### Appendix 5  Survey of Vegetation Diversity of Mukurti National Park 2002-2003

Mapping of GPS points by Sandilya T. and Deviah Aiamma

**Day 1: August 9 2002 - Mapping for General Reference Structure**

<table>
<thead>
<tr>
<th>NAME</th>
<th>LAT</th>
<th>LONG</th>
<th>ALT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>BANG</td>
<td>11° 15' 29.3&quot;</td>
<td>76° 30'17.4&quot;</td>
<td>2181</td>
<td>Starting point at Bangitappal Trekking Shed</td>
</tr>
<tr>
<td>01FORK</td>
<td>11° 15' 33.9&quot;</td>
<td>76° 30'26.6&quot;</td>
<td>2228</td>
<td>Path junction of path to Upper Bhavani Road and earth dam path</td>
</tr>
<tr>
<td>02STR</td>
<td>11° 15' 31.1&quot;</td>
<td>76° 30'35.3&quot;</td>
<td>2259</td>
<td>Small stream flowing across path</td>
</tr>
<tr>
<td>03RG</td>
<td>11° 15' 23.8&quot;</td>
<td>76° 30'35.3&quot;</td>
<td>2345</td>
<td>Rain gauge location: situated on a saddle of land. Mainly shola forest surrounding this saddle, but some patches of grassland interspersed with <em>Rhododendron nilagiricum</em>, <em>Strobilanthes</em> and other shrubs. Bracken fern and Raspberry present in grasslands and <em>I. clavicornu</em> locally abundant.</td>
</tr>
<tr>
<td>04ROAD</td>
<td>11° 15' 22.5&quot;</td>
<td>76° 30'37.3&quot;</td>
<td>2367</td>
<td>Junction of shortcut with Upper Bhavani Main Road (Bear picture to 'Nurture Nature... Torture' present)</td>
</tr>
<tr>
<td>05ELB</td>
<td>11° 15' 05.3&quot;</td>
<td>76° 30'35.5&quot;</td>
<td>2375</td>
<td>Elephant board present and start to Nadugani path -&gt; to the NE is Nanjundamalai range extending till the earth dam. Grassland on both sides of the road with Wattle saplings common, <em>I. clavicornu</em> occasional, Bracken Fern and Raspberry present along roadside. To the S of this point are pine plantations.</td>
</tr>
<tr>
<td>06PINE</td>
<td>11° 14'58.5&quot;</td>
<td>76° 30'41.0&quot;</td>
<td>2346</td>
<td>~ 8-10 ha of pine plantations coming up to the road.</td>
</tr>
<tr>
<td>07BIS</td>
<td>11° 14' 49.3&quot;</td>
<td>76° 30'43.4&quot;</td>
<td>2349</td>
<td>Bison board present and start to Upper Bhavani Hut -&gt; high density of ~ 3-4m tall Wattle, Raspberry present, <em>I. clavicornu</em> ABSENT, many dead Wattle trees also. The grassland is devoid of other herbs. This area is also the region where the Forest Department attempted to plant shola tree saplings but all planting failed.</td>
</tr>
<tr>
<td>08CDAM</td>
<td>11° 14' 42.9&quot;</td>
<td>76° 30'48.6&quot;</td>
<td>2298</td>
<td>Check dam in the beginning of a valley leading to Upper Bhavani. N is a watershed, W is Wattle plantation with ~ 4m high trees, not very dense stands, E is Forest Department's Wattle eradicated site of 1999. Nearby a Wattle nursery (abandoned) from the 1970s. Salt lick nearby. <em>I. clavicornu</em> occasional, few other herbs. Wattle eradication not 100%.</td>
</tr>
<tr>
<td>09KLND</td>
<td>11° 14' 10.3&quot;</td>
<td>76° 30' 59.2&quot;</td>
<td>2266</td>
<td>Kalundi - 1940s (?) dam labourers' living area and previously Toda pasture land. Short grasses ~ 2-3&quot; high, abandoned house foundations, some long grass patches along stream banks.</td>
</tr>
<tr>
<td>10UBHT</td>
<td>11° 13' 54.7&quot;</td>
<td>76° 31' 05.8&quot;</td>
<td>2259</td>
<td>Upper Bhavani Hut / Forest Guard shed. Surrounding tall slopes - dense Wattle stands - fully grown trees. Patches of grass devoid of other herbs. Tall tops - pine.</td>
</tr>
</tbody>
</table>
Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

Mukurti National Park

11EBRD  11 14' 01.4"  76 31' 11.9"  2276  Electricity Board Road, edge of National Park, junction of road to Forest Guard Hut and road to Dam Pump House.

12GATE  11 13' 55.0"  76 31' 28.2"  2312  Reception Centre - Upper Bhavani Dam and Park Gate. Surrounding - stands of Wattle and Acacia with very little ground cover.

13ROAD  11 14' 37.0"  76 31' 05.4"  2349  Road back to Bangitappal Trekking Shed.

14DUGB  11 14' 43.5"  76 31' 01.5"  2357  Road back to Bangitappal Trekking Shed.

15RD    11 15' 26.4"  76 30' 45.3"  2339  Road back to Bangitappal Trekking Shed.

16RD    11 15' 30.2"  76 30' 58.0"  2352  Road back to Bangithappal Trekking Shed.

17EDAM  11 15' 39.7"  76 31' 27.8"  2294  Road back to Bangitappal Trekking Shed.

18RD    11 15' 36.1"  76 31' 11.3"  2264  Road back to Bangitappal Trekking Shed.

19RD    11 15' 44.8"  76 30' 43.3"  2275  Road back to Bangitappal Trekking Shed.

20BRIG  11 15' 33.9"  76 30' 13.0"  2236  Road back to Bangitappal Trekking Shed.

MISC.  
• From gate to Hyena / Wild Dog Board, river/stream on right
• Wattle on both sides of road, some Cedar (?)
• Nanjundamala range: lower parts mostly shola and upper parts has grassland with Wattle saplings sparsely distributed in some regions and dense in others – all the way to the earth dam.
• Earth dam – to Bangitappal stretch: more grasses, less Wattle saplings, I. clavicornu present – locally abundant closer to Bangitappal where Wattle begins to disappear gradually.
• Some shola along the streams.

Day 2: August 10 2002 - More Mapping

21BANG  11 15' 29.2"  76 30' 17.6"  2253  Bangitappal Trekking Shed.

22RG    11 15' 23.7"  76 30' 35.6"  2302  Rain Gauge

23MTOP  11 15' 24.8"  76 30' 28.9"  2350  Start of Madipumalai Ridge Top.

Few Wattle saplings, some Rhododendron here and there. 2 sp. of Hedyotis common, 3 sp. of Anaphalis common, Impatiens rare. This area is not only a grassland – lots of shrubs, some shola trees. Slope is steep. S of the area is Upper Bhavani, NE is Bangithappal, patches of Anaphalis neelgerryana present.
Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

24MTP2  11 15' 15.7"  76 30' 08.8"  2411  Madipumalai Ridge Top continues.
Rocky landscape. *Hedyotis verticillaris* common. N slope shola forest, comes almost to very top, with *Rhododendron* growing under the trees. Clumps of *Eurya* present in area. Ridge narrows to ~ 20m wide. Few Wattle saplings present. Patches of *Anaphalis neelgerryana* present.

25MTP3  11 15' 08.5"  76 29' 52.0"  2450  Madipumalai Ridge Top continues.

26MTP4  11 15' 10.6"  76 29' 45.2"  2466  Close to end of Madipumalai ridge top: also the location of a stone pile – last survey point. From 25MTP3 till here rock cover (some), good grass, patches of sparse grass cover, patches of I. clavicornu, solitary Wattle saplings.

27MSR1 & 28MSR2  11 15' 19.1"  76 30' 05.0"  2375  Route down ridge to the side of Madipumalai
Steep slope, shola forest in valley.

Day 3: August 11 2002  Route: Western Catchment #1 Trekking Path (WC1P)

29BANG  11 15' 29.4"  76 30' 17.4"  2244  Start at Bangitappal Trekking Shed.

30BRIG  11 15' 33.6"  76 30' 14.0"  2231  Bridge where WC1P begins.

31BNHS  11 15' 40.0"  76 30' 21.5"  2242  31BNHS research site enclosed by wooden fence.
Area that was set on fire then allowed to regrow. *I. clavicornu* density higher than surrounding grassland. (Seeds planted? – check with Ashfaq). Grassland has medium height grass, NO Wattle, seems quite diverse: small populations of *I. clavicornu*, some *Hedyotis verticillaris*, *Peristylus*, *Gaultheria*, *Strobilanthes, Anaphalis neelgerryana* present.
Remark: generally quite diverse compared to the other areas seen. Areas just above/ opposite the Bangitappal gorge with shola forest in it.

32STR  11 15. 48.9"  76 30' 25.7"  2277  Small stream crossing path. Steep slopes on both sides of stream. Along stream edge – *Strobilanthes, Rhododendron, Eurya, Anaphalis* present. Very few Wattle present in the grassland.

33STR  11 15' 54.4"  76 30' 29.9"  2298  Big stream with shola forest, steep slope of grassland on either side of stream.

34HTOP  11 15' 56.7"  76 30' 38.1"  2327  Top of path. Grassland with short grass, heavy winds.

35BORD  11 16' 04.3"  76 30' 53.6"  2338  Path meets Kerala border – fire-line. Shola forest coming up to the top, possibly from the Nilambur Valley.
Western Catchment #1 path continues. Patches of exposed ground. Lower density of the most common grass sp. Grass short, strong wind exposure. Few Wattle saplings. General diversity low.

Path continues. Same as 36WC1P description but some solitary *Rhododendron*.

WC1 Path meets road going up to WC#1 (two hours walk) + another road going to tunnel mouth. Scattered *Rhododendron*, grassland full of shrubs, exposed patches of ground. Further down the road toward the earth dam – patches of *Anaphalis neelgerryana*, *Oldenlandia stylosa*.

Along the road leading to earth dam. Patches of exposed ground, small clumps of Wattle saplings, area poor in grasses, dominated mainly by *Strobilanthes*, solitary *Rhododendron* and *Syzygium*, Bracken and Raspberry present. Remark: very disturbed.

Road meets earth dam gate road.

Day 4: August 12 2002 Route: Nadugoni Path

Trekking Shed at Bangitappal.

Road meets start of Nadugani – Sispara path. Next to stream with narrow strips of shola tress to the south of the path. Path is heading W. N is a hill slope with grassland. Remark: diverse variety of grasses, *I. clavicornu* and *diversifolia* common, solitary *Rhododendron*. Steep slope, no Wattle present. *Hedyotis verticillaris* locally abundant along the path.

Stream crossing path + old horse shelter. Small shola patch along the stream. Clumps of big *Rhododendron* with other shrubs below, in the grassland. *I. clavicornu* locally abundant, same for *Strobilanthes* & Bracken, few Raspberry.

Path continues. Gradual slopes, several patches of shola forest even where there are no streams. Evenly distributed *Rhododendron* trees ~ 5m apart. These *Rhododendron* stands continue since Bangitappal road. *H. verticillaris*, Bracken, *I. clavicornu* and *Strobilanthes* locally abundant. Remark: Grassland shrubby and not very diverse.

Labour shed, road ends, starting of fire-line which goes to the border (?) Same description as point 44 BUT no shola patches, no Bracken and *H. verticillaris*. *I. clavicornu* locally abundant. Few *Gaultheria* and Raspberry, possible to reach to Madipumalai. Lycopods growing abundantly on banks by side of road. Few solitary Wattle saplings.
46NPTH 11 15' 13.8"  76 29' 13.6"  2216  Path continues, just exited large shola patch crossing several streams. To the SW, healthy looking grassland (but not diverse): grassland was dense with mostly the common sp. few *I. diversifolia*, Bracken, dry/dead Wattle saplings. Slopes down to the NE into shola plot. A patch of *I. clavicornu*.

47NPTH 11 15' 06.6"  76 29' 00.3"  2187  Path continues. SW – flowing stream near point in steep-slope sided valley. Several large *Rhododendron* trees in the grassland on the slopes + occasional Wattle saplings. Narrow, patchy shola along stream. Rock outcrops on the slopes to the NW of stream. *I. clavicornu* and *Strobilanthes* common along the stream. Remark: quite diverse grassland.

48HTOP 11 15' 07.5"  76 28' 49.4"  2278  Top of hill range to the N of the path (off-path). Steep slope, scattered live Wattle saplings (common). Few shrubs – *Gaultheria*, *O. stylosa*. Other side (further N) of hill has a stream flowing and has shola.

49FLAT 11 15' 05.8"  76 28' 36.2"  2237  ~ 500m long flat valley where several streams meet (small streams) with few shola trees along them. *Strobilanthes*, *H. verticillaris* locally abundant next to the streams. No shrubs in the grassland, some Bracken, solitary *Rhododendron*, *I. clavicornu* common. Few *I. diversifolia*. Remark: not very diverse grassland.

50BORD 11 15' 10.3"  76 28' 31.2"  2276  ~ 100m from Kerala border, further N of 49FLAT, at the hill top. Small shola patch along a stream. Grassland very diverse: locally abundant *I. diversifolia*, *O. stylosa*, *H. verticillaris*, *Strobilanthes*, *L. suffruticosa*. Dense grass cover with no Wattle.

51BORD 11 15' 18.1"  76 28' 43.9"  2329  Survey stone structure at the border. Wattle and broad-leaved Acacia saplings scattered and common dense grass, locally abundant *I. clavicornu* and *diversifolia*. Few clumps of *Gaultheria*.

52BORD 11 15' 27.8"  76 29' 04.4"  2324  Survey stone structure at the border. Grassland quite diverse, Bracken, *I. diversifolia*, *I. clavicornu*, *Strobilanthes*, and *L. suffruticosa*, broad-leaved Acacia common, few Wattle saplings and clumps of *Gaultheria*. Grass is dense. Many *Ceropegia pusilla* on the exposed part of the border.

53BRJN 11 15' 29.3"  76 29' 15.7"  2357  Path coming from labour set (?) meeting border. Small shola patch to the N grassland same as previous pt. 52BORD

54BORD 11 15' 32.9"  76 29' 27.0"  2332  Survey stone structure at the border. Grassland appears less diverse compared to previous 2 pts. Some shola patches along the way upto this point. Occasional *Rhododendron*, few *I. clavicornu* and *diversifolia*. Few *Peristylus* and *Gaultheria*. No other shrubs.
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55BORD  11 15' 34.9"  76 29' 39.0"  2366 Stream with small shola patch across the border, maintained border ends at stream, border goes blow plateau? *I. clavicornu* locally abundant (and on the way here). Grassland not dominated by common grass sp. solitary. *Rhododendron*, few *Peristylus*, NO Wattle. Stream flowing W, coming from horse shelter to the E.

56NPTH  11 15' 32."  76 29' 51.0"  2370 Back to Nadugani path/road near Horse shelter. Along the way here, shola patches, *Rhododendron* (one solitary gigantic tree seen too), grassland similar to previous point.

Day 5:  17 September 2002  Route: To Nadugoni. Points taken from 47NPTH

59NPTH  11 14' 56.9"  76 28' 46.1"  2199 Start of short cut to Nadugani grass short – fairly diverse – *I. diversifolia*, *Peristylus sp.*, *Anaphalis sp.*, *Osbeckia* sp. and several other herbs. *Strobilanthes sp.* and *H verticillaris* along the stream going S. Hill tops in the area have dead or dying wattle saplings. Small patches of shola coming down to the valley bottom on the east side.

60NPTH  11 14' 39.7"  76 28' 26.0"  2222 Short cut meets man Nadugani path again. *Habenaria cephalotes* few, *Peristylus sp.* clumps of *Gaultheria* scattered. Surrounding hill stops have many patches of exposed rock. Small pockets of shola. General view of the surrounding is mainly grassland.

61NPTH  11 14' 33.5"  76 28' 12.3"  2207 Nadugani path crosses stream flowing E on a broken down check dam/ bridge. More sholas and larger in size from 60NPTH. No *H. verticillaris* along the stream and no more wattle. Steep slopes, and narrow valley. Few *dversifolia* on the northern slope. Grassland not diverse.

62NPTH  11 14' 13.7"  76 28' 00.1"  2268 Just past a large shola – grassland patch with exposed ground. Grass short *L. suffruticos*a common, few *Anaphalis wightiana*?

63NPTH  11 13' 44.9"  76 27' 59.3"  2278 No sign of wattle since the beginning of shortcut. Short hills, shola patches few and smaller from 62NPTH. Grassland scrubby with *Strobilanthes sp.*, *Gaultheria* and *Eurya*. No *I.diversifolia*.

64NADU  11 13' 38.9"  76 27' 57.9"  2293 Nadugani shed.

65SISP  11 13' 22.1"  76 27' 57.3"  2279 Path to Sispara from Nadugani hill slope facing west – *Habenaria cephalotes* few scattered on the moist patches of grassland on the rock face.

66SISP  11 13' 16.0"  76 27' 54.5"  2254 Path to Sispara – where it crosses a largish stream, with the old Nadugani trekking shed nearby. Grassland diverse, grass short, has been burned (evidence seen in several photos). Slopes shallow, *I. diversiflora*, *Satyrium*, *Peristylus sp.* *Habeneria heyneana* and other herbs common. Wet ground.

67SISP  11 13' 02.1"  76 27' 40.7"  2276 Path to Sispara. Place called Nadugani mattam – meadows with shallow hills and broad flat valleys. Tall thick grass with *Leucas* abundant, *I. diversifolia*, *Strobilanthes sp.* along the stream.
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68SISP  11 12' 50.0"  76 27' 33.4  2249  Start of descent to Sispara – Valakkad range / Silent valley, to the south nearby. Rocky grassland patchy, Strobilanthes sp. common. Few Satyrium, L. suffruticosa and Habenaria sp., Habenaria heyneana, Peristylus sp.

69SISP  11 12' 32.0"  76 27' 16.0"  2122  Sispara path at the bottom of the valley – stream flowing southeast, grassland not diverse, mainly covered with Strobilanthes sp. Some I. diversifolia, clavicornu. Rocky. Small to large sholas on surrounding folds and patches of trees and single ones on the grassland.

70SISP  11 12' 18.4"  76 27' 06.5"  2127  Sispara path continues along the valley bottom. Place called “Karadi Guha”. Overhanging rock on the side of the hills. Shelter for 2 or 3 people to stay. Northern slopes have only grassland, and the southern slopes are mostly covered with shola. Abundant Strobilanthes sp. along the stream, also Oldenlandia verticillaris. Few Satyrium.

71SISS  11 12' 06.5"  76 26' 23.0"  2004  Sispara shed. On the Kerala side steep descent soon after 70SISP, and then further down again from Sispara Pass 72SISP

72SISP  11 12' 03.3"  76 26' 36.8"  2124  Sispara Pass. Place with the board.

73MTP  11 15' 09.4"  76 29' 47.5"  2459  Madipumalai Top. The place where the ridge branches in two. Gen. impression of the ridge – grassland varies from thick/tall not so diverse to short and patchy, where there are many herbaceous plant species growing – Habenaria polyodon, Satyrium, L. suffruticosa, patches of Anaphalis nilgirianum, I. clavicornu, I. inconspicua, Hedyotis sp. and solitary Rhododendron all along the ridge. View of Nadugani, Sispara area to the southwest. North – Bangitappal valley, Nilgiri Peak. North-east – Western Catchment, Mukurti Peak area. East – Upper Bhavani. South – Kingerundi, Periya shola area. Madupumalai is most probably the best place to get a view of the whole National Park. Definitely the best, highest and most central in the Bangitappal-Sispara region.

Nanjundamalai to Upper Bhavani hills look very destroyed. Most hills are covered with Wattle, and those that are not, do not have any shola in the folds. There are also two thick Pinus plantations of about 3 or 4 acres each in the area. This is the area where the Forest Department is doing some Wattle eradication. Madipumalai has only a few Wattle saplings. Most are dry.

74MTPL  11 14' 59.7"  76 29' 41.2"  2454  Madipumalai Top last. From here there is a steep rocky slope down to a smaller hill, but the range continues – the same on the opposite side of the ridge where it braches initially. Between the two arms there are many smaller hills that have some Wattle. Rocky slope, tufts of grass with Anaphalis sp. Hedyotis sp. Satyrium, Leucas rosmarinifolia (?) common. Facing Nadugani, Sispara on the right and Kingerundi, Periya shola on the left. The left side has much larger patches of sholas compared to the right.

75MBOT  11 14' 39.6"  76 29' 20.7"  2176  Madipumalai Bottom. In the hills between its two arms. Several streams converging from the Madipumalai drainage at this point. Few small thick clumps of Wattle along the stream. The slopes have scattered Wattle. Mostly thick grass with I. diversifolia, some wet rocks on the slopes with abundant I. acaulis. The sholas along the streams are narrow.
<table>
<thead>
<tr>
<th>Route</th>
<th>Latitude 11° 14'</th>
<th>Longitude 76° 29'</th>
<th>GPS Reading</th>
<th>Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>76WATL</td>
<td>34.9&quot;</td>
<td>60.0&quot;</td>
<td>2178</td>
<td>Going northwards towards NPTH from MBOT. Most of the surrounding is only grassland with only two small clumps of shola visible. Scattered Wattle all over the hillsides, some patches are dense. Grassland – tall and thick to short with exposed ground. Where short grass – <em>Anaphalis</em> sp., <em>L. suffruticosa</em>, <em>Swertia corymbosa</em>, <em>H. heyneana</em>, <em>Peristylus</em> sp. and several other herbs. Few clumps of <em>Gaultheria</em> and <em>Eurya</em>.</td>
</tr>
<tr>
<td>77PASS</td>
<td>29.3&quot;</td>
<td>40.4&quot;</td>
<td>2225</td>
<td>Short grass, exposed rock and gravel. <em>L. suffruticosa</em>, <em>I. diversifolia</em>, <em>Gaultheria</em> and Bracken common. No Wattle.</td>
</tr>
<tr>
<td>78BRIG</td>
<td>40.5&quot;</td>
<td>34.1&quot;</td>
<td>2168</td>
<td>Bhavanipuzha bridge, Nadugani path. Short grass. Rock faces with <em>I. acaulis</em>, <em>I. diversifolia</em> and solitary <em>Rhododendrons</em>. Some <em>Anaphalis</em> sp.</td>
</tr>
<tr>
<td>80NMAT</td>
<td>42.8&quot;</td>
<td>27.3&quot;</td>
<td>2299</td>
<td>Same as 79, except for locally abundant Bracken.</td>
</tr>
<tr>
<td>81NMAT</td>
<td>44.9&quot;</td>
<td>7.4&quot;</td>
<td>2393</td>
<td>40 Nilgiri Tahr sighted. Border an edge of plateau. Vegetation same as above.</td>
</tr>
<tr>
<td>82NMAT</td>
<td>25.7&quot;</td>
<td>27.7&quot;</td>
<td>2293</td>
<td>Diverse and no Bracken.</td>
</tr>
<tr>
<td>83WFAL</td>
<td>06.9&quot;</td>
<td>03.6&quot;</td>
<td>2281</td>
<td>Waterfall. Hill slope opposite path to Sispara. Below the path is a waterfall of the stream that flows across the path near the old Nadugani shed. Grass medium height, not dense. Rock outcrops in many places. Not very diverse. <em>H. cephalotes</em>, <em>Leucas suffruticosa</em> and <em>Anaphalis</em> sp. (few). Grasses diverse. No shrubs.</td>
</tr>
<tr>
<td>84HTOP</td>
<td>51.5&quot;</td>
<td>07.8&quot;</td>
<td>2356</td>
<td>Hill top. High hill opposite Sispara path. Grassland – tall to short and patchy, mixed with <em>Strobilanthes</em> sp. and <em>Gaultheria</em>, and <em>Eurya</em>. Many sholas in the surrounding hill sloped. Bracken and <em>Leucas suffruticosa</em> common.</td>
</tr>
<tr>
<td>85SADL</td>
<td>55.9&quot;</td>
<td>29.0&quot;</td>
<td>2285</td>
<td>Saddle between two large hill slopes. Large sholas perpendicular on both sides. Grass medium height, not very diverse. <em>H. cephalotes</em> and <em>Anaphalis</em> sp. scattered, few. <em>Gaultheria</em> and <em>Strobilanthes</em>, few.</td>
</tr>
<tr>
<td>86SOLA</td>
<td>41.4&quot;</td>
<td>33.8&quot;</td>
<td>2308</td>
<td>South – Peria shola – initially big shola with few grass patches and further south there are no more grasslands – Silent Valley, Mannarkad Range. The grassland has been quite poor since the last few points with some areas having a lot of exposed ground. Most of these grasslands are covered with <em>Strobilanthes</em> sp. and Bracken. Here, no exposed ground. <em>Strobilanthes</em>, Bracken, <em>Hedyotis</em> common. <em>Habenaria</em> sp., <em>Anaphalis</em> sp. <em>L. suffruticosa</em> scattered, few.</td>
</tr>
<tr>
<td>87HTOP</td>
<td>56.1&quot;</td>
<td>40.5&quot;</td>
<td>2285</td>
<td>Going towards Nadugani – Upper Bhavani path. Grassland similar to previous point.</td>
</tr>
<tr>
<td>88HTOP</td>
<td>15.6&quot;</td>
<td>45.3&quot;</td>
<td>2233</td>
<td>No more <em>Strobilanthes</em> and other shrubs, apart from a few <em>Hedyotis</em>. Grass medium height and diverse. <em>L. suffruticosa</em>, <em>Anaphalis</em> sp. and <em>Swertia corymbosa</em>, few.</td>
</tr>
<tr>
<td>89</td>
<td>29.6&quot;</td>
<td>27.5&quot;</td>
<td>2186</td>
<td>Slopes and large hills, heading back to Nadugani Trekking Shed on the Upper Bhavani Path. Tall, dense grass, mostly one species, <em>I. diversifolia</em> and <em>Gaultheria</em> – few.</td>
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Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

90NADU   11 13' 36.2"   76 28' 00.7"   2244   Close to Nadugani Hut. Grasses small to big, some bare ground. *Satyrium, H. cephalotes, L. suffruticosa* – few. *Strobilantes* sp., *Anaphalis* sp. common. Some rocks.

91VALY   11 13' 37.9"   76 28' 47.5"   2085   Valley bottom. Path to elephant board from Nadugani. Steep slopes on either side of the largish stream, few small sholas, grass tall and dense. *I. diversifolia, Anaphalis* sp. and *H. verticillaris* common. Solitary *Rhododendrons* scattered on the slopes. Path continues along the stream.

92RIVR   11 13' 40.5"   76 28' 52.7"   2082   Bhavanipuzha Path and stream meet Bhavanipuzha flowing east. Grassland similar to 91. Solitary *Rhododendrons* increase on the southern slopes. Path continues along Bhavanipuzha.

93RIVR   11 13' 36.4"   76 29' 06.8"   2089   River valley widens to a large flat area. Two other valleys / streams converging. Grassland patchy but diverse in grass species, poor in other herbs. *Anaphalis* sp., *Peristyulus* sp., few others. Rocky ground. Largish shola nearby.

94SOLA   11 13' 44.1"   76 29' 27.4"   2119   Hill top. South side far below is Bhavanipuzha. Slope opposite has a large shola. E side is another range, mostly covered in shola – perpendicular to Bhavanipuzha. From the N comes Emmyerpuzha and joins Bhavanipuzha to become Emmerypuzha. There is an old rain gauge near the place of convergence, not in use. Emmerypuzha comes from below Madipumalai N face. The grassland here has been burned in 1999, fairly diverse. *Perisyulus* sp. *Hedyotis* sp. *I. diversifolia* and *L. suffruticosa* common. Several other species. Some Bracken, steep slope with some exposed ground.

95MERY   11 13' 48.7"   76 29' 31.0"   2042   Emmerypuzha Path crosses Emmerypuzha. The steep slope on the opposite side has been burned not more than a year ago. Fresh growth of grass similar to Naduganimattam, which was burned Dec 2001. Some exposed ground. *I. diversifolia* single, scattered. Solitary *Rhododendron*, common. *Strobilantes*. Fairly diverse in other herbs.

96GAGE   11 13' 50.0"   76 29' 44.5"   2164   Rain guage broken. Eastern hills are covered in Wattle, W is Nadugani, W is Madipumalai. Grassland with diverse grasses. *Commelina* sp., *Swertia corymbosa, Anaphalis* sp. common. Clumps of Bracken common, some *Strobilantes*, some small patches of shola nearby, *I. diversifolia*, single / scattered. Fairly diverse. Path disappears.

97HTOP   11 14' 02.3"   76 29' 56.7"   2299   Directly opposite Madipumalai N face, with its numerous parallel and narrow strips coming down to Emmerypuzha. Next hill on the way to elephant board marks the beginning of Wattle. Grassland quite diverse, *Commelina* sp., *Anaphalis neelgeryana, L. suffruticosa, Strobilantes* common. Few *H. cephalotes, Gaultheria* clumps and *Satyrium*. Several other species. Some rocky patches.

98WATL   11 14' 28.5"   76 30' 13.2"   2362   Data unclear

99ANML   11 12' 01.9"   76 26' 50.1"   2198   Data unclear

100RD    11 15' 02.6"   76 30' 32.6"   2358   Before elephant board and road. Dense Wattle plantation ends. Grassland with felled Wattle in patches. Raspberry common, many of the stumps are growing back. Grass short, *Satyrium*, Wattle saplings (poor). *Strobilantes*. Valley on the north side has a large shola where Emmerypuzha starts.
Half kilometer down river from Bhavanipuzha bridge (78BRIG) where the river becomes rapids in most places with plenty of boulders. Slopes on both sides are steep with thick grass. Mostly dominated by the common species. Some rock outcrops here and there with *I. acaulis*, *Emilia*, *Justicia*.

Route over Madipumalai to 93RIVR. We went to top of Madipumalai went down on the right arm of it. Some rocky outcrops with a few *Pedicularis*, *H. perrotteti*.

Same as above

Same as above

Same as above


Emmerypuzha below. Across are steep slopes with rocky outcrops. Wattle plantation connected to the plantations of upper Bhavani. Thick grass. *Strobilanthes kuntianus* common. Also *Smithia blanda*. Some bracken.

Continue along the hill to another hill tp directly above Emmerypuzha and further S. (end of NP). Scrubby with abundant *S. kuntianus* and *Hedyotis sp*. grass not so thick with both tall and short grass. Not very diverse. No more grasslands further S. below, the river from Upper Bhavani joins Emmerypuzha?