

Ecology of the Kuruva Island Reserved Forest

Mananthoddy Puzha originates from the main Western Ghat range where the mountain comes closest to the Arabian Sea. This part of the Western Ghats receives one of the highest rainfalls along its entire length. Mananthoddy Puzha has a steep short course and receives very few sub-tributaries till it meets the other major tributary of Kabini River originating from within Wayanad – the Panamaram Puzha.

Panamaram Puzha drains the rest of Wayanad. It has many sub-tributaries, most of which have long sinuous channels, gentle gradients and are all sluggish streams. Rainfall in this part of Kabini Basin is considerably less and is getting reduced rapidly. Mananthoddy Puzha and Panamaram Puzha join together to form the main Kabini River at a place called Dasanakkurai.

The north-western border of Wayanad is the Brahmagiri Mountain Range which has a short south to south-east running spur – the Kambamala. It comes down south to Dasanakkurai and shuts off the valley of Kabini from the north. The basin of Panamaram Puzha has a number of scattered hillocks rising 100 metres or less from the river bed elevation. One of these ridges within the Padiri Reserve runs from Pakkam in the south due north to Pannikkallu. This short ridge blocks off the course of Kabini from the south. These two obstructions force the river to take a sharp easterly turn.

The sediment loaded sluggish Panamaram Puzha flowing from south to north is suddenly impacted by the more violent Mananthoddy Puzha coming in from the west. This forces the main river channels to take a sharp turn to the east and also results in the considerable load of silt and sand to be deposited on the jutting rocky outcrops through which Kabini has to force her way east. Thus was formed the island of Kuruva. The inside of the curve of the river where the flow is less violent accumulates more deposit and a series of smaller islets are strung along the southern side of the main Kuruva Island.

The annual flood deposits builds up a ridge along the outer fringes of the Island, a higher one along the northern edge. The centre of the main island is a depression where after the monsoon recedes, water remains for a longer time. Two ponds called 'Palkulam' and 'Kanjikkulam' were perennial. The unconsolidated sediment deposition would have been totally washed away in some unusually violent floods but for its special vegetation cover. The abundance of water and rich alluvium resulted in a dense evergreen forest which came to be called the Kuruva Reserved Forest in 1938. This part of Wayanad, earlier part of the Mysore State, had caught the British attention especially because of its Makseer fish availability and for tiger hunting, both indicative of the richness of the river and forest.

In the past when rainfall all over Wayanad was much higher and more of the land was under forest cover, annual floods were regular and higher. The entire island used to get inundated and part of the sediments would get eroded away. But this was compensated by forest loam brought down by flood waters and trapped by the vegetation in the island. This pattern has now completely disappeared and the erosion is continuing but at a lower level and the island soil is not getting replenished. Construction of the Banasuram Diversion Project has stopped all the high floods in the Mananthoddy Puzha. Near total deforestation, urbanization and ecologically destabilizing landuse practices in the entire catchment of Panamaram Puzha have killed her sub-tributaries such as Pathiripuzha, Kadamanthodu, Narasippuzha

etc. Hence the original characteristics of River Kabini which created and sustained the unique island ecosystem no longer exist. This is a major contributor to the extreme fragility of Kuruva.

Silt and sand practically saturated with water down the year sticking on to teeth like rocky projections across the valley sustained a special type of evergreen forest – the Riparian Forest Vegetation. The main tree elements of this forest as well as most of its perennial understorey plants have to have adaptations to survive in water logged, oxygen deficient 'soil'. This vegetation has to withstand 5 – 6 months of water logging, and for part of the time the flow is violent. Plants along the river edge must have root and branch architecture to resist the erosive water discharge as well as violent winds funnelled by the two ridges. The ground flora must have unique adaptations for the unusual physico-chemical conditions of the soil. Many unique herbaceous elements must have had Kuruva as their last refuge as most of the moist riparian vegetation in Wayanad was destroyed during the 1940 -1970 period. Biogeographically this part of Wayanad is more akin to the Deccan and would have had plant distribution basically different from the western slopes of the Western Ghats and the plains of Kerala.

The Marakkadavu – Bavali segment of the north-eastern part of Wayanad is precisely where ecological and climatic destabilization of the Karnataka plateau is creeping into Kerala Wayanad. Desiccation of the land is the most obvious symptom. Kuruva is located along one edge of the gap. Along the left flank of Kabini there is no forest buffer left. On the right flank there are only residual patches of the Pathiri Reserve. Forests of Kuruva is fully exposed to the desiccation from the north-east adding to its fragility.

After the forceful occupation of the Pulpally Devaswom Forests in the 1960s and the extension of human settlements eastward from Mananthavady, multi-tiered high canopy forest vegetation buffering is almost fully lost in this part of Wayanad. Till the 1980s the State Forest Department was overburdened with the responsibility of expanding teak and eucalyptus plantations, extraction of bamboo for the Gwalior Rayons etc. Protecting the Kuruva Island Reserve, then part of Kozhikode Forest Division was not priority. Heavy damages were inflicted by timber pilferage, cattle grazing, wildlife poaching and so on by the local population. Only after the 1980s, the island forest got some semblance of attention. Even then priority was for raising medicinal plant garden under the World Bank aided Socioforestry Project. There was minimal tourism pressure and much less exploitation and the forest started regenerating at that time.

There has been no systematic benchmark study of this forest so far. Some floristic studies may have been carried out by the Gurukula Botanical Garden at Alattil especially on orchids and some herbaceous elements.

The Importance of Kuruva as a Representative of the Extremely Endangered Forest Type – the Riparian Forest

Kerala claims to have 40 odd rivers. The forests along the Western Ghat catchment slopes of these rivers cover almost 10,000 sq km. But the State had only two River Islands notified as Reserved Forests. Apart from Kuruva which is still forested, the other was Vempuram in the Periyar River. All the major rivers flowing through Kerala originate from the Western Ghats. More than one third of the area of these river basins is on steep Ghat slopes with the tributaries having rapid like channels. The large number of

torrential hill streams flowing west joins together and then flow through the midland valleys. In the case of a few rivers such as Pampa, Chalakkudy, Periyar and Chaliyar, a section of the basin is located on a higher plateau within the Ghats. In this section the main river flows for some distance along a gently sloping valley where the water level does not fluctuate significantly between the peak monsoon months and the lean summer months. In such a terrain, a special type of evergreen forest evolved under special micro-climatic and terrrainal conditions. These forests can withstand seasonal flooding and resist the erosive flow. But unfortunately practically all the forested plateaus in Kerala Western Ghats have been deforested and converted to cash crop plantations more than a century ago. And most of the remaining forested valleys were submerged under hydél dam reservoirs.

Apart from Kuruva, the last remaining such riparian forests with some semblance to its original characteristics in the entire State is an approximately 140 ha tract in the Chalakkudy Basin. It is located between the Poringalkuthu Powerhouse tailrace point and the Vazhachal waterfall. This entire stretch is under imminent threat from the proposed Athirappilly Hydro-electric Project. If the Project comes through the entire Riparian Forest stretch will go under water. All the trees have been numbered for felling. Actually this forest is two narrow strips, each less than 100 metre wide on either side of the river extending for less than one and a half kilometre. The forest does not continue inland as it has been replaced by monoculture teak plantations. There is no natural river flow and only the water let out of the powerhouse flows along this channel. The riparian vegetation is regularly damaged by the flushing action of flood waters when the Poringalkuthu reservoir is full. Tourism is also eroding into it in and around Vazhachal. This adds considerably to the conservation demand on the Kuruva vegetation.

The riparian forest vegetation has not been exhaustively studied from the point of flora or smaller faunal elements. As they are the rapidly degrading remnants of a far more extensive forest type stretching along all the major rivers in Kerala, what remains might still harbour unique biodiversity. But there is no scientific proof to substantiate this. A far more critical and important need for protecting the riparian vegetation is the vital role they play in maintaining the essential ecology of the river. The remaining riparian forests provide us with the only guidelines when we begin to restore our rivers. This is of vital importance to the State.

A Note on the Carrying Capacity

Carrying Capacity studies on the evergreen forest are in a most primitive state. Forest is an extremely complex living system. Even an apparently uniform sea shore is a very complex and dynamic system. A forested river island, especially one like Kuruva under constantly changing, difficult to monitor forces both from the river and the land area, with its very little known biotic elements, cannot be considered as a simple uniform surface. Human interactions on this complex system on the number and types of interactions add another dimension of complexity. It is not a simple linear equation of area, number of people and duration of time to reach a safe carrying capacity end result. To cite a small example, ecologically the most fragile and at the same time biologically the richest part of the island is the river fringe. We are not sure how far it is already destabilized. Tourists flock to this island especially because of the flowing water. They demand access to the vegetated river margin. Even the minimal trampling will damage the island fringe silt ridge. The compaction of soil, disturbance to the root system all could

inflict irreparable damage. Most unfortunately there is no time-sequence study to properly assess its present status. Without knowing how destabilized the ecosystem is, it is next to impossible how much more load can be added on to it. Apart from the ecological considerations, the human factor especially from the point of view of management is a question mark. In the face of hoards of recreation seekers, what all laid down prescriptions would get implemented is a moot point. It is not an impossibility that we have already loaded the last straw on the camel's back.

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