

# BIODIVERSITY ON THE PALNI HILLS

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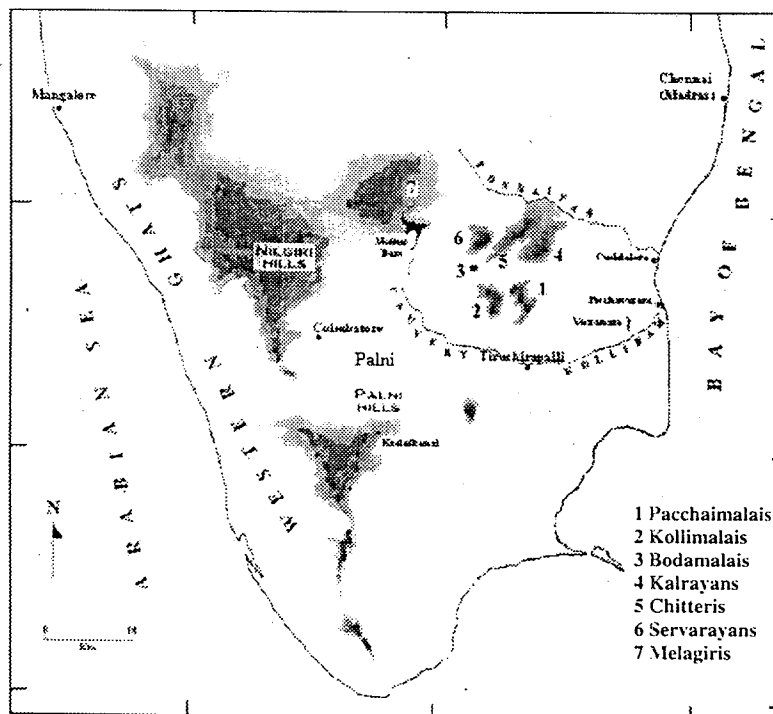
## 1. Introduction

We function as a 2-station natural history establishment: *research* on plant diversity at The Rapinat Herbarium, Tiruchirapalli, and *environment* at The Anglade Institute of Natural History, Sacred Heart College, Shembaganur, Kodaikanal 624 104, benefitting from a century-old infrastructure and tradition. This diversification helps for avoiding duplication while ensuring efficiency. Though our expertise lies with plants, we are including fauna also for the sake of completeness, basing ourselves on the natural history museum and related documents of the Anglade Institute.

## 2. Basic research on plant diversity

Extensive field exploration as basis for plant diversity studies has been axiomatic with us.

Map 1: South India showing the exploration area



In Map 1, zones 1 and 2 have already been completed, while zones 3 and 4 are in progress. Zone 1 (1976-1988) covered the plains and lower hills, while Zone 2 (1984-1999) covered the Palni hills. These two together will make for an adequate coverage for the Tamil Nadu State, excluding the evergreen belt west of the Western Ghats.

**Table 1 : Report of Field work**

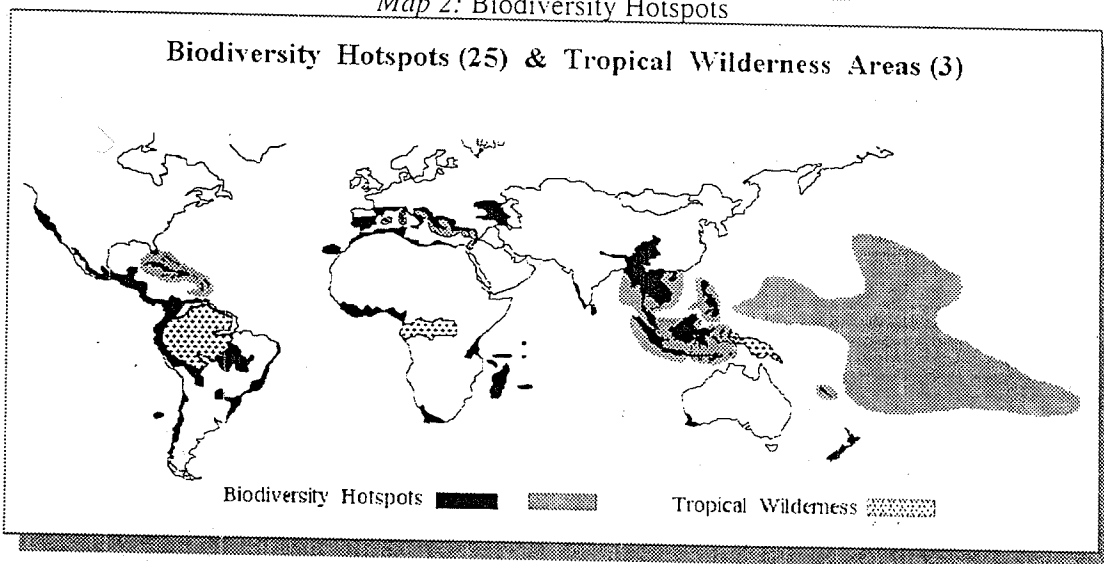
	Area	Duration	Number of		
			Field Days	Collections	Species
Zone 1	<i>Plains:</i> low altitude hills ( < 1400 m)	1976 - 1983	631	30,722	2,037
Zone 2	<i>Palni hills</i> (to 2410 m)	1984 - 1994	323	14,987	2,478
Zone 3	Coromandel <i>Coast</i>	(1997) 2001-	58	2,393	
Zone 4	North TN	1999-	83	3,762	

This is a summary of field days, collections made and the number of species involved. Please note that nearly 50% of genera (aliens excluded) in zone 1 (486/990) were monotypic! Though this figure went down to 33% (377/1137) when the Palnis also were considered and might go down a little lower when the evergreen of the Western Ghats also are included, the high percentage monotypic genera is still significant. The location where a whole subcontinent is tapering off explains this and the co-terminous location of the Biodiversity Hotspot is its best confirmation.

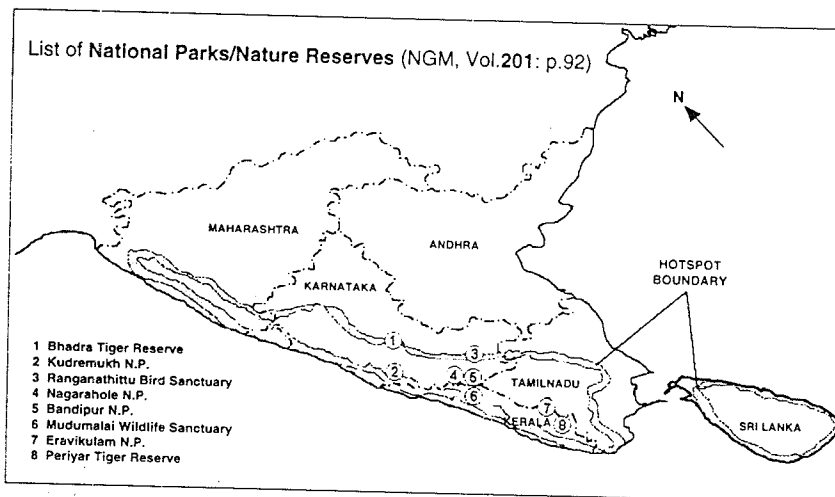
**3. The Biodiversity Significance of the Palni hills**

lies in the fact that they are part of the Western Ghats of India, one among the 25 Biodiversity Hotspots of the entire planet: a mere 1.4% of the land surface of the planet being the home of 44% of plants and 35% of fauna. (Mittermeir *et al.* 1998)

Map 2: Biodiversity Hotspots



Map 3 : Map of the W. Ghats Biodiversity Hotspot  
(National Geographic Magazine) 201: 92. Jan 2002.



Once linked by land, India's Western Ghats and Sri Lanka together make up one Biodiversity Hotspot: a piece with threatened natural habitats that are rich in species, especially plants, that live nowhere else.

Though the Palnis are relatively less disturbed than other hill stations (Lengerke, 1982; Matthew *et al.* 1976, Wight, 1837), the high percentage of alien plants (29%) in Table 2, below, is disturbing (Matthew 1969). Further, some half a dozen weeds have irretrievably overrun extensive denuded areas. Among the 71% of the indigenous species, a significant number fall under the rare/endangered/threatened categories. Finally the Palnis can serve as an **indicator area: what is happening over restricted areas over short time intervals is a miniature of what is happening over larger areas over longer periods, and hence these data are vitally important in planning for conservation and eco-restoration.**

Table 2 : Classified conspectus of the included taxa

Zone	Families	Genera (monotypic in brackets)	Species				
			Native	Naturalised	Cultivated	Garden	Total
1	180	990 (486)					2,037
2	202	1,137 (377)	1,758	161	344	215	2,478
3							
4							

**Table 3 : Conservation Status  
Biodiversity & Conservation 8 : 779-796. 1999**

Area Explored	Status of Species		
	Vulnerable	Extinct	New Records (x aliens)
Carnatic	25	3	6
Palni hills	65	13	58
Coromandel			
North TN			

The data in *Table 3*, in itself threatening, are notably lower than published figures because we have relied exclusively on hard evidence rather than published data: our own field work and previous collections preserved in the relevant herbaria, especially in Kew (Matthew 1999b). Another factor is that whereas the Palnis have several species from the Western Ghats along the western border, the fact that the other three sides are exposed to the arid plains accounts for lower figures for the tiny herbs.

The 65 species listed under vulnerable (Matthew 1999a) clearly point to two sources of degradation: habitat destruction and over-exploitation. Desiccation of the habitat from deforestation is equally damaging (Matthew 1990; Matthew & Mathew 1993). As a member of the plant specialist group for the Indian subcontinent, I have been feeding our data into IUCN's data base (Sharma & Babu, 1996).

Table 4 : List of taxa that are extinct, or highly vulnerable from *extrinsic* reasons.

	Habitats/ Special Uses	Central Tamilnadu	Palni hills
Habitat destruction	Grasslands	<i>Anemia, Linum, Swertia</i>	<i>Campanula alphonsii</i>
	Epiphytes	<i>Huperzia, Psilotum</i>	<i>Coelogyne</i>
	Sheltered ravines	<i>Impatiens acaulis</i>	<i>Sonerila pulneyensis</i> <i>Hoya wightii</i> ssp. <i>palniensis</i> <i>Plectranthus bourneae</i> <i>Phyllanthus chandrabosei</i> <i>Trichoglottis tenera</i>
Over-exploitation	Ornamentals	<i>Aerides, Satyrium, Liliium</i>	<i>Aerides, Arundina, Coelogyne, Liliium</i>
	Pharmacology Timber	<i>Drosera peltata</i> <i>Xylocarpus, Sonneratia</i> <i>Exacum perrottetii, Pedicularis, Dipcadi</i>	<i>Drosera peltata</i> <i>Pterocarpus, Dalbergia</i> 13 species (Matthew 1996)
Suspected extinction			

## 5. Conservation Programmes

Leaving the PHCC-executed programmes for the entire Palnis for a separate presentation, I confine myself to strictly *ex situ* (off site) programmes around the Pambar Shola, the vegetational core area of the entire Palnis (Stewart & Balcar, 1996 -): (a) Pambar Shola endemics: *Hoya wightii* ssp. *palniensis*, *Sonerila pulneyensis*, *Phyllanthus chandrabosei*, *Trichoglottis tenera*, *Psydrax ficiformis*, *Elaeocarpus blascoi*, *Plectranthus bournei*; (b) Palni hills endemics: *Hydnocarpus pentandra*, *Pentapanax leschenaultii*, *Aerides crispa*, *Crotalaria beddomeana*, *Arundia graminifolia*, *Bentinckia condapanna* (Matthew 1991); (c) Locally extinct but re-introduced: *Alchemilla indica* var. *madurensis*, *Impatiens tangachee*, *Vernonia arborea*. These are as yet seedling nursery results; large scale release back to nature is yet to take place.

## 6. Fauna

The natural history museum of The Anglade Institute is the main reference point for the fauna of the Palnis. The *Handbook* (Matthew 1994) has a short, untechnical but comprehensive account of the various groups like Mammals, Birds, Snakes, Butterflies, Moths and Insects with some key references to publications. Whereas it is reassuring that mammals like the Gaur and the Tahr returning for over a decade, the gradual increase in temperature among other attendant factors, has brought in more snakes, bonnet macaques, crows, etc.

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