Riparian vegetation play a major role in maintaining water quality and biodiversity. It had been recognized by wildlife biologist as a critically important and functionally dominant component of terrestrial landscapes. The Cauvery river basin areas have a large floristic wealth enough to constitute as a separate phyto-geographic unit. As increase in the population growth, human activities within the river basin and surrounding landscapes have persistently stressed the riparian ecosystems in the Cauvery river basin. Despite this, some habitats at peripheral ends of River Cauvery, Karnataka are still intact, as they enjoying legal status under Wildlife Protection Act -1972 and Karnataka Forest Rules, 1969.

Hence, to understand the dynamism of riparian forests exposed to anthropogenic pressures, the riparian forests along Cauvery river, Karnataka extending from Mekedatu to Talacauvery (318 Km) was categorized into two landscapes viz., forest and agro ecosystem. The tree species were sampled using random sampling design, by laying belt transects of size 100 X 50m at 8 km intervals. Regenerating individuals were collected individually from quadrat of 5 X 5m for saplings and 1 X 1 m for seedlings placed at each corner of the sample plot chosen to enumerate tree individuals in the forest landscapes. The structural analysis was carried out in forest landscapes by laying four belt transect of size 30m X 5m each, covering 6000 m² area. Tree species were quantified using selective sampling and major human disturbances were documented.

The results revealed, a total of 177 tree species belongs to 52 families representing 2930 individuals. Among them, 52 (29.37%) are common to both forest and agro ecosystem landscape. 55 (31.07%) were exclusive to forest landscape and Seventy species (39.54 %) were confined to agro ecosystem landscape. Of 177 species, 106 species were found in forest landscape and 123 species in agro ecosystem landscape of the riparian forest in River Cauvery. The spatial richness is more in the forest landscape (14.1 species
ha\textsuperscript{-1}) than agro ecosystem (4.35 species ha\textsuperscript{-1}). The basal area of riparian forests in the forest landscape (19.17 m\textsuperscript{2}ha\textsuperscript{-1}) is greater than Agro ecosystem landscape (6.50 m\textsuperscript{2}ha\textsuperscript{-1}). A rarefaction plot confirmed higher species richness for the forest landscapes with diverse vegetation compared to the agro ecosystem landscape. Species composition indicated a relatively low or poor similarity between the two zones. An aggregate kind of species distribution is apparent in the riparian forest of river Cauvery. Marked compositional differences between the forest and agro ecosystem landscapes in the riparian area were evident. The linkage distance at 23.1 for the two landscapes indicates less than 50 % similarity, reflecting enormous variation in composition due to different land use practices. Species area curve revealed that further increase in transect size is needed for the plots located in the periphery area. The Shannon-Wiener diversity indices with more evenness in distribution were evident in forest landscapes.

The Importance Value Index (IVI) of each species encountered in the forest landscape shows that vegetation distribution in the riparian stretch belong to *Terminalia arjuna* – *Pongamia pinnata* – *Tamarindus indica* series. In agro ecosystem landscapes *Pongamia pinnata* - *Ficus benghalensis* - *Salix tetraspermae* series were evident.

Among 177 species recorded in the study area, 30 species belonging to the threatened status of IUCN, FRLHT and WCMC to the Western Ghats. Of the 30 species, 18 are found in the upper stretch of the River Cauvery of Western Ghats region.

Totally 41 species were found to be regenerating in the lower stretch and 43 species in the upper stretch. Seedlings density was more than the saplings in the lower and upper stretch of Cauvery. The lower stretch had more richness for the saplings (5.4) than seedlings (4.5). Whereas upper stretch, seedlings were richer (5.5) than the saplings (5.1). Seedlings showed more diversity than the saplings in both stretches. The Simpson index indicated a mixed type of individuals in the two zones with a little dominance by a few species.

In the lower riparian stretch, out of 60 tree species, 11 showed good regeneration. Twenty species recorded fair, 3 species poorly regenerated, 7 species were not abundant
and 19 species were not regenerating. In the upper stretch, out of 51 tree species, 11 showed good regeneration, 24 recorded fair, 4 species recorded poor regeneration while 10 species were found to be non regenerating and 3 are categorized as not abundant. The size class distribution for endemic species In lower stretch reveals that the proportion of small diameter individuals of *Ixora bracheata*, *Syzygium cumini* and *Syzygium jambose* were greater than large diameter indicating sufficient regeneration in the riparian forest. In upper stretch, *Elaeocarpus tuberculatus*, *Syzygium mundagum*, *Hydnocarpus pentandra* and *Holgarna arnotiana* appeared in all the girth class indicating a marked distribution.

In vertical structure analysis of riparian forest, presence of trees of ‘present’ at several structural ensembles with diverse floristic composition along with continuous upper tree layer of emergent’s reflects a well structured riparian forest.

Our observation all along the river course indicates, besides recurring anthropogenic activities such as sand mining, agricultural encroachment, unscientific tourism, grazing, illicit tree cutting etc., species diversity remains still higher in the forest landscapes, which occupied a small proportion of the study area. An appropriate policy is essential to control anthropogenic activities, which were lacking in our country to protect the remnant vegetation in riparian zone. There is an urgent need to develop an integrated management tool involving both forest and agricultural department officials to protect and conserve the riparian forest of the region.