SUMMARY

Sacred Grove is the most important sacred element designed to conserve biodiversity. They are patches of vegetation, forest or tree stands preserved on religious grounds which were established in ancient days by ecosystem people inhabiting the hilly areas, when they attempted cultivation as vocation. As they migrated to agricultural plains, the practice continued and perpetuated. In course of time, the reverence towards nature evolved into a variety of belief systems and swelled with rites, rituals, taboos and folklores. Slowly, the ethos of conservation became integrated into the cultural heritage.

We investigated the biocultural perspectives and plant diversity of Sacred Groves in and around Pondicherry in a sector of Coromandel coast of South India covering Marakkanam - Pondicherry - Cuddalore region. Though 163 sacred groves were enumerated initially, only 15 groves situated at Sandhikupparn, Keezhkumaramangalam, Sedarapet, Karasur, Ramanathapuram, Nagari, Kumalam, Silkarpalayam, Pannaikuppam, Krishnavaram, Nattamedu, Moorthikuppam, Thennampakkam, Mangalam and Alamarathukuppam were selected for detailed study. Seven of them fall within Pondicherry territory, four each in the intervening pockets of Cuddalore and Villupuram districts of Tamil Nadu State. Krishnavaram (8.8 ha) is the largest one, while five are medium sized (1.12 ha to 4.92 ha) and other nine are smaller groves (<1.0 ha). All are
surrounded by crop fields or plantations, dotting the agricultural landscape and hence called "Marudham Groves".

Restriction on tree felling, hunting of animals and collection of firewood are common to most of the groves. Beliefs on earning the wrath of infuriated deities, if the trees are harmed, is wide-spread. Folklores / tales glorifying the virtues of God are associated with all the groves. People repose immense faith in God and are afraid of supernaturality which indirectly contributes to conservation. Nevertheless, signs of weakening of belief-system and violations are rampant in all the groves.

Seven major castes and communities viz. Chettiar, Mudaliar, Naidu, Pillai, Reddiar, Vanniyar and Scheduled caste live in the villages adjoining the groves and they are the stake-holders. Two communities, Vanniyar and Scheduled caste are pre-dominant. These two are also the poorest and most illiterate sections of the society. Their fideism is pivotal to the maintenance and conservation of the groves.

Aiyanar is the presiding deity in 12 groves and Amman in three. A stone slab with the Aiyanar in the middle flanked by his two consorts, Poorani and Porkalai represents the idol. It is installed in the open on the floor in two groves under the huge trees reminiscent of nature worship of primitive societies. In three groves, it is raised on platforms. In the rest, temples or shrines of varying complexities exist.
Of the 15 groves Sedarapet with its uniconic character and close tree cover comes closer to an informal grove. Thennampakkam is dedicated to the memory of Saint Azhagar Siddhar; hence a memorial grove. All others are formal groves, since the idol worship and shrine construction is prevalent in varying extent.

Sedarapet (0.23 ha) is the smallest one, but had 60 species in 56 genera and 36 families. Of these, 21 are tree species, 14 shrubs, 17 herbs, seven climbers and one parasite.

Karasur (0.25 ha) had a total of 32 species distributed in 30 genera and 23 families. There were nine woody species, eight shrubs, seven herbs, seven climbers Cassytha filiformis was the only parasite.

The grove at Moorthikuppam (0.28 ha) contained 24 species belonging to 23 genera and 19 families. Among these, eight were woody species, shrubs and herbs seven each and two lianas. A rare woody climber Vallaris solanacea was recorded only in this grove.

Nagari grove (0.28 ha) had a total of 30 species representing 29 genera and 19 families. Of these 15 trees species, five shrubs, eight herbs, and a single climber were enumerated.

Kumalam grove (0.30 ha) contained 27 species in 25 genera and 20 families. Of these trees were 18, shrubs three, herbs five and climber one.

Keezhkumaramanagalam (0.32 ha) had a total of 40 species, representing 36 genera and 27 families. There were 22 woody taxa, 10 shrubs, five herbs, two climbers and one liana.
Ramanathapuram (0.66 ha) recorded 56 species in 54 genera and 35 families. There were 21 woody taxa, 12 shrubs, 15 herbs and seven climbers.

At Silkaripalayam (0.75 ha) 74 species, 70 genera and 40 families were enumerated. Of these, 23 woody taxa, 19 shrubs, 24 herbs, eight climbers were found.

The grove at Mangalam (0.96 ha) had a total of 64 species, in 59 genera, and 37 families. Among them, woody taxa accounted for 24, shrubs 14, herbs 17, climbers five, lianas two and parasites two. There was a thick shrub layer, dominated by *Alantia monophylla*. A robust liana, *Derris scandens* (83 cm gbh) was a notable specimen.

Sandhikuppam (1.12 ha) had 57 species distributed in 53 genera and 36 families. There were 15 tree species, 13 shrubs, 19 herbs, eight climbers and one liana. *Borassus flabellifer* and *Azadirachta indica* were the most important species.

Nattamedu (1.5 ha) had a total of 65 species in 59 genera and 37 families inclusive of 30 woody species, 15 shrubs, 14 herbs, four climbers, liana and parasite one each. Seven exotic species have been introduced by the Government of Pondicherry as part of afforestation. A pond inside the grove is the perennial water source. It is situated closer to the village and on the main road.

The grove at Pannaikuppam (1.5 ha) had 55 species, 48 genera and 36 families, which includes 23 woody species, 12 shrubs, 13 herbs, six climbers and one parasite. One third of the grove-proper was converted for agriculture purpose.
Thennampakkam (4.5 ha) is famous for the temple of Azhagar and is a memorial grove. It had a total of 23 species distributed in 21 genera and 18 families; 15 are woody species, four shrubs, three herbs and one liana. Herbs and shrubs were restricted towards the extreme corner of the grove. Ground vegetation was sparse due to the frequent visit by the devotees.

Alamarathukuppam (4.92 ha) had 79 species belonging to 60 genera and 36 families. From these, woody taxa 28, shrubs 15, herbs 22, climbers 10, lianas two and parasites two were recorded. The shrub vegetation is dominated by *Phoenix pusilla*. A portion of the grove is saline and swampy where *Salvadora persica*, a halophyte is grows luxuriously. The presence of *Ficus amplissima*, *Corypha macropoda*, and the succulent, *Sarcostemma intermedium* are botanically important.

Krishnavaram (8.8 ha), famous for fire-walking ritual, is the largest in the study area. It had 92 species, representing 81 genera in 41 families, of which trees accounted for 29 species, shrubs 25, herbs 19, climbers 16, parasites two and liana one. A big pond and clearing for festivities reduced the vegetation cover. Abundance of climbers and thicket species indicates the degree of destruction. The thalloid bryophyte, *Riccia* sp. was found during post-monsoon period only. A rare monocarpic palm, *Corypha macropoda* also was present.

In all the groves, together measuring 26.37 ha 200 plant species belonging to 176 genera and 62 families were inventoried. Of these, 136 were woody taxa.
Silkaripalayam is a shining example of success of conservation ordained through cultural traditions is a well-preserved one. Five other groves, Sedarapet, Karasur, Ramanathapuram, Nagari and Kumalam are also fairly well preserved.

Despite the species diversity, three groves can be classified as mono-species and the others as mixed in composition. Though mono-species groves were dominated by *Borassus flabellifer* (e.g. Sandhikuppam, Krishnavaram and Moorthikuppam) or *Tamarindus indica* (Thennampakkam), certain trees like *Azadirachta indica* were equally important to the extent of becoming co-dominant. There were sizable populations of other trees too; No one species was dominant uniformly across the groves. The groves at Kumalam and Ramanathapuram were characterized by luxurious growth of *Glycosmis mauritiana* shrubs in which isolated trees were interspersed with.

Natural vegetation along the Coromandel coast occurs in patches of Tropical Dry Evergreen Forests (TDEF) or scrub woodlands. The following groves viz. Sedarapet, Mangalam, Karasur, Ramanathapuram and Kumalam shared both evergreen and deciduous elements. Since this region was covered by evergreen forests in the past, these groves may be relicts of erstwhile formations with reduced species richness with a large proportion of ligneous and armed species. Krishnavaram is a scrub jungle.

Degradation of vegetation as a result of continued human interference is evident in all the groves. Sand quarrying, erection of elaborate temple structures,
facility for causeway / foot path and encroachment of the grove proper for housing / agricultural purposes are the major forms of human impacts. Frequent visits of devotees and grand celebrations of annual festivals were other contributory factors. Natural calamities in the form of cyclonic storms have uprooted trees occasionally.

The groves are not exactly the miniatures of their original forest types. As they stand today, they cannot become typically tall and thick woody stands as the pressures are manifold. Despite the species diversity, they are dominated by secondary species, uncharacteristic of climax vegetation. To make it worse, several of the trees are ageing and old specimens, giving way to coppicing.

However, the groves are home for some rare and threatened category taxa. *Diospyros melanoxylon*, *Santalum album* (Sedarapet), *Amorphopallus sylvaticus* (Karasur), *Polylathia suberosa* (Pannaikuppam Silkaripalayam), *Corypha macropoda*, *Ficus amplissima*, *Sarcostemma intermedium*, *Riccia* sp. (Alamarathukuppam), *Pamburus missionis*, *Crataeva adansonii* (Ramanathapuram), *Gliriosa superba* (Silkaripalyam) are some examples.

Genetic diversity of certain species is also impressive, *Cassia* (5 spp.) *Capparis* (4 spp.) *Ficus* (5 spp.) and *Grewia* (3 spp.) are distributed between the groves within this narrow stretch of Coromandel coast.

Certain species, like *Alangium salvifolium* (Keezhkumaramangalam), *Azadirachta indica* (Nagari and Ramanthapuram), *Lepisanthes tetraphylla* (Nattamedu), *Madhuca longifolia* (Silkaripalayam), *Ficus benghalensis*
(Keezhkumaramangalam), *Polyalthia suberosa, Ficus religiosa* (Pannaikuppam), *Tamarindus indica* and *Crataeva adansonii* (Ramanathapuram), *Syzygium cumini* (Thennampakkam), *Derris scandens* (Mangalam) and *Capparis zeylanica* (Ramanathapuram) have attained luxurious growth and are giant specimens. Their robustness could be correlated to the relatively undisturbed environment guaranteed by cultural traditions. *Ficus benghalensis* is a keystone species. It is recorded in all the groves except Pannaikuppam; but the sacred tree *Azadirachta indica* grows in all.

The groves also harbour several medicinaly valuable species. *Alangium salvifolium* (Keezhkumaramangalam), *Garcinia spicata* (Kumalam), *Rauvolfia tetraphylla* (most groves), *Tylophora indica* (Krishnavaram) are part of the constituents.

Together with two natural formations, the Marakkanam Reserve Forest (MRF) and Swadeshi Cotton Mill (Private forest) in the coromandel coast sector, 251 woody species have been enumerated from 35 patches.

The present study has confirmed the existence of rich biodiversity in the groves and justify the ecological prudence of the agricultural peasants of the past. Their cultural traditions have protected scores of plants of conservation values either within the relict patches or in the anthrotropic stands. A treasure trove of biodiversity has been discovered in the form of Sacred Groves and it craves for immediate protection form the onslaught of the self-centred civilized society.