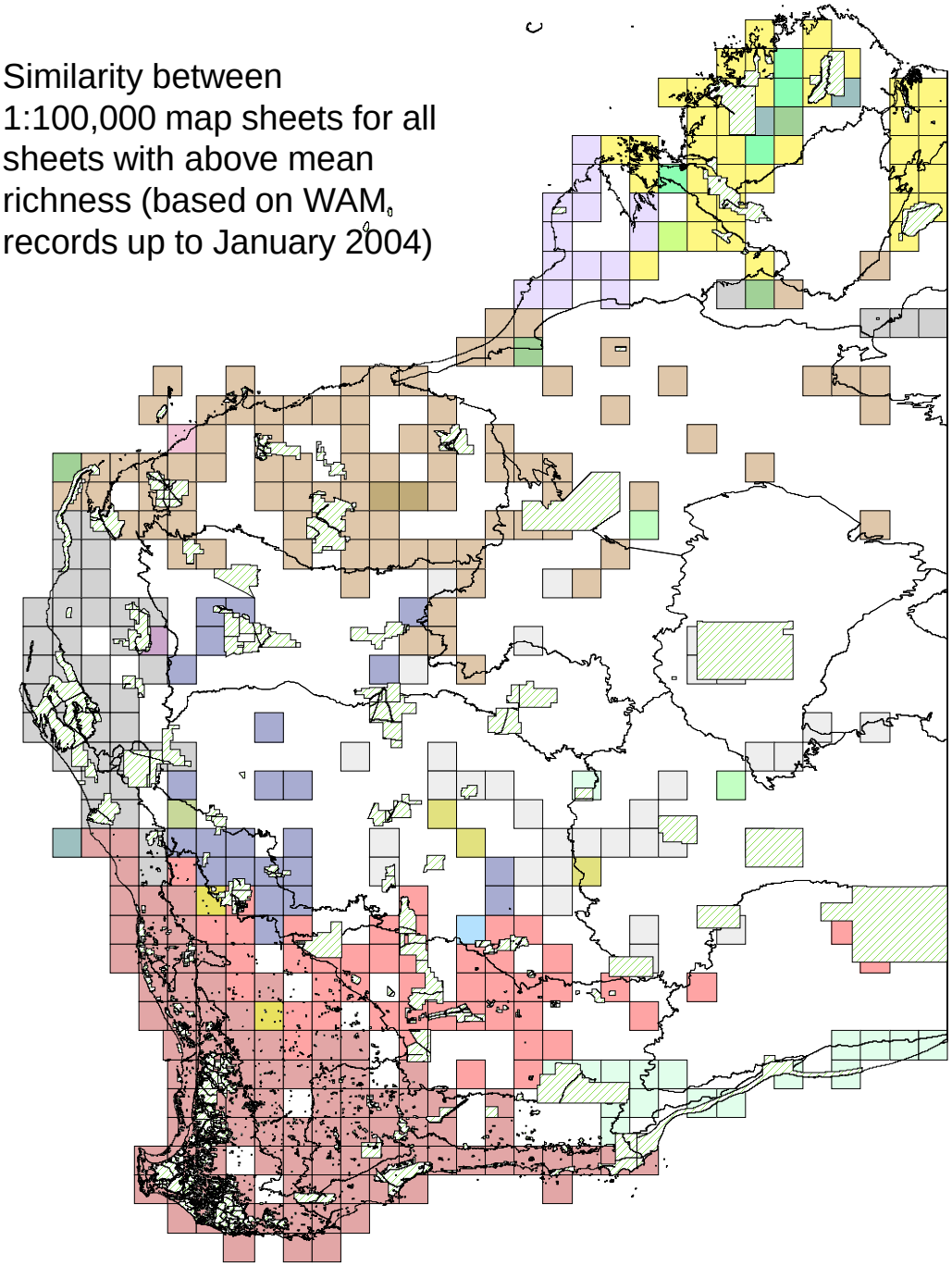
Lorna Glen Biological Survey

Similarity between 1:100,000 map sheets for all sheets with above mean richness (based on WAM$_0$ records up to January 2004)



M A Cowan 2004

Purpose of Lorna Glen Biological survey

- Identify and document present biodiversity values
- Provide baseline data against which change can be measured
- To develop an understanding of species biology, population dynamics and ecological processes
- To contribute towards knowledge of biogeography of the states biota
- Develop community awareness and understanding of biodiversunburntvalues and conservation issues

Standards for biological survey

- Needs to be rigorous
  - Stratified
  - Replicated
  - Vouchered
  - Repeatable
  - Statistically analysed

- Most information for least effort

- Targeted and systematic

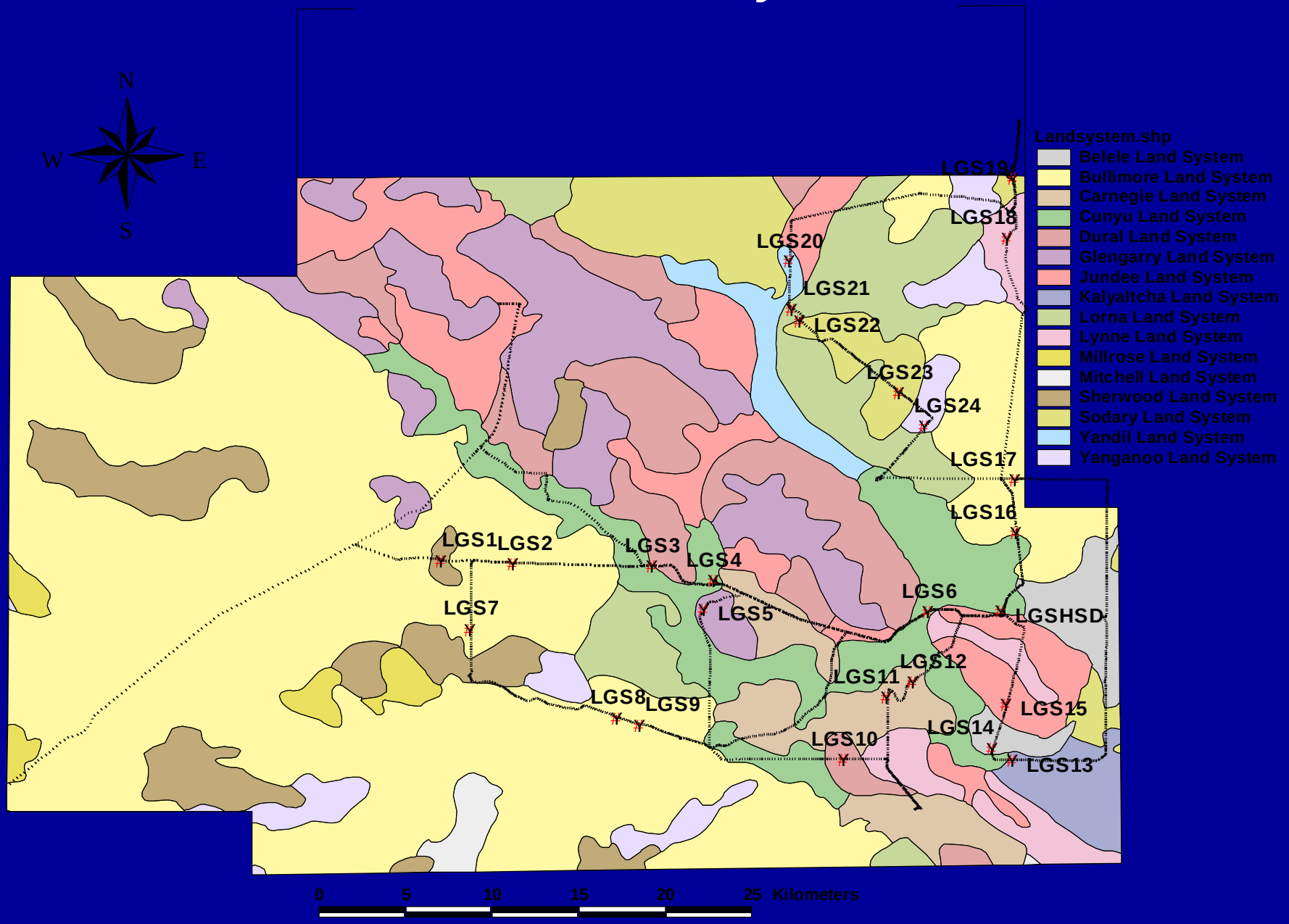
- Information and results needs to be accessible so as to contribute to regional, state and national biological understanding and conservation efforts

- Published

Methodology

- 24 sites stratified by landsytem/landtypes
- 6 pits (20 L Buckets) at 10m spacing along 50 m fence
- Replicated
- 30x30 m floristic quadrats
- Sampling done for 7 nights per trip
- Representatives of each taxa (plants and animals) lodged in state reference collections

Lorna Glen Survey Sites





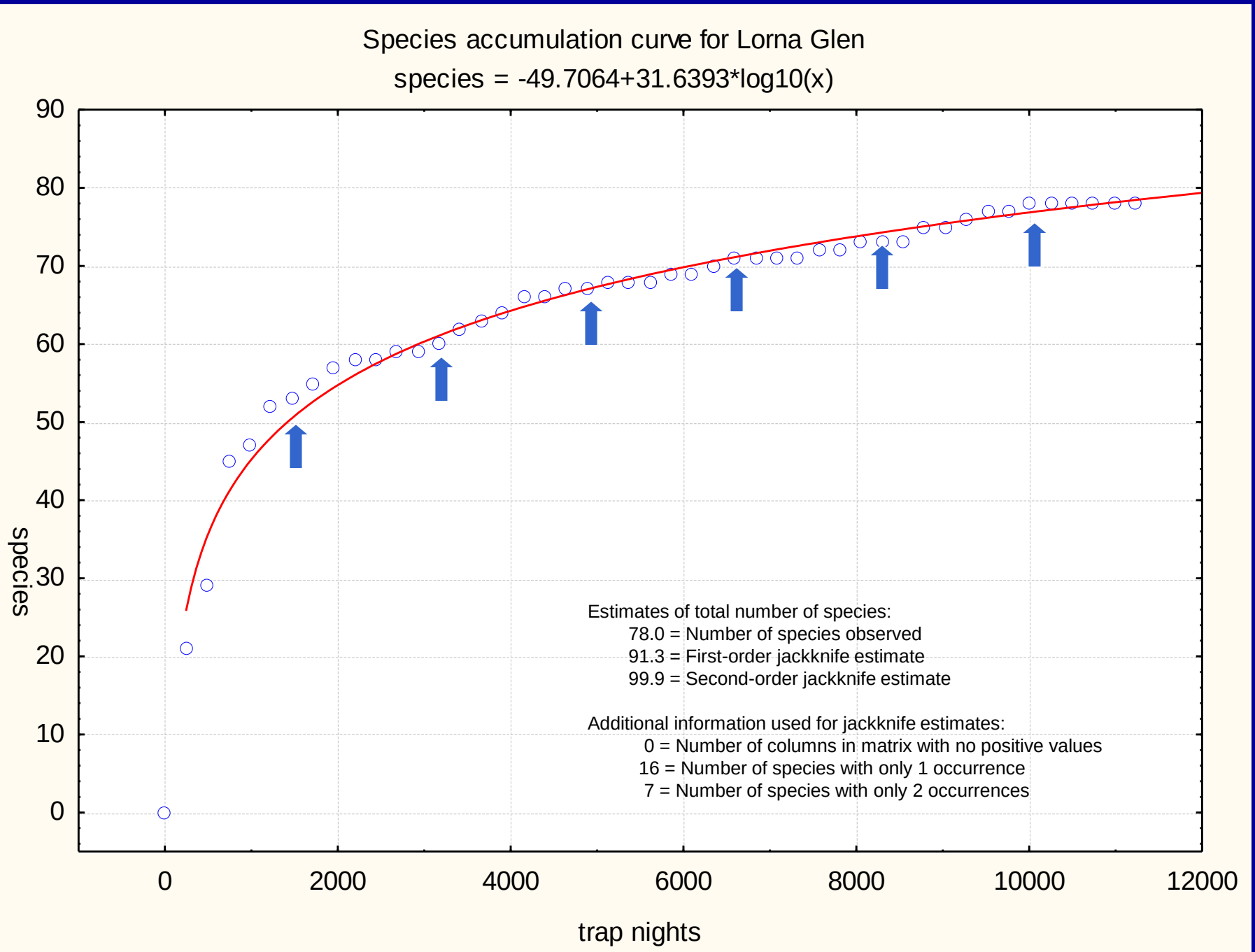






Comparison of reptile capture data from a number of surveys

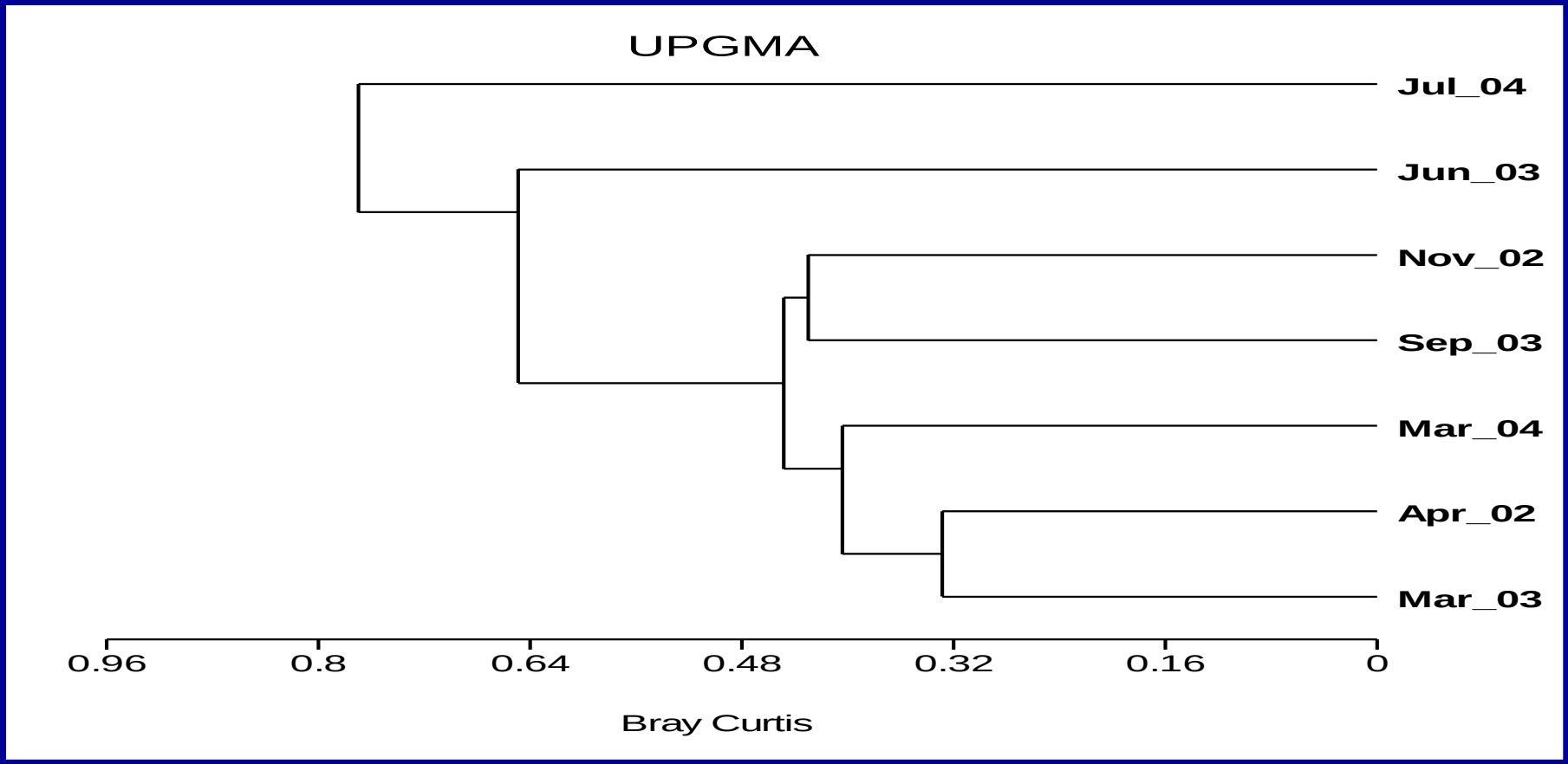
Sites	R	U	E	S	L	Bu	BP	Ro	T(B)	LE	CW	OB	T(A)	LG	Mean
Total No.of individuals	8410	806	5130	1422	4137	3093	2488	1393	5502	1023	7036	2093	898	**1935**	3240
Species richness (S)	68	37	45	36	42	46	26	27	40	57	42	50	32	**69**	44
Species															
Agamids	8	3	5	5	4	7	2	7	5	10	6	6	3	**12**	6
Varanids	6	3	5	5	4	1	1	1	3	2	2	3	3	**6**	3
Skinks	24	15	19	16	17	16	12	10	14	24	13	17	14	**23**	17
Geckos	12	8	8	8	8	8	2	6	8	12	8	10	7	**14**	9
Pygopods	4	3	6	2	4	7	2	0	5	4	5	5	2	**4**	4
Elapid	12	2	9	0	4	7	6	2	2	3	5	6	1	**8**	5
Blind Snakes	2	2	2	0	1	0	1	1	2	2	3	3	2	**2**	2
% Species <0.5% captures	57.3	40.5	48.8	41.6	47.6	52.1	26.9	25.9	45.0	42.1	47.6	38.0	50.0	**50.72**	43.9
Shannon index (H)	3.06	2.74	3.28	2.61	2.73	2.86	2.11	2.52	2.00	3.44	2.51	3.15	1.66	**3.49**	2.7
Evenness (E)	0.58	0.52	0.62	0.49	0.52	0.54	0.40	0.48	0.38	0.65	0.47	0.59	0.32	**0.83**	0.5


Species accumulation curve for Lorna Glen
species = -49.7064+31.6393*log10(x)
90
80
70
60
50
40
30
20
10
0
species
0
2000
4000
6000
8000
10000
12000
trap nights
Estimates of total number of species:
78.0 = Number of species observed
91.3 = First-order jackknife estimate
99.9 = Second-order jackknife estimate
Additional information used for jackknife estimates:
0 = Number of columns in matrix with no positive values
16 = Number of species with only 1 occurrence
7 = Number of species with only 2 occurrences

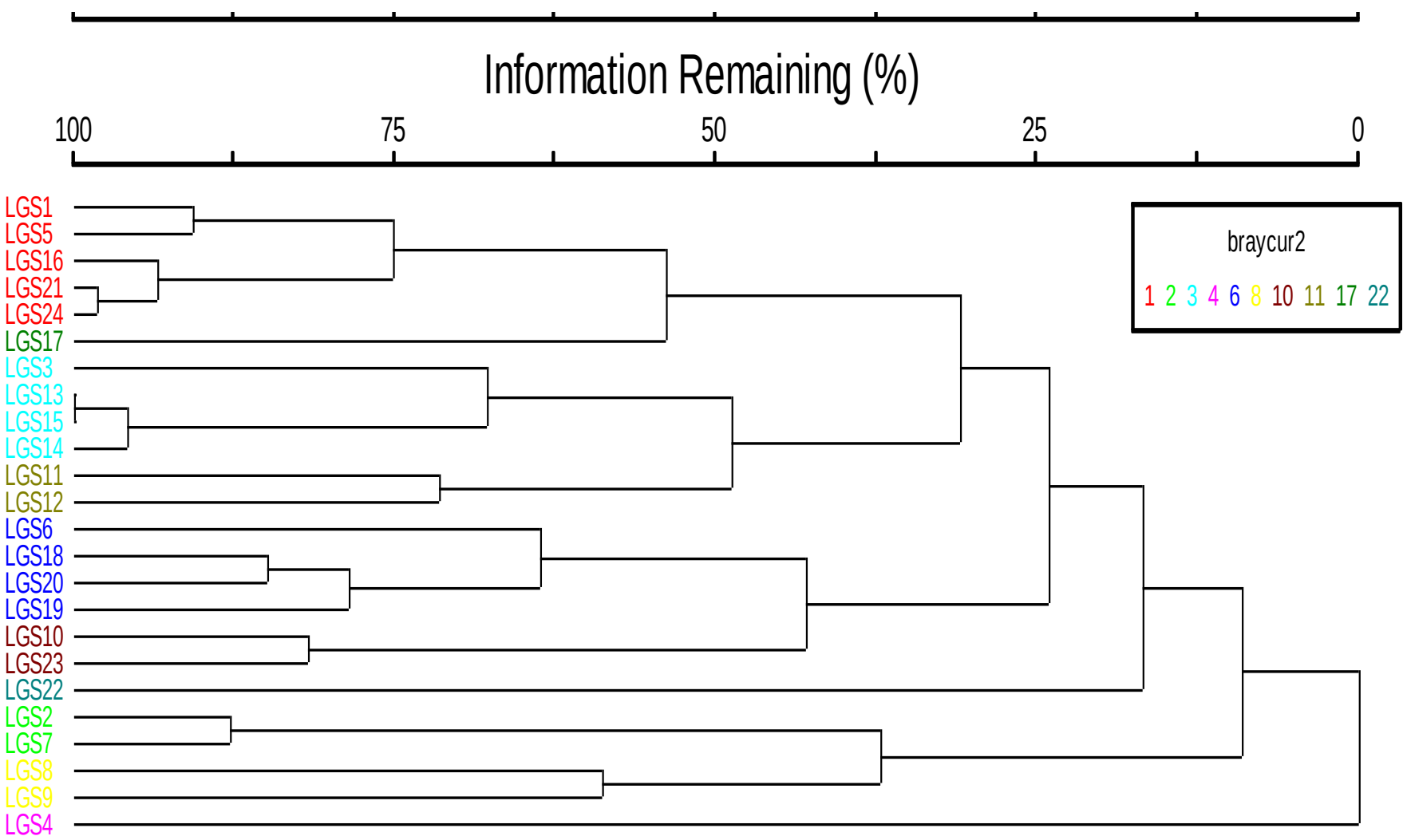
Dissimilarity of all sites across different sampling periods

Distance matrix

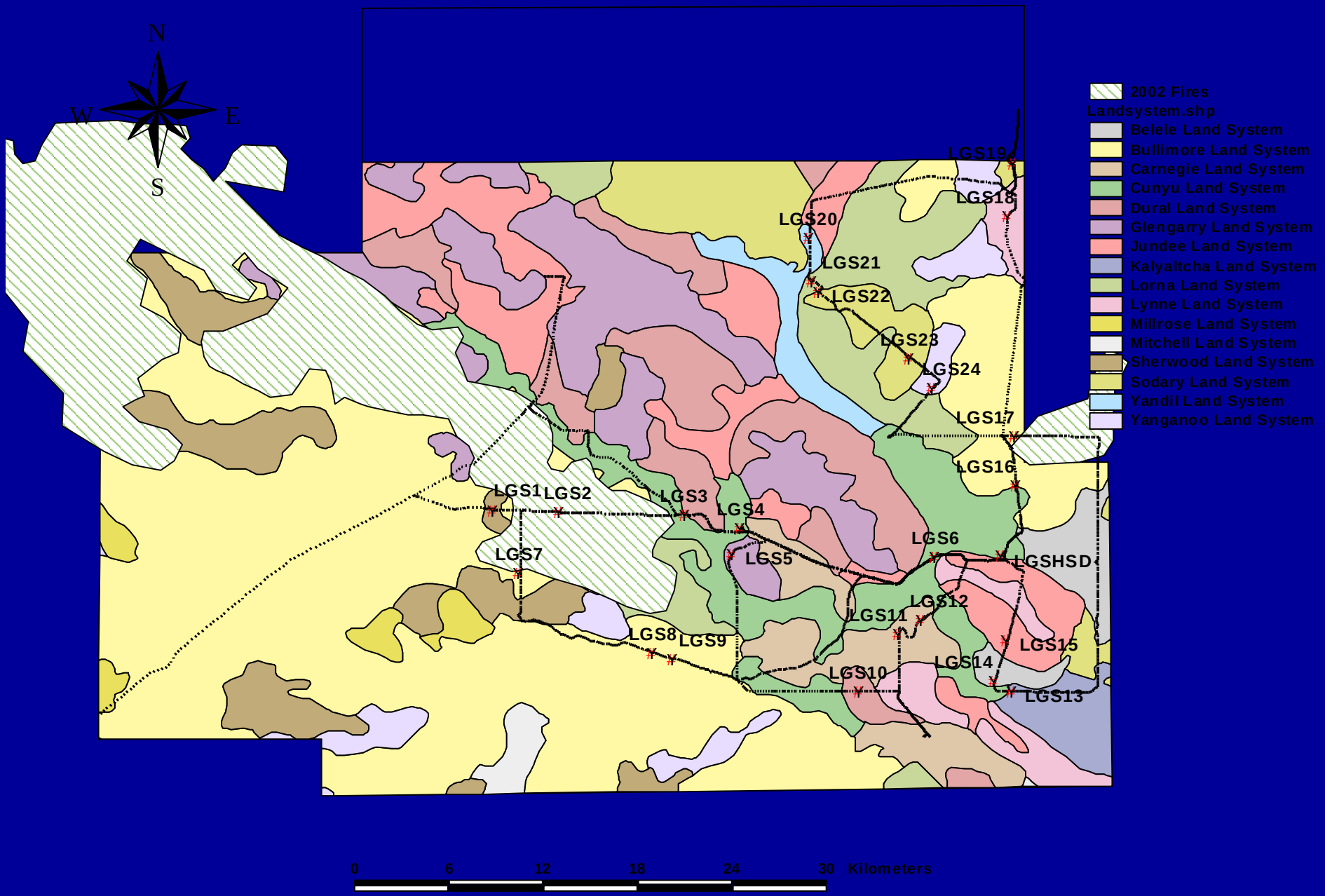
	Apr_02	Nov_02	Mar_03	Jun_03	Sep_03	Mar_04	Jul_04
Apr_02	0.000						
Nov_02	0.460	0.000					
Mar_03	0.328	0.437	0.000				
Jun_03	0.681	0.633	0.651	0.000			
Sep_03	0.510	0.430	0.385	0.604	0.000		
Mar_04	0.476	0.475	0.332	0.678	0.424	0.000	
Jul_04	0.821	0.806	0.812	0.770	0.751	0.658	0.000



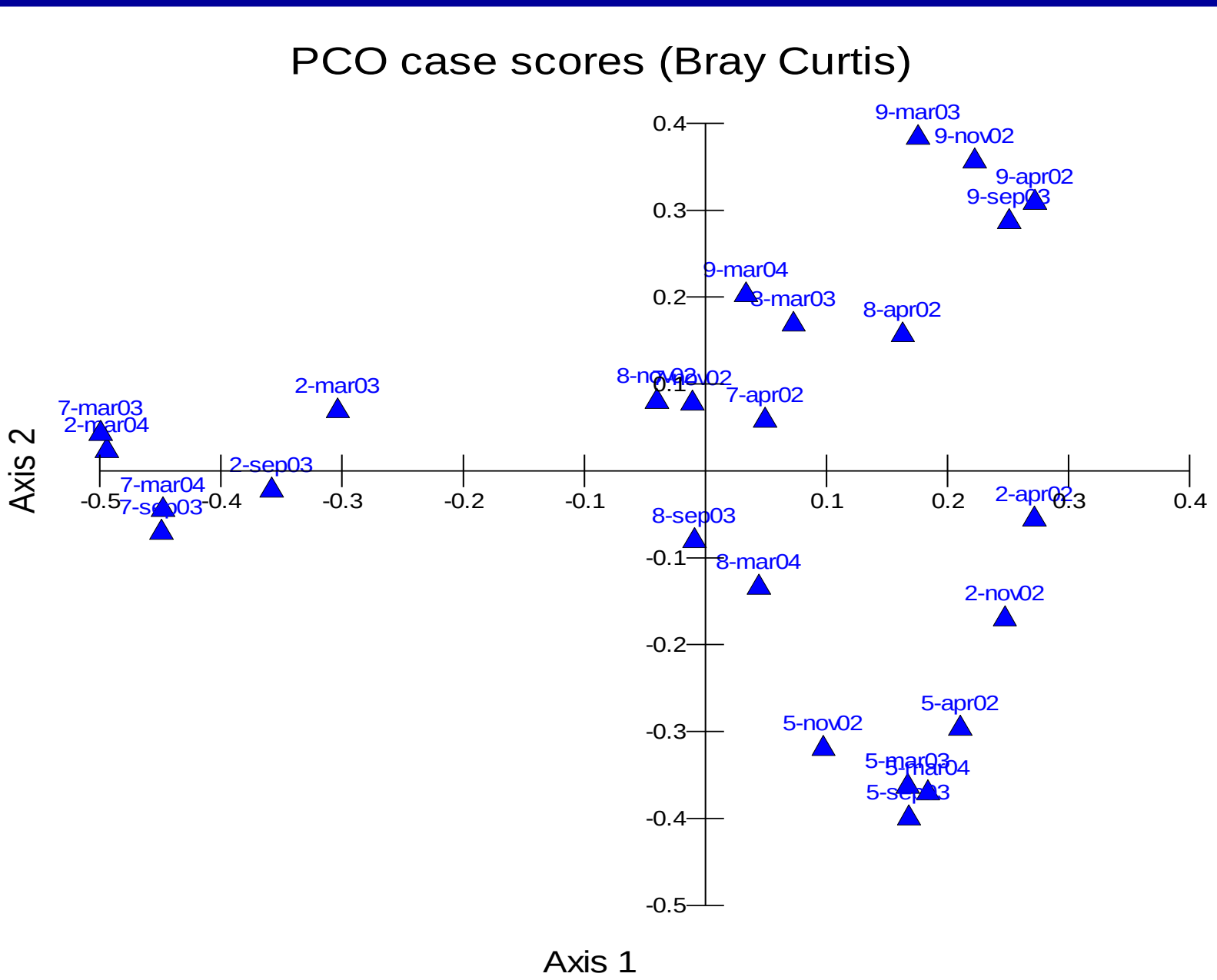
Site distances for all trapping periods combined utilising species abundance data and Bray-Curtis coefficient of distance



Lorna Glen Survey Sites







PCO case scores (Bray Curtis)
Axis 2
Axis 1
0.4
0.3
0.2
0.1
-0.1
-0.2
-0.3
-0.4
-0.5
-0.5
-0.4
-0.3
-0.2
-0.1
0.1
0.2
0.3
0.4
9-mar03
9-nov02
9-apr02
9-sep03
9-mar04
8-mar03
8-apr02
8-nov02
7-apr02
2-mar03
7-mar03
2-mar04
2-sep03
7-mar04
7-sep03
2-apr02
8-sep03
8-mar04
2-nov02
5-apr02
5-nov02
5-mar03
5-mar04
5-sep03

Indicator Species analysis for burnt and unburnt spinifex sites

Column	Maxgrp	Observed Indicator Value(IV)	IV from randomised Groups Mean	S.Dev	P*
Ctenaria	0	26.8	16	5.36	0.064
Ctenhele	0	43.6	26.2	6.59	0.021
Ctenisol	0	26.8	20.8	6.06	0.16
Ctenleon	0	14.6	10.7	4.41	0.286
Ctennuch	1	64.3	14.1	5.26	0.001
Ctenpant	0	36.6	20.8	6.1	0.023
Diplsten	1	55.8	16.9	5.72	0.001
Nephlaev	0	22	14.4	5.17	0.129
Ningride	0	36.6	20.3	5.69	0.019
Pseuherm	0	28.7	24.4	6.58	0.227
Rhynorna	1	58.5	27.7	6.6	0.001
Sminoold	0	19.6	17.2	5.23	0.294
Stroelde	0	30.7	26.5	6.25	0.227

* proportion of randomised trials with indicator value
p = (1 + number of runs >= observed)/(1 + number of randomised runs)

Management Units derived from faunal assemblage similarities