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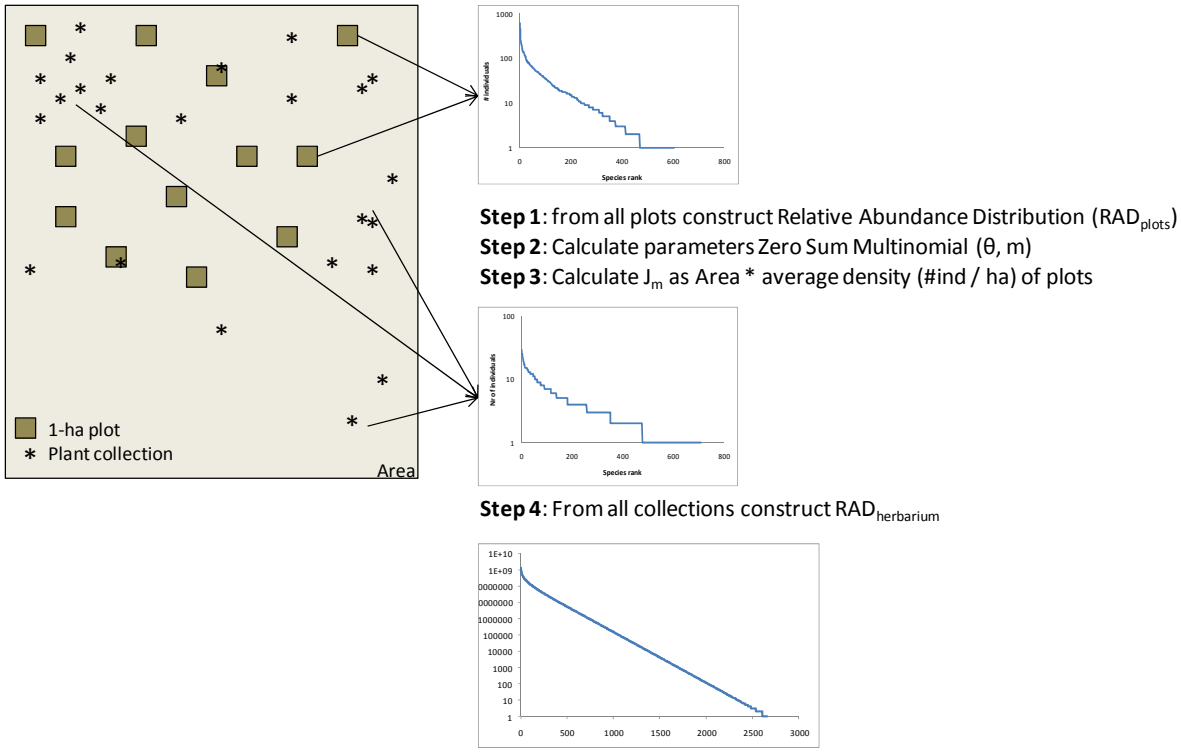

Step 1: from all plots construct Relative Abundance Distribution (RAD_{plots})
Step 2: Calculate parameters Zero Sum Multinomial (θ, m)
Step 3: Calculate J_m as Area * average density (#ind / ha) of plots

Step 4: From all collections construct $RAD_{herbarium}$

Step 5: With θ, m and J_m, construct ZSM for total Area (ZSM_{area})
Step 6: sample ZSM_{area} with scenarios 1 to 4
Step 7: compare model output with $RAD_{herbarium}$

Appendix S1. Schematic representation of the model to simulate collector's behaviour.

A model of botanical collector's behavior in the field: Never the same species twice. Appendix S2

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Table S2. Number of collections and species collected by a few large 'expedition type' collectors in French Guiana, Suriname and Guyana (as present in the Utrecht Herbarium). Most of these collecting trips were made within the framework of the Flora of the Guianas. Each collector tried to collect the highest amount of species possible, resulting in very high S/N ratios. 20% of the collecting trip had an S/N of over 90%, while 80% had an S/N of over 75%, clearly supporting the idea that collectors maximize for the number of species within a collecting trip.

collector	year	N	S	S/N
Lindeman, J.C.	1953	1650	795	0.48
Lindeman, J.C.	1954	1563	845	0.54
Lindeman, J.C.	1955	123	102	0.83
Maas, P.J.M.	1965	464	389	0.84
Lindeman, J.C.	1967	76	71	0.93
Granville, J.J. de	1969	245	208	0.85
Granville, J.J. de	1970	596	422	0.71
Granville, J.J. de	1971	206	155	0.75
Maas, P.J.M.	1971	52	49	0.94
Granville, J.J. de	1972	726	495	0.68
Granville, J.J. de	1973	848	587	0.69
Granville, J.J. de	1974	300	257	0.86
Maas, P.J.M.	1974	175	155	0.89
Granville, J.J. de	1975	453	353	0.78
Lindeman, J.C.	1975	268	193	0.72
Lindeman, J.C.; Stoffers, A.L.	1975	262	176	0.67
Granville, J.J. de	1976	192	168	0.88
Mori, S.A.	1976	567	383	0.68
Granville, J.J. de	1977	76	73	0.96
Lindeman, J.C.	1977	189	168	0.89
Maas, P.J.M.	1977	200	163	0.82
Granville, J.J. de	1978	74	71	0.96
Granville, J.J. de	1979	304	246	0.81
Maas, P.J.M.	1979	776	586	0.76
Granville, J.J. de	1980	786	501	0.64
Lindeman, J.C.	1980	71	68	0.96
Lindeman, J.C.; Görts-van Rijn, A.R.A.	1980	604	458	0.76
Granville, J.J. de	1981	592	450	0.76
Lindeman, J.C.; Roon, A.C. de	1981	225	191	0.85
Maas, P.J.M.	1981	440	387	0.88
Granville, J.J. de	1982	274	226	0.82
Mori, S.A.	1982	533	360	0.68
Stoffers, A.L.	1982	374	303	0.81

Granville, J.J. de	1983	326	254	0.78
Mori, S.A.	1983	230	192	0.83
Granville, J.J. de	1984	1077	679	0.63
Granville, J.J. de	1985	961	617	0.64
Jansen-Jacobs, M.J.	1985	480	378	0.79
Granville, J.J. de	1986	569	402	0.71
Mori, S.A.	1986	273	249	0.91
Granville, J.J. de	1987	787	525	0.67
Jansen-Jacobs, M.J.	1987	590	442	0.75
Mori, S.A.	1987	85	76	0.89
Granville, J.J. de	1988	117	103	0.88
Maas, P.J.M.	1988	574	479	0.83
Mori, S.A.	1988	93	89	0.96
Granville, J.J. de	1989	640	439	0.69
Jansen-Jacobs, M.J.	1989	563	468	0.83
Mori, S.A.	1989	205	168	0.82
Mori, S.A.	1990	255	213	0.84
Granville, J.J. de	1991	228	173	0.76
Jansen-Jacobs, M.J.	1991	476	416	0.87
Mori, S.A.	1991	107	98	0.92
Görts-van Rijn, A.R.A.	1992	384	296	0.77
Jansen-Jacobs, M.J.	1992	575	455	0.79
Mori, S.A.	1992	195	177	0.91
Granville, J.J. de	1993	269	239	0.89
Mori, S.A.	1993	433	314	0.73
Granville, J.J. de	1994	118	107	0.91
Jansen-Jacobs, M.J.	1994	558	443	0.79
Mori, S.A.	1994	141	130	0.92
Granville, J.J. de	1995	402	311	0.77
Jansen-Jacobs, M.J.	1995	1126	790	0.70
Mori, S.A.	1995	86	62	0.72
Jansen-Jacobs, M.J.	1996	210	186	0.89
Granville, J.J. de	1997	143	130	0.91
Jansen-Jacobs, M.J.	1997	250	236	0.94
Mori, S.A.	1997	253	227	0.90
Granville, J.J. de	1998	243	208	0.86
Mori, S.A.	1998	76	66	0.87
Granville, J.J. de	1999	199	180	0.90
Jansen-Jacobs, M.J.	1999	431	321	0.74
Mori, S.A.	1999	107	90	0.84
Granville, J.J. de	2000	323	277	0.86
Mori, S.A.	2000	106	98	0.92
Granville, J.J. de	2001	128	121	0.95
Mori, S.A.	2001	109	100	0.92
Granville, J.J. de	2002	779	534	0.69
Mori, S.A.	2002	114	93	0.82
Jansen-Jacobs, M.J.	2003	316	133	0.42
Mori, S.A.	2003	107	86	0.80

Granville, J.J. de	2004	427	352	0.82

A model of botanical collector's behavior in the field: Never the same species twice. Appendix S1

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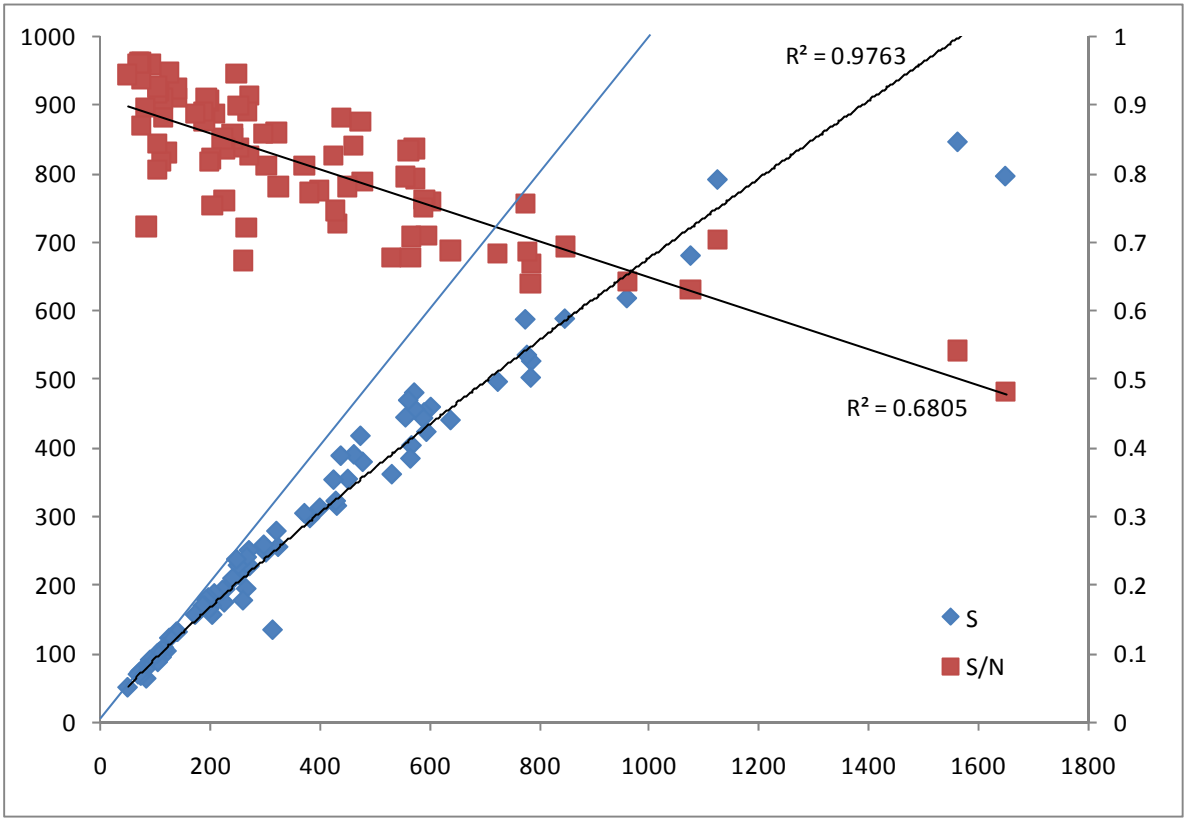

Figure S2. Number of specimens (x-axis) and species (left y-axis) collected on big expeditions in the Guianas from 1953 to 2004. The optimum under the strategy "never the same species twice" would be S=N. This is the straight light blue line upwards. The true number of species collected can never by higher but is inclreanlgly lower as the size of the total collection increases (blue diamonds, left y-axis). Thus, the efficiency to collect each species only once (S/N ratio (red squares) – right y-axis)) decreases with the size of the collection made (x-axis), (one outlier left out, Jansen-Jacobs 2003). The straight line up is y = x.

A model of botanical collector's behavior in the field: Never the same species twice. Appendix S4

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Table S2. All collectors and their number of collections made during long and short expeditions in Mabura Hill, Guyana and the Bauxite Mts are NE-Suriname.

Mabura		**Bauxite**	
Clarke, H.D.	690	BW	837
FD	278	Lanjouw, J.; Lindeman, J.C.	291
Jansen-Jacobs, M.J.	272	LBB	286
Polak, A.M.	271	Donselaar, J. van	280
Hoffman, B.	246	Lindeman, J.C.; Stoffers, A.L.	203
Mutchnick, P.	237	Andel, T.R. van	167
Pipoly, J.J.	199	Mori, S.A.	117
Maas, P.J.M.	152	Lindeman, J.C.	77
Steege, H. Ter	131	Tresling, J.H.A.T.	53
Chanderbali, A.	125	Maguire, B.	52
McDowell, T.	103	Emden, W.C. van	40
Mori, S.A.	99	Cowan, R.S.	30
Pennington, R.T.	84	Unknown	30
Gillespie, L.J.	71	Collector indigenous	28
Stoffers, A.L.	49	Lanjouw, J.	25
Acevedo R., P.	42	Tjon-Lim-Sang, R.J.M.	22
Scharf, U.	27	WE	22
Jenman, G.S.	25	Hulk, J.F.	21
Hahn, W.J.	24	Schulz, J.P.	18
Smith, A.C.	21	Stahel, G.	14
Cruz, J.S. de la	21	Maas, P.J.M.	11
University Guyana - Neotropical Botany	19	Scharf, U.	10
Raes, N.	18	Lindeman, J.C.; Cowan, R.S.	9
Schomburgk, R.H.	17	WH	9
Ehringhaus, C.	15	Zaandam, C.J.	9
Maguire, B.	12	BBS	8
Redden, K.M.	7	Mennega, A.M.W.	8
Henkel, T.W.	5	Versteeg, G.M.	8
Grewal, M.S.	4	Kock, C.	6
Bartlett, A.W.	4	Lems, K.	4
Abraham, A.A.	4	Lindeman, J.C.; Mennega, E.A.	4
Kelloff, C.L.	4	Jonker, F.P.	3
Gleason, H.A.	3	Kramer, K.U.	3
Schomburgk, M.R.	3	Sauvain, M.	3
Sandwith, N.Y.	3	Wessels Boer, J.G.	3
Rombouts, H.E.	2	Christenhusz, M.J.M.	2
Christenson, E.A.	2	Florschütz, P.A.	2

Stockdale, F.A.	2	Lindeman, J.C.; Görts-van Rijn, A.R.A.	2
Persaud, C.A.	2	Lindeman, J.C.; Roon, A.C. de	2
Unknown	2	Wullschlägel, H.R.	2
Arets, E.J.M.M.	1	Evans, R.J.	1
Fanshawe, D.B.	1	Focke, H.C.	1
Granville, J.J. de	1	Gonggrijp, J.W.	1
Knapp, S.	1	Prance, G.T.	1
Davis, T.A.W.	1	Troon, F. van	1
Ek, R.C.	1	Webster, G.L.	1
Kennedy, H.	1		
Total	**3,302**		**2,727**