is implemented by Kerala State Biodiversity Board in thirty four selected Panchayats in the three districts Idukki, Ernakulam, and Thrissur. Development of a statutory framework for Biodiversity governance at three levels Panchayat, block and district level, documentation of traditional ecological knowledge of tribal communities is being done as part of the programme.





Looking ahead

Biodiversity Park: A state of the art Biodiversity museum is being setup at Vallakadavu, with galleries which gives an overview of the ecosystem and biodiversity of the state. They will focus on various themes such as pre-historic animals-, ecologically important species, Threatened species, tribes of Kerala, flora and fauna of Kerala. The galleries will include exhibits, panels, dioramas, scaled down models, interactive kiosks, LCD displays etc in addition to a 3D theatre. The exhibits will be housed in the boat house building at Vallakadavu, Thiruvananthapuram which was built way back in the 1820's.

National biodiversity garden & traditional knowledge centre at Munnar:

The major mandate of the garden will be establishing a live conservatory of biodiversity and conservation of medicinal and crop plants unique to the area. The area will depict the natural history, geography, geology of the region, evolution as also some of the adaptation acquired by terrestrial, aquatic and aerial life of Kerala. The garden will represent the themes of Biological Diversity, Ecology, Conservation, Heritage sites and Protected areas of Kerala.





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Kerala, God's own country is blessed with unmatched diversity both cultural and diversity. The Biological Diversity Act (2002) and Kerala Biological Diversity Rules (2008) aims to conserve and safeguard this rich diversity against unsustainable utilization. It gives me great pleasure to present a brief progress of work undertaken by KSBB during the past decade. Conservation of the rich biodiversity of Kerala is a daunting task and let us put our concerted efforts to achieve the goals of

CLEAN AIR
CLEAN WATER
SAFE FOOD TO ALL



Dr. Oommen V. Oomen
Chairman



Dr. KP Laladhas
Member Secretary