Parambikulam Tiger Reserve: Changing Management Archetypes

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Introduction

Parambikulam Tiger Reserve (PKMTR), an ecologically well connected conservation area of about 1000 km^2, constitutes the northern segment of central Highlands of the southern Western Ghats in Kerala. The Ghats in Kerala, well known for their stable mass of Archaean and Pre-Cambrian formations, are characterized by geomorphologically significant steep, sharp hills and exceptionally higher plateaux with best preserved and most extensive climax vegetation in Peninsular India.

Located immediately south of the Palghat Gap; the 30 odd kilometre wide and only discontinuity along the entire length of the Western Ghats, the Parambikulam plateau is a large natural amphitheatre ensconced within the mountainous Nelliampathies in the north, north-west and Anamalais in the east, east-south. Shielded by these two massive hill ranges, the amphitheatre, with an average elevation of about 500 meter ASL, predominantly consists of two elongated valleys; Thunacadavu and Parambikulam, draining south-westward to Kerala midlands. It is widest in its eastern flank and progressively narrows down towards the west within its northern and southern extremities. The steep hills fall sharply to wide undulating slopes before merging with the gentler valleys. Oriented westwards, the hills and valleys drain into river Chalakudy through a network of tributaries.

Although, Chalakudy is a tributary of river Periyar flowing westwards to the Arabian Sea, it is, however, recognized as the fifth longest river of Kerala. The gentle land terrain, copious waterflow fortified with nutrients from the rich loamy slopes and ample wide spaces with diverse vegetation make the valleys a wildlife reservoir *par excellence*. The configuration of hills and valleys create multiple habitats to allow a host of life forms to flourish. Standing atop the *Karimala Gopuram*, the highest peak in PKMTR, one could appreciate the structural architecture and resultant ecological attributes of this wonderful landscape.

For a first time visitor to PKMTR, nature manifests itself into a diversity of ecological spaces producing multiple living signatures and their interactions within and without. Complex algorithms of ecological systems with concomitant inter play of energy and matter create a range of habitats associated with a host of life forms. Long term conservation of this complex and dynamic ecological system, symbolized by tiger, constitutes the contemporary rationale of management. The effectiveness of PKMTR management today lies in ensuring long term survival of tiger and its prey and their habitats. However. It wasn't so too long ago! As a matter of fact, it was very different than what it is today. The contemporaneous notion of conservation, being a value laden social construct, engenders values, meanings and resultant management practices that shift their course as per shifting cultural, socio-economic and political perspective of the human society. Over the last one hundred years or so, the evolution of the idea and practice of conservation of PKMTR from a forest of immense timber wealth to a repository of biological diversity has been a wonderful journey of shifting conversation on conservation.

The Land that is Parambikulam

Geographical location, topographic architecture and climatic variability have endowed the southern Western Ghats with unique environmental characteristics, in which a mix of latitudinal and altitudinal gradients create widespread ecosystem assemblies, manifesting in diverse habitats and their associated flora and fauna. The extensive Parambikulam basin, draining to the west towards Arabian Sea, is encircled by massive hills, the Nelliampathies and Anamalais, with ridges on spurs attaining more than 1200 meter elevation on the north, east and south. This architecture effectively shelters the valleys from the dry, desiccating winds arising from the northern Palghat Gap and eastern Tamil Nadu plains. From the Coastal west, the moist winds move in through a geographical conduit over river Chalakudy, causing copious monsoonal rainfall. On the other hand, a couple of low saddles like Top Slip, located on the eastern ridge, let in the retreating monsoon that rains over, at least in the eastern part of the plateau during winters. Sitting on the metamorphosed Archean rocks with a history of two and a half billion years, Parambikulam and its surrounding areas represent the plenteousness of nature, exhibiting a predominantly forested landscape that is one of the most extensive tropical moist forests in the southern Western Ghats.

Biogeographically of the 'Indo-Malayan' origin, these forests represent one of the centres of high biological endemism and diversity. The natural vegetation of this landscape is constituted by the floristic elements of Malabar and Deccan origin, which, coupled with microclimatic fluctuation and edaphic, topographic and biotic factors yielding rich vegetal assemblages. The landscape exhibits a variety of forest types, ranging from tropical dry and moist deciduous forests to wet evergreen and montane forests (*shola*). The wooded valleys are punctuated irregularly by grass and sedge dominated small swampy landforms, locally known as '*vayals*'. The abundance of food, water and cover in the landscape creates a mosaic of habitats, permitting a diversity of animals to be present and perform their ecological functions.

Originally the entire landscape, right from the Kerala midlands in the west to the mountainous highlands towards the watershed divide in the east, would have been covered with evergreen and semi-evergreen forests. The sheltered Parambikulam plateau that permitted the early human settlements in these parts, must have undergone anthropogenic transformations leading to changed local conditions to favour the growth of moist deciduous forests. The hillmen or the tribal people, represented by *Muduvar, Malayar* or *Malasar, Malay-Malasar* and *Kadar* communities were the early settlers in these dense forested areas, although, it is understood that the *Kadar* community was a late entrant, which was brought to the Parambikulam valley by the colonial government for raising teak plantations in the early 20th century.

The tribal communities, over the years, have transformed distinctly due to changing economic and socio-political environment surrounding them, although they do display their specific cultural traits inherited through generations. The *Muduvar*, for example, living in the higher elevations are quite distinct, both in their physical and cultural attributes, from the river valley dweller *Malayar* or *Kadar*. Most of the tribal settlements are situated in the valleys, except of the *Muduvar*, who are land tillers, occupying higher slopes in the

Anamalais. Among the tribal communities, the most primitive are the *Malay-Malasar*, who are partly reported to be still practicing a semi-nomadic way of life. The tribal history of these forests is fairly ancient and is a subject of human ecological enquiry.

The Capitalization of Nature

Prior to the arrival of colonial administration in this part of the country, the forests of Parambikulam belonged to the State of Cochin, which had emerged as an independent kingdom by the middle of 18th century. The forests of Thunacadavu valley and neighbourhood, occupying the north-eastern region of PKMTR today, belonged to the *Rajah of Kollengode*, a protectorate of Cochin. During those days, proprietary rights in respect of forests and forest produce did not exist, as the local communities exercised such rights in their vicinity in the form of tradition-governed use of forest space and goods. The tribal communities occupied interior forest areas as a matter of traditional-customary rights and were largely exempted from paying land taxes. Although teak wood and ivory had become precious forest products much before the ascent of colonial administration and were beginning to be reserved as 'royal property' through official decree, the application of the idea of proprietorship over forest lands and produce entered the conservation discourse only after the arrival of colonial concept of forest conservancy, embedded in commercial and environmental agenda of colonial state making.

With the defeat of Tipu Sultan during the late 18th century, the East India Company, represented by Madras Presidency took over the administration of Malabar province and began applying forest conservancy practices based on the notion of property ownership and superior scientific knowledge. The abundance of teak trees in Malabar, without clearly defined ownership rights provided the colonial administration the required impetus for taking control of such forests. An official proclamation of 1796 allowed private contractors exclusive rights of cutting timber and catching elephants over forest areas leased out to them by the government. By the end of 18th century, the unrestricted access to forests, enjoyed by natives was taken away and forest conservancy restrictions began. To maintain timber supply to the British Navy, Malabar received the first Conservator of Forests in India - Captain Watson of the Police Department, who was appointed in 1806.

Realizing the commercial value of timber such as teak, rosewood, ebony etc., the Travancore and Cochin States too had begun to invite British officers for surveying their respective forests and assessing the timber value therein. The survey of Travancore country by Lieutenant Ward and Conner from 1817 to 1820, followed later by the forest report of Bourdillon constituted the early institutionalization of forest conservancy and allowed the government to step directly in the management of forests. The State of Cochin had already appointed a Superintendent of Forests in 1813 to regulate the leasing of forest lands to contractors for harvesting and trading timber. Such woods were brought under the royal monopoly from 1837. The European influence played a vital role in converting these forests into a valuable economic property, shifting management notion from open access resource to a strictly guarded state property, wherein the state claimed a privileged status for its mode of knowledge, technology and authority.

Raising Teak Plantations

By mid-19th century, the forests were, to some extent, noticeable by timber coupes run by the contractors and shifting cultivation practiced by the tribal communities inhabiting them. With the acceptance of tapioca as a subsistence crop, colonization of forests by farmers from the coastal plains also began. The shortage of food grains in midlands and coastal plains made the plainsmen to enter interior forests, using marshy *vayals* for paddy cultivation and hill slopes for tapioca. Introduction of plantations of tea, coffee, cardamom, pepper etc. by the British in the vicinity ushered in significant physical and environmental changes in the landscape. The quality of forests was seriously impacted as they were being progressively invaded both for subsistence as well as for commercial purposes. With the consolidation of forests by the then governments, harvesting of timber had increased many fold. In Malabar, the administration was finding it difficult to adjust public and private requirements from forests and had begun to discuss the need to regulate harvest and trade of timber and raising artificial tree plantations for maintaining the quality of timber and avoiding permanent loss of crop.

In Kerala, the initiative for raising teak plantations was taken by the then Malabar Collector, H.V. Connolly to ensure steady supply of teak timber needed for the Bombay Navy Dockyard. He began this exercise in 1841 by purchasing 6,700 ha. land from the landlords at Nilambur. Between 1841 and 1843, his team of officials conducted many experiments on germination of teak seeds, nursery raising, planting techniques and care of seedlings. From 1844 to 1862, Chathu Menon, a local official, worked as Sub Conservator and remained in charge of the plantations throughout that period. His sincere work fetched him a memento for excellent service in 1858 from Lord Harvis, the then President of East India Company. With the introduction of artificial regeneration of teak in Nilambur, teak plantations began to be extended to other parts of Kerala.

The requirement of timber and fuelwood was progressively increasing due to need for enormous quantity of good quality timber for ship building and railway line expansion. In addition to the local community's need for small timber and fuel wood, the railways also needed fuel wood for running their steam engines. Constitution of Forest Department in 1864 and promulgation of Indian Forest Act in 1865 had given the colonial administration strong legal instruments to declare reserved forests and regulate entry, harvest and trade of wood and hunting of wild animals. Teak plantations were initiated in Travancore in 1865-66 and in Cochin in 1872. Beginning from the First World War in 1914 and continuing until the end of World War II in 1945, indiscriminate exploitation of forests intensified to meet the requirement of defence. Artificial regeneration of teak thus emerged as a technology for ensured supply of timber over long time and commercial enhancement of forest property.

Teak Plantations in Parambikulam

Parambikulam and Thunacadavu valleys were well known for naturally occurring high quality teak, which was found in abundance in the moist deciduous forests all along the valleys and lower hill slopes. The British took the Thunacadavu valley and neighbouring areas on lease, known as Thekkady leased forests, from the *Rajah of Kollengode* and a scheme to work these forests under Selection System was written by Porter in 1885, who recommended clear-felling and planting of teak in 1889. Systematic raising of teak plantations began from 1921. It was Laurie's plan in 1932, wherein details on raising nursery of teak using both, the seeds and the stump were given. By now, the stump planting technique had been standardized, for it had been perfected by foresters during the late 19th century. The last teak plantation in Thunacadavu valley was raised in 1983, when the 1923 regeneration area was clear-felled following a rotation age of 60 years and replanted with teak.

In Cochin territory, under which fell the Parambikulam valley, the forests were being worked without much control over the contractors to whom the areas were leased out for specified periods. In 1813, the inherent defects in the system were rectified by appointment of a Forest Superintendent. However, lack of communication to interior forests was felt to be a significant impediment in forest exploitation. Thus, in 1894, J C Kolthoff, the first Conservator of Cochin, conceived the idea of laying a tramway line to exploit the forests of Parambikulam. A German engineer was specially brought for this purpose, under whose supervision the tramway was constructed from Chalakudy, a small town in the west coast to Parambikulam. The tramway became fully operational by 1907, running on a meter gauge with an average gradient of 1 in 80.

The introduction of tramway led to massive clearing of forests and in the absence of a working plan, the fellings became indiscriminate. Not only that, the tramway itself needed huge amount of fuel to run its steam engine, which led to the removal of inferior quality woods also, growing along the length of the tramway. With the passage of time, the running of tramway became less profitable and in 1926, abolition of tramway was proposed. However, due to administrative regions, the tramway continued its operations until 1951, when it was finally discontinued. However, it had already devastated a vast swathe of forests in the Parambikulam valley by then. By 1960, about 15,000 acres of prime forest had been over exploited.

During 1961, P Narayana Nair, the then Conservator of Forests of Kerala Forest Department, proposed a scheme to artificially regenerate 15,000 acres of Parambikulam area, which also included Thunacadavu valley, then under Nemmara Forest Division. For the implementation of this scheme, a separate Teak Plantation Division with headquarter at Thunacadavu was established and targeted clear-felling of natural forests, reforested with teak plantation started from 1961. However, a separate working plan for raising teak plantations over such a large scale was not written and prescriptions laid down in the working plan of Nemmara Division were followed. During implementation of the scheme, the planting targets remained lower than planned and also the maintenance schedule of newly raised plantations did not strictly follow appropriate timelines at many sites, resulting in variance in plantation quality.

Nevertheless, the central valleys had been completely transformed from a luxuriant moist deciduous forest to the monoculture of teak plantations raised over half a century, with production of high quality teak timber as primary objective of management.

The Making of a Wildlife Sanctuary

After the promulgation of Wildlife (Protection) Act, 1972, declaration and management of wildlife sanctuaries was streamlined for protection of wildlife. It also became a customary norm for protecting the catchments of river valley projects, which had been in the making since the colonial times. In the forestry field, the notion of wildlife management was still hazy, confined mostly to elephant capture, hunting regulation and human-wildlife conflict, whereas protection of river catchments was a well-known condition to avoid silting of dams being constructed. During 1958, through an inter-governmental agreement between Tamil Nadu and Kerala, the former began constructing a series of dams over the rivers flowing through PKMTR for meeting their electricity and irrigation needs under the project titled, ***'Parambikulam-Aliyar Project'***.

A formal agreement was executed between the parties in 1970 with retrospective effect. Three dams, consequently came up in the amphitheatre, namely, Peruvaripallam with 1.39 km^2 reservoir in the north-eastern part of the valleys; Parambikulam with 20.65 km^2 reservoir, located in the central, south-western part and Thunacadavu, a linking dam between these two with a reservoir of 1.85 km^2 and also the headquarter of Teak Plantation Division. Construction of all three dams was completed in 1972, as the pan Indian wildlife protection law entered the forestry domain and began to shift management focus from 'timber only to wildlife too'.

The structural architecture of PKMTR encourages, among other things, congregations of ungulates in the valleys, luring large carnivores there and offering excellent wildlife viewing opportunities. The local people, forestry personnel and government officials often encountered wild animals in these areas and as the activities for plantation raising and dam building increased, so did the news on wildlife viewing opportunities in Parambikulam. For the world outside, Parambikulam began to be known as a 'good wildlife area'.

Thus, in July 1962, 30 square miles in the Thekkady Reserve of Sungam Range was notified as Parambikulam Wildlife Sanctuary. Subsequently, the entire Teak Plantation Division and part of Nemmara Forest Division were added to the sanctuary in 1973. The DFO, Teak Plantation Division was given the responsibility to manage wildlife, making him *de facto* Wildlife Warden. An Assistant Wildlife Preservation Officer (Range Officer) was appointed exclusively to look after wildlife matters in the area, which was otherwise being managed as a production forest. The Sanctuary was under dual control of DFO Teak Plantation Division and DFO Nemmara, who managed their respective functions on common territory as prescribed in the Nemmara Working Plan and WL (P) Act, 1972. The teak plantations, occupying valleys, were to be managed under 'clear-felling and replanting' silviculture system, whereas the natural forests were to be managed under 'selection felling and regeneration improvement' system.

Dr Salim Ali made the first visit to Parambikulam in 1933, which made the area famous as a bird watcher's delight. The Teak Plantation Division, although still a high intensity teak plantation area, also began to invest in wildlife protection and a nascent tourism development.

During 1984, the Government of Kerala created a separate Wildlife Wing under the charge of a Chief Conservator of Forests to achieve the 'objective of preservation and better management of Wildlife Sanctuaries and National Parks in the state'. Following this, the dual control of Parambikulam was abolished and a new administrative arrangement was made by merging parts of Nemmara Division and entire Teak Plantation Division into one single unit, the Parambikulam Wildlife Sanctuary. A revised notification was issued by the government on 3rd September 1984, notifying the unified area as a wildlife sanctuary, extending over to 285 Km^2. The DFO, Teak Plantation Division was redesignated as Wildlife Warden, reporting to the Field Director, Project Tiger at Kottayam, with four Assistant Wildlife Wardens to manage four ranges. With these arrangements in place, protection of wild animals and their habitats became the overriding practice of management, although teak plantations continued as a major source of revenue for the exchequer.

Planning for Wildlife Management

A High Power Committee had recommended ban on green felling in natural forests during 1984. The teak plantations were however, continued to be managed as prescribed in the working plans. While, informal discussions had begun to draft a management plan for Parambikulam soon after its notification in 1984, the official authority to draft the plan, in line with the National Wildlife Action Plan, 1982 was obtained in 1986. This was the first time, when the teak plantations were to be viewed as wildlife habitats and by late 1985, official orders were obtained to stop clear-felling of those teak plantations that had reached rotation age and were due to be clear-felled.

It was agreed that the teak plantations would be managed in accordance with the principle that 'forestry operations alter habitats, they do not destroy them'. Abundance of wild animals in teak plantations was considered as a spin-off of the timber management. Therefore, the argument was made that the teak plantations would be managed essentially to improve their wildlife habitat values and in place of clear-felling of plantations at rotation age, a low key, selective removal regime would be established. Timber value would be subservient to the necessities of wildlife in the plantations. Consequently, clear-felling of teak was agreed to be stopped. However, a greater challenge was to progressively decrease the timber harvest, as abrupt cessation of timber operations would have severely impacted the revenue stream of the government and economic sustenance of local tribal communities, who did not have alternative employment opportunities worked out to compensate for the loss of labour in plantation activities. The proposed management plan for the sanctuary had to resolve this complex situation in order to be accepted at the government level.

By 1985, there were very few wildlife management plans in the country and the available ones had been prepared mostly for Tiger Reserves. There were no examples of commercial

plantations being managed as wildlife habitats in India and information deficit was the biggest impediment in proper wildlife management planning for Parambikulam. Whereas, production forestry had a long drawn out and well tested method to draft forest working plans, protected area planning was in its infancy. Wildlife management planning guidelines were also evolving and the forest officers trained in the Wildlife Institute of India would use Sahariya' s guidelines, provided to them in the WII classrooms. In Kerala, only the Periyar Tiger Reserve had a management plan that too came up after the declaration of Periyar as a Tiger Reserve.

Therefore, preparation of the first management plan for Parambikulam Wildlife Sanctuary was an adventure in unknown waters and involved extensive discussions, lobbying and information collection on habitat quality and use by wild animals. The sanctuary staff, who were oriented to forestry activity, were reoriented towards wildlife management through a number of short training programmes. For the first time in Kerala, a participatory process for management planning was adopted to acquire information on vegetation characteristics and animal populations. Through official arrangements, the students of Forestry College Agriculture University, Trissur were drafted in the scheme, who along with the sanctuary staff moved extensively in the forests to collect required information. Sampling, based on Quadrate method was used for rapid assessment of forest habitats and vegetation attributes, and King's Transect method was used for animal distribution and population estimation. Field data sheets were typed, cyclostyled and distributed to individuals for collecting data. The data obtained from individual teams were collated at the headquarter and analysed with the help of scientists from Kerala Forest Research Institute and local forest officers trained in wildlife management from the Wildlife Institute of India. KFRI was instrumental in creating vegetation maps, on which different vegetation types and habitats were differentiated using crayons. There were no computers those days and all calculations were done using calculators and hand drawn tables. The draft plan was hand written, corrected, typed on official type machines, corrected again and finally typed in the office of the Field Director, Kottayam in the newly purchased electronic type machine.

The draft of the management plan was sent to the Wildlife Institute and improved further on the basis of comments/inputs provided by the faculty there. The senior officers in Kottayam and Trivandrum reviewed the draft plan, and after incorporating relevant enhancements, the first management plan for Parambikulam was finally brought out in October 1987 for the period 1986-87 to 1996-97. The first management plan, although incomplete and sketchy in places, nevertheless introduced the principles of wildlife management in managing habitats, including in teak plantations and laid the foundation of scientific management of protected areas in Kerala. Following this, the second plan was drafted for the period from 2002 to 2012 and presently, after upgradation of the Sanctuary to a Tiger Reserve in 2009, the first Tiger Conservation Plan was written for the period 2011-12 to 2021-22 and the second one commenced operation in 2021.

Planning Management of Teak Plantations as Wildlife Habitats:

In PKMTR today, an area of 85.6 km^2 of the amphitheatre is covered with teak plantations, of which 67.30 Km^2 fall in the core area and 18.29 km^2 in the buffer. As discussed, teak plantations occur primarily in valleys, but were also extended over low to medium gradient slopes in the southern and north western parts of the sanctuary. To understand vegetation characteristics and wildlife values, stratified sampling was adopted by dividing the Sanctuary into two broad physical units – the valleys and lower medium gradient slopes comprising of teak plantations and deciduous forests; and the hills, consisting of semi-evergreen and evergreen forests.

After the exercise, It was clear that the teak plantations were being used extensively by ungulates. Conversely, teak plantations were found to be drier, harsher and covered with weeds, when compared to the natural forests. They were also least diverse in terms of vegetation composition and were under extensive human use. This contradiction was resolved by looking into structural architecture of the plantations.

The plantations were created in blocks of a few hundred hectare each, all over the valleys. At many places, the blocks were demarcated by leaving a 20 m. wide resident natural forest vegetation. These linear strips would merge with the mother forests existing beyond valleys. In addition, 20 m. wide natural forest strips were also maintained on either side of the streams meandering through the plantations in the valleys. These natural forest strips, continued with the wider natural forest scape, became the conduits for ungulates to pass through the drier plantations. The plantations have another strategic resource interspersed within – the marshy, grassy, open *vayals*. *Vayal* is a vernacular word for marshy, wetter and irregularly shaped bowls of grass, sedge and herbs, scattered in the lower reaches of the valleys. These grazing grounds provided ideal habitats for gregarious ungulates. The perennial streams flow through the valleys, where plantations have been raised. The interspersion of these elements created ideal conditions for ungulates to remain in the plantations for long periods.

For management planners, this understanding led to the evolution of 'restricted extractive management' of Teak plantations for improving habitat and effective wildlife management. Silvicultural principles were applied to selectively remove planted teak for facilitating growth of native trees. Periodic thinning of teak trees was conceived for improving regeneration of miscellaneous deciduous tree species in places vacated by teak trees. A selective removal of teak past rotation age was planned from places, where they stood atop struggling or promising natural tree saplings, limiting the removal under 25% of the planted stock. From the volume tables available to planners, it was found that trees like *terminalia, rosewood, lagerstroemia* etc. take about 100 years to reach the comparable girth class of teak at rotation age. Thus a cyclical and selective removal of teak over this period, supplemented with miscellaneous tree regeneration would be likely to convert the teak plantations to miscellaneous deciduous forests over time. Furthermore, the younger plantations would continue to be thinned as per existing thinning cycles, with stipulation that those teak trees would be marked for felling that were hindering the growth of upcoming natural tree species. It was proposed in the plan that before application of the proposed silvicultural treatment, regeneration surveys should be undertaken and

subsequently, regeneration status of miscellaneous species in the treated areas should be monitored periodically. It was also proposed that after five years of application of this method of treating teak plantation, a comprehensive survey of forest regeneration and animal use of the area would be conducted and results thereof would be deliberated in a workshop to modify, continue or abandon the scheme.

The *'restricted extractive management'* was not only a habitat improvement practice, it was also administratively and politically palatable. Due to ban on green felling since 1984, forest revenues were falling all over the state and it was very difficult to make the government agree to forego the amount of revenue that conservation demanded. There were also tribal communities, in fact, some families had been brought for raising the very same plantations and practicing *Taungya* (cultivation of tapioca or such other crops in the newly raised teak plantations). Allowing *taungya* would save Forest Department cost of weeding the new plantations and provide people subsistence for living. The constructions related to PAP river valley project since late 1950s also brought many plainsmen to Parambikulam from both Kerala and Tamil Nadu, building a large labour force in a rich wildlife area. Without reasonable livelihood alternatives for local inhabitants, immediate closure of forestry operations, which were being practiced for more than 50 years, would cause socio-economic and political turmoil hampering the new wildlife management agenda.

The selective removal of teak, devised on the principle of integrating silviculture and wildlife management, facilitated its acceptance at decision makers' level, as the timber revenues would not drop drastically and the local labour would not be rendered unemployed.
The first management plan, thus placed all plantations in the buffer zone and recognizing the ecological contiguity of natural forests with their neighbours in the Anamalais, Nelliampathies and Vazhachal regions, proposed an extended, outlying core zone that actually surrounded the buffer. The experiment, which would have opened up a different outlook on integrating silviculture and wildlife management saw its demise, when in 2000, all forestry operations were stopped in Parambikulam.

The planners had envisioned the potential of a greater conservation area in Parambikulam at that time, although it took almost 25 years for that dream to be actually realized, when in 2009 the sanctuary was upgraded to PKMTR