

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

NAME	LAT	LONG	ALT	DESCRIPTION
BANG	11 15' 29.3"	76 30'17.4"	2181	Starting point at Bangitappal Trekking Shed
01FORK	11 15' 33.9"	76 30'26.6"	2228	Path junction of path to Upper Bhavani Road and earth dam path
02STR	11 15'31.1"	76 30'35.3"	2259	Small stream flowing across path
03RG	11 15'23.8"	76 30'35.3"	2345	Rain gauge location: situated on a saddle of land. Mainly shola forest surrounding this saddle, but some patches of grassland interspersed with <i>Rhododendron nilagiricum</i> , <i>Strobilanthes</i> and other shrubs. Bracken fern and Raspberry present in grasslands and <i>I. clavicornu</i> locally abundant.
04ROAD	11 15'22.5"	76 30'37.3"	2367	Junction of shortcut with Upper Bhavani Main Road (Bear picture to 'Nurture Nature... Torture' present)
05ELB	11 15'05.3"	76 30'35.5"	2375	Elephant board present and start of Nadugani path -> to the NE is Nanjundamalai range extending till the earth dam. Grassland on both sides of the road with Wattle saplings common, <i>I. clavicornu</i> occasional, Bracken Fern and Raspberry present along roadside. To the S of this point are pine plantations.
06PINE	11 14'58.5"	76 30'41.0"	2346	~ 8-10 ha of pine plantations coming up to the road.
07BIS	11 14'49.3"	76 30'43.4"	2349	Bison board present and start to Upper Bhavani Hut -> high density of ~ 3-4m tall Wattle, Raspberry present, <i>I. clavicornu</i> 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.
08CDAM	11 14'42.9"	76 30'48.6"	2298	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. <i>I. clavicornu</i> occasional, few other herbs. Wattle eradication not 100%.
09KLND	11 14'10.3"	76 30' 59.2"	2266	Kalundi - 1940s (?) dam labourers' living area and previously Toda pasture land. Short grasses ~ 2-3" high, abandoned house foundations, some long grass patches along stream banks.
10UBHT	11 13' 54.7"	76 31' 05.8"	2259	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.

Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

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.

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- 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 <i>Rhododendron</i> here and there. 2 sp. of <i>Hedyotis</i> common, 3 sp. of <i>Anaphalis</i> common, <i>Impatiens</i> 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 <i>Anaphalis neelgerryana</i> 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. <i>Hedyotis verticillaris</i> common. N slope shola forest, comes almost to very top, with <i>Rhododendron</i> growing under the trees. Clumps of <i>Eurya</i> present in area. Ridge narrows to ~ 20m wide. Few Wattle saplings present. Patches of <i>Anaphalis neelgerryana</i> present.
25MTP3	11 15' 08.5"	76 29' 52.0"	2450	Madipumalai Ridge Top continues. <i>I. clavicornu</i> common, <i>Gaultheria</i> common, few <i>Hedyotis</i> , some rocky patches, some <i>Rhododendron</i> . <i>Anaphalis</i> ABSENT. Patches of ground exposed and grass clumps short. <i>Anaphalis neelgerryana</i> present.
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>I. clavicornu</i> , 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>I. clavicornu</i> density higher than surrounding grassland. (Seeds planted? – check with Ashfaq). Grassland has medium height grass, NO Wattle, seems quite diverse: small populations of <i>I. clavicornu</i> , some <i>Hedyotis verticillaris</i> , <i>Peristylus</i> , <i>Gaultheria</i> , <i>Strobilanthes</i> , <i>Anaphalis neelgerryana</i> 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 – <i>Strobilanthes</i> , <i>Rhododendron</i> , <i>Eurya</i> , <i>Anaphalis</i> 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.

Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

36WC1P	11 16' 05.3"	76 31' 04.8"	2393	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.
37WC1P	11 16' 15.6"	76 31' 22.8"	2443	Path continues. Same as 36WC1P description but some solitary <i>Rhododendron</i> .
38RDJN	11 16' 15.0"	76 31' 29.5"	2443	WC1 Path meets road going up to WC#1 (two hours walk) + another road going to tunnel mouth. Scattered <i>Rhododendron</i> , grassland full of shrubs, exposed patches of ground. Further down the road toward the earth dam – patches of <i>Anaphalis neelgerryana</i> , <i>Oldenlandia stylosa</i> .
39WC1R	11 15' 57.1"	76 31' 34.6"	2387	Along the road leading to earth dam. Patches of exposed ground, small clumps of Wattle saplings, area poor in grasses, dominated mainly by <i>Strobilanthes</i> , solitary <i>Rhododendron</i> and <i>Syzygium</i> , Bracken and Raspberry present. Remark: very disturbed.
40DGAT	11 15' 39.4"	76 31' 31.0"	2302	Road meets earth dam gate road.

Day 4: August 12 2002 Route: Nadugoni Path

41 BANG	11 15' 29.5"	76 30' 17.1"	2280	Trekking Shed at Bangitappal.
42NDJN	11 15' 33.3"	76 30' 07.3"	2288	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>I. clavicornu</i> and <i>diversifolia</i> common, solitary <i>Rhododendron</i> . Steep slope, no Wattle present. <i>Hedyotis verticillaris</i> locally abundant along the path.
43STR	11 15' 31.4"	76 29' 49.3"	2305	Stream crossing path + old horse shelter. Small shola patch along the stream. Clumps of big <i>Rhododendron</i> with other shrubs below, in the grassland. <i>I. clavicornu</i> locally abundant, same for <i>Strobilanthes</i> & Bracken, few Raspberry.
44NPTH	11 15' 23.8"	76 29' 34.2"	2312	Path continues. Gradual slopes, several patches of shola forest even where there are no streams. Evenly distributed <i>Rhododendron</i> trees ~ 5m apart. These <i>Rhododendron</i> stands continue since Bangitappal road. <i>H. verticillaris</i> , Bracken, <i>I. clavicornu</i> and <i>Strobilanthes</i> locally abundant. Remark: Grassland shrubby and not very diverse.
45LSET	11 15' 23.1"	76 29' 24.5"	2276	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 <i>H. verticillaris</i> . <i>I. clavicornu</i> locally abundant. Few <i>Gaultheria</i> and Raspberry, possible to reach to Madipumalai. Lycopods growing abundantly on banks by side of road. Few solitary Wattle saplings.

Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

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>I. diversifolia</i> , Bracken, dry/dead Wattle saplings. Slopes down to the NE into shola plot. A patch of <i>I. clavicornu</i> .
47NPTH	11 15' 06.6"	76 29' 00.3"	2187	Path continues . SW – flowing stream near point in steep-slope sided valley. Several large <i>Rhododendron</i> 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>I. clavicornu</i> and <i>Strobilanthes</i> 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 – <i>Gaultheria</i> , <i>O. stylosa</i> . 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. <i>Strobilanthes</i> , <i>H. verticillaris</i> locally abundant next to the streams. No shrubs in the grassland, some Bracken, solitary <i>Rhododendron</i> , <i>I. clavicornu</i> common. Few <i>I. diversifolia</i> . 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>I. diversifolia</i> , <i>O. stylosa</i> , <i>H. verticillaris</i> , <i>Strobilanthes</i> , <i>L. suffruticosa</i> . 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>I. clavicornu</i> and <i>diversifolia</i> . Few clumps of <i>Gaultheria</i> .
52BORD	11 15' 27.8"	76 29' 04.4"	2324	Survey stone structure at the border. Grassland quite diverse, Bracken, <i>I. diversifolia</i> , <i>I. clavicornu</i> , <i>Strobilanthes</i> , and <i>L. suffruticosa</i> , broad-leaved Acacia common, few Wattle saplings and clumps of <i>Gaultheria</i> . Grass is dense. Many <i>Ceropegia pusilla</i> 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 <i>Rhododendron</i> , few <i>I. clavicornu</i> and <i>diversifolia</i> . Few <i>Peristylus</i> and <i>Gaultheria</i> . No other shrubs.

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>I. clavicornu</i> locally abundant (and on the way here). Grassland not dominated by common grass sp. solitary. <i>Rhododendron</i> , few <i>Peristylus</i> , 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, <i>Rhododendron</i> (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>I. diversifolia</i> , <i>Peristylus sp.</i> , <i>Anaphalis sp.</i> , <i>Osbeckia sp.</i> and several other herbs. <i>Strobilanthes sp.</i> and <i>H. verticillaris</i> 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. <i>Habenaria cephalotes</i> few, <i>Peristylus sp.</i> clumps of <i>Gaultheria</i> 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 <i>H. verticillaris</i> along the stream and no more wattle. Steep slopes, and narrow valley. Few <i>diversifolia</i> 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 <i>L. suffruticosa</i> common, few <i>Anaphalis wightiana</i> ?
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 <i>Strobilanthes sp.</i> , <i>Gaultheria</i> and <i>Eurya</i> . No <i>I. diversifolia</i> .
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 – <i>Habenaria cephalotes</i> 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>I. diversiflora</i> , <i>Satyrium</i> , <i>Peristylus sp.</i> <i>Habenaria heyneana</i> 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 <i>Leucas</i> abundant, <i>I. diversifolia</i> , <i>Strobilanthes sp.</i> along the stream.

Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

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, <i>Strobilanthes sp.</i> common. Few <i>Satyrium</i> , <i>L. suffruticosa</i> and <i>Habenaria sp.</i> , <i>Habenaria heyneana</i> , <i>Peristylus sp.</i>
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 <i>Strobilanthes sp.</i> Some <i>I. diversifolia</i> , <i>clavicornu</i> . 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 <i>Strobilanthes sp.</i> along the stream, also <i>Oldenlandia verticillaris</i> . Few <i>Satyrium</i> .
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 – <i>Habenaria polyodon</i> , <i>Satyrium</i> , <i>L. suffruticosa</i> , patches of <i>Anaphalis nilgiranum</i> , <i>I. clavicornu</i> , <i>I. inconspicua</i> , <i>Hedyotis sp.</i> and solitary <i>Rhododendron</i> 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, Peria 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 <i>Pinus</i> 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 <i>Anaphalis sp.</i> <i>Hedyotis sp.</i> <i>Satyrium</i> , <i>Leucas rosmarinifolia</i> (?) 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>I. diversifolia</i> , some wet rocks on the slops with abundant <i>I. acaulis</i> . The sholas along the streams are narrow.

Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

76WATL	11 14' 34.9"	76 29' 06.0"	2178	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 – <i>Anaphalis sp.</i> , <i>L. suffruticosa</i> , <i>Swertia corymbosa</i> , <i>H. heyneana</i> , <i>Peristylus sp.</i> and several other herbs. Few clumps of <i>Gaultheria</i> and <i>Eurya</i> .
77PASS	11 14' 29.3"	76 28' 40.4"	2225	Short grass, exposed rock and gravel. <i>L. suffruticosa</i> , <i>I. diversifolia</i> , <i>Gaultheria</i> and Bracken common. No Wattle.
78BRIG	11 14' 40.5"	76 28' 34.1"	2168	Bhavanipuzha bridge, Nadugani path. Short grass. Rock faces with <i>I. acaulis</i> , <i>I. diversifolia</i> and solitary <i>Rhododendrons</i> . Some <i>Anaphalis sp.</i>
79NMAT	11 13' 38.2"	76 27' 40.5"	2310	Nadugani Mattam. Hill above Nadugani Trekking Shed. Area was burned in Dec. 2001 – fresh growth of grass and many herbs, and shrubs – <i>Strobilanthes sp.</i> , <i>L. suffruticosa</i> and <i>Anaphalis sp.</i> – common. Lot of exposed ground with gravel. <i>Habenaria cephalotes</i> , <i>Hedyotis sp.</i> <i>Drosera peltata</i> , <i>Habenaria sp. I. inconspicua</i> common. Very diverse.
80NMAT	11 13' 42.8"	76 27' 28.3"	2299	Same as 79, except for locally abundant Bracken.
81NMAT	11 13' 44.9"	76 27' 07.4"	2393	40 Nilgiri Tahr sighted. Border an edge of plateau. Vegetation same as above.
82 NMAT	11 13' 25.7"	76 27' 27.7"	2293	Diverse and no Bracken.
83WFAL	11 13' 06.9"	76 28' 03.6"	2281	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. <i>H. cephalotes</i> , <i>Leucas suffruticosa</i> and <i>Anaphalis sp.</i> (few). Grasses diverse. No shrubs.
84HTOP	11 12' 51.5"	76 23' 07.8"	2356	Hill top. High hill opposite Sispara path. Grassland – tall to short and patchy, mixed with <i>Strobilanthes sp.</i> and <i>Gaultheria</i> , and <i>Eurya</i> . Many sholas in the surrounding hill sloped. Bracken and <i>Leucas suffruticosa</i> common.
85SADL	11 12' 55.9"	76 28' 29.0"	2285	Saddle between two large hill slopes. Large sholas perpendicular on both sides. Grass medium height, not very diverse. <i>H. cephalotes</i> and <i>Anaphalis sp.</i> scattered, few. <i>Gaultheria</i> and <i>Strobilanthes</i> , few.
86SOLA	11 12' 41.4"	76 28' 33.8"	2308	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 <i>Strobilanthes sp.</i> and Bracken. Here, no exposed ground. <i>Strobilanthes</i> , Bracken, <i>Hedyotis</i> common. <i>Habenaria sp.</i> , <i>Anaphalis sp. L. suffruticosa</i> scattered, few.
87HTOP	11 12' 56.1"	76 28' 40.5"	2285	Going towards Nadugani – Upper Bhavani path. Grassland similar to previous point.
88HTOP	11 13' 15.6"	76 28' 45.3"	2233	No more <i>Strobilanthes</i> and other shrubs, apart from a few <i>Hedyotis</i> . Grass medium height and diverse. <i>L. suffruticosa</i> , <i>Anaphalis sp.</i> and <i>Swertia corymbosa</i> , few.
89	11 13' 29.6"	76 28' 27.5"	2186	Slopes and large hills, heading back to Nadugani Trekking Shed on the Upper Bhavani Path. Tall, dense grass, mostly one species, <i>I. diversifolia</i> and <i>Gaultheria</i> – few.

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. <i>Satyrium</i> , <i>H. cephalotes</i> , <i>L. suffruticosa</i> – few. <i>Strobilanthes sp.</i> , <i>Anaphalis sp.</i> 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>I. diversifolia</i> , <i>Anaphalis sp.</i> and <i>H. verticillaris</i> common. Solitary <i>Rhododendrons</i> 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 <i>Rhododendrons</i> 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. <i>Anaphalis sp.</i> , <i>Peristylus sp.</i> , 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 Emmerypuzha 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. <i>Peristylus sp.</i> <i>Hedyotis sp.</i> <i>I. diversifolia</i> and <i>L. suffruticosa</i> 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>I. diversifolia</i> single, scattered. Solitary <i>Rhododendron</i> , common. <i>Strobilanthes</i> . 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. <i>Commelina sp.</i> , <i>Swertia corymbosa</i> , <i>Anaphalis sp.</i> common. Clumps of Bracken common, some <i>Strobilanthes</i> , some small patches of shola nearby, <i>I. diversifolia</i> , 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, <i>Commelina sp.</i> , <i>Anaphalis neelgerryana</i> , <i>L. suffruticosa</i> , <i>Strobilanthes</i> common. Few <i>H. cephalotes</i> , <i>Gaultheria</i> clumps and <i>Satyrium</i> . 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, <i>Satyrium</i> , Wattle saplings (poor). <i>Strobilanthes</i> . Valley on the north side has a large shola where Emmerypuzha starts.

Survey and Assessment of Vegetation Diversity of Mukurti National Park 2002-2003

101RIV	11 14' 31.0"	76 28' 31.1"	2048	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>I. acaulis</i> , <i>Emilia</i> , <i>Justicia</i>
102TOP	11 15' 12.1"	76 29' 42.7"	2403	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 <i>Pedicularis</i> , <i>H. perrotteti</i> .
103TOP	11 14' 57.6"	76 29' 16.4"	2265	Same as above
104TOP	11 14' 35.4"	76 29' 09.1"	2142	Same as above
105BOT	11 14' 23.2"	76 29' 08.9"	2067	Same as above
106TOP	11 14' 04.9"	76 29' 07.4"	2188	Same as above
107TOP	11 13' 46.9"	76 29' 10.2"	2076	Same as above
108BOT	11 13' 18.3"	76 29' 25.6"	2057	Going S from 93RIVR upper valley. Burnt two years ago. Grass light green with fresh growth. Few dead trees on the nearby shola edges. Not very diverse. Lot of exposed ground. Patches of Bracken.
109TOP	11 13' 08.3"	76 29' 45.6"	2163	Emmerypuzha below. Across are steep slopes with rocky outcrops. Wattle plantation connected to the plantations of upper Bhavani. Thick grass. <i>Strobilanthes kuntianus</i> common. Also <i>Smithia blanda</i> . Some bracken.
110TOP	11 12' 40.8"	76 29' 47.5"	2250	Continue along the hill to another hill tp directly above Emmerypuzha and further S. (end of NP). Scrubby with abundant <i>S. kuntianus</i> and <i>Hedyotis sp.</i> 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?