

The following Appendix (Appendixes 1-4) is the Electronic Supplementary Material of the article entitled “Tree community composition, structure and diversity along an elevational gradient in an Andean forest of Northern Ecuador” at <https://doi.org/10.1007/s11629-020-6479-3>

Appendix 1 Species list and density of stems in the three elevational zones (low 2437–2700 m, middle 2756–3052 m and high 3163–3334 m). Data of 1144 stems found in SVR by elevation and endemic species.

Families/ Genera/ Species	No. of stems by elevation			Total	Endemic = E None = N
	Low	Middle	High		
Actinidiaceae	2	3		5	N
<i>Saurauia</i>	2	3		5	N
<i>Saurauia brachybotrys</i> Turcz.		1		1	N
<i>Saurauia tomentosa</i> (Kunth) Spreng.	2	2		4	N
Aquifoliaceae		2	24	26	N
<i>Ilex</i>		2	24	26	N
<i>Ilex hualgayoca</i> Loizeau & Spichiger		2	20	22	N
<i>Ilex myricoides</i> Kunth			3	3	N
<i>Ilex weberlingii</i> Loizeau & Spichiger			1	1	N
Araliaceae	12	5	1	18	N
<i>Oreopanax</i>	12	5	1	18	N
<i>Oreopanax grandifolius</i> Borchs.	1	3	1	5	E
<i>Oreopanax palamophyllum</i> Harms	10	2		12	N
<i>Oreopanax robustus</i> Borchs.	1			1	E
Asteraceae	12	4		16	N
Asteraceae	12	4		16	N
Asteraceae sp.	12	4		16	N
Brunelliaceae	1	2	1	4	N
<i>Brunellia</i>	1	2	1	4	N
<i>Brunellia acostae</i> Cuatrec.	1			1	N
<i>Brunellia tomentosa</i> Bonpl.		2	1	3	N
Caprifoliaceae		4	3	7	N
<i>Viburnum</i>		4	3	7	N
<i>Viburnum urbani</i> Graebn.		4	3	7	N
Celastraceae		3		3	N
<i>Maytenus</i>		3		3	N
<i>Maytenus macrocarpa</i> (Ruiz & Pav.) Briq.		3		3	N
Chloranthaceae	6	13		19	N
<i>Hedyosmum</i>	6	13		19	N
<i>Hedyosmum cuatrecazanum</i> Occhioni	6	13		19	N
Clethraceae	4	5	6	15	N
<i>Clethra</i>	4	5	6	15	N
<i>Clethra fagifolia</i> Kunth	2			2	N
<i>Clethra ovalifolia</i> Turcz.			6	6	N
<i>Clethra revolute</i> (Ruiz & Pav.) Spreng.	2	5		7	N
Clusiaceae	36	14		50	N
<i>Clusia</i>	36	14		50	N
<i>Clusia</i> sp.1		11		11	N
<i>Clusia</i> sp.2	3			3	N
<i>Clusia</i> sp.3	1	3		4	N
<i>Clusia</i> sp.4	1			1	N
<i>Clusia</i> sp.5	31			31	N
Cunoniaceae	3	21	97	121	N
<i>Weinmannia</i>	3	21	97	121	N
<i>Weinmannia auriculifera</i> Hieron.		1	10	11	N
<i>Weinmannia lentiscifolia</i> C. Presl	3	18	3	24	N
<i>Weinmannia mariquitae</i> Szyszyl.			3	3	N
<i>Weinmannia pinnata</i> L.			8	8	N
<i>Weinmannia rollottii</i> Killip		2	73	75	N
Cyatheaceae	31	40	21	92	N

(-To be continued-)

(-Continued-) **Appendix 1** Species list and density of stems in the three elevational zones (low 2437–2700 m, middle 2756–3052 m and high 3163–3334 m). Data of 1144 stems found in SVR by elevation and endemic species.

Families/ Genera/ Species	No. of stems by elevation			Total	Endemic = E None = N
	Low	Middle	High		
<i>Cyathea</i>	31	40	21	92	N
<i>Cyathea</i> cf. <i>Frigida</i> (H. Karst.) Domin	25	38	21	84	N
<i>Cyathea fulva</i> (M. Martens & Galeotti) Fée	6	2		8	N
Dicksoniaceae	3	8		11	N
<i>Dicksonia</i>	3	8		11	N
<i>Dicksonia sellowiana</i> Hook.	3	8		11	N
Ericaceae			1	1	N
<i>Pernettya</i>			1	1	N
<i>Pernettya prostrata</i> (Cav.) DC.			1	1	N
Escalloniaceae			5	5	N
<i>Escallonia</i>			5	5	N
<i>Escallonia myrtilloides</i> L. f.			5	5	N
Euphorbiaceae	18	6		24	N
<i>Hyeronima</i>	3	2		5	N
<i>Hyeronima macrocarpa</i> Müll. Arg.	1			1	N
<i>Hyeronima scabrida</i> (Tul.) Müll. Arg.	2	2		4	N
<i>Sapium</i>	15			15	N
<i>Sapium laurifolium</i> (A. Rich.) Griseb.	10			10	N
<i>Sapium stylare</i> Müll. Arg.	5			5	N
<i>Tetrorchidium</i>		4		4	N
<i>Tetrorchidium macrophyllum</i> Müll. Arg.		4		4	N
Fabaceae	6			6	N
<i>Dussia</i>	3			3	N
<i>Dussia lehmannii</i> Harms	3			3	N
<i>Erythrina</i>	3			3	N
<i>Erythrina edulis</i> Triana ex Micheli	2			2	N
<i>Erythrina schimpffii</i> Diels	1			1	E
Flacourtiaceae	23	2		25	N
<i>Banara</i>		2		2	N
<i>Banara guianensis</i> Aubl.		2		2	N
<i>Casearia</i>	23			23	N
<i>Casearia sylvestris</i> Sw.	23			23	N
Lauraceae	35	13		48	N
<i>Beilschmiedia</i>	3	1		4	N
<i>Beilschmiedia tovarensis</i>	3	1		4	E
<i>Endlicheria</i>	1	1		2	N
<i>Endlicheria</i> sp.1	1			1	N
<i>Endlicheria</i> sp.4		1		1	N
Lauraceae	2			2	N
Lauraceae sp.2	1			1	N
Lauraceae sp.3	1			1	N
<i>Nectandra</i>	17	9		26	N
<i>Nectandra</i> cf. <i>laurel</i> Klotzsch ex Nees	3	3		6	N
<i>Nectandra</i> cf. <i>lineatifolia</i> (Ruiz & Pav.) Mez	3	3		6	N
<i>Nectandra</i> cf. <i>obtusata</i> Rohwer	6	1		7	N
<i>Nectandra</i> sp.1	5	2		7	N
<i>Ocotea</i>	12	2		14	N
<i>Ocotea pachypoda</i> Mez & Sodiro	4	1		5	E
<i>Ocotea sericea</i> Kunth	8	1		9	N
Melastomataceae	53	115	11	179	N
<i>Axinaea</i>		8	5	13	N
<i>Axinaea</i> cf. <i>sclerophylla</i> Triana		7		7	E
<i>Axinaea macrophylla</i> (Naudin) Triana			5	5	N
<i>Axinaea quitensis</i> Benoist		1		1	E

(-To be continued-)

(-Continued-) **Appendix 1** Species list and density of stems in the three elevational zones (low 2437–2700 m, middle 2756–3052 m and high 3163–3334 m). Data of 1144 stems found in SVR by elevation and endemic species.

Families/ Genera/ Species	No. of stems by elevation			Total	Endemic = E None = N
	Low	Middle	High		
<i>Blakea</i>	4			4	N
<i>Blakea rotundifolia</i> D. Don	4			4	E
<i>Meriania</i>	3	1		4	N
<i>Meriania maxima</i> Markgr.		1		1	N
<i>Meriania tomentosa</i> (Cogn.) Wurdack	3			3	N
<i>Miconia</i>	12	48	6	66	N
<i>Miconia barbeyana</i> Cogn.		1		1	N
<i>Miconia</i> cf. <i>sodiroi</i> Wurdack		11	3	14	E
<i>Miconia corymbiformis</i> Cogn.		7	1	8	N
<i>Miconia difficilis</i> Triana		2		2	N
<i>Miconia lasiocalyx</i> Cogn.	10	10		20	N
<i>Miconia</i> sp. 1			2	2	N
<i>Miconia theaezans</i> (Bonpl.) Cogn.	2	17		19	N
<i>Tibouchina</i>		1		1	N
<i>Tibouchina gleasoniana</i> Wurdack		1		1	E
<i>Topobea</i>	34	57		91	N
<i>Topobea</i> cf. <i>acuminate</i> Wurdack	34	57		91	N
Meliaceae	12	8	1	21	N
<i>Guarea</i>	10	2		12	N
<i>Guarea kunthiana</i> A. Juss.	10	2		12	N
<i>Ruagea</i>	2	6	1	9	N
<i>Ruagea membranacea</i> W. Palacios	1			1	E
<i>Ruagea pubescens</i> H. Karst.		6	1	7	N
<i>Ruagea tomentosa</i> Cuatrec.	1			1	N
Mimosaceae	11			11	N
<i>Inga</i>	11			11	N
<i>Inga</i> cf. <i>insignis</i> Kunth	11			11	N
Moraceae	11	1		12	N
<i>Ficus</i>	10	1		11	N
<i>Ficus dulciaria</i> Dugand	10	1		11	N
<i>Morus</i>	1			1	N
<i>Morus insignis</i> Bureau	1			1	N
Myrsinaceae	13	7	21	41	N
<i>Cybianthus</i>			1	1	N
<i>Cybianthus</i> sp.			1	1	N
<i>Geissanthus</i>	9	7	20	36	N
<i>Geissanthus andinus</i> Mez			15	15	N
<i>Geissanthus ecuadorensis</i> Mez	9	7	2	18	E
<i>Geissanthus vanderwerffii</i> Pipoly			3	3	E
<i>Myrsine</i>	4			4	N
<i>Myrsine andina</i> (Mez) Pipoly	3			3	N
<i>Myrsine coriacea</i> (Sw.) R. Br. ex Roem. & Schult.	1			1	N
Myrtaceae	58	11		69	N
<i>Myrcianthes</i>	58	11		69	N
<i>Myrcianthes orthostemon</i> (O. Berg) Grifo	3	4		7	N
<i>Myrcianthes rhopaloides</i> (Kunth) McVaugh	55	6		61	N
<i>Myrcianthes</i> sp.1		1		1	N
Piperaceae	15	1		16	N
<i>Piper</i>	15	1		16	N
<i>Piper puraceanum</i> Trel. & Yunck.		1		1	N
<i>Piper sodiroi</i> C. DC.	15			15	E
Primulaceae		3		7	N
<i>Ardisia</i>		3		3	N
<i>Ardisia foetida</i> Willd. ex Roem. & Schult.		3		3	N

(-To be continued-)

(-Continued-) **Appendix 1** Species list and density of stems in the three elevational zones (low 2437–2700 m, middle 2756–3052 m and high 3163–3334 m). Data of 1144 stems found in SVR by elevation and endemic species.

Families/ Genera/ Species	No. of stems by elevation			Total	Endemic = E None = N
	Low	Middle	High		
Rosaceae	7	3	9	19	N
<i>Hesperomeles</i>			2	2	N
<i>Hesperomeles obtusifolia</i> (Pers.) Lindl.			2	2	N
<i>Prunus</i>	7	3	7	17	N
<i>Prunus huantensis</i> Pilg.	7	3	7	17	N
Rubiaceae	71	38	5	114	N
<i>Cinchona</i>	3	1	2	6	N
<i>Cinchona pitayensis</i> (Wedd.) Wedd.	2	1	2	5	N
<i>Cinchona pubescens</i> Vahl	1			1	N
<i>Faramea</i>	41	27		68	N
<i>Faramea calyprate</i> C.M. Taylor	40			40	N
<i>Faramea</i> cf. <i>ovalis</i> Standl.		13		13	N
<i>Faramea flavicans</i> (Humb. & Bonpl. ex Roem. & Schult.) Standl.	1	14		15	N
<i>Gonzalagunia</i>		1		1	N
<i>Gonzalagunia</i> sp.		1		1	N
<i>Guettarda</i>	5	2		7	N
<i>Guettarda crispiflora</i>	1			1	N
<i>Guettarda hirsute</i> (Ruiz & Pav.) Pers.	4	2		6	N
<i>Palicourea</i>	22	7	3	32	N
<i>Palicourea amethystine</i> (Ruiz & Pav.) DC.	7	2	3	12	N
<i>Palicourea</i> cf. <i>stipularis</i> Benth.	6	1		7	N
<i>Palicourea cornigera</i> C.M. Taylor		4		4	E
<i>Palicourea lineata</i> Benth.	2			2	N
<i>Palicourea lyrastipula</i> Wernham	5			5	N
<i>Palicourea stenosepala</i> Standl.	2			2	E
Rutaceae		1		1	N
<i>Zanthoxylum</i>		1		1	N
<i>Zanthoxylum andinum</i> Reynel		1		1	N
Sabiaceae	12	9	2	23	N
<i>Meliosma</i>	12	9	2	23	N
<i>Meliosma arenosa</i> Idrobo & Cuatrec.	1	4		5	N
<i>Meliosma frondosa</i> Cuatrec. & Idrobo	9	5	2	16	N
<i>Meliosma</i> sp.1	2			2	N
Sapindaceae		5		5	N
<i>Allophylus</i>		5		5	N
<i>Allophylus excelsus</i> (Triana & Planch.) Radlk.		1		1	N
<i>Allophylus floribundus</i> (Poepp.) Radlk.		4		4	N
Siparunaceae		1	1	2	N
<i>Siparuna</i>		1	1	2	N
<i>Siparuna pilosolepidota</i> Heilborn		1	1	2	E
Solanaceae	8	4	1	13	N
<i>Cestrum</i>			1	1	N
<i>Cestrum humboldtii</i> Francey			1	1	N
Solanaceae	6	3		9	N
<i>Solanaceae</i> sp.2	6	1		7	N
<i>Solanaceae</i> sp.3		2		2	N
<i>Solanum</i>	2	1		3	N
<i>Solanum</i> sp.1	2			2	N
<i>Solanum</i> sp.2		1		1	N
Staphyleaceae	2	3		5	N
<i>Turpinia</i>	2	3		5	N
<i>Turpinia heterophylla</i> (Ruiz & Pav.) Tul.	1	3		4	N
<i>Turpinia occidentalis</i> (Sw.) G. Don	1			1	N

(-To be continued-)

(-Continued-) **Appendix 1** Species list and density of stems in the three elevational zones (low 2437–2700 m, middle 2756–3052 m and high 3163–3334 m). Data of 1144 stems found in SVR by elevation and endemic species.

Families/ Genera/ Species	No. of stems by elevation			Total	Endemic = E None = N
	Low	Middle	High		
Styracaceae	1	4		5	N
<i>Styrax</i>	1	4		5	N
<i>Styrax heterotrichus</i> Perkins	1	4		5	N
Symplocaceae	3	4	2	9	N
<i>Symplocos</i>	3	4	2	9	N
<i>Symplocos quitensis</i> Brand	3	1		4	N
<i>Symplocos subandina</i> B. Ståhl		3	2	5	E
Theaceae	6	43	40	89	N
<i>Freziera</i>		2	29	31	N
<i>Freziera reticulata</i> Bonpl.		2	1	3	N
<i>Freziera verrucosa</i> Kobuski			28	28	N
<i>Gordonia</i>	3	27	11	41	N
<i>Gordonia fruticosa</i> (Schrad.) H. Keng	3	27	11	41	N
<i>Ternstroemia</i>	3	14		17	N
<i>Ternstroemia lehmannii</i> (Hieron.) Urb.	3	14		17	N
Thymelaeaceae	1			1	N
<i>Schoenobiblus</i>	1			1	N
<i>Schoenobiblus panamensis</i> Standl. & L.O. Williams	1			1	N
Urticaceae		1		1	N
<i>Boehmeria</i>		1		1	N
<i>Boehmeria celtidifolia</i> Kunth		1		1	N
<i>Cecropia</i>	4			4	N
<i>Cecropia gabrielis</i> Cuatrec.	1			1	N
<i>Cecropia maxima</i> Snethl.	3			3	E
Verbenaceae	1	4		5	N
<i>Aegiphila</i>	1	4		5	N
<i>Aegiphila bogotensis</i> (Spreng.) Moldenke	1	2		3	N
<i>Aegiphila</i> cf. <i>panamensis</i> Moldenke		2		2	N
Total	481	411	252	1144	19

Appendix 2 Stand physical structure for 31 plots established in two transects (a) open trail (OT) transect and (b) closed trail (CT) transect.

(a) Open trail (OT)

Plot	Plot elev. (m)	No. of stems	Height (m)			Diameter at breast height (cm)			Basal Area (m ² ha ⁻¹)	Stand volume (m ² ha ⁻¹)
			Max.	Median	Mean	Max.	Mean	Median		
15	2437	53	24	8	9.44	57	14.7	9.8	61.78	10307
14	2561	42	22	10	10.33	61.5	16.8	11.8	65.20	9432.3
13	2669	33	32	10	12.22	64.5	18.9	12.6	61.58	8282.5
12	2700	29	20	10	10.95	56.5	16.8	12.8	39.85	4217.5
11	2773	39	20	10	10.85	44.5	16.3	14	46.30	6528.3
10	2820	44	20	10	9.75	30.7	13.9	12.7	32.64	4667.5
31	2824	58	24	11.5	13.20	42.5	14.4	9.8	53.53	13668
9	2860	23	30	9	11.99	68.5	20.8	14.5	49.00	4504.7
8	2946	24	16	10	10.00	36	19.6	17.8	33.82	2705.6
7	3022	35	25	9	10.44	48	18	12	52.12	6350
6	3093	21	35	11.5	12.75	59	20.5	15	44.07	3931
5	3163	21	16	7	8.29	52	17.8	13.5	29.65	1719.7
4	3250	17	16	14	13.75	41.5	21.6	18	28.67	2231.5
3	3288	63	24	12	11.68	36	13.6	12.5	44.17	10836.4
1	3321	100	20	12	11.96	26	10.7	11	40.16	16003.8
2	3334	51	11	7	6.72	20	9	8	15.21	1736.5

(b) Closed trail (CT)

Plot	Plot elev. (m)	No. of Stems	Height (m)			Diameter at breast height (cm)			Basal Area (m ² ha ⁻¹)	Stand Volume (m ² ha ⁻¹)
			Max.	Median	Mean	Max.	Mean	Median		
28	2451	31	20	20	10.8	65	21	14	68.22	7663.4
29	2474	22	20	11.5	12	61	23.9	15.5	57.04	5057.5
30	2514	35	20	10	10.6	65	16.7	10	50.68	6267.4
27	2572	48	20	12	11.6	39	16	13	52.92	9843.1
26	2582	13	20	14	12.6	46	24.5	22	31.33	1712.7
25	2603	34	20	9	10.2	61	15.9	11	43.23	5029.1
24	2630	40	25	11.5	12.3	57	15.2	11.5	44.67	7325.9
23	2631	32	16	9.5	9.8	26	10.9	10	14.18	1488.9
22	2664	32	22	11.5	11.7	78	18.4	10.3	71.49	8960.1
21	2680	37	20	10	10.5	49	14	10	32.87	4256.7
20	2756	48	24	11	12.1	80	16.8	12	69.85	13620.8
19	2830	20	22	14	14.1	92	31.9	28	104.85	9873.4
18	2951	42	20	11.5	11.2	40	14.9	10.8	40.97	6439.1
17	2989	31	23	10	10.5	69	19.5	12.5	76.8	9728
16	3052	26	22	12	12.8	79	23.9	15	93.29	10728.4

Appendix 3 Stand density and species diversity in 31 plots established in two transects (a) open trail (OT) transect and (b) closed trail (CT) transect.

(a) Open trail (OT)

Plot	Plot elev. (m)	No. of stems	No. of species	Shannon's diversity (species)	No. of families	Shannon's diversity (families)	Mean species per family	Mean individuals per species
15	2437	53	17	11.74	13	9.48	1.89	3.31
14	2561	42	14	8.43	10	6.10	1.56	2.63
13	2669	33	17	12.17	12	9.13	1.89	2.06
12	2700	29	18	15.30	14	10.63	2.00	1.81
11	2773	39	14	10.00	11	6.99	1.56	2.44
10	2820	44	23	18.95	16	12.64	2.56	2.75
31	2824	58	24	17.70	16	9.50	2.67	3.63
9	2860	23	14	11.72	12	9.81	1.56	1.44
8	2946	24	15	13.18	10	7.34	1.67	1.50
7	3022	35	15	11.20	10	6.22	1.67	2.19
6	3093	21	10	7.52	9	7.04	1.11	1.31
5	3163	21	11	10.07	10	9.20	1.22	1.31
4	3250	17	8	6.83	8	6.83	0.89	1.06
3	3288	63	14	9.10	9	5.81	1.56	3.94
1	3321	100	16	8.31	9	4.55	1.78	6.25
2	3334	51	11	6.08	8	5.11	1.22	3.19

(b) Closed trail (CT)

Plot	Plot Ele. (m)	No. of stems	No. of species	Shannon's diversity (species)	No. of families	Shannon's diversity (families)	Mean species per family	Mean individuals per species
28	2451	31	17	14.82	14	11.82	1.89	1.94
29	2474	22	11	8.48	10	7.96	1.22	1.38
30	2514	35	17	14.35	11	8.58	1.89	2.19
27	2572	48	18	14.50	15	11.23	2.00	3.00
26	2582	13	8	7.32	8	7.33	0.89	0.81
25	2603	34	17	13.69	13	11.27	1.89	2.13
24	2630	40	20	13.84	13	9.53	2.22	2.50
23	2631	32	17	14.09	13	10.32	1.89	2.00
22	2664	32	20	15.07	16	12.27	2.22	2.00
21	2680	37	24	19.16	19	14.40	2.67	2.31
20	2756	48	23	17.47	15	10.04	2.56	3.00
19	2830	20	15	13.42	10	8.37	1.67	1.25
18	2951	42	21	15.02	16	11.68	2.33	2.63
17	2989	31	17	11.78	16	10.61	1.89	1.94
16	3052	26	16	13.71	12	8.37	1.78	1.63

Appendix 4 Data of number of species and sample area in the ecological literature and our study area. Arrows indicate the trend reported in each study and N/A data not available.

Transect	Elevational range	Sample area	Sampled plots	No. of species	Diameter at breast height	Alpha diversity	Reference
Siempre Verde Reserve	2437–3334 m	0.775 ha	31	130	≥ 5 cm	↓	Our study
Pasocha volcano	3310–3260 m	1 ha	1	31	≥ 5 cm	N/A	Valencia and Jørgensen (1992)
Cotacachi–Cayapas Ecological Reserve	3330–3630 m	0.2 ha	4	28	≥2.5 cm	↓	Young and Keating (2001)
	3330 m	500 m ²	1	18			
	3430 m	500 m ²	1	20			
	3530 m	500 m ²	1	14			
3630 m	500 m ²	1	13				
Reserva San Francisco	1850–2570 m	0.68 ha	17	190	≥ 5 cm	↓	Homeier et al. (2010)

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