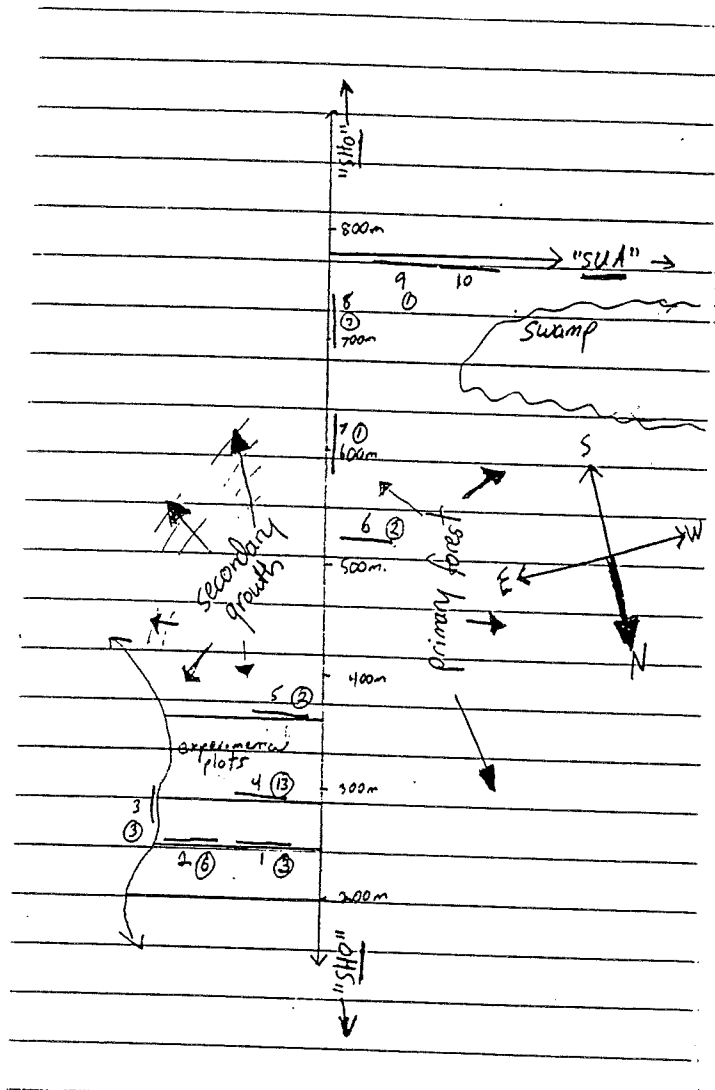


Figure 3 La Selva mist net map.

Nets opened: 0715-1115
Total # nets: 10
Total net hours: 40
Total # birds: 31
Birds / net hour: 0.78



DARTMOUTH COLLEGE FSP PERMANENT FOREST PLOTS
PALO VERDE, MONTEVERDE, LA SELVA
ESTABLISHED JANUARY AND FEBRUARY 1991
LOCATION AND BASELINE DATA

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Objective: To quantify and compare forest structure and dynamics among several primary forest types, at four Costa Rican sites: Palo Verde, Corcovado, La Selva and Monteverde.

Initial Forest Structure Data:

Summary: Plots established Jan. - Feb. 1991, except Corcovado - Jan. 1990, [No Data]

	Total Number of Trees > 25cm dbh	Ave. dbh (cm)	Total Basal Area/Plot (m2)
Palo Verde	6	36.1	0.699
Monteverde	23	53.4	4.429
La Selva	9	48.0	1.823

Equipment and Methods:

- sighting compass
- clinometer
- DBH tapes
- tape measures (100')
- corner posts (4)
- marking tape
- hammer and nails
- aluminum marking tags
- tree paint
- snake chaps
- machetes

Each 30 x 30m plot was randomly selected from a previously chosen hectare plot. Beginning at one corner of the hectare plot, we paced off randomly generated distances along its X and Y axes to arrive at the first corner of the 30 x 30m plot. From this corner we measured off the four edges, sighting the angles with a compass. Each corner was marked with a stake and referenced by two witness trees. The witness trees, designated

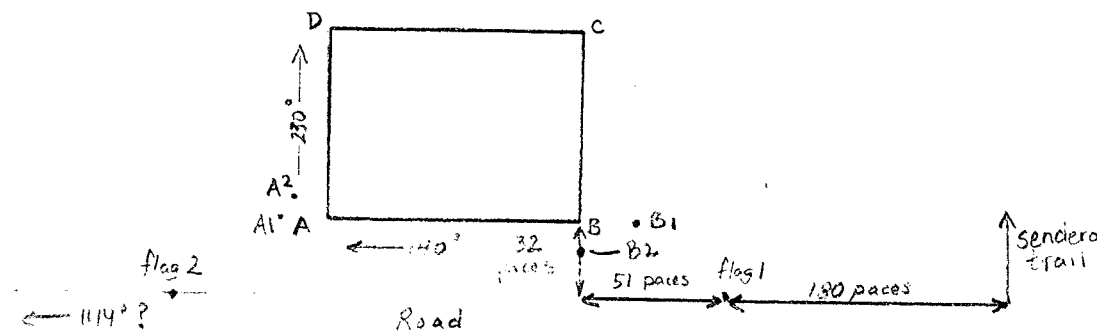
by the corner letter and a number, were large, vigorous trees in the vicinity of the corner stake. We recorded the distance and bearing from the corner stake to each of its witness trees.

Within the plot we marked every tree with a DBH greater than 24cm with a numbered aluminum tag, recorded the DBH, the plot coordinates, and a general description of the tree. These sampling methods have no negative impacts and do not interfere with other research plots in the area.

Diameters of trees with large buttresses were measured at 1.37m, taut circumference only, rather than contacting every dip between buttresses with the dbh tape. Also large trees which forked below 1.37m had the dbh of all its stems measured and recorded as stems of the same tree, such as tree #1A, 1B, 1C etc. For averaging the dbh of these forked trees with the rest of plots dbh's, we first calculated each forked stem's combined basal area. We then calculated what that tree's dbh would have been, with its present basal area, if it had been one circular stem. Basal area/plot calculations were based on the dbh's of trees > 25 cm dbh only.

Palo Verde Permanent Plot Tree Data - 1991

estimated canopy height: 83°, estimated distance: 35-38 meters



Corner points: 0.5 m stakes, with blue paint and flagging.

Witness trees were marked with blue paint at about 2m above ground and aluminum tag.

- A1 28.7 cm dbh 3.5 m at 142° azimuth from stake
light brown grey, fissured bark
- A2 19.2 cm dbh 11.3 m at 210°
grey bark, many sprouts, main trunk 30° tilt
- B1 83.8 cm dbh 11.0 m at 346°
four main boughs twisting, flaking bark
- B2 89.7 cm dbh 17.5 m at 41°
dead?, tall dark bark, prickles, about 10 m from road, (Bomba copsis?)

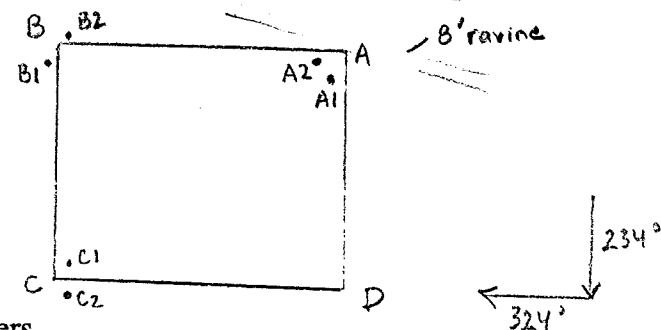
- B3 51 cm dbh 15.28 m at 48° from stake (in case B2 is dead)
- C1 24.5 cm dbh 6.65 m at 295°
dark grey brown, ridged bark, simple opposite leaves, main ramet tilted about 20°
- C2 17.2 cm dbh 6.0 m at 161°
- D1 22.2 cm dbh 4.35 m at 5°
Bursera
- D2 85.5 cm dbh 8.8 m at 150°
Ceiba

Trees within the Palo Verde forest plot:

Tag	dbh	x,y coordinates
10a	33.5cm	6m, 10m
10b	50.0	6, 10
10c	11.7	6, 10
10d	8.8	6, 10
10e	3.8	6, 10
1	36.0	26.5, 2
2a	14.1	19.5, 5.5
2b	16.5	19.5, 5.5
3	28.5	19.5, 5.5
4a	20.6	6, 5.5
4b	15.7	6, 5.5
5a	33.9	25, 19.4
5b	23.0	25, 19.4
5c	11.0	25, 19.4

Monteverde Permanent Tree Plot Data - 1991

- 1) Witness tree is located about 50 m from junction of Sendero Valle and S. Torre, on S. Torre [gap-tree fall across start of trail, had to detour to right (N)]. Witness tree has an metal tag at breast height, on the right hand side of the trail, at start of long straight stretch.
- 2) Go 14 m on trail (324°, northwest)
- 3) Go 34 m (234°, southwest)
- 4) Corner A is just across (on far side, south) of deep narrow ravine. It is marked with a 4' pole, with aluminum tag and blue flagging on top.



Witness trees for corners

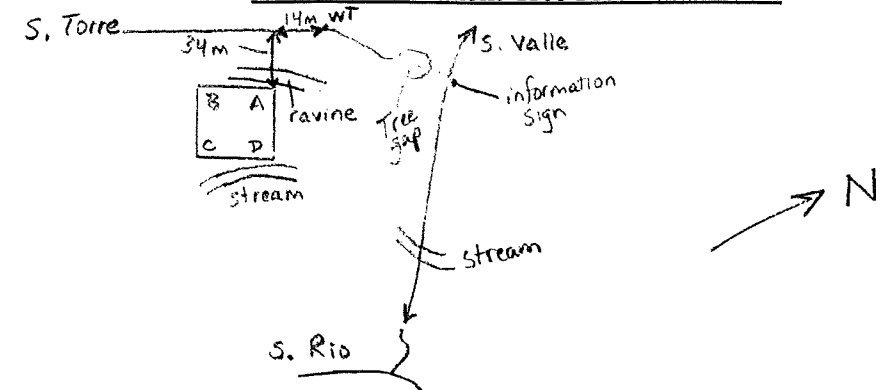
A1	105 cm dbh	2.9 m at 274° azimuth from stake
A2	22.5 cm dbh	5.1 m at 327°
B1	23 cm dbh	2.16 m at 250°
B2	13 cm dbh	1 m at 139°
C1	124 cm dbh	1.48 m at 60°
C2	11 cm dbh	5.5 m at 206°
D1	41.5 cm dbh	3.57 m at 178°
D2	56.5 cm dbh	3.80 m at 342°

Trees tagged and measure on permanent plot, Monteverde, February 2, 1991.

Tag	dbh	Tag	dbh	Tag	dbh
#1	26.8cm	11	80.0	58	62.4
2	38.5	12	26.0	59	87.0
3	35.0	13	24.8		
4	51.0	51	41.8		
5	37.6	52	21.4		
6	31.9	53	44.5		
7	50.8	54	44.6		
8	78.0	55	48.3		
9	49.0	56	35.6		
10	32.8	57	55.0		

Note: A few trees may have been missed. These were tagged under very wet, cool conditions. No coordinates were taken.

La Selva Permanent Tree Plot Data - 1991



- 1) Camino Centrale (CC) 2000 meter mark.
- 2) 7 m beyond 2000 m mark is tree 5051. Corner A is located 9 m in the woods from tree 5051 at a 98° bearing.
- 3) Corner stakes are 0.5" PVC pipe (grey) with orange flagging and metal tag.

Witness trees for corners

Corner A (tag DC A-0)

A1	16.9 cm dbh	1.0 m at 270° stake to tree
		no epiphytes, large ovate leaves, stilt roots
A2	61.8 cm dbh	10.5 m at 191°
		in the plot, tan bark, green moss, simple leaves, canopy tree

Corner B (tag DC B-0)

B1	27.9 cm dbh	4.5 m at 163°
		not in plot
B2	-----	4.6 m at 7°
		very heavily buttressed, several stems, lianas and climbing vines, just beyond plot edge

Corner C (tag DC C-0)

C1	57 cm dbh	3.8 m at 95°
		buttresses, light bark, thin moss layer, <u>Pentaclethra macroloba</u>
C2	40.8 cm dbh	6.7 m at 337°
		within the plot, brown bark, somewhat fissured, buttresses, heavy vines

Corner D (tag DC D-0)

D1	48.9 cm dbh	5.3 m at 4°
		not very buttressed, thin moss, vines, <u>Pentaclethra macroloba</u>
D2	63 cm dbh	3.7 m at 223°
		very buttressed, flaking bark, simple leaves, light grey bark, heavy vines

Trees in permanent plot, La Selva Biological Station, Costa Rica.

Tag	dbh	coordinates	description
DC-1	26.8	(24,1)	few vines, very white bark covered with green moss
DC A-2	61.8	(9.6,4)	tan bark, green moss, simple leaves, canopy tree
DC-2	38.5	(13.2,6)	also #50247, light brown fissured bark
DC-3	80.0	(10,4)	thick buttresses white, horizontal fissured bark
DC-4	37.0	(28,15)	thin algae cover on light bark, small buttressing
DC-5	31.2	(23.5,14.8)	small buttresses, tan bark, anostomised in areas, adjacent stilted tree
DC D-2	63	(3,29)	very buttressed, flaking bark, vines, simple leaves, light grey bark
DC-6	53.1	(23.5,16.7)	lichen, smooth bark, low buttressing, below 1.5m
DC C-2	40.8	(25,25)	brown fissured bark, buttresses, heavy vines
DC-7	23.4	(24.4,24.3)	light flaking brown bark

Comments: Set up lines in this order: A-D, A-B, B-C. When confirming C-D, 2 meters short but angle good. Height of canopy is about 35 meters. Plot slopes downhill at a bearing of 30°. There is a lot of exposed dirt and there are many understory plants. Not all plot trees that may have been Pentaclethra were so noted.