Figure 13. Delta-Wide Crevasses, Crevasse 38. Elevation survey (TIN model).

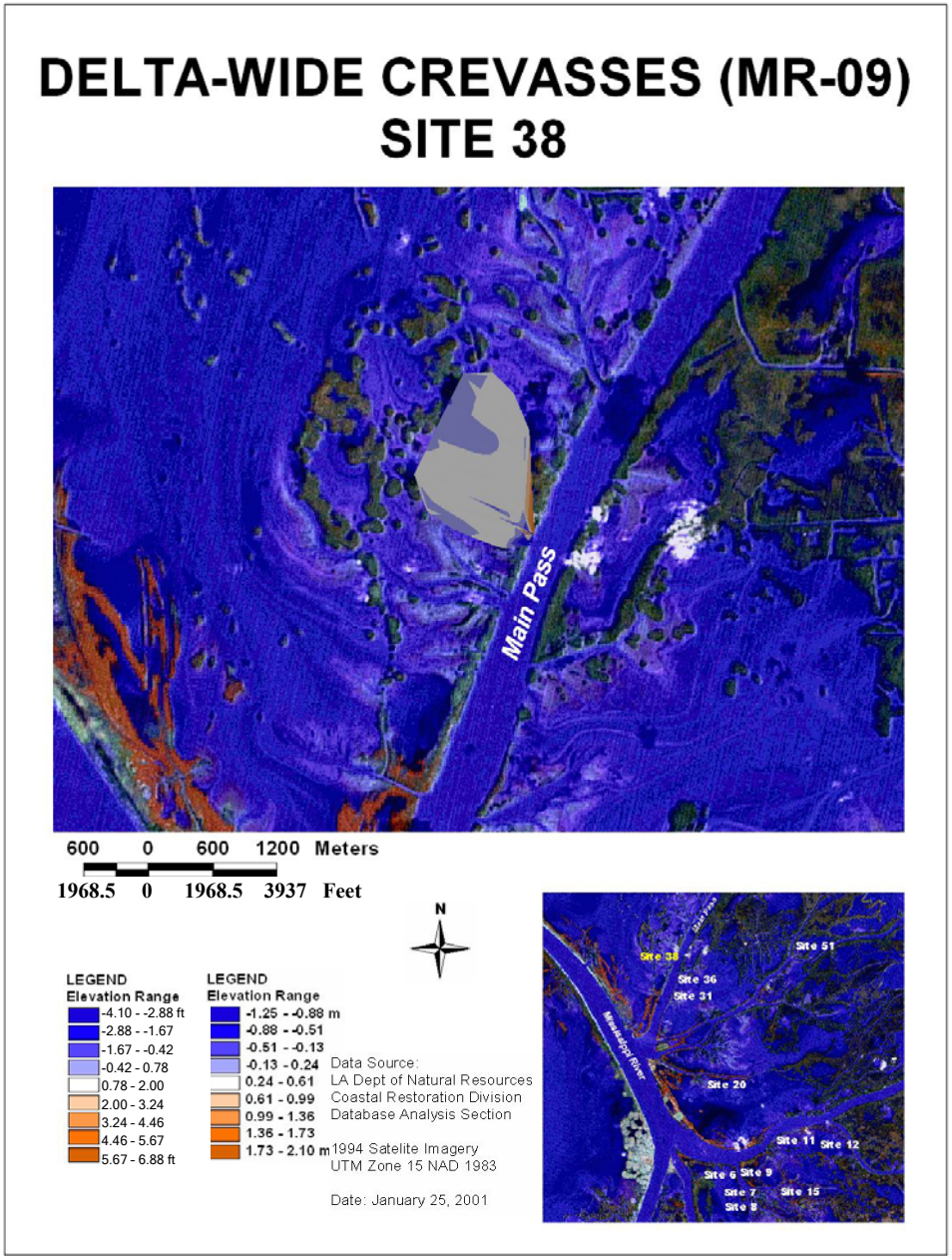
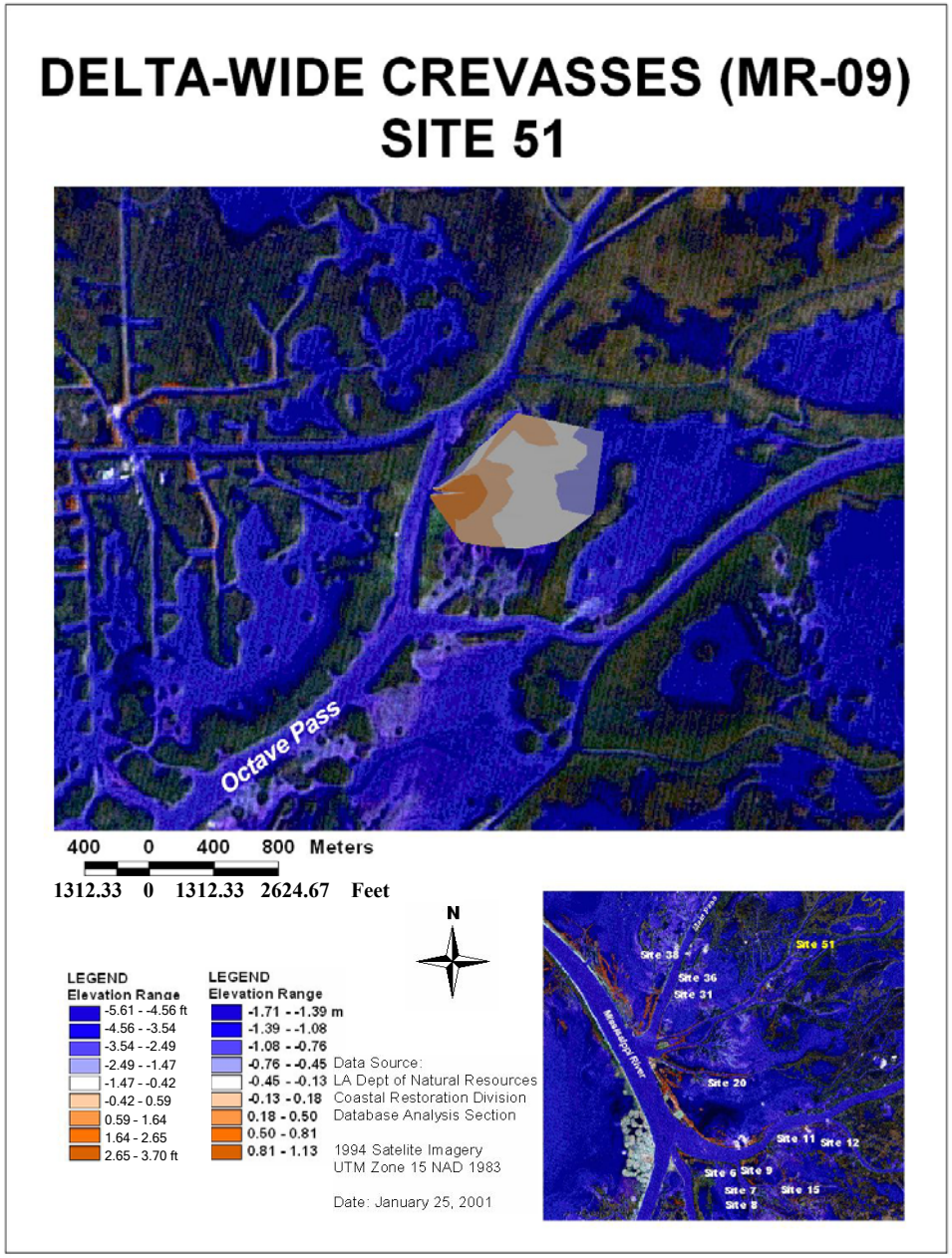


Figure 14. Delta-Wide Crevasses, Crevasse 51. Elevation survey (TIN model).



Mean Elevation (NAVD88) at Delta-Wide Crevasse (MR-09) Sites During Fall of 2000.

Crevasse	Mean	Median
MR09-06	-0.7447 ft	0.0000 ft
MR09-07	-0.0833 ft	0.2500 ft
MR09-08	0.0668 ft	0.0000 ft
MR09-09	0.3839 ft	0.3000 ft
MR09-11	-0.6984 ft	0.2000 ft
MR09-12	0.3171 ft	0.0500 ft
MR09-15	-1.1662 ft	-0.5000 ft
MR09-20	-0.7456 ft	-0.7000 ft
MR09-31	-0.3032 ft	0.1500 ft
MR09-36	0.0621 ft	0.4000 ft
MR09-38	0.6001 ft	1.000 ft
MR09-51	-0.4552 ft	-0.6000 ft

MR-09 Delta-Wide Crevasses

Vegetation

Mean Percent Cover by Site and Year

As-built survey conducted in 1999, First post-construction survey in 2002

- Crevasse 11 : 1999 - 2002
- Crevasse 12 : 1999 - 2002
- Crevasse 15 : 1999 - 2002
- Crevasse 20 : 2002 (NOTE: This crevasse was new construction and no emergent vegetation was present during as-built survey in 1999)
- Crevasse 38 : 1999 - 2002
- Crevasse 51 : 1999 - 2002

Scientific Name	Common name	Scientific Name	Common name
Alternanthera philoxeroides	Alligator weed	*Phragmites australis*	Common Reed
Amaranthus australis	Southern Amaranth	*Pluchea camphorata*	Camphorweed
Amaranthus sp.	Amaranth	*Polygonum punctatum*	Dotted Smartweed
Ammania latifolia	Pink Ammania	*Pontederia cordata*	Pickerel Weed
Ammannia coccinea	Purple Ammania	*Sagittaria lancifolia*	Bull Tongue Arrow Head
Colocasia esculenta	Elephant's Ear	*Sagittaria latifolia*	Broad Leaf Arrow Head
Cyperus difformis	Variable Flatsedge	*Sagittaria platyphylla*	Delta Arrow Head
Echinochloa walteri	Coast Cockspur	*Schoenoplectus americanus*	Olney's Bulrush
Echinodorus cordifolius	Creeping Burhead	*Schoenoplectus californicus*	California Bulrush
Eichornia crassipes	Water Hyacinth	*Schoenopluctus tabernaemontani*	Softstem Bulrush
Eleocharis equisetoides	Horse-tail Spikerush	*Scirpus americanus*	*See *Schoenoplectus*
Hydrocotyle sp.	Penny-wort	*Scirpus californicus*	*See *Schoenoplectus*
Hydrocotyle umbellata	Many Flower Penny-wort	*Sesbania drummondi*	Drummond's Rattle Bush
Hymenocallis sp.	Spider-lily	*Sphenoclea zeylandica*	Chicken Spike
Leptochloa ap.	Sprangle-top	*Typha angustifolia*	Narrow Leaf Cattail
Ludwigia leptocarpa	River Seedbox	*Typha sp.*	Cattail
Ludwigia sp.	Seedbox	*Vigna luteola*	Hairy Pod Cowpea
Mikania scandens	Climbing Hempweed	*Zizaniposis miliacea*	Southern Wildrice
Panicum dicotomiflorum	Fall Panic Grass		

Mean % Cover of the most abundant species across all stations at Crevasse 11
Delta-wide Cervasses (MR-09), 1999-2002

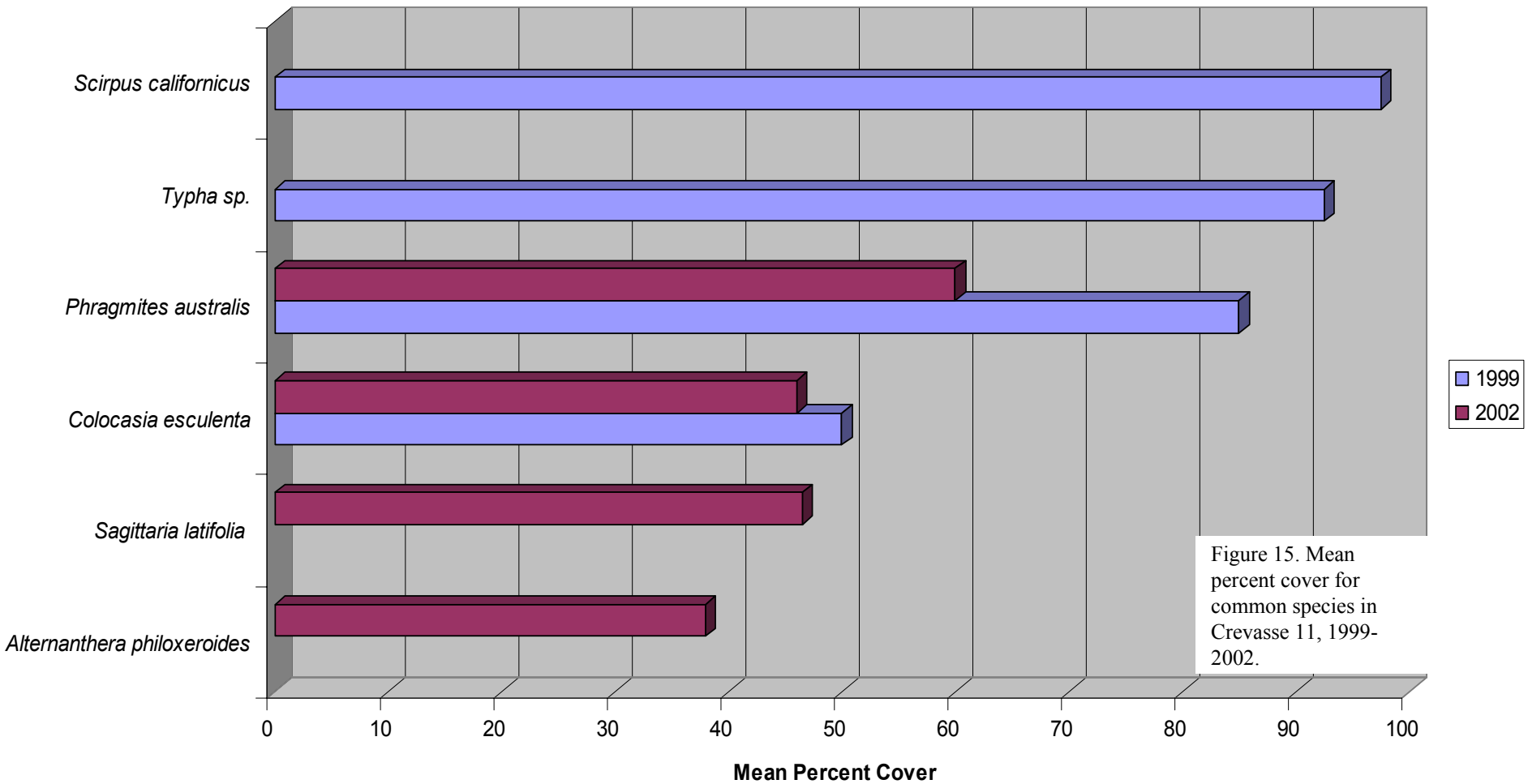


Figure 15. Mean percent cover for common species in Crevasse 11, 1999-2002.

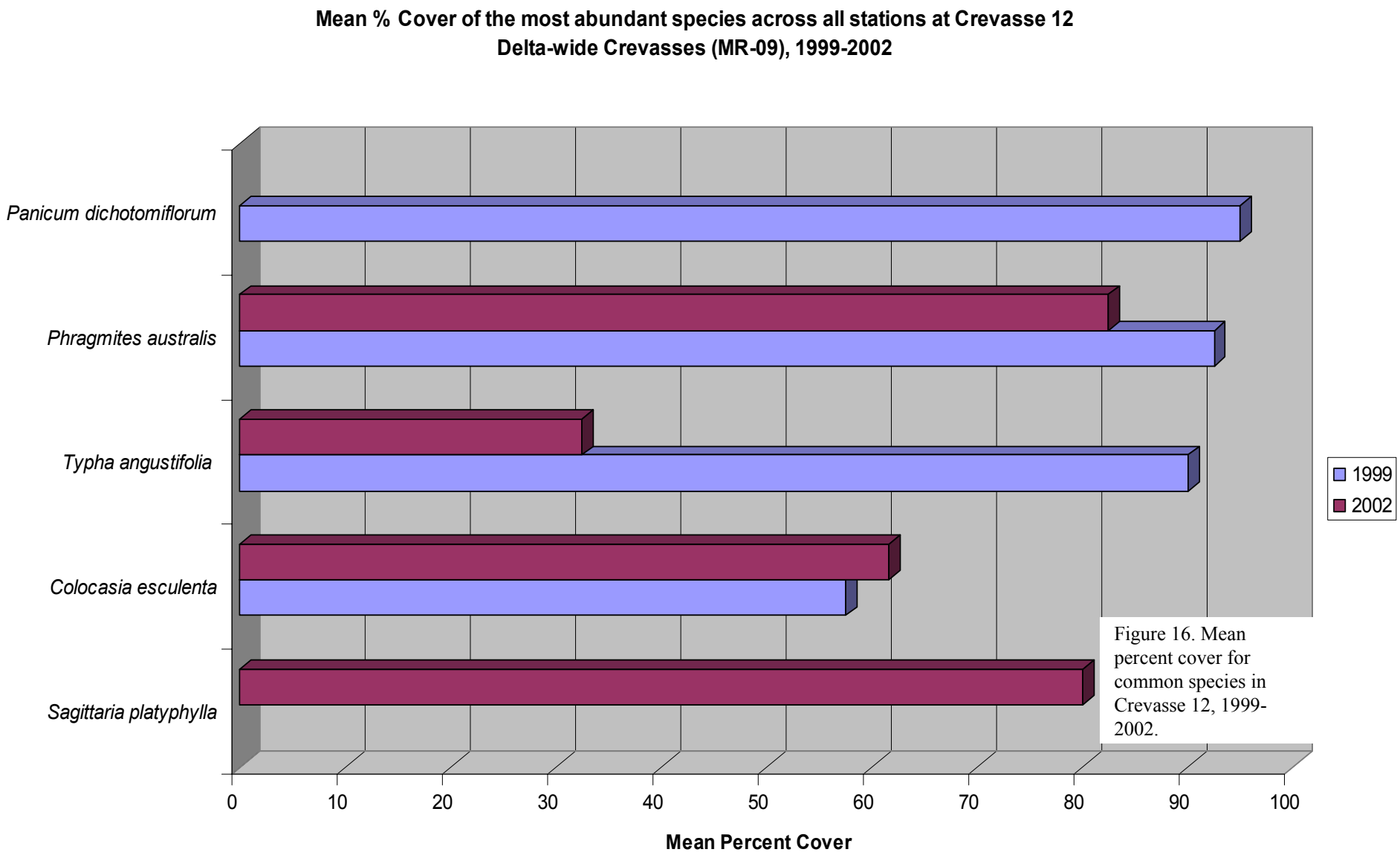


Figure 16. Mean percent cover for common species in Crevasse 12, 1999-2002.

Mean % Cover of the most abundant species across all stations at Crevasse 15
Delta-wide Crevasses (MR-09), 1999-2002

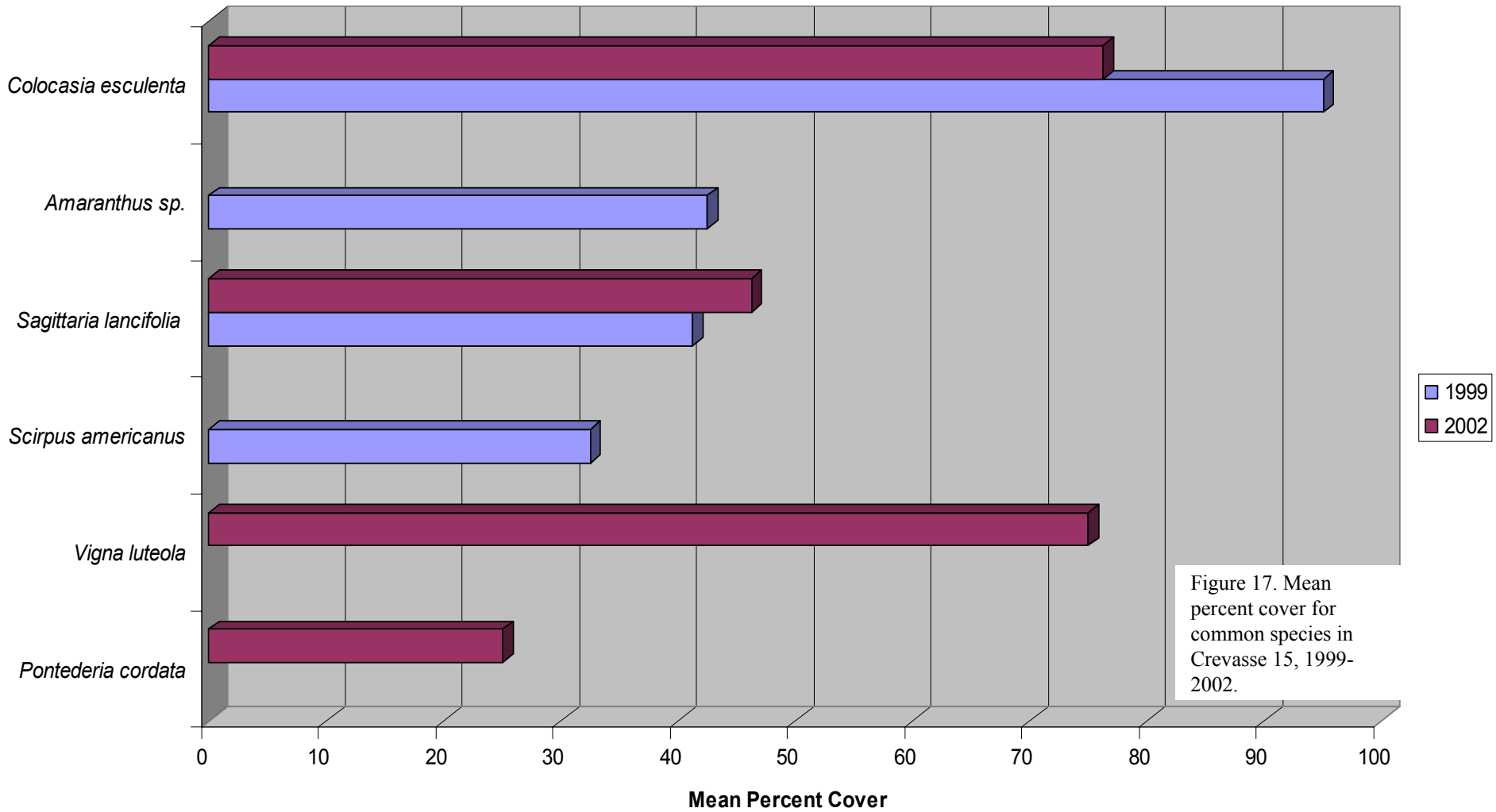


Figure 17. Mean percent cover for common species in Crevasse 15, 1999-2002.

Mean % Cover of the most abundant species across all stations at Crevasse 20
Delta-wide Crevasses (MR-09), 1999-2002

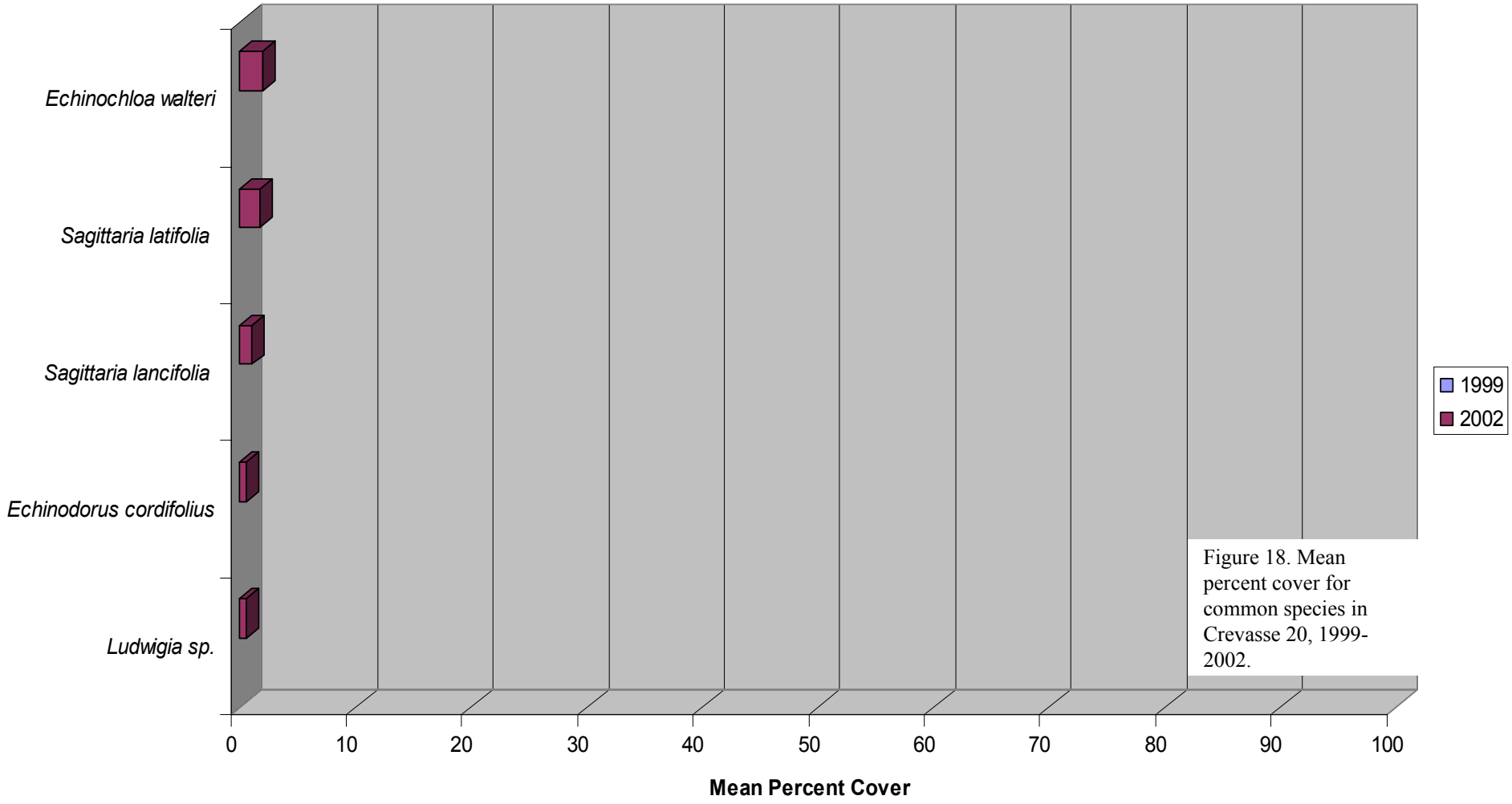


Figure 18. Mean percent cover for common species in Crevasse 20, 1999-2002.

Mean % Cover of the most abundant species across all stations at Crevasse 38
Delta-wide Crevasses (MR-09), 1999-2002

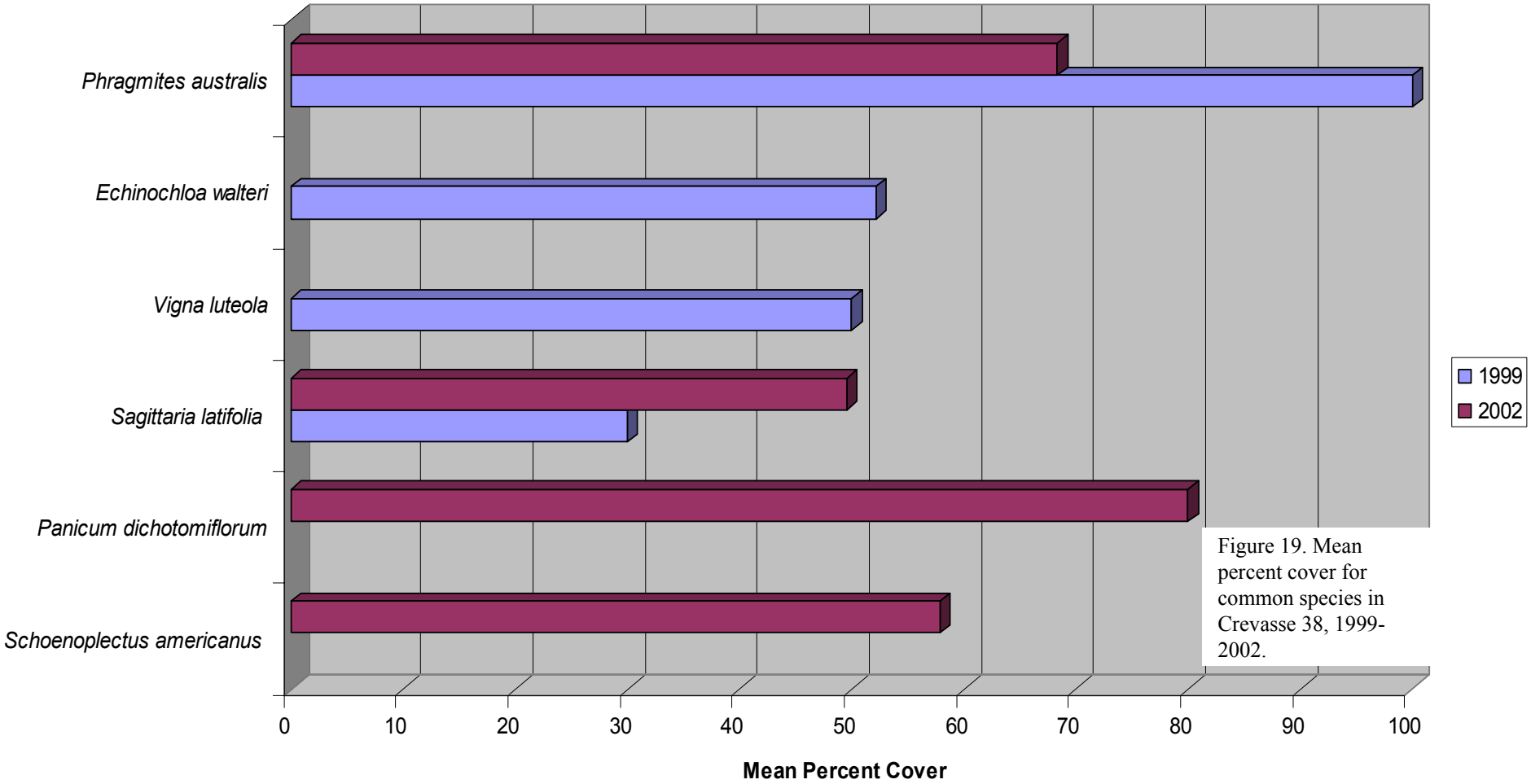


Figure 19. Mean percent cover for common species in Crevasse 38, 1999-2002.

Mean % Cover of the most abundant species across all stations at Crevasse 51
Delta-wide Crevasses (MR-09), 1999-2002

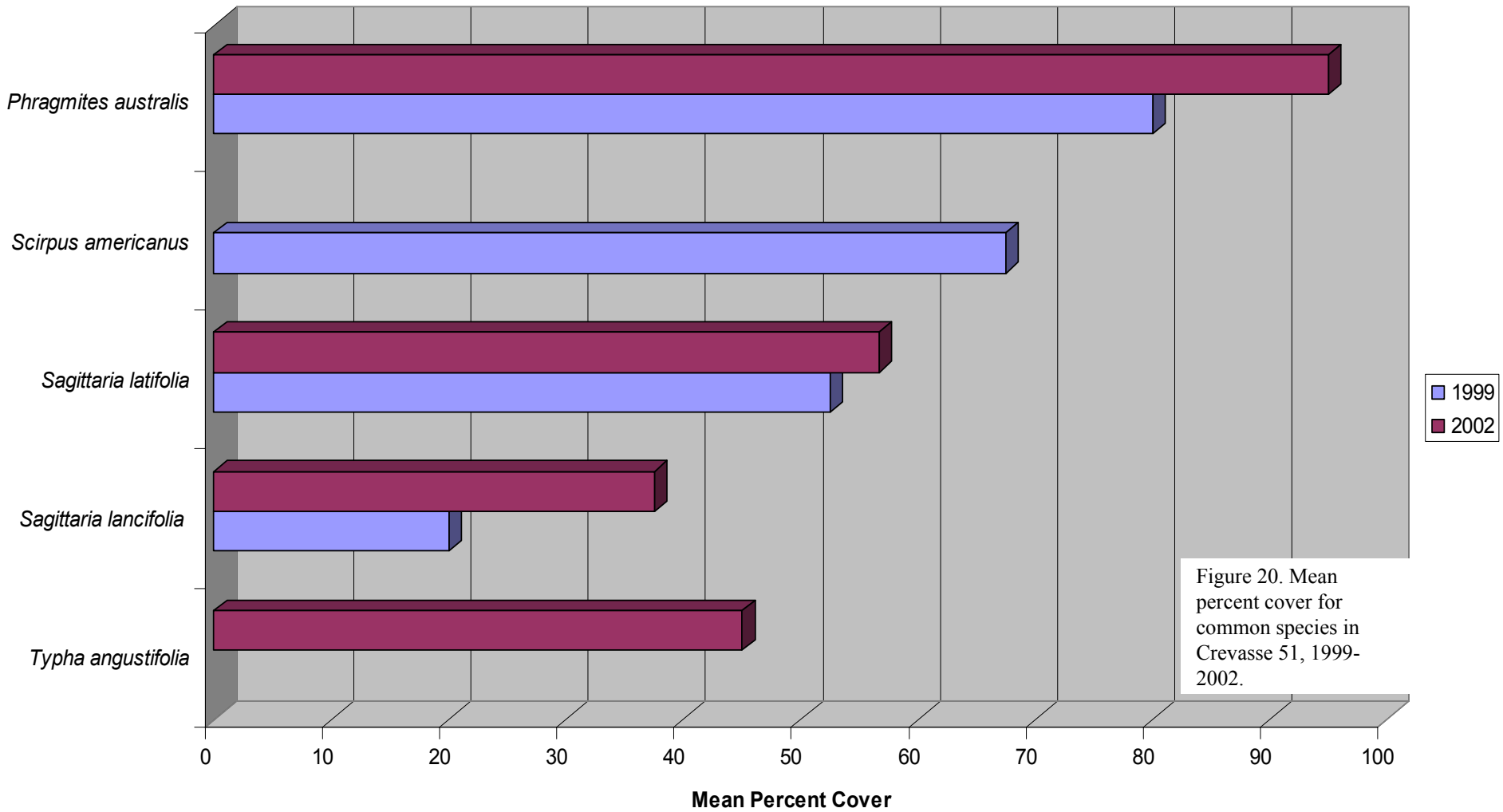


Figure 20. Mean percent cover for common species in Crevasse 51, 1999-2002.

MR-09 Delta-Wide Crevasse

Vegetation

Diversity Indices (DI)

Diversity indices are a combined measure of abundance of species types and evenness between species. A greater abundance of species leads to a higher number. A more evenly distributed number of individuals leads to a higher number. These numbers do not have an absolute value, they are for comparative purposes only. Two different diversity indices are used because the Shannon index is more sensitive to rare species while the Simpson index represents the probability that any two cells selected at random would be different patch types.

- Richness : Number of species present
- Simpson DI: Abundance and evenness
- Shannon DI: Abundance and evenness
- Evenness : Comparative abundance
- Community Similarity : Comparison of species richness

NOTE : Locations are given in “transect-plot” format

Crevasse 11 in 1999

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	3	0.392	0.658	0.131
01-02	3	0.512	0.794	0.171
01-03	6	0.332	0.732	0.055
01-04	4	0.363	0.700	0.091
01-05	2	0.040	0.100	0.020
02-04	1	0.000	0.000	0.000
02-05	2	0.298	0.474	0.149
03-02	1	0.000	0.000	0.000
03-03	1	0.000	0.000	0.000
03-04	1	0.000	0.000	0.000
03-05	5	0.404	0.866	0.081

Table 1. Comparison of Diversity values for all plots within all transects of Crevasse 11, MR-09.

Crevasse 11 in 2002

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	3	0.205	0.391	.130
01-02	5	0.493	0.961	.192
01-03	5	0.585	1.059	.212
01-04	9	0.832	1.958	.218
01-05	6	0.770	1.578	.263
02-04	1	0.000	0.000	.000
02-05	1	0.000	0.000	.000
03-02	1	0.000	0.000	.000
03-03	1	0.000	0.000	.000
03-04	3	0.368	0.650	.217
03-05	5	0.439	0.822	.164

Table 2. Comparison of Diversity values for all plots within all transects of Crevasse 11, MR-09.

Comparison of Simpson Diversity Index from 1999-2002 in Crevasse 11

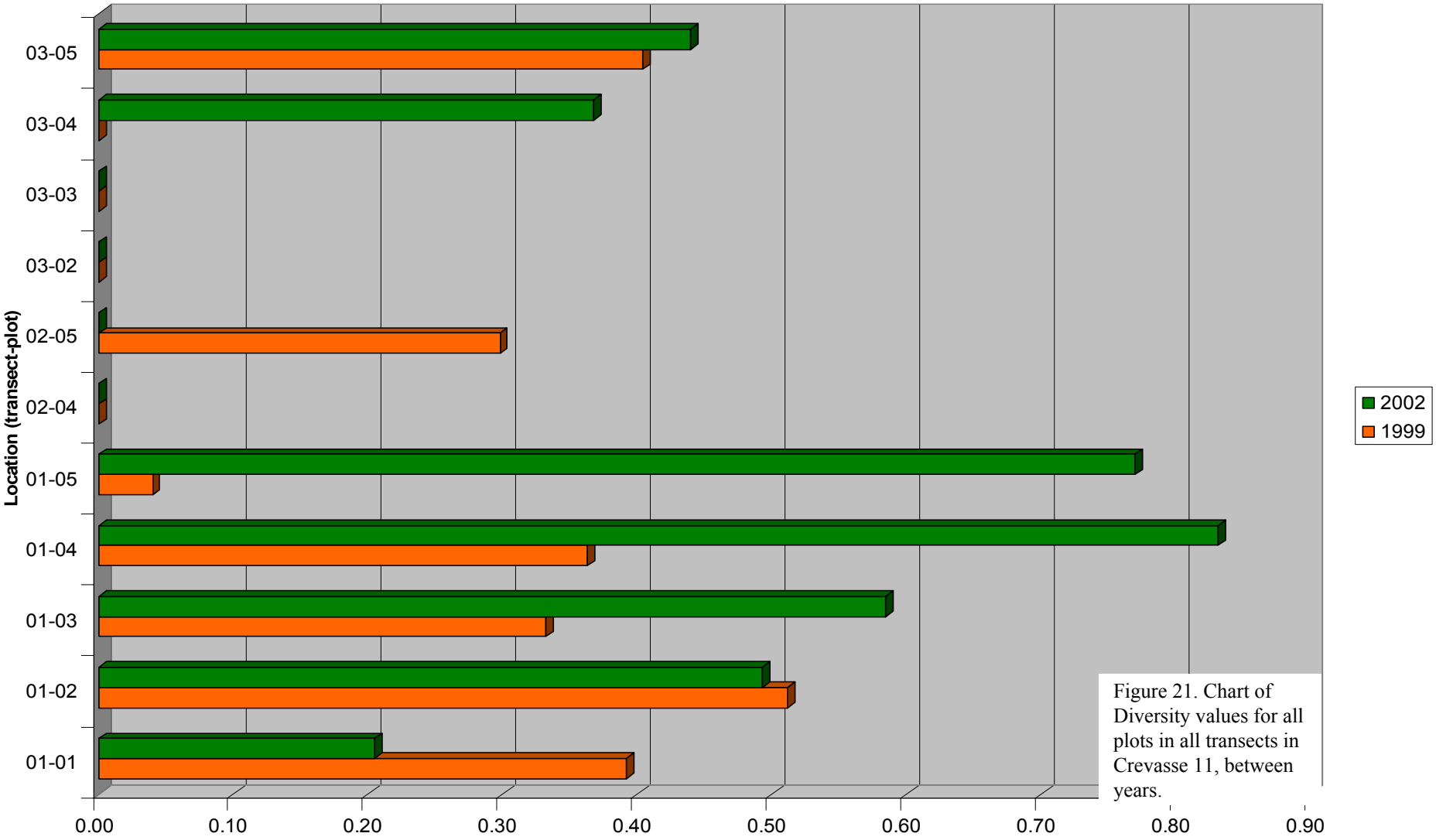


Figure 21. Chart of Diversity values for all plots in all transects in Crevasse 11, between years.

Comparison of Shannon Diversity Index from 1999-2002 in Crevasse 11

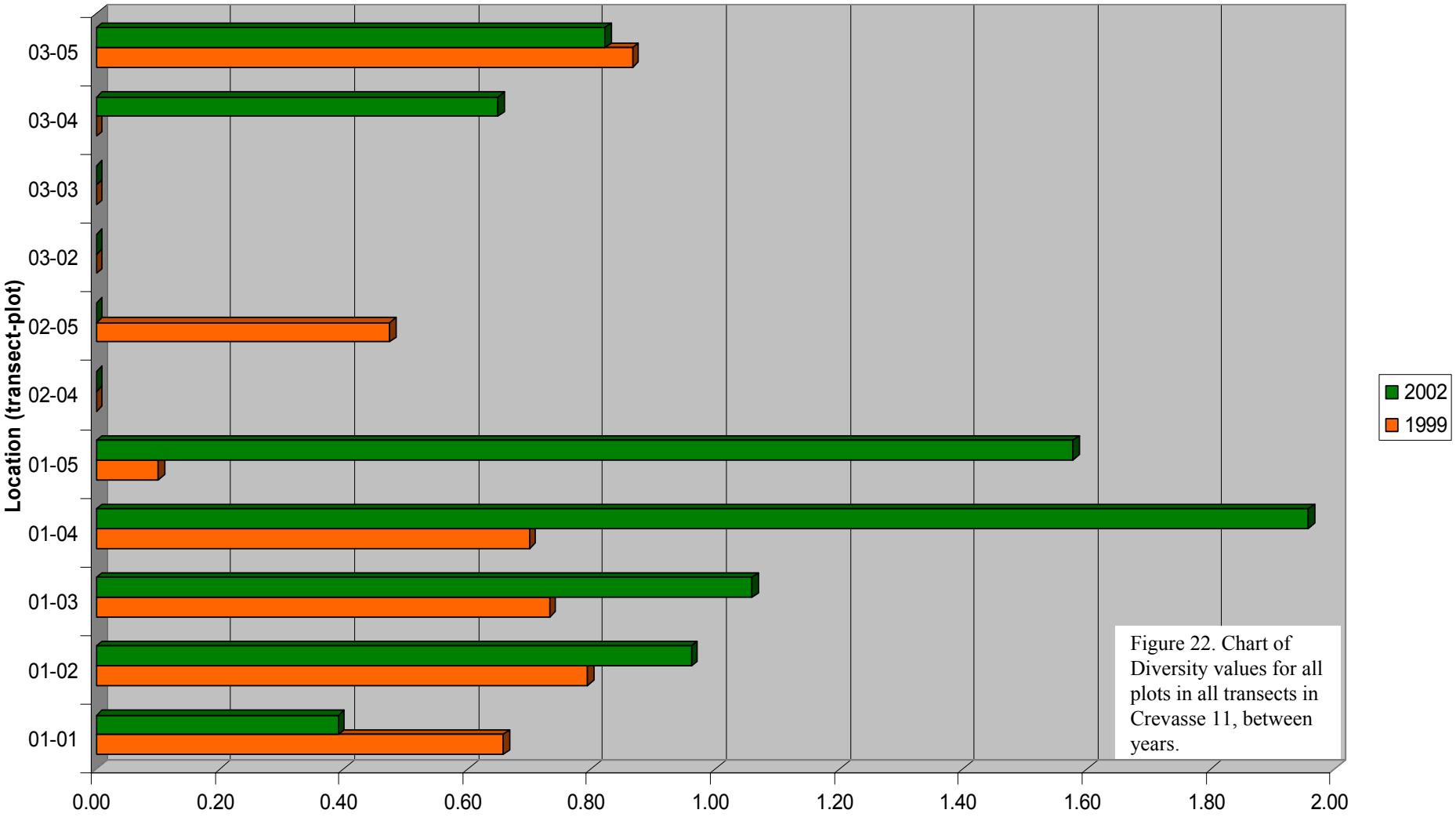


Figure 22. Chart of Diversity values for all plots in all transects in Crevasse 11, between years.

Crevasse 12 in 1999

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	1	0.000	0.000	0.000
01-02	3	0.528	0.886	0.176
01-03	1	0.000	0.000	0.000
01-04	2	0.095	0.199	0.048
01-05	6	0.483	1.014	0.080
02-01	1	0.000	0.000	0.000
03-01	1	0.000	0.000	0.000

Table 3. Comparison of Diversity values for all plots within all transects of Crevasse 12, MR-09.

Crevasse 12 in 2002

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	2	0.320	0.500	.250
01-02	4	0.605	1.040	.260
01-03	1	0.000	0.000	.000
01-04	2	0.091	0.191	.096
01-05	6	0.736	1.487	.248
02-01	1	0.000	0.000	.000
03-01	1	0.000	0.000	.000

Table 4. Comparison of Diversity values for all plots within all transects of Crevasse 12, MR-09.

Comparison of Simpson Diversity Index from 1999-2002 in Crevasse 12

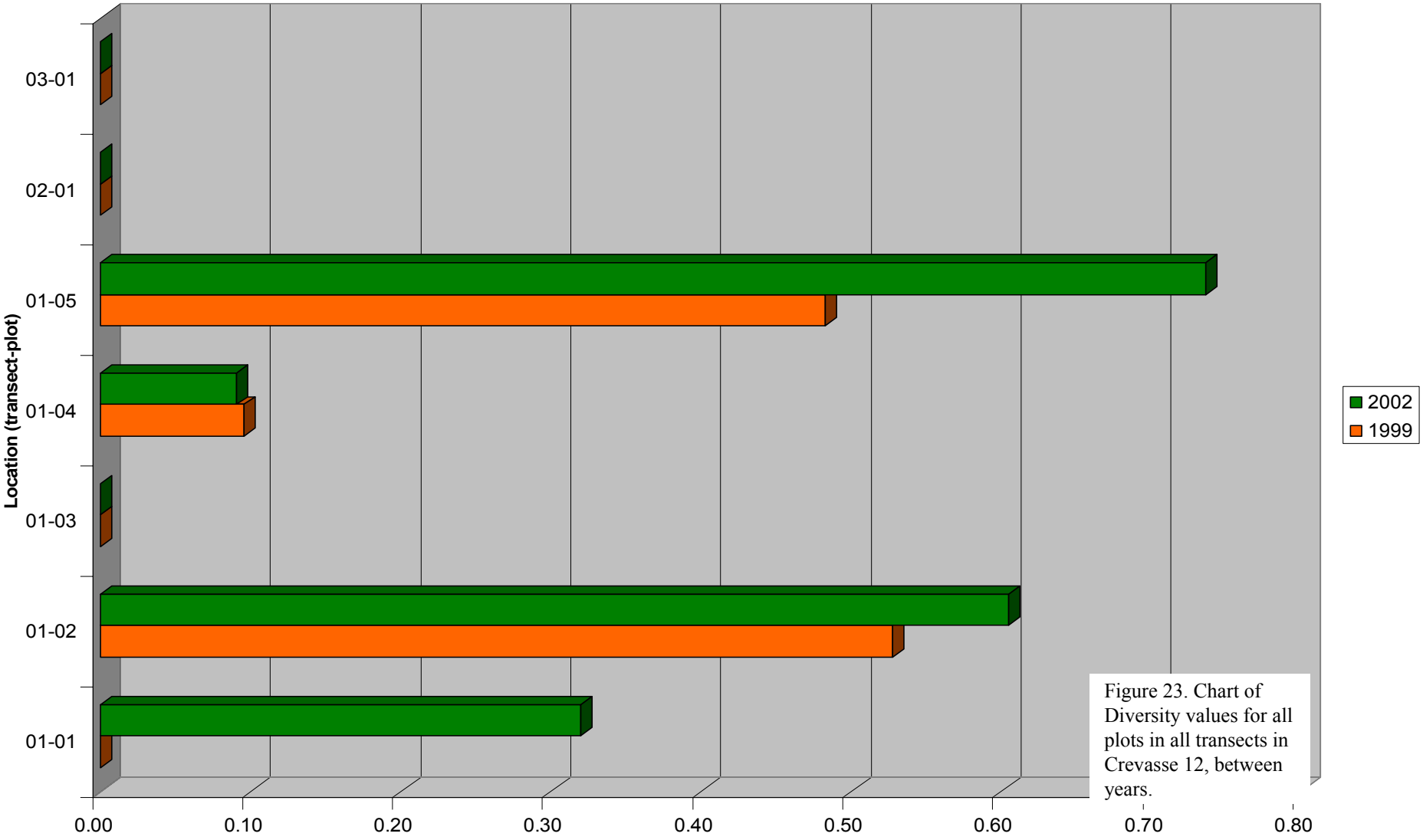


Figure 23. Chart of Diversity values for all plots in all transects in Crevasse 12, between years.

Comparison of Shannon Diversity Index from 1999-2002 in Crevasse 12

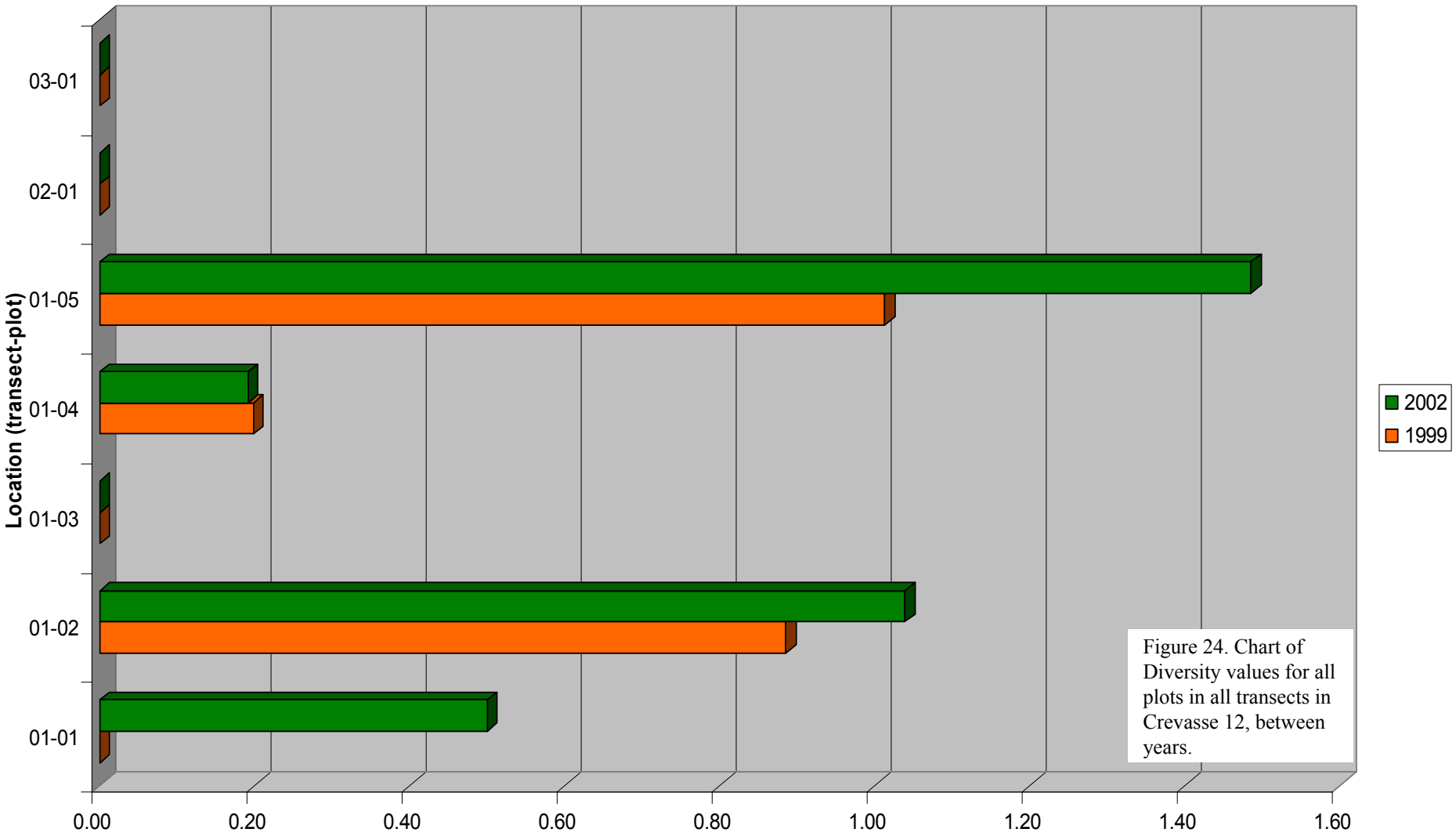


Figure 24. Chart of Diversity values for all plots in all transects in Crevasse 12, between years.

Crevasse 15 in 1999

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	2	0.020	0.056	0.010
01-02	7	0.540	1.032	0.077
01-03	5	0.516	0.942	0.103
01-04	1	0.000	0.000	0.000
01-05	1	0.000	0.000	0.000
02-01	2	0.298	0.474	0.149
02-02	3	0.314	0.600	0.105
03-01	1	0.000	0.000	0.000

Table 5. Comparison of Diversity values for all plots within all transects of Crevasse 15, MR-09.

Crevasse 15 in 2002

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	1	0.000	0.000	.000
01-02	5	0.595	1.114	.223
01-03	5	0.573	1.044	.209
01-04	3	0.130	0.291	.097
01-05	1	0.000	0.000	.000
02-01	3	0.151	0.328	.109
02-02	2	0.469	0.662	.331
03-01	2	0.245	0.410	.205

Table 6. Comparison of Diversity values for all plots within all transects of Crevasse 15, MR-09.

Comparison of Simpson Diversity Index from 1999-2002 in Crevasse 15

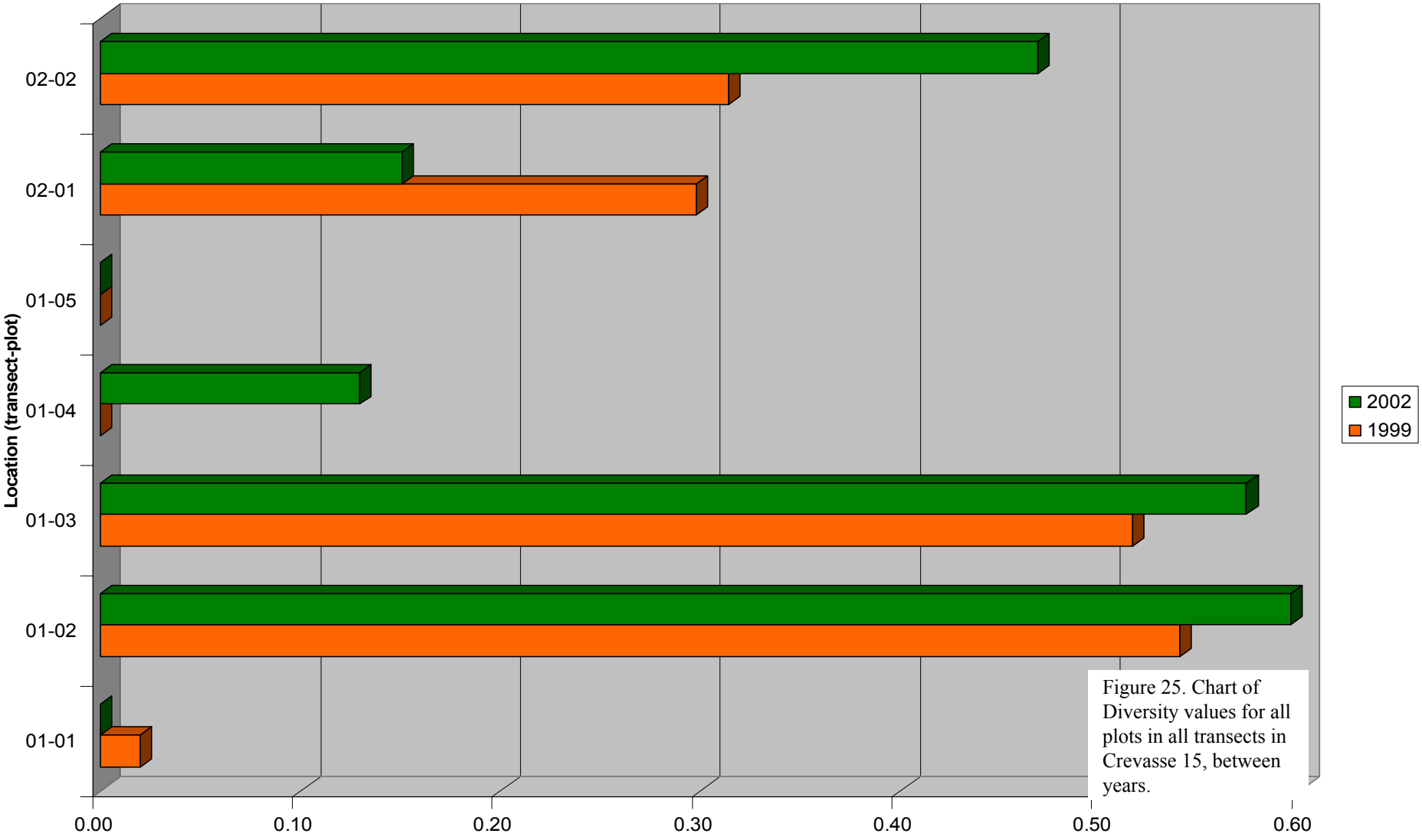


Figure 25. Chart of Diversity values for all plots in all transects in Crevasse 15, between years.

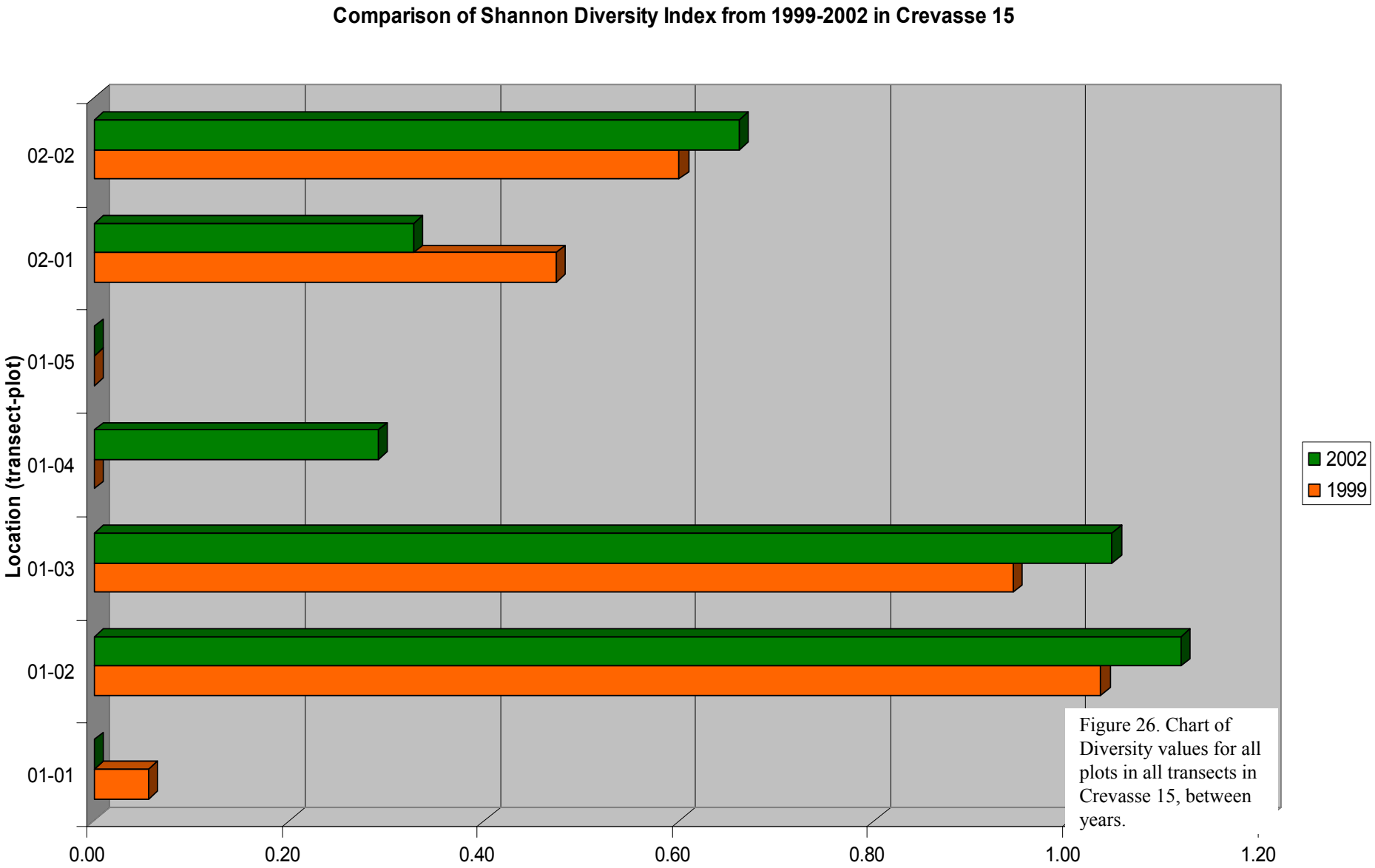


Figure 26. Chart of Diversity values for all plots in all transects in Crevasse 15, between years.

Crevasse 20 in 2002

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	5	0.704	1.376	.275
01-02	2	0.320	0.500	.250

Table 7. Comparison of Diversity values for all plots within all transects of Crevasse 20, MR-09.

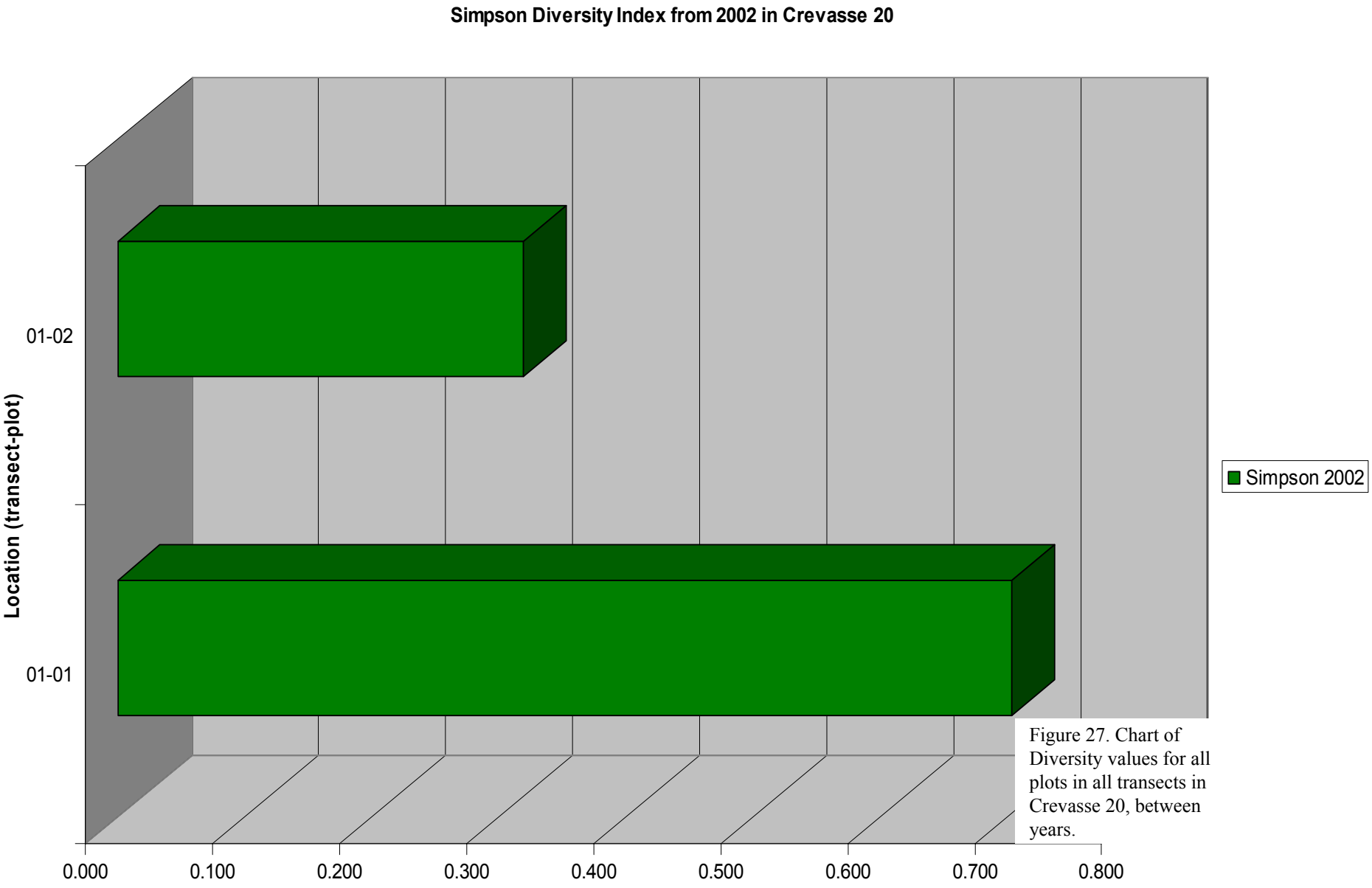


Figure 27. Chart of Diversity values for all plots in all transects in Crevasse 20, between years.

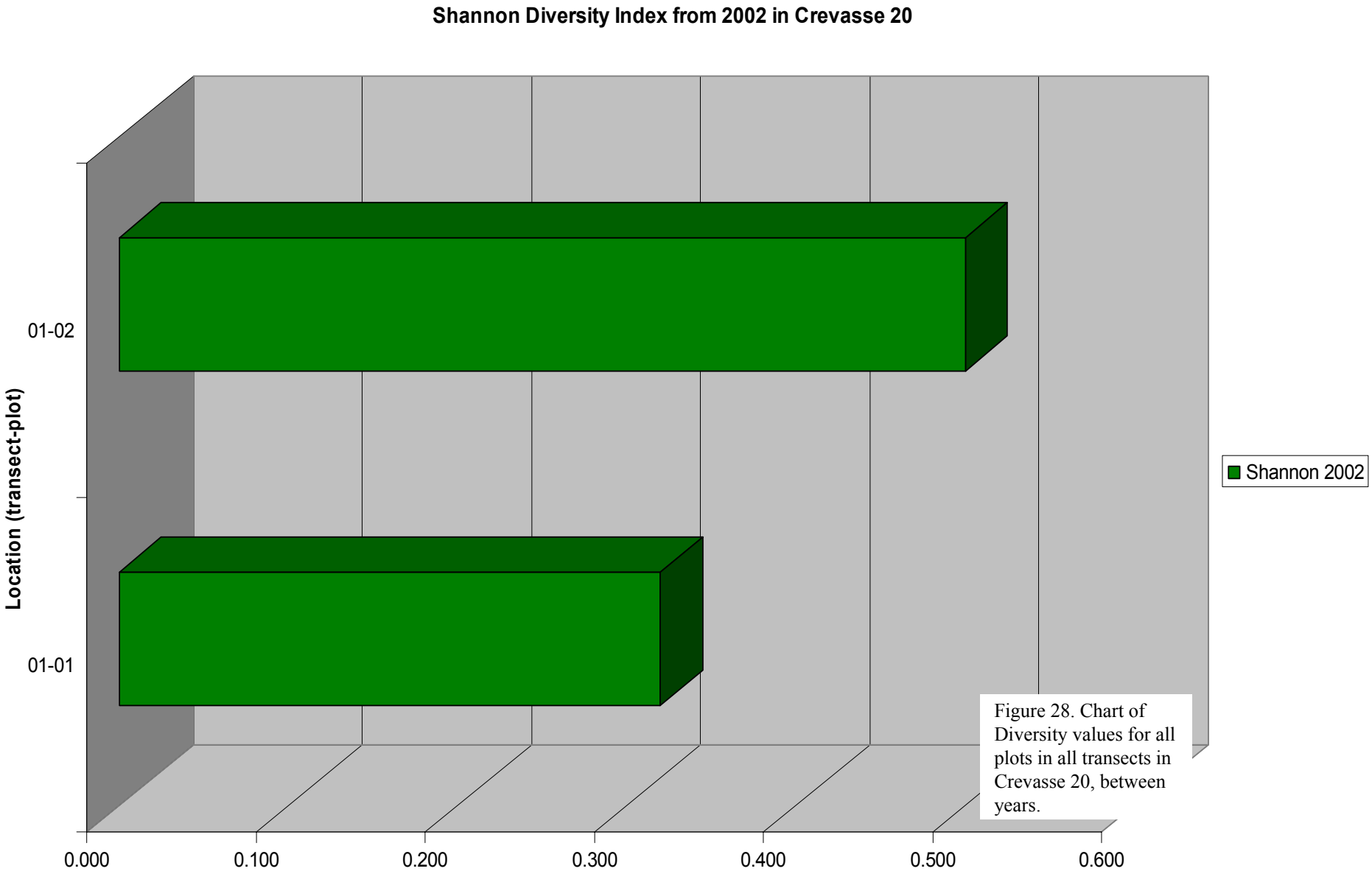


Figure 28. Chart of Diversity values for all plots in all transects in Crevasse 20, between years.

Crevasse 38 in 1999

Table 8. Comparison of Diversity values for all plots within all transects of Crevasse 38, MR-09.

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	2	0.444	0.637	0.222
01-02	3	0.437	0.717	0.146
01-03	3	0.379	0.687	0.126
01-04	10	0.807	1.915	0.081
01-05	6	0.265	0.609	0.044
02-01	1	0.000	0.000	0.000
02-02	6	0.637	1.255	0.106
02-03	7	0.311	0.706	0.044
02-04	6	0.337	0.783	0.056
02-05	5	0.325	0.651	0.065
03-01	3	0.169	0.368	0.056
03-02	2	0.005	0.017	0.002
03-03	3	0.475	0.787	0.158
03-04	2	0.375	0.562	0.188
03-05	2	0.006	0.021	0.003

Crevasse 38 in 2002

Table 9. Comparison of Diversity values for all plots within all transects of Crevasse 38, MR-09.

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	1	0.000	0.000	.000
01-02	2	0.278	0.451	.225
01-03	3	0.531	0.817	.272
01-04	6	0.493	0.978	.163
01-05	6	0.692	1.301	.217
02-01	2	0.480	0.673	.337
02-02	3	0.139	0.297	.099
02-03	3	0.219	0.448	.149
02-04	4	0.541	0.867	.217
02-05	3	0.547	0.869	.290
03-01	3	0.097	0.235	.078
03-02	1	0.000	0.000	.000
03-03	2	0.048	0.115	.057
03-04	3	0.070	0.178	.059
03-05	2	0.100	0.206	.103

Comparison of Simpson Diversity Index from 1999-2002 in Crevasse 38

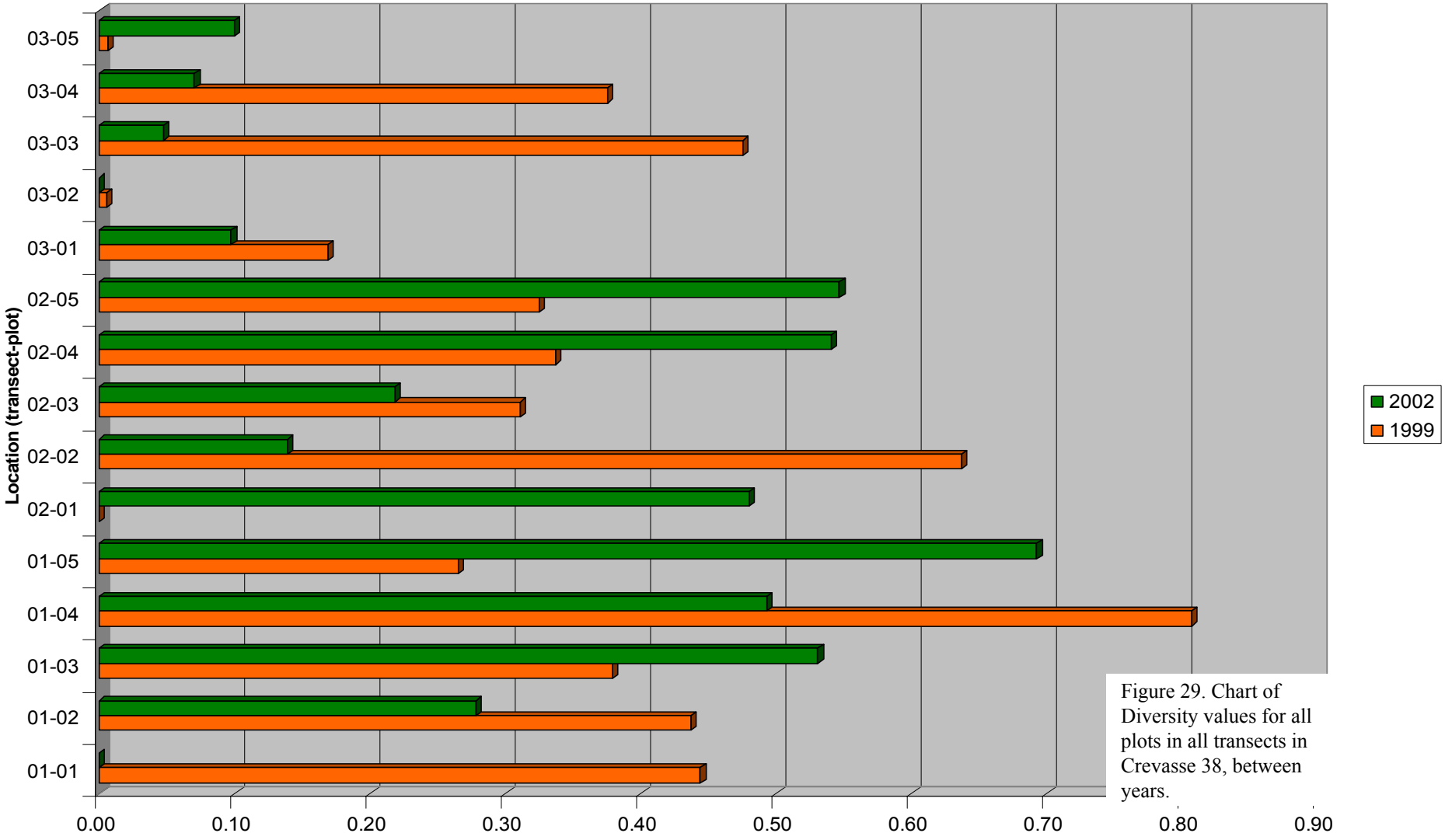


Figure 29. Chart of Diversity values for all plots in all transects in Crevasse 38, between years.

Comparison of Shannon Diversity Index from 1999-2002 in Crevasse 38

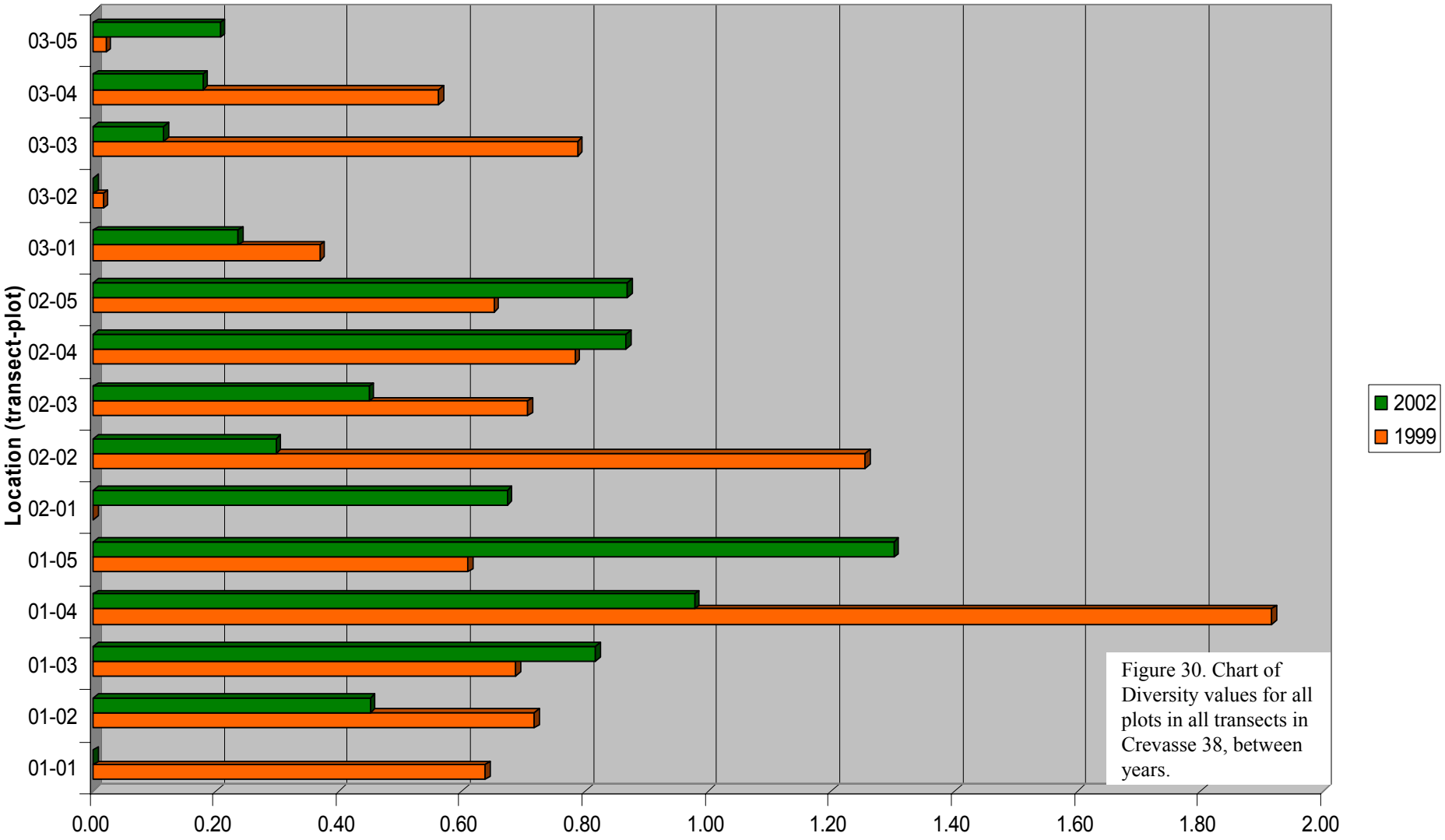


Figure 30. Chart of Diversity values for all plots in all transects in Crevasse 38, between years.

Crevasse 51 in 1999

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	2	0.095	0.199	0.048
01-02	9	0.744	1.658	0.083
01-03	1	0.000	0.000	0.000
01-04	1	0.000	0.000	0.000
01-05	1	0.000	0.000	0.000

Table 10. Comparison of Diversity values for all plots within all transects of Crevasse 51, MR-09.

Crevasse 51 in 2002

Location	***Richness***	***Simpson***	***Shannon***	***Evenness***
01-01	4	0.434	0.823	.206
01-02	5	0.671	1.273	.255
01-03	1	0.000	0.000	.000
01-04	1	0.000	0.000	.000
01-05	1	0.000	0.000	.000

Table 11. Comparison of Diversity values for all plots within all transects of Crevasse 51, MR-09.

Comparison of Simpson Diversity Index from 1999-2002 in Crevasse 51

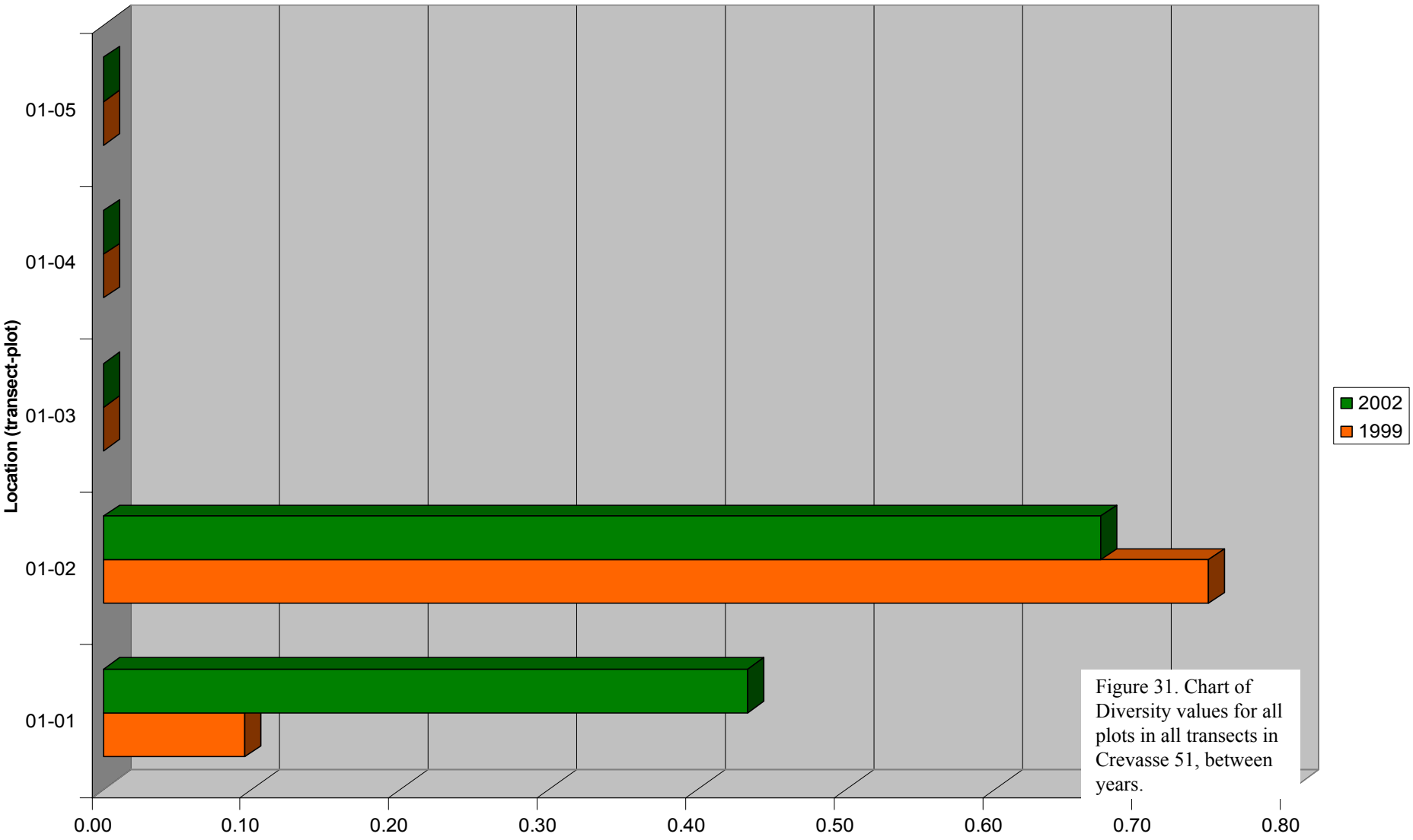


Figure 31. Chart of Diversity values for all plots in all transects in Crevasse 51, between years.

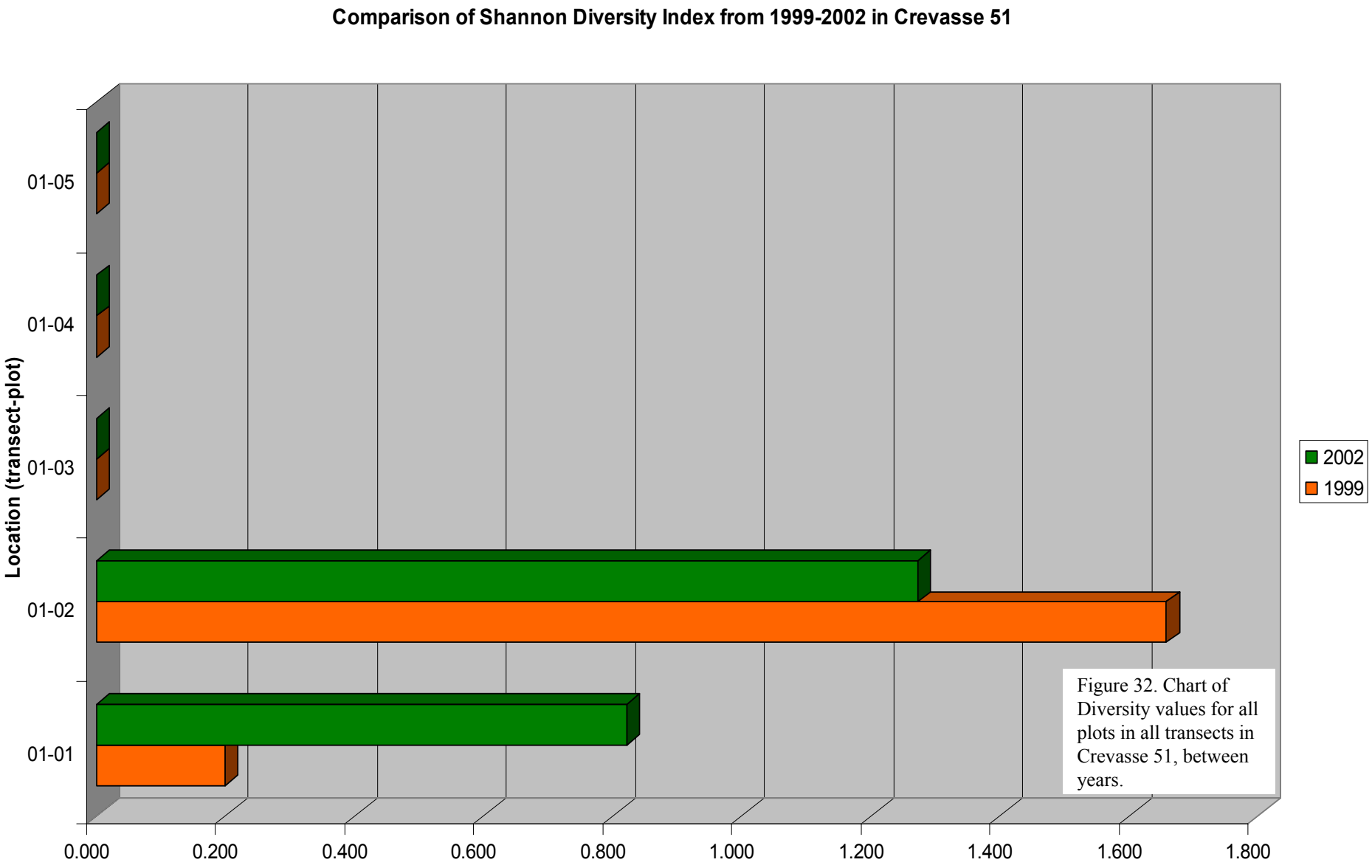


Figure 32. Chart of Diversity values for all plots in all transects in Crevasse 51, between years.

MR-09 Delta-Wide Crevasses

Vegetation

- Comparison of Average Simpson Diversity
- Comparison of Average Shannon Diversity

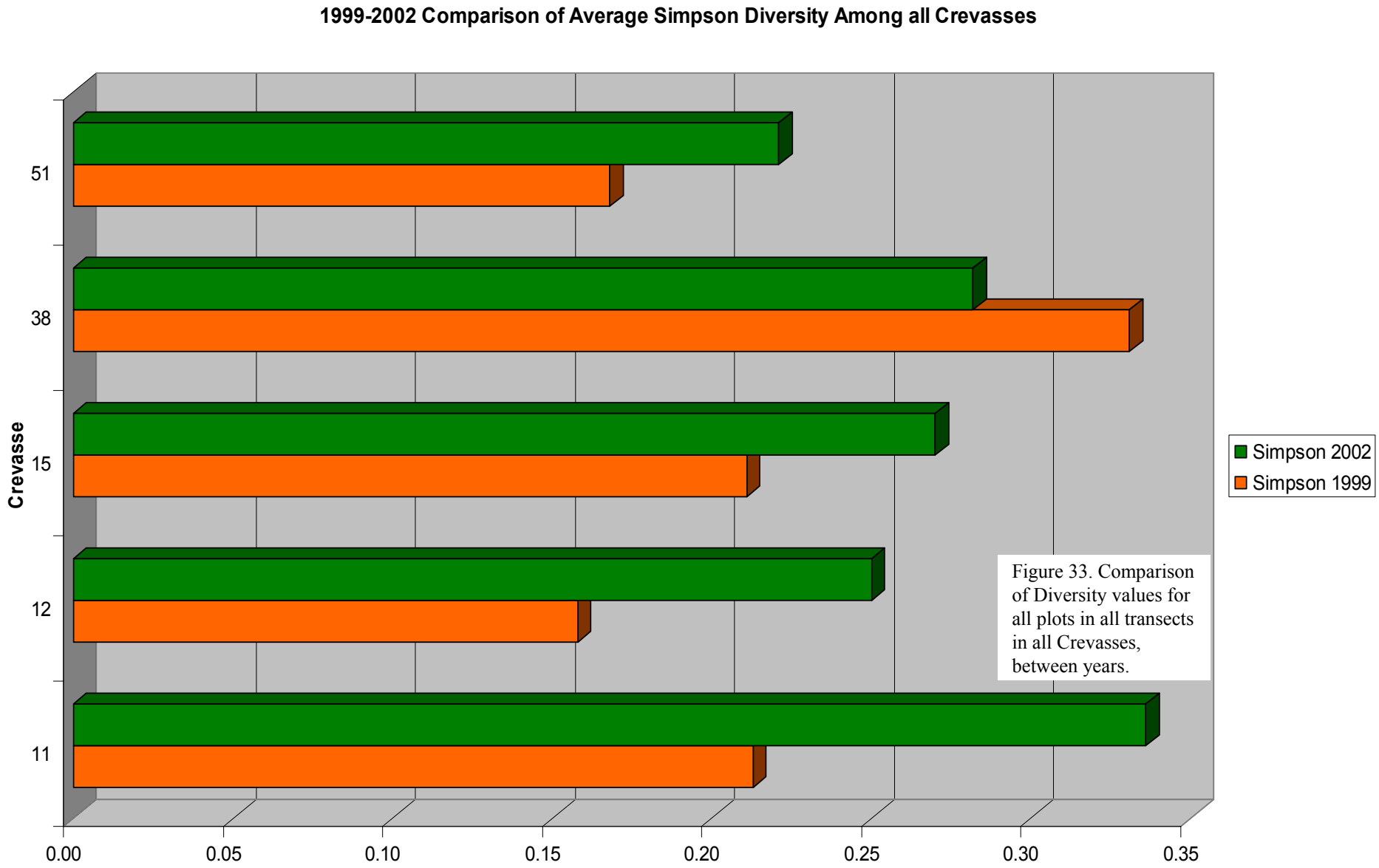


Figure 33. Comparison of Diversity values for all plots in all transects in all Crevasses, between years.

1999-2002 Comparison of Average Shannon Diversity Among all Crevasses

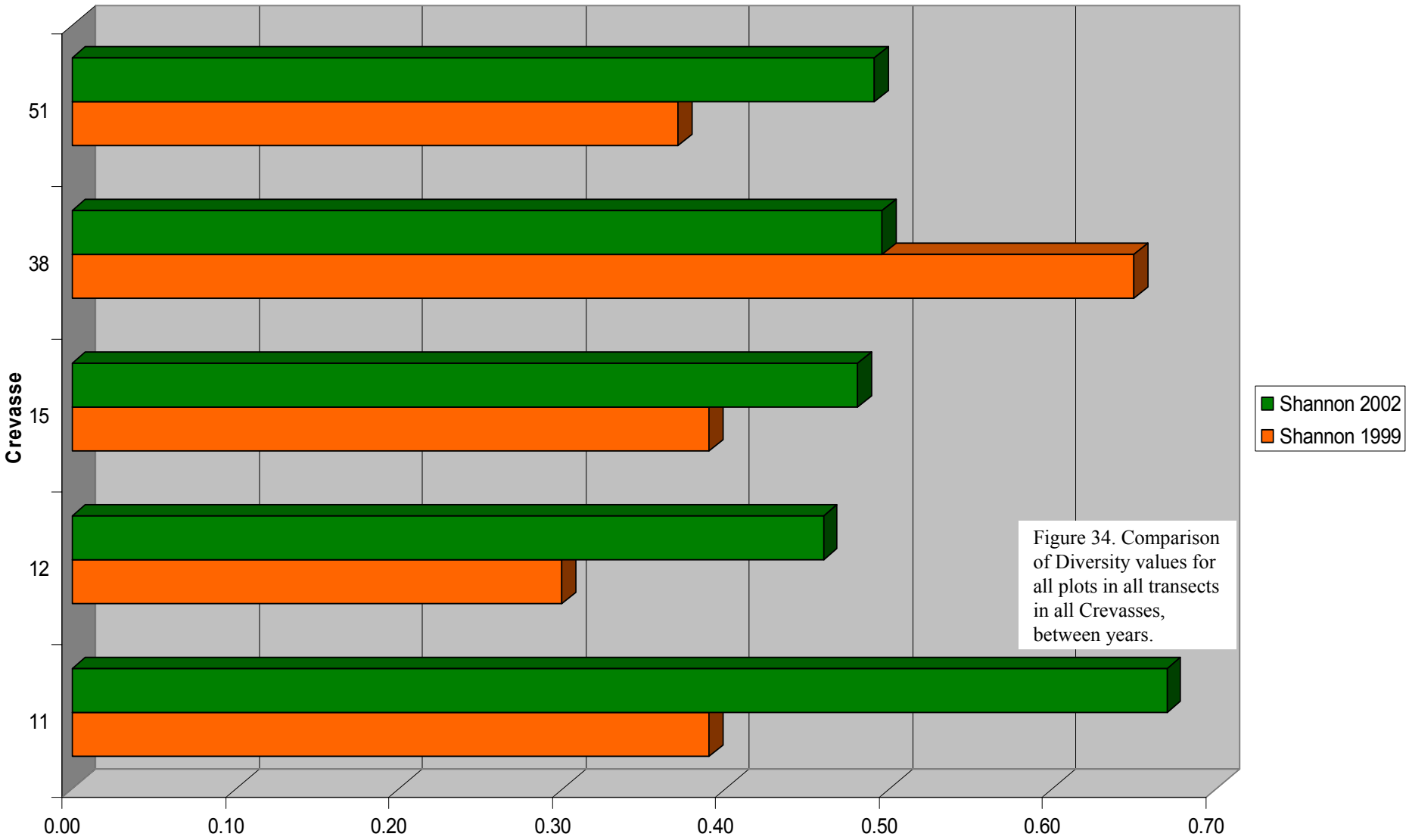


Figure 34. Comparison of Diversity values for all plots in all transects in all Crevasses, between years.

MR-09 Delta-Wide Crevasses

Vegetation

- Community Similarity Index for 1999
- Community Similarity Index for 2002
- Community Similarity Index comparing 1999 to 2002

Community Similarity in 1999

Crevasse	11	12	15	38	51
11	100%				
12	42.9%	100%			
15	31.3%	31.3%	100%		
38	26.1%	20.8%	30.4%	100%	
51	23.5%	23.5%	20.0%	50.0%	100%

Community Similarity in 2002

Crevasse	11	12	15	20	31	58
11	100%					
12	43.8%	100%				
15	62.5%	40.0%	100%			
20	11.8%	7.7%	6.3%	100%		
38	52.9%	50.0%	41.2%	21.4%	100%	
51	40.0%	33.3%	35.7%	9.1%	35.7%	100%

Community Similarity 1999-2002

Crevasse	Similarity
11	71.4%
12	58.3%
15	46.6%
38	40.9%
51	28.5%

Net Change in Simpson Diversity Index from 1999-2002 in Five Crevasses

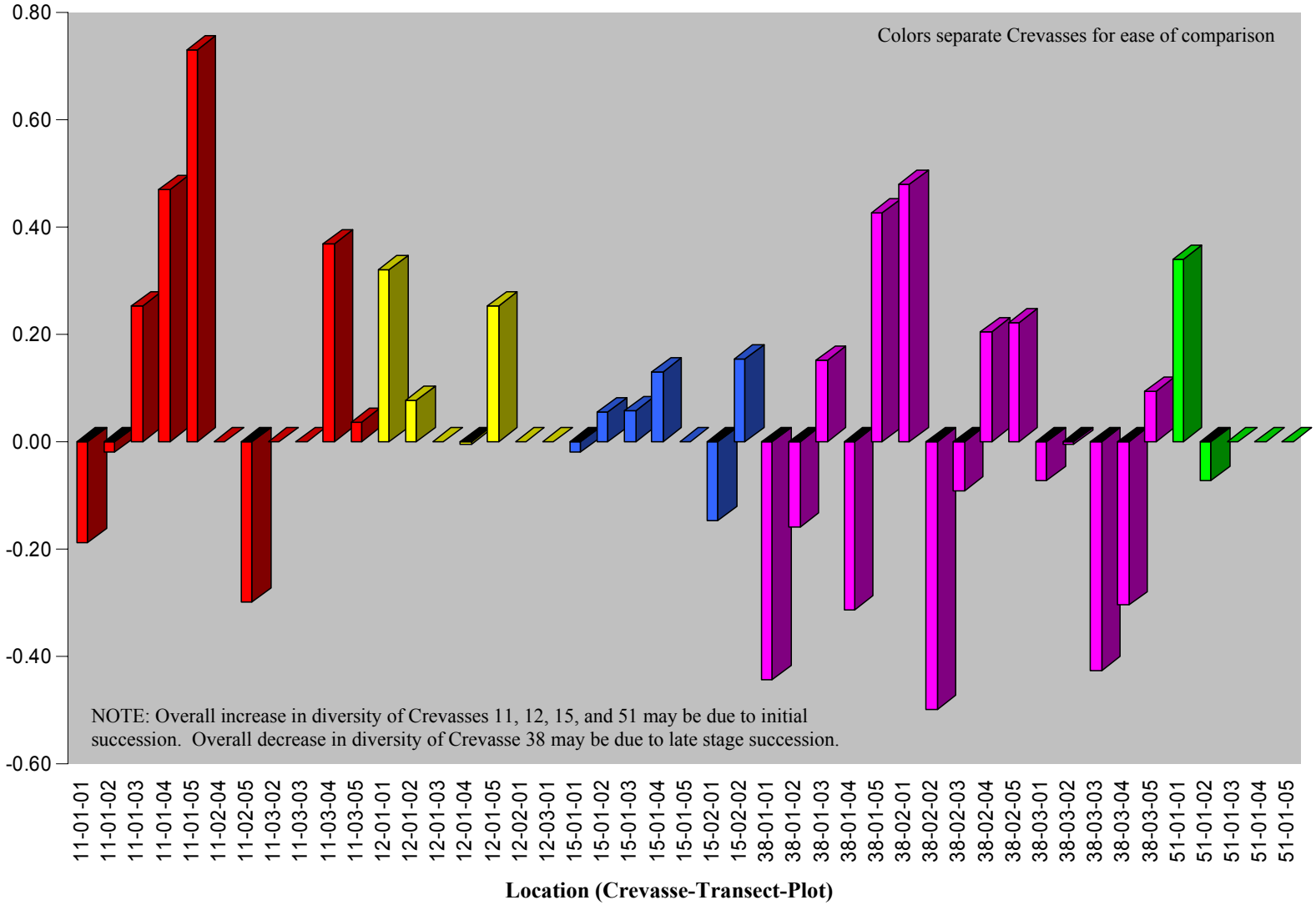


Figure 35. Net change in Simpson Diversity Index value from 1999-2002. Above 0 is an increase in diversity, below 0 is a decrease in diversity.

MR-09 Delta-Wide Crevasses

Preliminary Findings

- Aerial Photography:

  As-built and 2002 data have been collected, but analyses have not been completed.

- Elevation:

  As-built data have been collected (see elevation). The 2002 survey was delayed and data are not available at this time.

- Vegetation:

  Similarity in species composition increased from 1999 to 2002 in all Crevasses. Crevasse 11 had almost the same species composition, unlike most other Crevasses. Diversity (as measured by the Diversity Indices) generally increased in all Crevasses except Crevasse 38. This being the oldest Crevasse (38), the result may be due to the late stages of succession as compared to colonization in other Crevasses (11, 12, 15, 20, and 51. New plant growth, and therefore new plots, has been recorded (see data for Crevasse 20).