Need to control tree-cutting method and producer origin

During the first training sessions in the field in 2001, we encountered chainsaw operators a hundred meters from our plot. (The operators were avowed to be from outside NCNRMA.) We realized that it was necessary to halt the use of chainsaws during the inventory so that averages applied to the number of hectares would not be overestimated. The villages agreed to this requirement for three years. Now (in 2005) the policy should be re-visited, considering that chainsaws reduce the amount of time required to cut and shape a tree by a factor of 10 or 20. The people of NCNRMA should decide how quickly they want to finish their sawtimber, now that a rough estimate exists on how much is left.

Info on current quantities and commercial potential of forest products

Village informant input on timber and nontimber products was meant to assist planning a future commercialization of the most promising and abundant of these. Inventory data should be presented back to user groups before decisions are made on which products to market.

Need for info on **regeneration** of valuable species, for future planning

Just as important as knowing what is there today, is knowing what will be there tomorrow. It will make no sense to harvest everything available this year, if next year no younger trees or bushes grow up to take their place.

Accordingly, information is presented on seedling and pole-sized trees per hectare, as measured on "regen plots" and during the variable-radius plot recording.

How the NTFP database produces information on NCNRMA products

The newly-designed Microsoft Access Database application used to process field data from this inventory has been set up as a series of nested tables on Stand info, Plot info, and tree info:

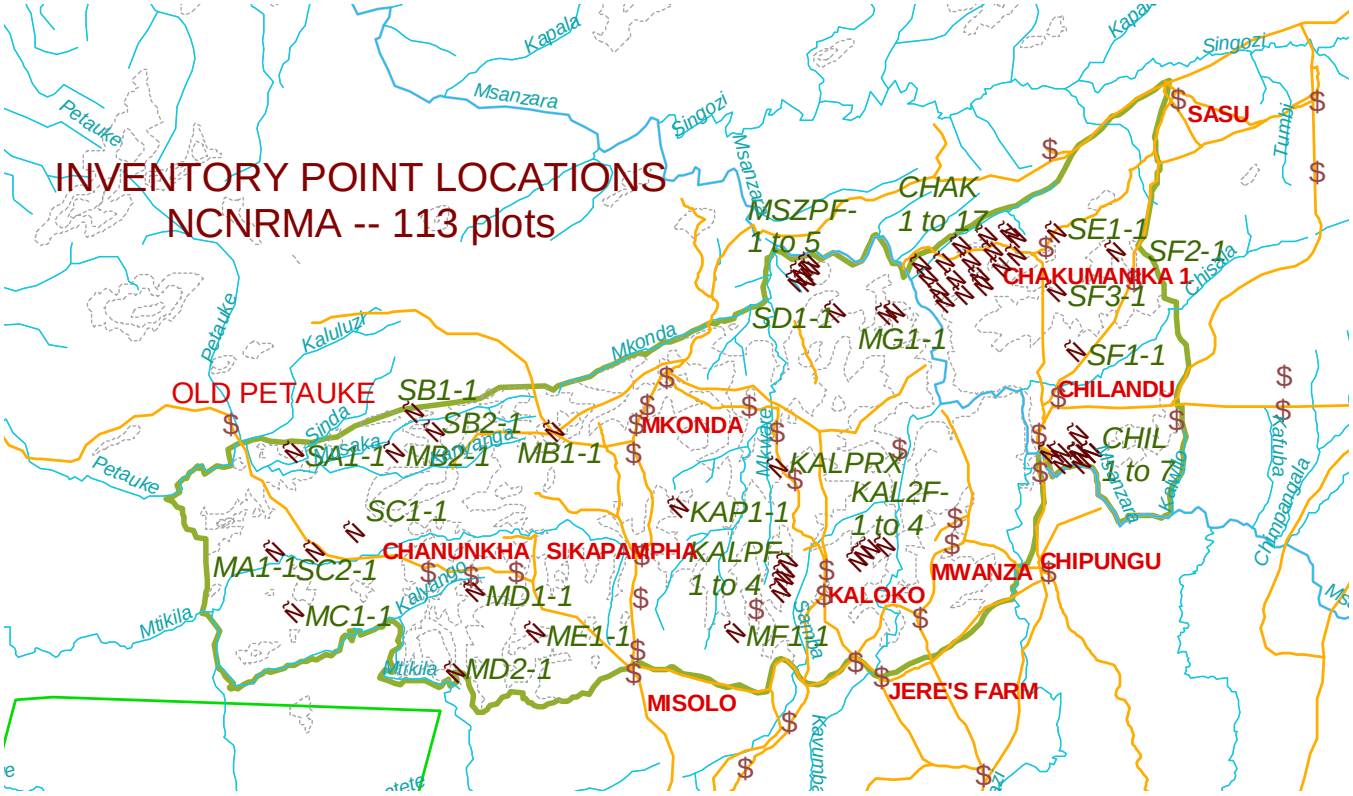
- First, inventory sheets are grouped by a unique stand name (Chakumanika, MiomboWest, etc.).
- In each stand, for each uniquely-numbered plot, general info on land use is recorded.
- Within each plot, each tree is uniquely coded and its diameter, height, and products are recorded directly from the data sheet. The computer screen is a replica of the field sheet (see below).
- While tree data are entered, the following are calculated *automatically* by embedded formulas:
    - Trees per hectare, using the formula:
      [Basal Area Factor (=2)]/[(plot count) X (Basal area of the tree)]
    - Diameter class, based on 10-cm classes
    - Sum of similar products per tree, extrapolated to products per hectare by multiplying (products/tree) X (trees/ha)
    - Sum of tree worth based on sum of tree products' kwacha values; this is also extrapolated to the hectare kwacha worth based on (worth/tree) X (trees/ha)
    - Sum of plot products; the plot's estimate of products/hectare and kwacha worth/hectare
    - Each stand's average products per hectare (=sum of (products /hectare) for all plots, divided by number of plots)
    - Each stand's average trees per hectare by species and diameter class (=sum of (trees per hectare by species and diameter class) for all plots, divided by number of plots)
    - Selected 95% and 80% confidence intervals for stand estimates (basal area, planks, sawn volume, charcoal sacks)

3. INVENTORY DATA GATHERING TOOLS and NTFP DATABASE APPLICATION

A MAP OF WHERE INVENTORY PLOTS WERE ESTABLISHED

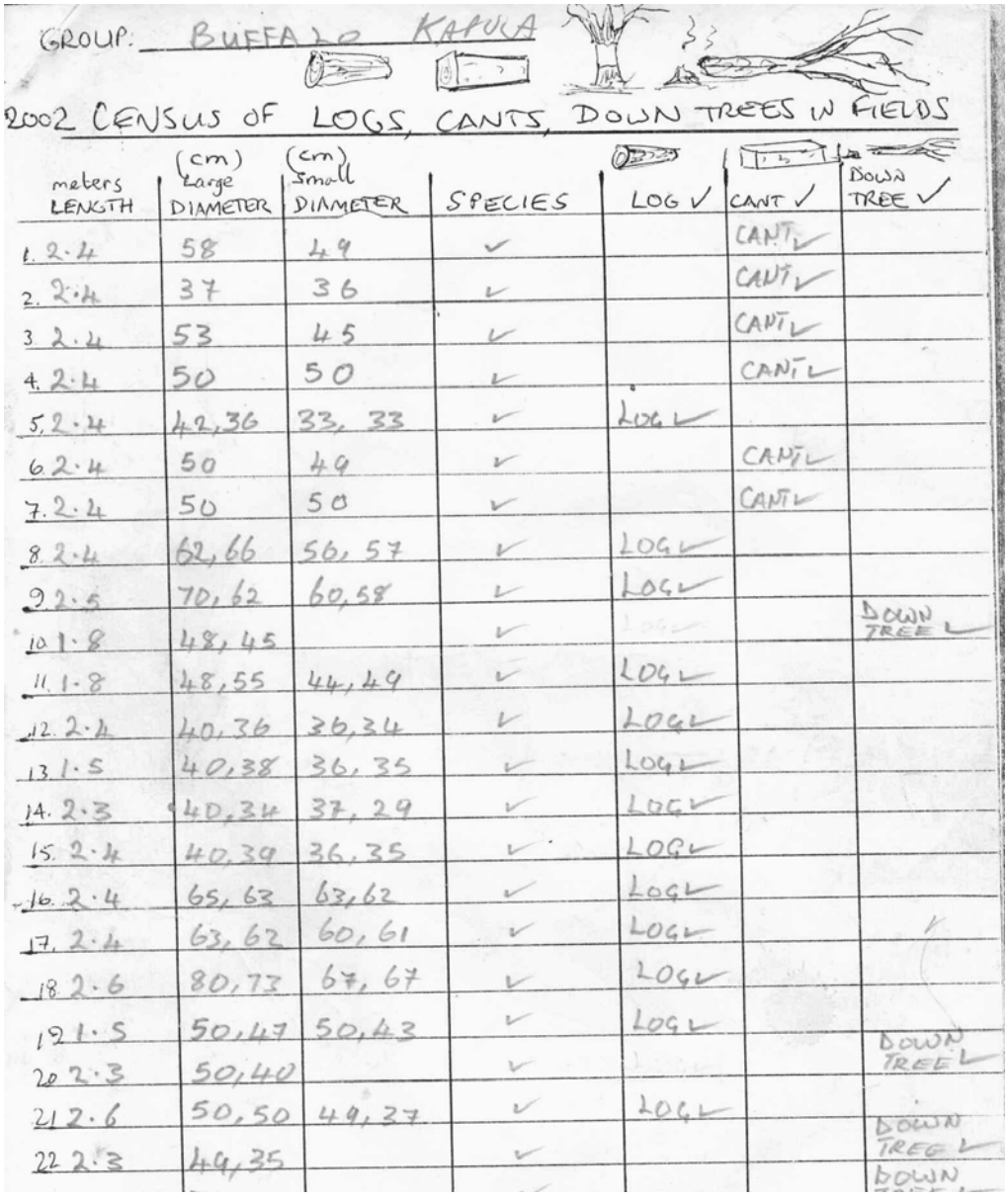
Plot locations were first chosen from the satellite image-generated stand types. Then they were transferred to the topo map, and finally to the GPS in UTM units for location in the field.

SPOT image at 1:25,000 with stand types overlaid on it



CENSUS SHEET FOR SALVAGE OF CANTS AND LOGS

Data sheets were filled out by sawyer groups after a short training in use of measuring and marking tools. One set of sheets was produced by each group. Census sheets for all six registered pitsawyer groups were added together. The totals were used to calculate the cost of a special log salvaging license from Forestry Department office in Petauke. This brought in money to both FD and the sawyer groups that otherwise would have burned up on the ground.



GROUP: BUFFALO KAPUKA

2002 CENSUS OF LOGS, CANTS, DOWN TREES IN FIELDS

	meters LENGTH	(cm) Large DIAMETER	(cm) Small DIAMETER	SPECIES	LOG ✓	CANT ✓	DOWN TREE ✓
1.	2·4	58	49	✓		CANT ✓	
2.	2·4	37	36	✓		CANT ✓	
3	2·4	53	45	✓		CANT ✓	
4.	2·4	50	50	✓		CANT ✓	
5.	2·4	42, 36	33, 33	✓	LOG ✓		
6	2·4	50	49	✓		CANT ✓	
7.	2·4	50	50	✓		CANT ✓	
8.	2·4	62, 66	56, 57	✓	LOG ✓		
9	2·5	70, 62	60, 58	✓	LOG ✓		
10	1·8	48, 45		✓			DOWN TREE ✓
11.	1·8	48, 55	44, 49	✓	LOG ✓		
12.	2·4	40, 36	36, 34	✓	LOG ✓		
13.	1·5	40, 38	36, 35	✓	LOG ✓		
14.	2·3	40, 34	37, 29	✓	LOG ✓		
15.	2·4	40, 39	36, 35	✓	LOG ✓		
16.	2·4	65, 63	63, 62	✓	LOG ✓		
17.	2·4	63, 62	60, 61	✓	LOG ✓		
18	2·6	80, 73	67, 67	✓	LOG ✓		
19	1·5	50, 47	50, 43	✓	LOG ✓		
20	2·3	50, 40		✓			DOWN TREE ✓
21	2·6	50, 50	44, 37	✓	LOG ✓		
22	2·3	44, 35		✓			DOWN TREE ✓
							DOWN

NYAMPHANDE PERMANENT COMMUNITY FOREST RESOURCE INVENTORY DATE 25/09/03 NOTETAKER Mucho GPS UNIT NO. 02

GPS WPT REFERENCE no. CHAK 12

MAP OF PLOT LOCATION

NORTH

SITE INFORMATION:

Grass type Nyamalokoto Land/forest type Msenga

Stone sizes: gravel ✓ man-sized ✓ house-sized ___

Best land use potential (check all that are mentioned):

agric ___ sawtrees ✓ wildlife food ✓ wildlife home ✓

mining ___ cemetery ___ other Beekeeping

List SIGNS of land use potential (species etc) given by informants: ___

NO.	SPECIES	(0.1 cm) DIAM	TOT HT	LENGTH + SAW OR OTHER PRODUCT +DIMENSIONS: LENGTH + ROTTEN: START FROM GROUND ZERO
01	Mpowoto Bark peter	10·5	6	1 bundle firewood
02	Kalam a	10	7m	13m pole ½ bundle firewood
03	Diospyros kirki	30·1	16	3 bags charcoal + 7 tool handles
04	11	11	13	5 cooking sticks + 1 bundle f wood.

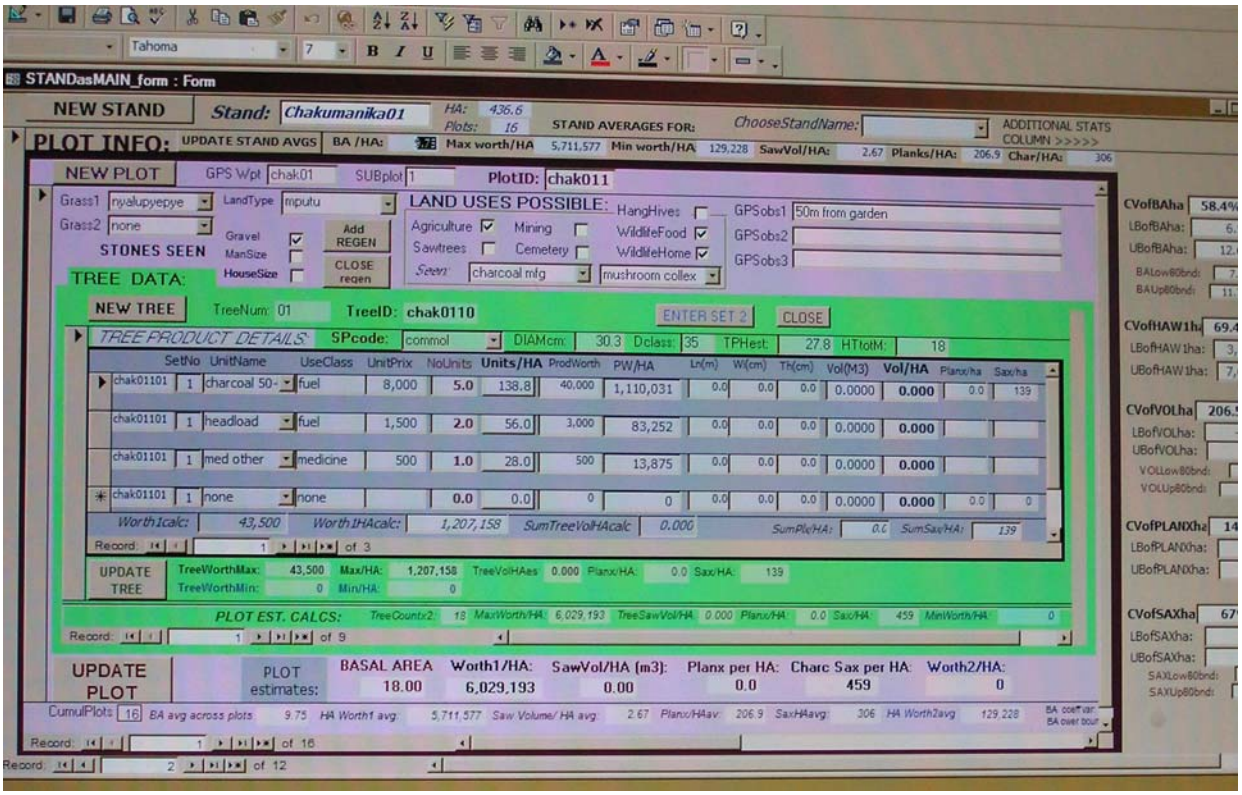
REGENERATION INFORMATION (LESS THAN 7 CM DIAMETER; USE 3 METER RADIUS)

SPECIES	COUNT	SPECIES	COUNT	SPECIES	COUNT
Bauhinia	𝍸 𝍸				
Diplorynchus	𝍸				

INVENTORY SHEET FOR VARIABLE-RADIUS PLOT and DATABASE

Typical information on diameter, height, and species were collected along with whatever products the informants mentioned in each tree. If commercial height were needed, it could be surmised from the product list.

Species names given in local names had to be converted to botanical name codes (not number codes) before being entered into the database, which matches the form.



This is a typical step in all inventories. The codes are composed of the first three letters of the genus and the species names.

INVENTORY SHEET FOR 10-YEAR AND 20-YEAR FALLOW PLOT

NYAMPHANDE COMMUNITY NATURAL RESOURCE AREA

FALLOW (CHISALA) RESOURCE INVENTORY *10m strip page* of

CLOSEST VILLAGE: ULEMU | GPS WPT REFERENCE no. 032

YEAR OF LAST CULTIVATION OF SITE: 1988 | Azimuth 20 ° Length 50 m

*YEAR of NEXT CULTIVATION 2004

TODAY'S DATE 10-10-03 NOTETAKER JESTON GPS UNIT NO. 2

NO.	SPECIES	DIAM to 0.1 cm	HEIGHT to 1 m	PRODUCTS (length + dimensions)
1	Terminalia spp	1.7	2.0	Nsondo
2	Terminalia spp	2.2	3	Mbalo
3	Terminalia spp	2.1	3	Mbalo
	Mtelezi Stekeun	2.2	3.5	Mbalo
	Piliostigma thonningii	11.2	5	firewood
	Strychnos cocculoides	6.5	5	Nsondo
	Piliostigma thonningii	1	2	Mbalo
	Kambakumbaker	2.6	2.5	Mbalo
	Kambakumbaker	1	2	Mbalo
	Strychnos cocculoides	5.1	5	Nsondo
	Strychnos cocculoides	2.7	3	Mbalo
	Strychnos cocculoides	5.1	7	Nsondo
	Strychnos cocculoides	3.9	8	Nsondo
	Markhamia obtusi	6.6	8	Nsondo
	Markhamia obtusi	2.9	5	Nsondo
	Mtelezi Stekeun	3.8	6	Nsondo
	Acacia polyacantha	12.6	9	2m forked pole
	Combretum molle	0.9	1	FIREWOOD

This form can be two or more pages long depending on the density of the stems.

Plots in the fallow zones were processed in ForestCalc as a test of the use of the new software in JFM applications. The plots are rectangular, 10m x 50m (or 0.05 hectare). Uses of the young trees are still recorded.

Measuring meter marks on a bamboo for heights; a degraded sawtimber stand.