Project Update: October 2013

The field work was initiated in February 2013. Sites along road both close to (about 5 m) and orthogonally away from road (about 30 m) were sampled for *Mikania micrantha* cover and other biotic and abiotic variables. Vegetation composition surveys were undertaken from 60 10 × 10 m plots with 30 plots each from the forest and clearing sites. Trees were enumerated within 10 m radius plots; shrubs and *M. micrantha* cover (visually estimated using two 2 m length sticks with notches every 20 cm and counting number of notches in contact with *M. micrantha* leaves) within 2 m and herbs within 1 m radius nested plots. Abiotic variables (soil moisture/ pH, light availability) and canopy cover were recorded from the plot centre using a soil moisture/ pH meter, lux meter and a densiometer, respectively. The location of each of the plots was marked using a Global Positioning System (GPS) unit.

Results

Average *Mikania micrantha* cover in the plots about 30 m away from the road was less than 1 % in comparison with plots close to road which had an average cover of about 37 % (Table 1). The plots close to and away from road were also significantly different in terms of other attributes. Species richness of shrubs and herbs was higher in plots close to roads than away from roads (2.66 vs 1.96 shrub species and 5.06 vs 3.75 herb species per plot, respectively, averaged across plots), whereas species richness of tree seedlings was higher in plots away from road (1.53 vs 2.71 species per plot, respectively, averaged across plots). Canopy cover was about 7 % in plots close to road and about 20 % away from road. Light availability was about 10 times higher in plots close to road in comparison with plots away from road whereas soil moisture and soil pH were not significantly different between road and forest plots.

Discussion

Mikania micrantha has been shown to be a species that favours conditions where light availability and soil moisture are higher (Zhang & Wen, 2009). From preliminary field work, I found that *M. micrantha* cover was higher close to than away from road. This could be either since dispersal of the species is higher along the roads, with dispersal by animals, humans and vehicles moving along the road and/or appropriate micro-climatic conditions closer to the road for the species. Further field work and analysis can provide more insights into how the species spreads along roads. Preliminary results however indicate and corroborate the fact that *M. micrantha* is more common and invasive close to roads than in interior forest.

Future work

Satellite imagery will be acquired for the years 2002 and 2012 for the January and February months when *Mikania micrantha* flowers. Imagery analysis will be undertaken to arrive at 1) the rate of spread of the species across the landscape, and 2) a risk map indicating sites vulnerable to future invasion will be created based on predictors that show significant relation with *M. micrantha* occurence.

Appendix

Table 1: *Mikania micrantha* cover and other variables from 58 points that were surveyed close to and away from road (shrub.sr – shrub species richness, herb. sr – herb species richness, seedling.sr – species richness of seedlings of tree species, tree.sr – species richness of trees, tree.nos – number of trees around the point, mikania.cover – *Mikania micrantha* cover, soil.moist – soil moisture, soil.ph – Soil Ph, canopy.cover – canopy cover around the point)

srno.	plot.type	shrub.sr	herb.sr	seedling.sr	tree.sr	tree.nos	mikania.cover	soil.moist	soil.ph	canopy.cover
1	road	4	11	3	3	4	20	80	6.2	7.75
2	away	6	4	1	9	14	0	50	7	22.25
3	road	3	8	2	7	10	50	40	7	11.5
4	away	3	5	2	6	7	0	50	7	14.25
5	road	2	4	2	2	9	0	85	7	15
6	away	2	1	4	5	7	0	60	7	23.5
7	road	2	6	3	0	0	35	-	-	2.25
8	away	3	5	1	6	7	0	80	6.6	18.5
9	road	7	6	1	1	1	45	65	5.9	1.75
10	away	2	3	5	7	9	0	65	6	23
11	road	5	11	2	7	9	5	60	7	20.75
12	away	5	1	0	6	10	0	70	7	21.75
13	road	6	5	2	6	8	5	40	7	19.5
14	away	5	1	0	4	7	0	50	7	21.25
15	road	2	5	1	5	5	50	80	7	2.25
16	away	1	7	3	10	11	0	40	6.6	22.75
17	road	3	6	3	8	11	0	70	6.9	21.5
18	away	0	5	5	5	5	0	60	7	21
19	road	4	4	3	3	3	50	50	6.9	15
20	away	1	4	5	2	3	0	90	7	21.5
21	road	4	3	1	2	2	15	-	-	10
22	away	2	7	2	3	4	0	90	6.9	21.25
23	road	4	5	0	1	1	45	80	6.6	2.5
24	away	1	2	3	3	7	0	50	6.4	23.5
25	road	1	4	0	2	2	35	-	-	0
26	away	1	2	3	4	7	0	60	6	23.5
27	road	2	3	1	4	4	80	100	7	6
28	away	1	6	3	2	3	0	70	6	22.25
29	road	1	5	2	3	12	10	75	7	7.25
30	away	3	8	2	3	4	20	50	6.3	11.5
31	road	2	4	1	3	3	85	85	5.9	0.5
32	away	0	6	2	4	15	0	90	5.8	12.75
33	road	1	8	2	1	1	40	40	7	6.5
34	away	2	5	0	3	5	0	60	6.1	3.5
35	road	1	5	1	2	2	50	45	6.8	0.75
36	away	1	5	3	4	6	5	30	6.6	17.5
37	road	4	5	0	2	2	35	55	6.6	0.5
38	away	1	5	3	2	2	0	70	6	9
39	road	2	6	0	3	3	30	80	6.2	0.25
40	away	1	2	7	3	7	0	40	6.3	19.75
41	road	2	3	0	0	0	55	25	6.9	0
42	away	1	3	3	3	11	0	40	6.5	22.75
43	road	2	5	3	3	5	0	50	6.4	17
44	away	2	3	4	3	19	0	60	6.5	23.25
45	road	1	4	2	1	2	60	70	6	18.25
46	away	1	1	3	4	7	0	65	6.2	23.5
47	road	6	4	0	1	4	10	65	6	1.25
48	away	1	0	4	5	9	0	60	6.2	23.75
49	road	1	1	0	1	1	75	-	-	0
50	away	2	2	2	2	2	0	40	6	22.75
51	road	2	3	1	0	0	90	45	6.5	0
52	away	3	4	2	4	10	0	50	6.3	23
53	road	0	4	3	2	6	40	40	6.3	13.75
54	away	2	5	3	5	8	0	40	6.6	18.5
55	road	1	4	4	1	2	25	30	6.5	3.5
56	away	2	3	1	4	6	0	40	6.7	20.25
57	road	3	4	1	1	1	60	50	6.4	2.5
58	road	2	6	2	3	4	5	40	7	1