

An Evaluation Of Northern Jarrah Forest Arboreta
For Potential Reafforestation Species

ATTACHMENT 5

BINGHAM RIVER ARBORETUM - FIELD GUIDE AND 1985 PERFORMANCE ANALYSIS

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BINGHAM RIVER

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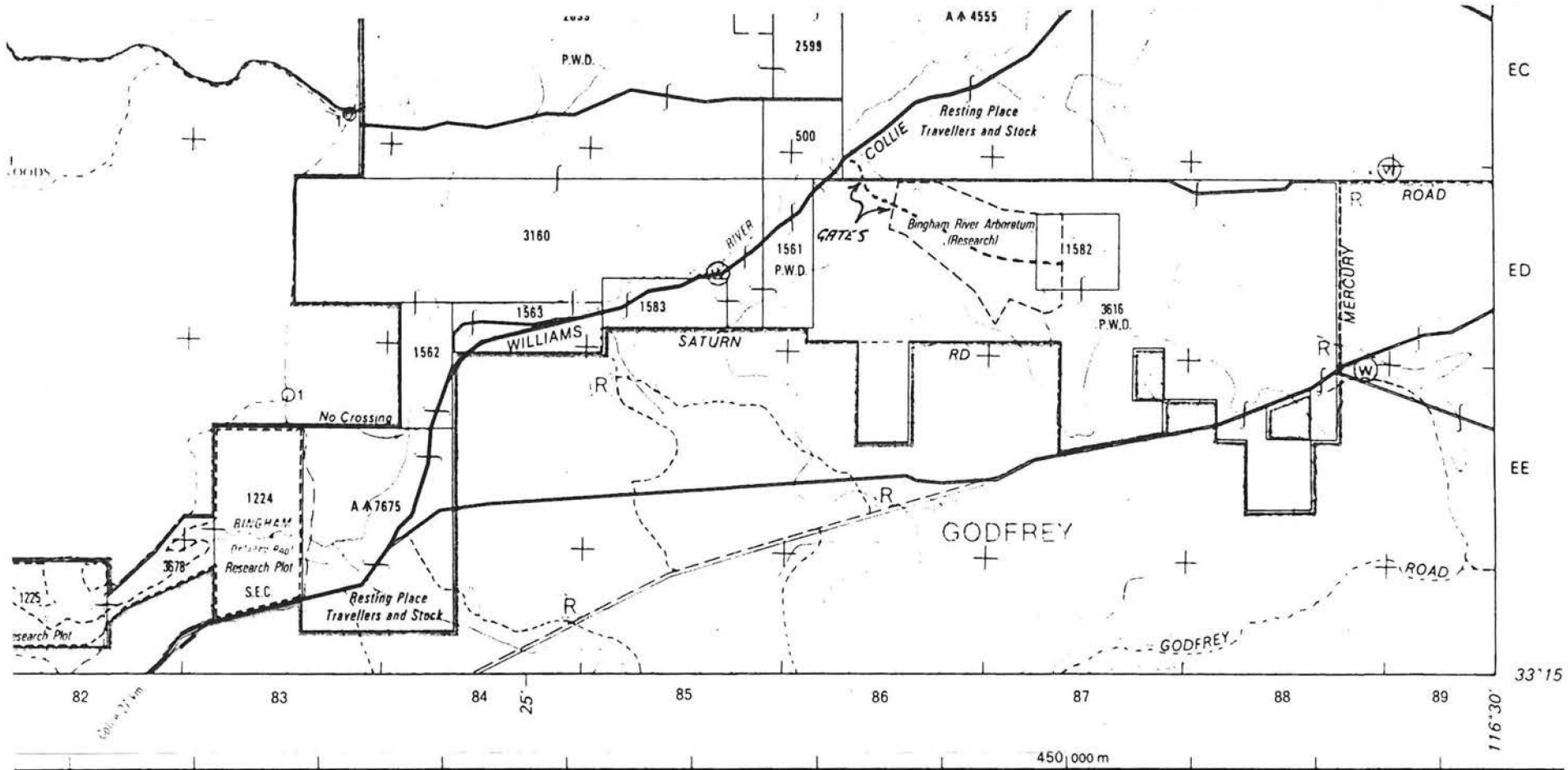
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INTRODUCTION

This booklet has been designed primarily for use as a directory for observers. It presents location maps, field guides, plot information and results for Bingham River Arboretum.

Separate graphs are presented for height, diameter, form, vigour, survival and "Rating" (ie. equal combination of height, diameter, form and vigour). For each parameter measured, plots are presented in logical sequence (starting with plot 1). Hence, travelling through an arboretum the point on the graph corresponding to a particular plot can be readily located and compared with neighbouring plots (means and 95% confidence intervals are supplied for all graphs except that for survival).

Figure BR-1: Location of Bingham River



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Figure BR-2: Plot Layout of BINGHAM RIVER

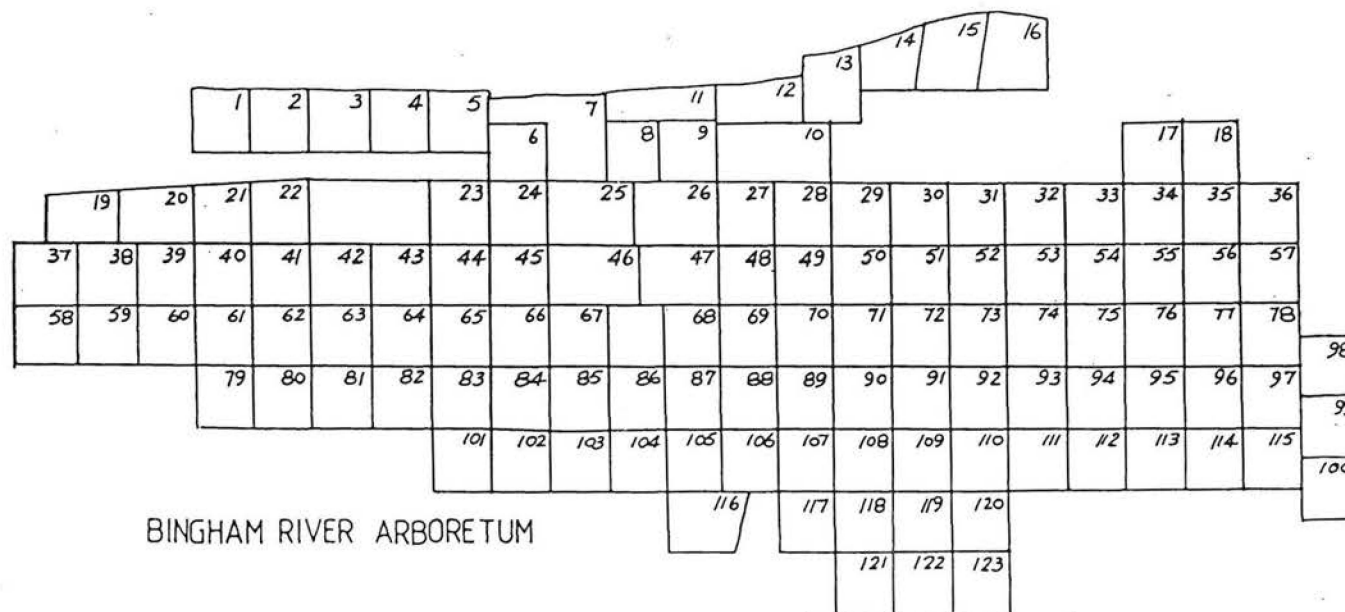


TABLE BR-1 :

PROVENANCE INFORMATION FOR
BINGHAM RIVER ARBORETUM

<u>Plot</u>	<u>Species</u>	<u>Seedlot</u>	<u>Provenance</u>
1	<i>E.longicornis</i>	6463	2.5km E. of Yellowdine
2	<i>E.oleosa</i>	6462	W.Celebration
3	<i>E.salubris</i>	6461	S.E. Coolgardie WA
4	<i>E.salmonophloia</i>	6460	Ex F.D. Kalgoorlie WA
5	<i>E.saligna</i> Botryoides cross	6234	Williams Springs Arb.
6	<i>E.globulus</i>	6291	Tas?
7	<i>E.accedens</i>	6215	Narrogin F.D. WA
8	<i>E.polyanthemos</i>	11307	Glen Maggie Vic 25m
9	<i>E.largiflorens</i>	10676	L.Albacutya Vic 75m
10	<i>E.largiflorens</i>	11912	L.Albacutya Vic 60m
11			
12	<i>E.rubida</i>	12029	Bothwell Tas 550m
13	<i>E.robusta</i>	10063	Port Stephens NSW 30m
14	<i>E.viminalis</i>	8911	Rocky R. SA 110m L.Stne
15			
16			
17	<i>E.melanophloia</i>	6959	N.Charleville Wld 410m
18	<i>E.melanophloia</i>	9723	Hebel District Qld 150m
19	<i>E.sideroxylon</i> (Tricarpa)	12636	W.Puckapunyal Vic 360m
20	<i>E.odorata</i>	8120	Sth Australia
21	<i>E.leucoxylon</i> ssp.pruinosa	9597	Arnaud Vic 230m
22	<i>E.gardeneri</i>	6228	Narrogin F.D. WA
23	<i>E.loxophleba</i>	6150	Narrogin F.D. WA
24	<i>E.spathulata</i>	6221	Narrogin Arboretum WA
25	<i>E.sargentii</i>	6467	SW of Hines Hill
26	<i>E.rudis</i>	6295	Ex F.D. Kelmscott WA
27	<i>E.camaldulensis</i>	11910	L.Albacutya Vic 60m
28	<i>E.camaldulensis</i>	10089	Horsham Vic 150m
29	<i>E.camaldulensis</i>	11340	Minlaton SA 60m
30	<i>E.camaldulensis</i>	6966	Angaston SA 640m
31	<i>E.robusta</i>	10176	Huskisson NSW 3m
32	<i>E.botryoides</i>	7509	Bodalla NSW 30m
33	<i>E.botryoides</i>	12104	W.of Orbest Vic 30m
34	<i>E.botryoides</i>	12134	Meroo Pt NSW 9m
35	<i>E.intertexta</i>	12470	W.of St George Qld 200m
36	<i>E.ocrophloia</i>	11731	S.Guilpie Qld 180m
37	<i>E.crebra</i>	12010	Coonabarabran NSW 510m
38	<i>E.crebra</i>	11784	Gilgandra District NSW 280m
39	<i>E.crebra</i>	8756	Dubbo NSW 340m
40	<i>E.radiata</i> ssp radiata	8525	Black Range Vic 210m
41	<i>E.falcata</i>	6438	Stokes Block Dryandra SF
42	<i>E.microtheca</i>	12538	Murchison R. WA 160m
43	<i>E.mannifera</i> ssp.maculosa	12159	Yass NSW
44	<i>E.platypus</i>	6004	2km Sth Borden WA
45	<i>E.conferruminata</i>	6367	Wellstead School Reserve
46	<i>E.occidentalis</i>	6459	Kalgoorlie S.of Scadden WA
47	<i>E.kondininensis</i>	6203	L.Pallarup WA
48	<i>E.patens</i>	6138	From Dwellingup collection WA
49	<i>E.wandoo</i>	4886	Ashcliffe Rd, Harvey WA
50	<i>E.wandoo</i>	6218	Narrogin F.D. WA
51	<i>E.laeliae</i>	6230	Ex Dwellingup Research WA
52	<i>E.goniocalyx</i>	12098	L.George NSW 660m
53	<i>E.dives</i>	8417	Tumut NSW 270m
54	<i>E.paniculata</i>	11741	SW Grafton NSW 300m
55	<i>E.paniculata</i>	11600	N.of Raymond Tce NSW 225m

TABLE BR-1 : (continued)

56	<i>E.resinifera</i>	11963	Medowie State Forest NSW 20m
57	<i>E.ocrophloia</i>	8584	Tongo NSW 80m
58	<i>E.crebra</i>	12506	W.of Emerald Qld 480m
59	<i>E.microtheca</i>	12497	NE Blackall Qld 283m
60	<i>E.microtheca</i>	11347	NW Coonamble NSW 170m
61	<i>E.radiata</i>	11983	Braidwood-Nerriga NSW 820m
62	<i>E.astringens</i>	4716	F.D. Narragin WA
63	<i>E.drepanophylla</i>	11412	N.Marlborough Qld 120m
64	<i>E.sideroxylon</i> spp. sid.	11844	SE of Gilgandra NSW 300m
65	<i>E.griffithsii</i>	6466	6km nth of Bonnievale East Ide
66	<i>E.woolsiana</i>	12105	W.Wylong NSW?
67	<i>E.woolsiana</i>	8831	Gilgandra NSW 270m
68	<i>E.largiflorens</i>	12644	NW Horsham Vic 100m
69	<i>E.microcarpa</i>	12638	N.Tooborac Vic 440m
70	<i>E.maculata</i>	11965	Coffs Harbour NSW 300m
71	<i>E.wandoo</i>	6218	F.D. Narragin WA
72	<i>E.megacarpa</i>	6451	Kelmscott WA
73	<i>E.goniocalyx</i>	12637	E.Tooborac Vic 410m
74	<i>E.dives</i>	10064	Carabost NSW 610m
75	<i>E.viminalis</i>	12400	Blue Range Vic 1000m
76	<i>E.cladocalyx</i>	11834	Gilgandra NSW 280m
77	<i>E.paniculata</i>	12137	W.Wandandian NSW 213m
78	<i>E.resinifera</i>	6011	Gleneagle Arboretum WA
79	<i>E.radiata radiata</i>	12631	Yass NSW?
80	<i>E.sideroxylon</i> spp. sid.	10299	W.Cann.R. Vic 20m
81	<i>E.decorticans</i>	10148	Murgon Qld 300m
82	<i>E.huberana</i>	7248	Williamstown SA 430m
83	<i>E.flocktoniae</i>	6464	N. Higginsville
84	<i>E.melliodora</i>	11860	Kambar ACT 600m
85	<i>E.microcarpa</i>	12633	Heathcote Vic 240m
86	<i>E.microcarpa</i>	8758	Parkes NSW 270m
87	<i>E.maculata</i>	9448	Kiola State Forest NSW
88	<i>E.maculata</i>	4817	Kirup WA?
89	<i>E.citriodora</i>	11640	Fairview Stn Qld 400m
90	<i>E.marginata</i>	6229	Marrinup Block Dwellingup WA
91	<i>E.aromophloia</i>	11311	Mt Lonarch Vic
92	<i>E.goniocalyx</i>	12639	W.Beaufort Vic 370m
93	<i>E.viminalis</i>	9320	S.W. Port Lincoln SA?
94	<i>E.viminalis</i>	11823	Eildon Vic 550m
95	<i>E.gomphocephala</i>	6090	Ludlow WA
96	<i>E.rubida</i>	12089	Glendale Crossing Act 800m
97	<i>E.intertexta</i>	11736	Girilambone NSW 250m
98	<i>E.albens</i>	8827	Tooraweenah NSW 335m
99	<i>E.albens</i>	10457	Gilgandra NSW 290m
100	<i>E.albens</i>	12632	Tongio Gap Vic 720m
101	<i>E.transcontinentalis</i>	6465	13km NE Coolgardie WA
102	<i>E.melliodora</i> (rosea)	11827	E.Trangie NSW 210m
103	<i>E.melliodora</i> (melliodora)	12640	Beaufort Vic 370m
104	<i>E.maculata</i>	11181	Hunter Valley NSW 20m
105	<i>E.maculata</i>	10728	Beaufort Vic 460m
106	<i>E.citriodora</i>	10767	Wirrabara For.Res. SA 360m
107	<i>E.citriodora</i>	12012	Dawson Range Qld 180m
108	<i>E.marginata</i>	6471	George Block & Dwp collection WA
109	<i>E.aromophloia</i>	12641	NE Halls Gap Vic 170m
110	<i>E.goniocalyx</i>	12643	S. Halls Gap Vic 390m
111	<i>E.baxteri</i>	10012	Grampian Mts Vic 300m
112	<i>E.baxteri</i>	10758	Kangaroo Is. SA 60m

TABLE BR-1 : (continued)

113	E.baxteri	12642	S. Halls Gap Vic 390m
114	E.intertexta	11630	Nyngan NSW 170m
115	E.gomphocephala	6090	Ludlow WA
116	E.citriodora	6240	WA Unknown
117	E.calophylla	6391	Ex Research Como WA
118	E.marginata	6471	George Block & Dwp collection WA
119	E.calophylla	6336	F.D. Narrogin WA
120	E.macrorrhyncha	11165	Uriarra forest ACT
121	E.cladocalyx	6470	Collie? WA
122	E.cladocalyx	11834	Gilgandra NSW 280m
123	E.macrorrhyncha	12630	Lima South Vic 480m

RESULTS

Plot by plot results detailing means, upper and lower 95% confidence limits for height, diameter, form, vigour and rating are listed in Table BR-3 towards the end of this booklet. Survival, and the presence/absence of evidence of stem borers, termites and cambial splits within each plot is also noted in Table BR-3.

Comparing the mean rating of each of the plots, the top 20 plots (ranked from best to worst) are listed in Table BR-2.

Comparing the mean rating of each of the plots, the top 10 plots (ranked from best to worst) are listed in Table BR-2, below.

The following figures display plot-by-plot graphs of mean and 95% confidence interval for height (Figure BR-3), diameter (Figure BR-4) form (Figure BR-5), vigour (Figure BR-6) and mean for survival (Figure BR-7).

Figure BR-8 presents a plot-by-plot graph of Rating (ie combination of height, diameter, form and vigour).

TABLE BR-2 LISTING OF TOP 20 PLOTS (IN ORDER OF RATING)

PLOT	SPECIES	SEEDLOT	DEFECT	B_E_S_I
94	E.viminalis	11823	B	↑
5	E.saligna/botryoides	6234	B C	
32	E.botryoides	7509		
6	E.globulus	6291		
75	E.viminalis	12400	C	
82	E.huberiana	7248	C	
104	E.maculata	11181	C	
12	E.rubida	12029	C	
88	E.maculata	4817	C S	
80	E.sideroxylon	10299	B	
121	E.cladocalyx	6470		
91	E.aromaphloia	11311	B C	
122	E.cladocalyx	11834		
96	E.rubida	12089	B C	
34	E.botryoides	12134	B	
93	E.viminalis	9320	B	
14	E.viminalis	8911	C	
73	E.goniocalyx	12637		
33	E.botryoides	12104	B C	
52	E.goniocalyx	12098		

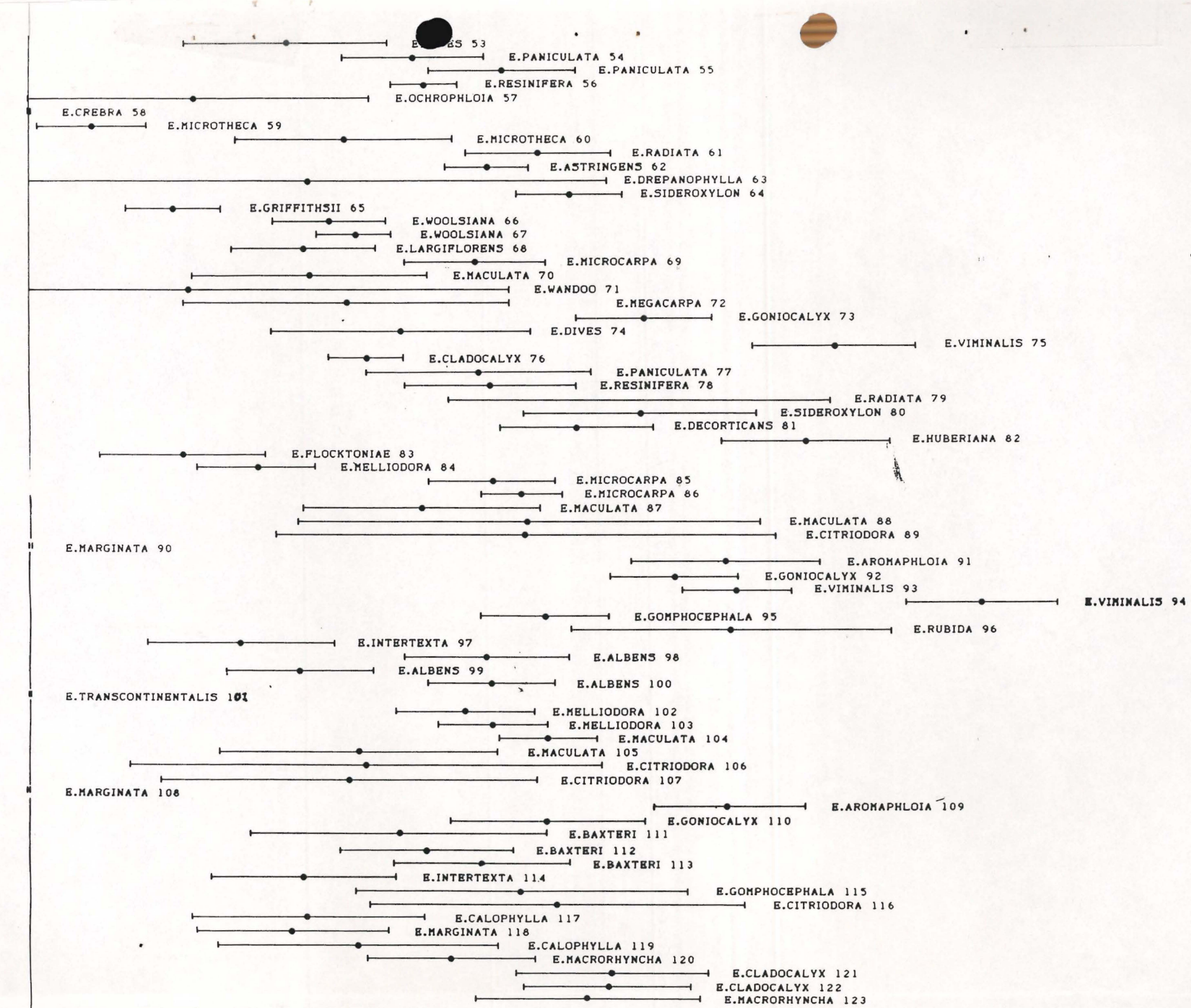
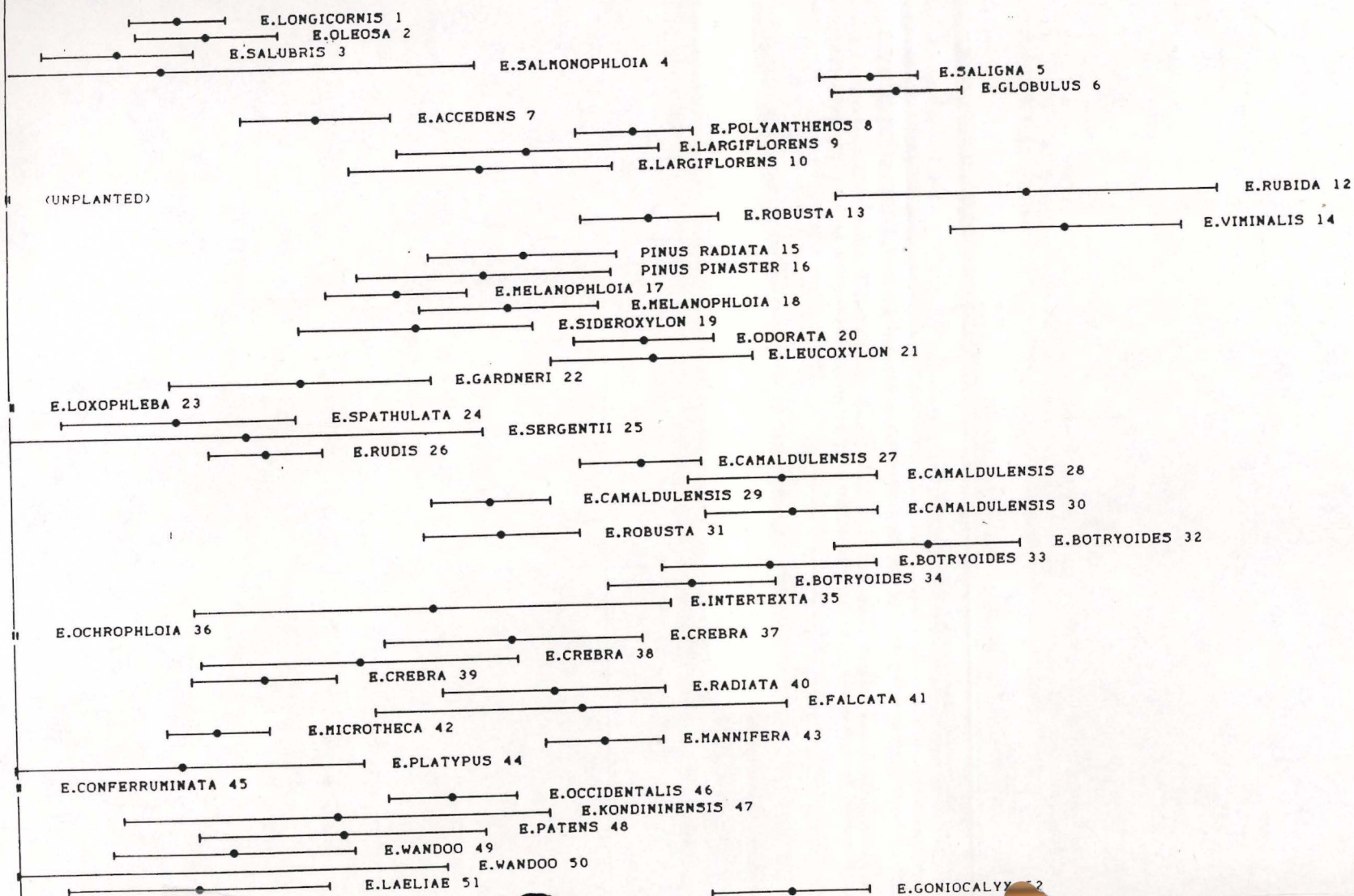
SYMBOLS : B = BORER OCCURRENCE NOTED IN PLOT
 T = TERMITE OCCURRENCE NOTED IN PLOT
 C = CAMBIAL SPLITS NOTED IN PLOT
 S = SURVIVAL LESS THAN 50%

FIGURE BR-3 : GRAPH OF BINGHAM RIVER MEAN PLOT HEIGHTS

HEIGHT (M)

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

BINGHAM RIVER



0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

FIGURE BR-4 : GRAPH OF BINGHAM RIVER MEAN PLOT DIAMETERS

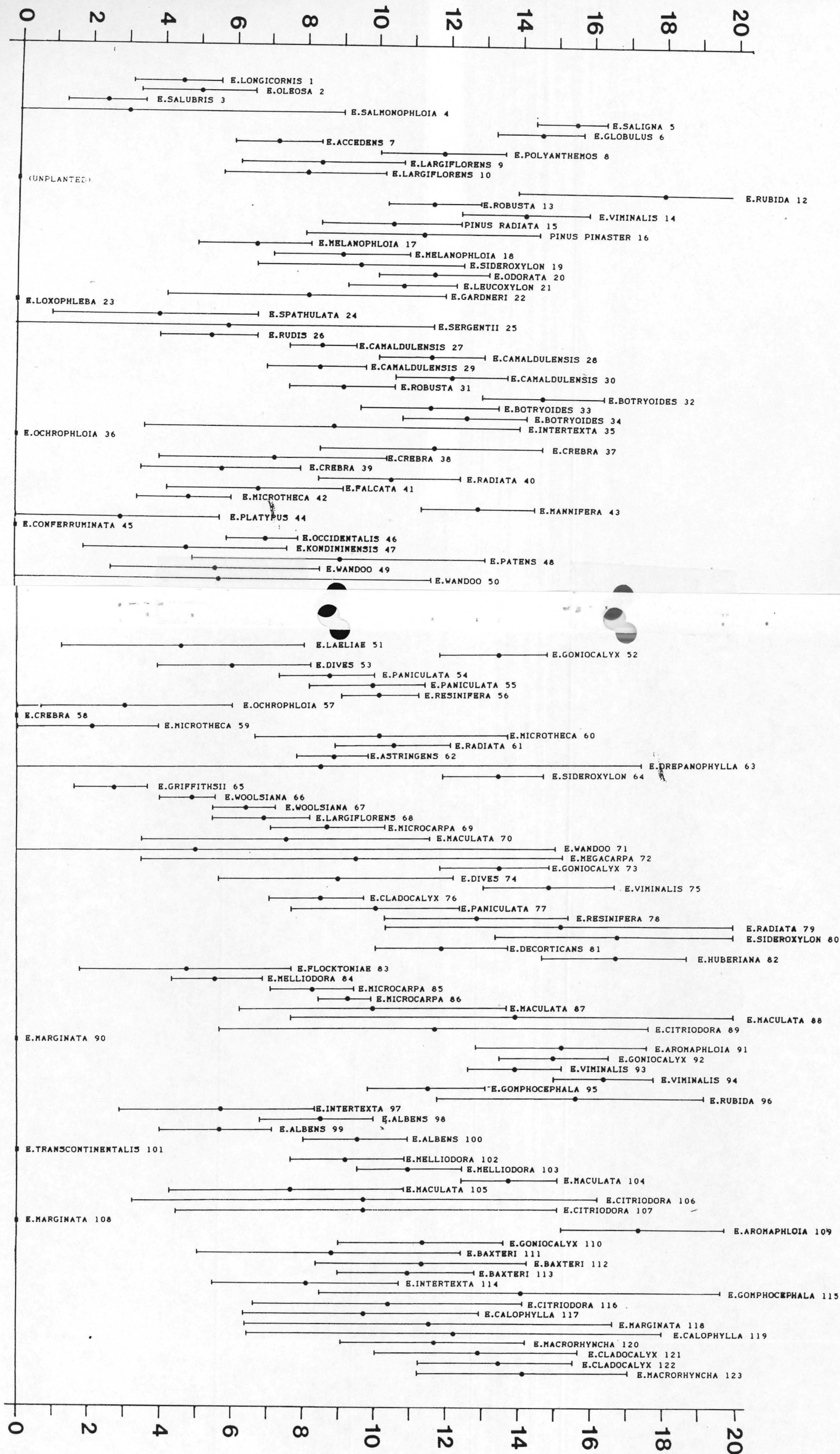


FIGURE BR-5 : GRAPH OF BINGHAM RIVER MEAN PLOT FORM

FORM (POINTS)

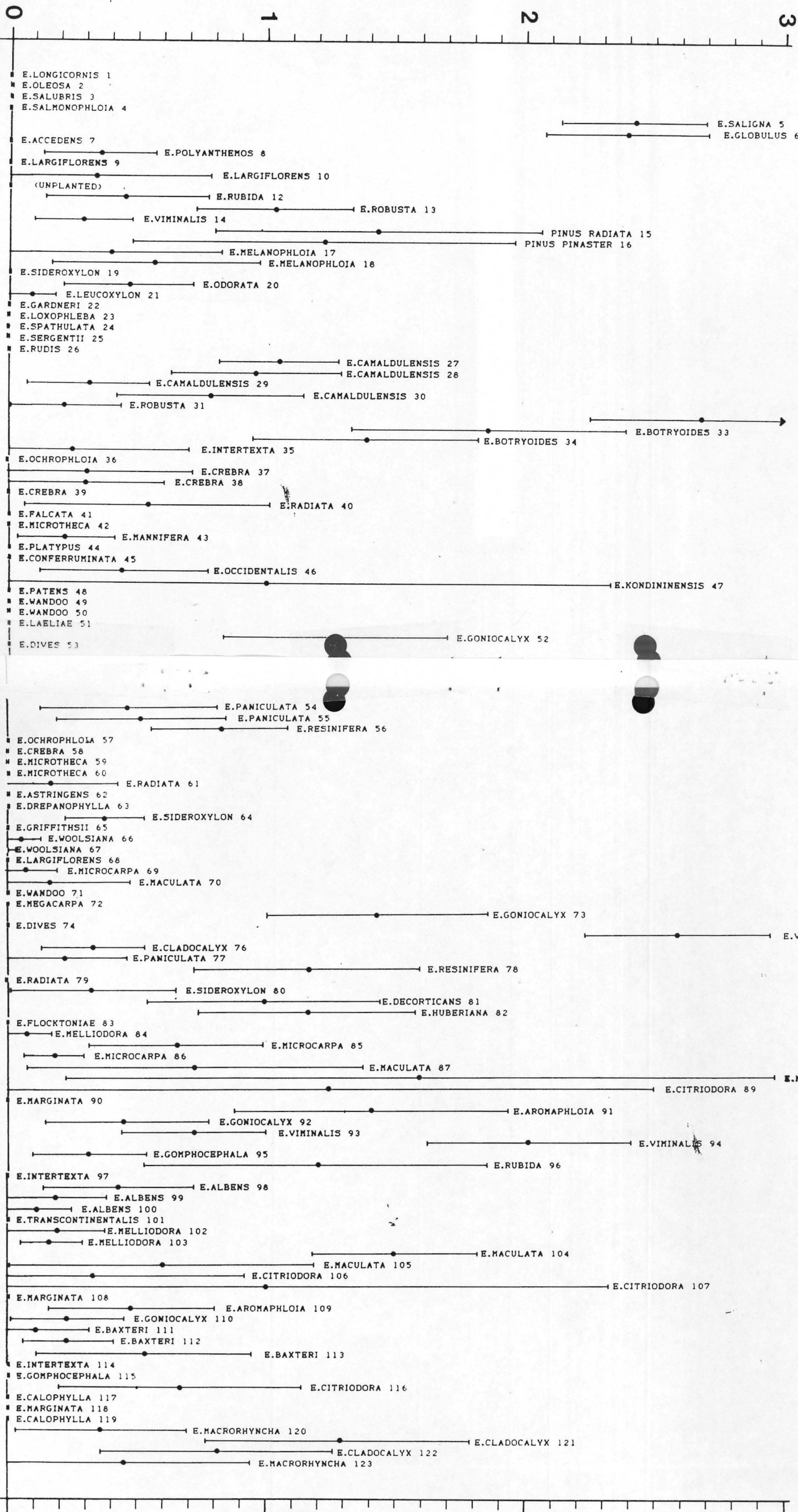


FIGURE BR-6 : GRAPH OF BINGHAM RIVER MEAN PLOT VIGOUR

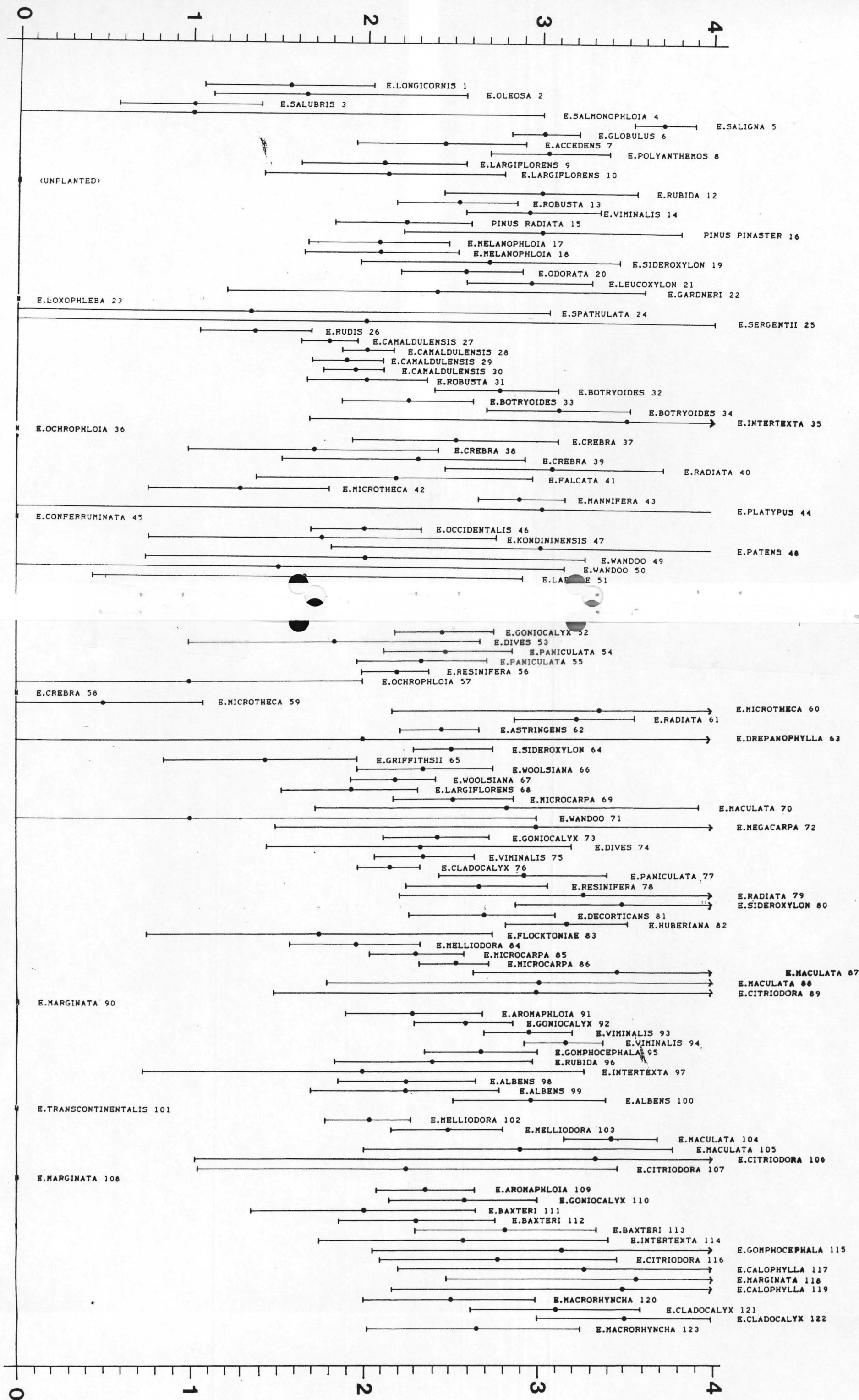


FIGURE BR-7 : GRAPH OF BINGHAM RIVER MEAN PLOT SURVIVAL

SURVIVAL (%)

BINGHAM RIVER

- E.LONGICORNIS 1
- E.OLBOSA 2
- E.SALUBRIS 3
- E.SALMONOPHLOIA 4
- E.SALIGNA 5
- E.GLOBULUS 6
- E.ACCEDEMS 7
- E.POLYANTHEMOS 8
- E.LARGIFLORENS 9
- E.LARGIFLORENS 10
- (UNPLANTED)
- E.RUBIDA 12
- E.ROBUSTA 13
- E.VIMINALIS 14
- PINUS RADIATA 15
- PINUS PINASTER 16
- E.MELANOPHLOIA 17
- E.MELANOPHLOIA 18
- E.SIDEROXYLON 19
- E.ODORATA 20
- E.LEUCOXYLON 21
- E.GARDNERI 22
- E.LOXOPHLEBA 23
- E.SPATHULATA 24
- E.SERGEANTII 25
- E.RUDIS 26
- E.CAHALDULENSIS 27
- E.CAHALDULENSIS 28
- E.CAHALDULENSIS 29
- E.CAHALDULENSIS 30
- E.ROBUSTA 31
- E.BOTRYOIDES 32
- E.BOTRYOIDES 33
- E.BOTRYOIDES 34
- E.INTERTEXTA 35
- E.OCHROPHLOIA 36
- E.CREBRA 37
- E.CREBRA 38
- E.CREBRA 39
- E.RADIATA 40
- E.FALCATA 41
- E.MICROTHECA 42
- E.MANNIFERA 43
- E.PLATYPUS 44
- E.CONFERRUMINATA 45
- E.OCCIDENTALIS 46
- E.KOMDININENSIS 47
- E.PATENS 48
- E.WANDOO 49
- E.WANDOO 50

- E.LAELIAE 51
- E.GONIOCALYX 52
- E.DIVES 53
- E.PANICULATA 54
- E.PANICULATA 55
- E.RESINIFERA 56
- E.OCHROPHLOIA 57
- E.CREBRA 58
- E.MICROTHECA 59
- E.MICROTHECA 60
- E.RADIATA 61
- E.ASTRINGENS 62
- E.DREPANOPHYLLA 63
- E.SIDEROXYLON 64
- E.GRIFFITHSII 65
- E.WOOLSIANA 66
- E.WOOLSIANA 67
- E.LARGIFLORENS 68
- E.MICROCARPA 69
- E.MACULATA 70
- E.WANDOO 71
- E.MEGACARPA 72
- E.GONIOCALYX 73
- E.DIVES 74
- E.VIMINALIS 75
- E.CLADOCALYX 76
- E.PANICULATA 77
- E.RESINIFERA 78
- E.RADIATA 79
- E.SIDEROXYLON 80
- E.DECORTICANS 81
- E.HUBERIANA 82
- E.FLOCKTONIAE 83
- E.MELLIODORA 84
- E.MICROCARPA 85
- E.MICROCARPA 86
- E.MACULATA 87
- E.MACULATA 88
- E.CITRIODORA 89
- E.MARGINATA 90
- E.AROMAPHLOIA 91
- E.GONIOCALYX 92
- E.VIMINALIS 93
- E.VIMINALIS 94
- E.GOMPHOCEPHALA 95
- E.RUBIDA 96
- E.INTERTEXTA 97
- E.ALBENS 98
- E.ALBENS 99
- E.ALBENS 100
- E.TRANSCONTINENTALIS 101
- E.MELLIODORA 102
- E.MELLIODORA 103
- E.MACULATA 104
- E.MACULATA 105
- E.CITRIODORA 106
- E.CITRIODORA 107
- E.MARGINATA 108
- E.AROMAPHLOIA 109
- E.GONIOCALYX 110
- E.BAXTERI 111
- E.BAXTERI 112
- E.BAXTERI 113
- E.INTERTEXTA 114
- E.GOMPHOCEPHALA 115
- E.CITRIODORA 116
- E.CALOPHYLLA 117
- E.MARGINATA 118
- E.CALOPHYLLA 119
- E.MACRORHYNCHA 120
- E.CLADOCALYX 121
- E.CLADOCALYX 122
- E.MACRORHYNCHA 123

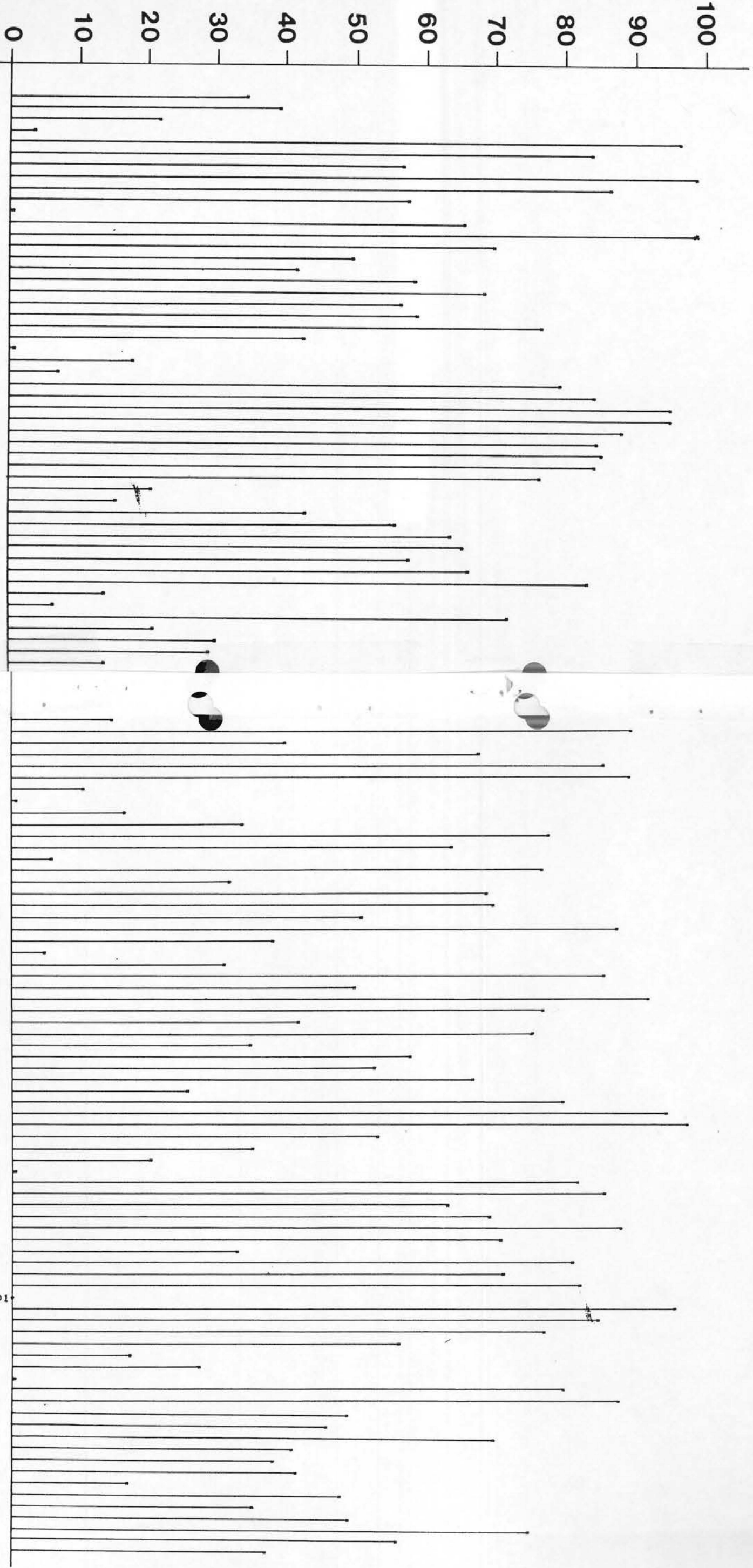


FIGURE BR-8 GRAPH OF RATING

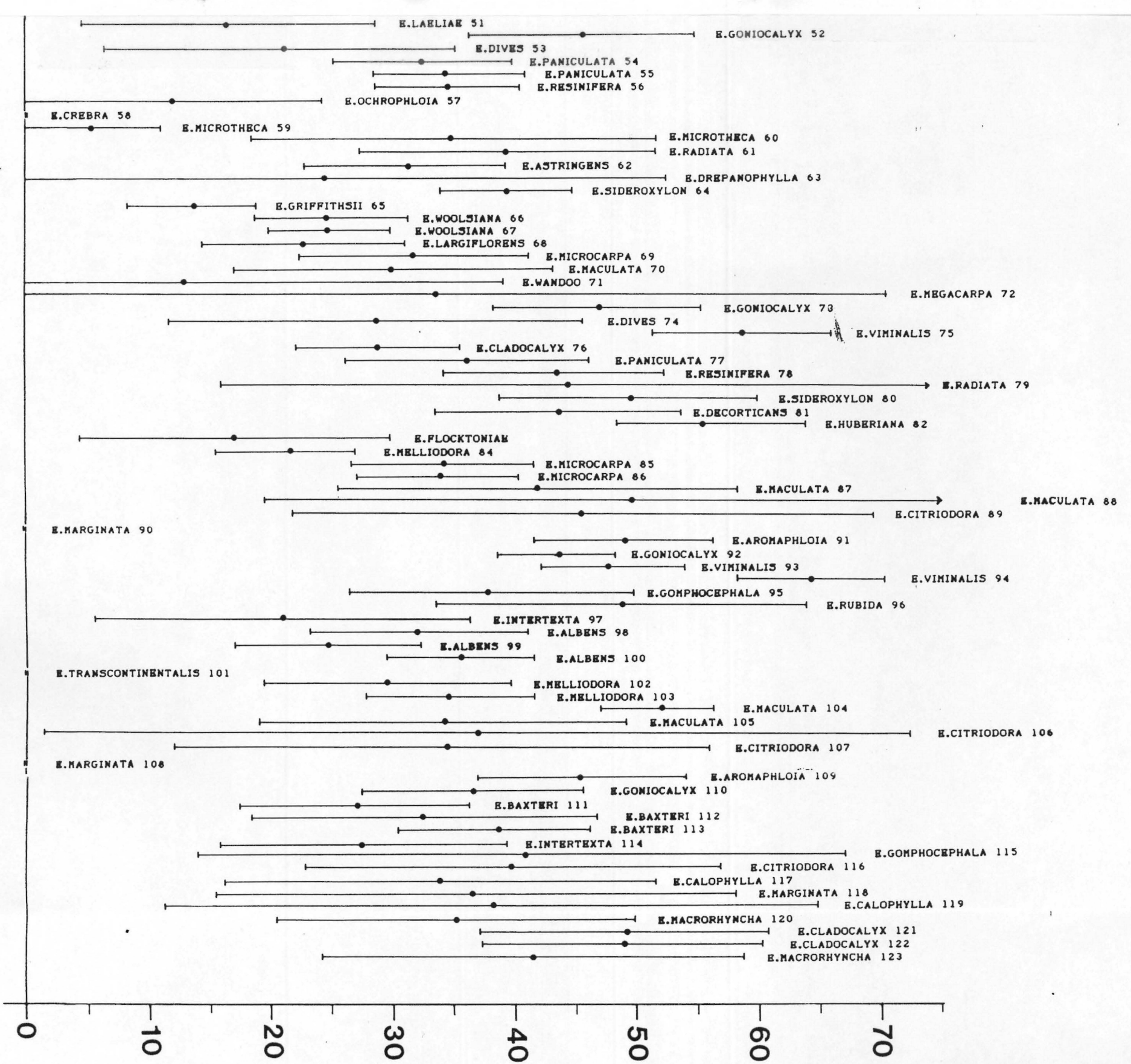
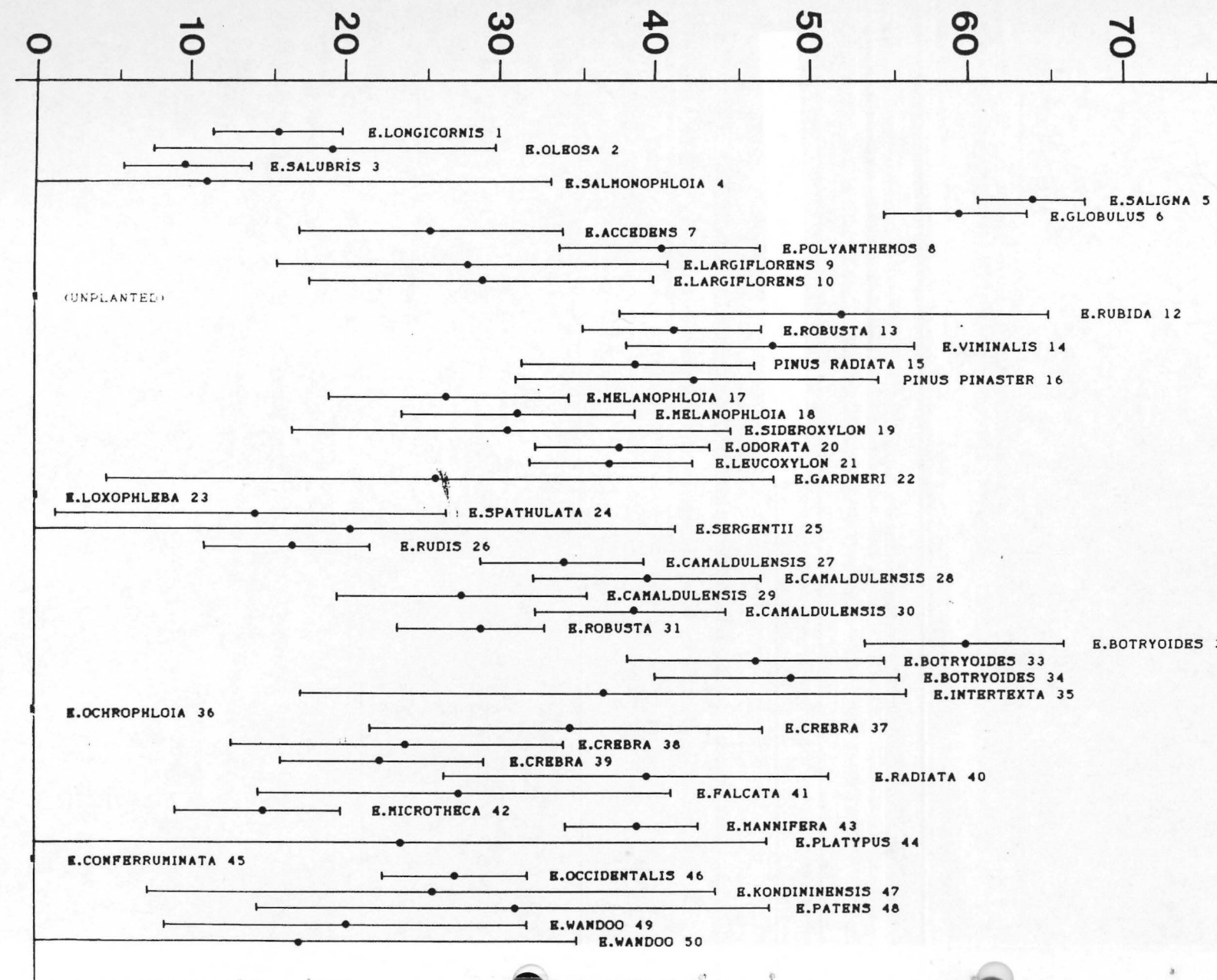


TABLE BR-3 :

PLOT BY PLOT TABLE OF RESULTS

-MEANS AND 95% CONFIDENCE INTERVALS-

PLOT NO	SPECIES & SEEDLOT	ARB	SURV	S	B	HEIGHT			DIAMETER			FORM			VIGOUR			RATING		
						1			1			1			1			1		
						1	1(X)	1	1	1	1	1	1	1	1	1	1	1	1	1
1	E. LONGICORNIS 6463	BR	34	-	Y	2.58	1.52	2.10	5.6	3.2	4.4	0.00	0.00	0.00	2.03	1.08	1.56	19.9	11.2	25.8
2	E. OLEOSA 6462	BR	38	-	Y	3.30	1.58	2.44	6.6	3.4	5.0	0.00	0.00	0.00	2.57	1.14	1.86	25.4	7.4	18.4
3	E. SALUBRIS 6461	BR	21	-	Y	2.28	0.96	1.62	3.5	1.3	2.4	0.00	0.00	0.00	1.40	0.60	1.00	13.5	5.7	9.6
4	E. SALMONOPHLOIA 6460	BR	3	-	-	5.70	-1.90	1.90	9.0	-3.0	3.0	0.00	0.00	0.00	3.00	-1.00	1.00	33.0	-11.0	11.0
5	E. SALIGNA 6234	BR	96	Y	Y	11.07	9.96	10.51	16.3	14.4	15.4	2.69	2.14	2.42	3.69	3.53	3.71	67.2	60.4	63.8
6	E. GLOBULUS 6291	BR	83	-	-	11.62	10.09	10.85	15.7	13.3	14.5	2.70	2.08	2.39	3.22	2.83	3.02	63.4	54.6	55.0
7	E. ACEDENS 6215	BR	56	-	Y	4.68	2.89	3.79	8.4	6.0	7.2	0.00	0.00	0.00	2.91	1.95	2.43	33.9	17.0	25.4
8	E. POLYANTHENS 11307	BR	98	Y	Y	8.34	6.99	7.67	13.5	10.1	11.8	0.57	0.13	0.35	3.35	2.72	3.05	46.6	33.8	40.2
9	E. LARGIFLORENS 10676	BR	86	-	Y	7.94	4.81	6.38	10.7	6.2	8.4	0.00	0.00	0.00	2.55	1.54	2.10	40.3	15.3	27.8
10	E. LARGIFLORENS 11912	BR	57	-	Y	7.36	4.22	5.79	10.2	5.7	8.0	0.78	-0.12	0.33	2.79	1.43	2.11	39.8	17.6	28.7
12	E. RUBIDA 12029	BR	65	-	Y	14.69	10.10	12.39	21.8	13.9	17.9	0.77	0.14	0.45	3.55	2.45	3.00	65.1	37.8	51.5
13	E. ROBUSTA 10063	BR	99	-	Y	8.66	7.00	7.83	12.8	10.3	11.5	1.33	0.73	1.03	2.85	2.18	2.52	46.6	35.5	41.1
14	E. VIMINALIS 8911	BR	70	-	Y	14.23	11.51	12.87	15.9	12.3	14.1	0.48	0.10	0.29	3.25	2.58	2.92	56.8	36.0	47.4
15	P. RADIATA (FILL IN)	BR	49	-	-	7.39	5.16	6.28	12.3	8.4	10.3	2.06	0.80	1.43	2.60	1.83	2.21	45.1	31.4	38.7
16	P. PINASTER (FILL IN)	BR	41	-	-	7.31	4.27	5.79	14.5	8.0	11.2	1.96	0.48	1.22	3.80	2.20	3.00	53.9	31.0	42.4
17	E. MELANOPHLOIA 6959	BR	58	-	-	5.57	3.87	4.72	8.1	5.0	6.6	0.82	-0.02	0.40	2.47	1.66	2.07	34.1	18.3	26.2
18	E. MELANOPHLOIA 9723	BR	68	Y	Y	7.14	5.01	6.07	10.9	7.1	9.0	0.97	0.17	0.57	2.51	1.64	2.07	36.5	23.7	31.1
19	E. SIDEROCXYLON 12636	BR	55	-	-	6.37	3.54	4.95	12.4	6.7	9.6	0.00	0.00	0.00	3.45	1.97	2.70	44.3	18.5	30.4
20	E. ODORATA 8120	BR	58	Y	Y	6.59	6.86	7.73	13.1	10.1	11.6	0.71	0.21	0.46	2.85	2.19	2.54	43.0	32.3	37.7
21	E. LEUCOCXYLON 9597	BR	76	-	Y	8.99	6.62	7.80	12.2	9.2	10.7	0.18	0.00	0.09	3.28	2.58	2.93	42.0	32.1	37.1
22	E. BARDNERI 6228	BR	42	-	-	5.10	1.94	3.52	11.9	4.2	8.1	0.00	0.00	0.00	3.60	1.20	2.40	47.1	4.5	25.8
23	E. LOXOPHLEBA 6150	BR	0	-	-	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
24	E. SPATHULATA 6221	BR	17	-	-	3.44	0.63	2.03	6.7	1.0	3.9	0.00	0.00	0.00	3.03	-0.36	1.33	26.2	1.2	13.7
25	E. SARSENTII 6457	BR	7	-	-	5.71	-0.01	2.85	11.5	-0.1	5.8	0.00	0.00	0.00	4.00	0.00	2.00	41.0	0.0	20.5
26	E. RUDIS 6295	BR	79	-	Y	3.76	2.44	3.10	6.7	4.0	5.3	0.00	0.00	0.00	1.68	1.04	1.36	21.3	11.1	16.2
27	E. CAMALDULENSIS 11910	BR	84	-	-	8.37	6.98	7.67	9.4	7.6	8.5	1.28	0.82	1.05	1.94	1.64	1.79	39.2	28.6	33.9
28	E. CAMALDULENSIS 10089	BR	95	-	-	10.51	6.28	9.39	13.0	10.1	11.5	1.29	0.63	0.96	2.15	1.85	2.00	45.4	32.3	39.3
29	E. CAMALDULENSIS 11340	BR	95	-	-	6.55	5.10	5.82	9.7	7.0	8.4	0.54	0.07	0.31	2.08	1.69	1.88	35.2	19.9	27.6
30	E. CAMALDULENSIS 6966	BR	88	Y	-	10.54	8.45	9.45	13.6	10.6	12.1	1.14	0.42	0.78	2.10	1.75	1.93	44.2	32.6	38.4
31	E. ROBUSTA 10176	BR	84	-	Y	6.85	5.03	5.94	10.5	7.8	9.1	0.43	0.01	0.22	2.33	1.67	2.00	32.8	23.9	28.3
32	E. BOTRYOIDES 7509	BR	85	Y	-	12.26	10.05	11.16	16.3	13.0	14.6	3.08	2.26	2.67	3.10	2.40	2.75	65.9	53.1	59.5
33	E. BOTRYOIDES 12104	BR	84	Y	Y	10.44	7.88	9.16	13.4	9.6	11.5	2.39	1.33	1.86	2.60	1.85	2.23	54.1	38.1	46.1
34	E. BOTRYOIDES 12134	BR	76	Y	-	9.23	7.25	8.24	14.2	10.8	12.5	1.82	0.95	1.39	3.51	2.69	3.10	55.4	41.1	46.3
35	E. INTERTEXTA 12470	BR	20	-	Y	7.95	2.20	5.08	14.0	3.8	8.8	0.70	-0.20	0.25	5.32	1.68	3.50	56.1	17.4	38.8
36	E. OCHROPHLOIA 11731	BR	0	Y	Y	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
37	E. CREBRA 12010	BR	42	Y	-	7.63	4.54	6.08	14.7	8.5	11.6	0.71	-0.11	0.30	3.09	1.91	2.50	46.6	21.8	34.2
38	E. CREBRA 11784	BR	55	Y	-	6.12	2.27	4.19	10.3	4.0	7.2	0.60	0.00	0.30	2.42	0.96	1.70	33.7	12.9	23.3
39	E. CREBRA 8756	BR	63	-	-	3.89	2.15	3.02	7.9	3.5	5.7	0.00	0.00	0.00	2.91	1.69	2.30	26.6	16.0	22.3
40	E. RADIATA 8926	BR	65	Y	-	7.69	5.25	6.57	12.4	6.5	10.5	1.01	0.06	0.54	3.70	2.45	3.06	51.9	26.3	39.1
41	E. FALCATA 6438	BR	57	Y	-	9.37	4.40	6.88	9.1	4.2	6.7	0.00	0.00	0.00	2.95	1.38	2.17	40.9	14.1	27.5
42	E. MICROTHECA 12538	BR	66	-	Y	3.04	1.85	2.45	6.0	3.4	4.7	0.00	0.00	0.00	1.78	0.76	1.27	19.7	9.2	14.5
43	E. MANNIFERA 12159	BR	83	-	-	7.85	6.44	7.14	14.4	11.3	12.8	0.41	0.03	0.22	3.13	2.65	2.85	42.8	34.2	36.5
44	E. PLATYPUS 6004	BR	13	-	Y	4.20	0.00	2.10	5.7	0.0	2.9	0.00	0.00	0.00	6.00	0.00	3.00	47.0	0.0	23.5
45	E. CONFERRUMINATA 6367	BR	0	Y	-	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
46	E. OCCIDENTALIS 6455	BR	72	Y	Y	6.09	4.53	5.31	7.8	5.9	6.9	0.77	0.12	0.44	2.31	1.69	2.00	31.5	22.8	27.1
47	E. KONDININENSIS 6203	BR	21	-	Y	6.44	1.30	3.87	7.5	1.9	4.7	2.32	-0.32	1.00	2.73	0.77	1.75	43.6	7.4	25.5
48	E. PATENS 6138	BR	29	-	-	5.69	2.22	3.96	13.1	4.9	9.0	0.00	0.00	0.00	4.20	1.60	3.00	47.1	14.5	30.8
49	E. WANDOO 4886	BR	26	-	-	4.07	1.15	2.51	6.5	2.7	5.6	0.00	0.00	0.00	3.26	0.74	2.00	31.5	6.4	20.0
50	E. WANDOO 6218	BR	13	-	-	5.20	0.00	2.60	11.5	-0.1	5.7	0.00	0.00	0.00	3.16	-0.16	1.50	34.9	-0.9	17.0
51	E. LAELIAR 6230	BR	14	-	-	3.76	0.57	2.17	8.0	1.2	4.6	0.00	0.00	0.00	2.90	0.43	1.67	26.5	4.9	16.7
52	E. BONIDCALYX 12058	BR	69	-	-	10.31	8.46	9.38	14.8	11.8	13.3	1.70	0.84	1.27	2.73	2.19	2.46	54.9	36.5	45.7
53	E. DIVES 8417	BR	39	-	-	5.54	2.43	3.98	6.2	3.9	6.1	0.00	0.00	0.00	2.66	1.00	1.83	35.1	6.9	21.0
54	E. PANICULATA 11741	BR	67	-	-	7.06	4.87	5.96	10.0	7.3	8.7	0.82	0.13	0.47	2.55	2.10	2.47	40.0	25.2	32.6
55	E. PANICULATA 11600	BR	65	Y	Y	8.51	6.24	7.38	11.4	8.5	9.9	0.85	0.19	0.32	2.69	1.95	2.32	41.0	26.6	34.8
56	E. RESINIFERA 11963	BR	69	Y	Y	6.66	5.65	6.15	11.2	9.1	10.1	1.09	0.57	0.63	2.37	2.01	2.19	40.5	28.5	34.5
57	E. OCHROPHLOIA 8584	BR	10	Y	-	5.30	0.00	2.65	6.0	0.0	3.0	0.00	0.00	0.00	2.00	0.00	1.00	24.0	0.0	12.0

58	E. DREBERA 12058	BR	0	-	-	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
59	E. MICROTHEDA 12497	BR	16	-	-	1.70	0.15	0.92	3.9	0.2	2.1	0.00	0.00	0.00	1.03	-0.06	0.30	11.2	-0.2	5.5
60	E. MICROTHEDA 11347	BR	33	-	-	6.57	3.20	4.89	13.6	6.6	10.1	0.00	0.00	0.00	4.51	2.16	3.33	31.4	18.2	34.8
61	E. RADIATA 11963	BR	77	Y	-	9.04	6.86	7.95	12.1	8.9	10.5	0.45	-0.08	0.17	3.54	2.88	3.21	51.2	37.4	35.1
62	E. ASTRINGENS 4716	BR	63	-	-	7.78	5.52	7.15	5.8	7.6	6.8	0.00	0.00	0.00	2.57	2.22	2.44	39.1	23.0	31.1
63	E. DREPANDOPHYLLA 11412	BR	5	-	-	8.98	-0.38	4.30	17.4	-0.3	8.5	0.00	0.00	0.00	4.45	-0.45	2.00	52.4	-3.4	24.5
64	E. SIDEROPHYLLON 11844	BR	78	-	-	9.20	7.57	8.44	14.7	11.9	13.3	0.53	0.23	0.36	2.74	2.31	2.52	44.7	33.6	39.3
65	E. BRISFATHSII 6466	BR	32	Y	-	2.93	1.53	2.23	3.7	1.7	2.7	0.00	0.00	0.00	1.58	0.87	1.43	16.7	8.7	13.7
66	E. WOOLLSIANA 12105	BR	68	-	-	5.52	3.50	4.66	5.6	4.0	4.6	0.13	-0.04	0.05	2.78	1.87	2.36	31.1	17.6	24.5
67	E. WOOLLSIANA 6831	BR	69	Y	Y	5.63	4.52	5.07	7.2	5.5	6.4	0.02	0.01	0.02	2.42	1.94	2.19	25.8	20.0	24.5
68	E. LARGIFLORENS 12644	BR	50	Y	Y	5.35	3.18	4.26	6.1	5.5	6.8	0.00	0.00	0.00	2.33	1.54	1.53	30.7	14.6	22.7
69	E. MICROCARPA 12638	BR	87	Y	Y	8.05	5.87	6.96	10.2	7.1	8.6	0.20	-0.05	0.07	2.86	2.18	2.52	41.1	22.2	31.6
70	E. MACULATA 11965	BR	37	Y	-	6.22	2.57	4.39	11.5	3.5	7.5	0.48	-0.14	0.17	3.53	1.73	2.53	43.0	17.0	30.0
71	E. WANDDO 6218	BR	4	-	-	7.50	-2.50	2.50	15.0	-8.0	5.0	0.00	0.00	0.00	3.00	-1.00	1.00	39.0	-10.0	13.0
72	E. MEGACARPA 6451	BR	30	Y	Y	8.76	2.44	5.60	15.2	3.6	9.4	0.00	0.00	0.00	4.50	1.50	3.00	70.4	-3.9	33.3
73	E. GONIOCALYX 12637	BR	65	-	-	10.64	8.57	9.60	14.8	11.8	13.3	1.87	1.01	1.44	2.74	2.14	2.44	55.6	38.4	47.0
74	E. DIVES 10064	BR	49	Y	Y	7.81	3.73	5.77	12.2	5.6	8.9	0.00	0.00	0.00	3.20	1.47	2.33	45.7	12.0	26.6
75	E. VIMINALIS 12400	BR	92	-	Y	13.78	11.32	12.55	16.7	13.0	14.8	2.96	2.24	2.60	2.63	2.09	2.36	60.8	51.5	56.7
76	E. CLADOCALYX 11834	BR	76	Y	Y	5.81	4.65	5.25	9.7	7.1	6.4	0.54	0.14	0.34	2.34	1.58	2.16	35.4	22.1	28.7
77	E. PANICULATA 12137	BR	41	-	Y	8.76	5.29	7.02	12.3	7.6	10.0	0.47	-0.01	0.23	3.40	2.45	2.92	46.3	26.2	36.2
78	E. RESINIFERA 6011	BR	73	Y	-	6.51	5.90	7.21	15.4	10.3	12.8	1.60	0.73	1.17	3.07	2.26	2.67	52.3	34.0	43.2
79	E. RADIATA 12631	BR	34	Y	-	12.43	6.55	9.49	20.0	10.3	15.2	0.00	0.00	0.00	4.36	2.21	3.29	73.1	16.0	44.6
80	E. SIDEROPHYLLON 10259	BR	57	Y	-	11.29	7.75	9.52	20.0	13.4	16.7	0.65	0.02	0.33	4.12	2.68	3.50	59.6	36.6	49.3
81	E. DECORTICANS 10148	BR	52	Y	Y	9.72	7.40	8.56	13.6	10.1	11.9	1.43	0.55	1.00	3.10	2.26	2.89	53.1	33.2	43.2
82	E. HUBERANA 7248	BR	66	-	Y	13.36	10.81	12.08	19.7	14.7	16.7	1.56	0.78	1.17	3.51	2.82	3.17	63.2	48.0	55.6
83	E. FLOCKTONIAE 6464	BR	25	-	-	3.69	1.11	2.40	7.6	1.8	4.7	0.00	0.00	0.00	2.73	0.77	1.75	29.8	4.7	17.3
84	E. MELLIODORA 11860	BR	79	-	Y	4.45	2.64	3.54	6.6	4.3	5.5	0.17	-0.03	0.07	2.33	1.59	1.96	27.0	15.6	21.3
85	E. MICROCARPA 12633	BR	94	-	Y	6.20	6.25	7.22	9.4	7.1	8.2	0.95	0.32	0.66	2.58	2.04	2.31	41.1	25.6	34.0
86	E. MICROCARPA 8758	BR	97	-	Y	6.32	7.06	7.69	9.9	8.4	9.2	0.30	0.07	0.13	2.71	2.33	2.52	40.1	17.1	33.7
87	E. MACULATA 9448	BR	53	-	Y	7.95	4.25	6.12	13.6	6.2	9.9	1.38	0.08	0.73	4.28	2.63	3.45	56.0	23.5	41.7
88	E. MACULATA 4817	BR	34	-	Y	11.39	4.20	7.79	20.1	7.7	13.9	2.97	0.23	1.60	4.20	1.80	3.00	79.2	19.6	49.4
89	E. CITRIGODORA 11640	BR	20	-	Y	11.63	3.82	7.73	17.6	5.7	11.7	2.51	-0.01	1.25	4.50	1.50	3.00	69.1	21.9	45.5
90	E. MARGINATA 6229	BR	0	-	-	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
91	E. ARDMAPHYLLA 11311	BR	81	Y	Y	12.30	9.41	10.86	17.5	12.8	15.2	1.94	0.88	1.41	2.68	1.91	2.29	56.2	41.7	48.9
92	E. GONIOCALYX 12639	BR	65	-	-	11.02	5.07	10.05	16.5	13.4	14.9	0.78	0.15	0.46	2.85	2.30	2.58	48.0	36.9	43.4
93	E. VIMINALIS 9320	BR	63	Y	-	11.66	10.19	11.02	15.2	12.6	13.9	1.00	0.45	0.72	3.20	2.70	2.95	53.4	42.3	47.9
94	E. VIMINALIS 11823	BR	69	Y	-	15.97	13.56	14.82	17.7	15.0	16.3	2.41	1.63	2.02	3.38	2.93	3.16	70.1	58.0	64.0
95	E. GOMPHODEPHALA 6090	BR	87	Y	-	9.01	7.10	8.05	13.1	9.6	11.4	0.54	0.11	0.32	2.95	2.36	2.68	49.3	26.4	37.5
96	E. ALBIDA 12068	BR	70	Y	Y	13.36	8.46	10.91	19.1	11.8	15.4	1.86	0.54	1.20	2.97	1.83	2.40	63.5	33.3	48.5
97	E. INTERTEXTA 11736	BR	32	-	Y	4.74	1.82	3.28	8.3	2.9	5.6	0.00	0.00	0.00	3.26	0.74	2.00	36.3	5.7	21.0
98	E. ALBENS 8827	BR	80	-	-	8.41	5.66	7.13	10.0	6.6	8.4	0.72	0.14	0.43	2.63	1.85	2.24	41.0	23.0	32.0
99	E. ALBENS 10457	BR	70	Y	Y	5.35	3.06	4.22	7.1	4.0	5.6	0.38	-0.01	0.19	2.78	1.72	2.25	32.4	17.1	24.6
100	E. ALBENS 12632	BR	81	Y	-	6.21	6.23	7.22	10.9	8.0	9.4	0.25	-0.04	0.11	3.39	2.51	2.95	41.3	26.4	35.4
101	E. TRANSCONTINENTAL 6463	BR	0	-	-	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
102	E. MELLIODORA 11827	BR	95	-	-	7.67	5.73	6.80	10.8	7.7	9.2	0.37	0.00	0.19	2.28	1.79	2.04	39.7	19.4	29.5
103	E. MELLIODORA 12640	BR	84	-	-	6.11	6.40	7.25	12.4	9.5	10.9	0.28	0.05	0.17	2.80	2.18	2.45	41.8	27.0	34.3
104	E. MACULATA 11181	BR	76	-	Y	8.80	7.35	8.08	15.0	12.4	13.7	1.82	1.16	1.50	3.69	3.17	3.43	56.5	47.3	51.9
105	E. MACULATA 10728	BR	55	-	-	7.29	3.00	5.14	10.8	4.3	7.6	1.15	0.01	0.60	3.76	2.02	2.90	48.9	19.1	34.0
106	E. CITRIGODORA 10767	BR	17	-	Y	8.95	1.57	5.26	16.2	3.2	9.7	0.92	-0.25	0.33	5.52	1.03	3.33	72.1	1.9	37.0
107	E. CITRIGODORA 12012	BR	27	-	-	7.93	2.05	4.99	15.0	4.5	9.8	2.32	-0.32	1.00	3.46	1.04	2.25	55.8	12.7	34.3
108	E. MARGINATA 6471	BR	0	-	-	0.00	0.00	0.00	0.00	0.0	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0
109	E. ARDMAPHYLLA 12641	BR	79	Y	-	12.06	9.75	10.94	19.7	15.2	17.4	0.80	0.15	0.48	2.65	2.09	2.37	53.8	37.2	45.5
110	E. GONIOCALYX 12643	BR	67	Y	-	9.58	6.53	8.11	13.5	5.0	11.3	0.45	0.01	0.23	3.00	2.18	2.59	45.7	27.8	36.6
111	E. BAXTERI 10012	BR	46	-	-	8.08	3.49	5.78	12.4	5.1	8.8	0.32	-0.10	0.11	2.63	1.37	2.00	36.6	17.7	27.1
112	E. BAXTERI 10758	BR	45	Y	Y	7.55	4.86	6.21	14.2	6.4	11.3	0.41	0.06	0.23	2.75	1.67	2.31	46.9	18.1	32.5
113	E. BAXTERI 12642	BR	69	-	Y	8.43	5.70	7.06	12.8	9.0	10.9	0.95	0.11	0.53	3.33	2.32	2.82	48.2	30.5	36.4
114	E. INTERTEXTA 11630	BR	40	Y	Y	5.69	2.86	4.27	10.7	5.5	8.1	0.00	0.00	0.00	3.40	1.75	2.57	39.2	16.0	27.6
115	E. GOMPHODEPHALA 6090	BR	37	-	Y	10.25	5.11	7.68	16.6	8.5	14.1	0.00	0.00	0.00	4.24	2.05	3.14	67.2	14.0	40.6
116	E. CITRIGODORA 6240	BR	41	-	-	11.13	5.35	8.24	14.1	6.7	10.4	1.14	0.20	0.67	3.45	2.10	2.78	57.0	23.0	40.0
117	E. CALOPHYLLA 6391	BR	16	-	Y	6.16	2.59	4.37	12.9	5.4	9.7	0.00	0.00	0.00	4.35	2.21	3.25	51.2	16.2	33.7
118	E. MARGINATA 6471	BR	47	-	-	5.60	2.74	4.17	16.6	6.4	11.5	0.00	0.00	0.00	4.66	2.48	3.57	58.0	15.5	38.7
119	E. CALOPHYLLA 6336	BR	34	-	Y	7.29	2.97	5.13	18.0	6.4	12.2	0.00	0.00	0.00	4.82	2.18	3.50	64.4	11.5	38.0
120	E. MACRODRYNCHA 11165	BR	48	-	-	7.85	3.26	6.57	14.2	9.1	11.7	0.69	0.03	0.36	2.95	2.01	2.50	49.8	20.6	35.2
121	E. CLADOCALYX 6470	BR	74	-	-	10.59	7.62	9.10	15.7	10.1	12.9	1.79	0.77	1.28	3.60	2.62	3.11	60.7	37.6	49.1
122	E. CLADOCALYX 11834	BR	58	-	-	10.31	7.73	9.02	15.5	11.3	13.4	1.26	0.36	0.81	4.00	3.00	3.50	60.3	37.6	48.9
123	E. MACRODRYNCHA 12630	BR	36	Y	-	10.47	6.95	8.73	17.0	11.2	14.1	0.94	-0.03	0.45	3.25	2.02	2.64	53.4	24.5	41.5