

Appendix (probably)

Appendix to Chapter 2 or 3: Optimising line-transect distance sampling surveys of multiple species

This document gives details of the data used to explore the multispecies application of line-transect distance sampling optimisation. Data was collected at four sites in (YEAR) to investigate invasion properties of plants from Botanical Gardens into the surrounding native forest. Protocols followed can be found in Junaedi (2018). Sample sizes for each species at each site are given in the table below.

	Location	Species	nDetections
1	BBG	Acanthaceae 2	10
2	BBG	Achyranthes bidentata	22
3	BBG	Ageratina riparia	1
5	BBG	Austroeupatorium inulifolium	7
10	BBG	Blumea sp.	10
13	BBG	Brugmansia x candida	2
22	BBG	Cestrum purpureum	1
28	BBG	Coffea sp.	20
33	BBG	Eupatorium odoratum	2
38	BBG	Passiflora ligularis	40
40	BBG	Peristrophe hyssipifolia	39
48	BBG	Widelia biflora	2
6	BRBG	Austroeupatorium inulifolium	17
11	BRBG	Blumea sp.	1
14	BRBG	Brugmansia x candida	1
17	BRBG	Calliandra callothyrsus	37
25	BRBG	Clidemia hirta	104
29	BRBG	Coffea sp.	6
31	BRBG	Dichroa febrifuga	7
34	BRBG	Eupatorium odoratum	18
41	BRBG	Peristrophe hyssipifolia	3
49	BRBG	Widelia biflora	8
4	CBG	Ageratina riparia	19
7	CBG	Austroeupatorium inulifolium	24
9	CBG	Bartlettina sordida	106
12	CBG	Blumea sp.	2
15	CBG	Brugmansia x candida	38
16	CBG	Calathea lietzei	22
19	CBG	Calliandra tetragona	9
21	CBG	Cestrum aurantiacum	399
23	CBG	Cestrum purpureum	15
24	CBG	Chimonobambusa quadrangularis	28
26	CBG	Clidemia hirta	3
32	CBG	Dichroa febrifuga	52
37	CBG	Ophiopogon japonicum	7

	Location	Species	nDetections
39	CBG	<i>Passiflora ligularis</i>	39
42	CBG	<i>Peristrophe hyssipifolia</i>	86
43	CBG	<i>Solanum giganteum</i>	28
45	CBG	<i>Solanum verbascifolium</i>	13
47	CBG	<i>Strobilanthes laevigata</i>	5
8	KBG	<i>Austroeupatorium inulifolium</i>	6
18	KBG	<i>Calliandra callothyrsus</i>	4
20	KBG	<i>Calliandra tetragona</i>	16
27	KBG	<i>Clidemia hirta</i>	19
30	KBG	<i>Coffea</i> sp.	13
35	KBG	<i>Eupatorium odoratum</i>	10
36	KBG	<i>Lantana camara</i>	5
44	KBG	<i>Solanum giganteum</i>	11
46	KBG	<i>Solanum verbascifolium</i>	1

Number of species per site are summarised below.

Location	nSpecies
BBG	12
BRBG	10
CBG	18
KBG	9

These data can be used to calculate encounter rates and other parameters needed to investigate applications of the optimal proportion to measure. Other parameters to summarise and display: strip width (same for all species?), detectability (if model can be fitted, what model and parameters?), densities (how different?)

Few species have sufficient sample sizes for density estimates. For other species... bootstrap? Idea is to get density and encounter rates, work out the extra effort needed to collect sufficient data for the rare species under LTS, then get the optimal proportions from the new equation

	Location	Species	nDetections
25	BRBG	<i>Clidemia hirta</i>	104
9	CBG	<i>Bartlettina sordida</i>	106
21	CBG	<i>Cestrum aurantiacum</i>	399
42	CBG	<i>Peristrophe hyssipifolia</i>	86

Explore the data to find some ‘model’ species to use as species A and B: example 1: species A will be common, species B will be rare example 2: species A is a group of more common species, species B is a group of more rare species