

# Dataset formatting and the use of PAST

# Dataset format – basic data

VARIABLES

Morphometrics

Meristics

Additional information

Specimen code:

- to identify individual specimens
- depends on purpose of study, often including locality information
- should be short

SPECIMENS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Code	TL	SL	PAL	AFL	PPeL	PPcL		DFS	DFR	Scales	Vertebrae		Country	Basin	Location	Lat	Loag	Number
2	AtH	11	9.85	4.45	5.474	3.774	1.802							Cameroon	Unknown	Cameroon	?	?	
3	Br01G	185.2	169.5	56.1	114.9		18.7						76	Gabon	Unknown	Gabon	?	?	1930-0032
4	Br02	132	123.9	40.3	82.7		14.6						79	Congo Rep	Unknown		?	?	1930-0143
5	Br03	178.5	162	47.5	113.3	43.8	17.3						81	Congo Rep	Unknown		?	?	1931-0044
6	Br04	203.1	186.5	59.1	135.4	53.9	20.3						80	Congo Rep	Unknown		?	?	1931-0045
7	Br05	179.8	164.7	52.1	115	48.3	19.4						79	Congo Rep	Unknown		?	?	1931-0141
8	BrH	275.79	255.16	88.94	171.64	81.89	27.6						73	Gabon	Ogooue	Ngomo, Gabon	-0.8167	9.95	
9	BS01JaK	148.9	137.61	58.89	76.12	52.44	19.88							Cameroon	Dja	riv. Ja, Kameroc	?	?	1903.7.28.194-195
10	BS02JaK	93.4	87.88	38.07	48.63	33.49	14.21							Cameroon	Dja	riv. Ja, Kameroc	?	?	1903.7.28.194-195
11	Lo01JaK	195.54	172.37	71.8	98.81	65.65	28.22							Cameroon	Dja	riv. Ja, Kameroc	?	?	P-7039
12	Lo02BomK	171.06	153.28	64.97	87.3	57.49	22.61							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
13	Lo03BomK	170.96	155.45	63.11	91.41	55.54	22.61							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
14	Lo04BomK	135.03	122.64	52.04	69.23	47.07	18.35							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
15	Lo05BomK	109.39	100.47	43.55	54.88	39.93	15.54							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
16	Lo06BomK	107.78	99.86	42.15	54.35	37.74	14.99							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
17	Lo07BomK	120.92	108.76	47.84	61.79	41.75	16.59							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
18	Lo08BomK	116.88	105.16	45.51	62.68	40.97	15.85							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
19	Lo09BomK	107.92	99.07	42.65	54.14	37.68	14.92							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
20	Lo10BomK	105.8	96.84	39.49	55.23	35.19	15.23							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
21	Lo11BomK	110.2	99.65	44.58	56.55	39.05	15.69							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
22	Lo12BomK	78.08	70.9	28.75	41.6	26.7	10.57							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
23	Lo13BomK	103.28	93.74	39.16	52.84	36	14.43							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
24	Lo14BomK	110.51	99.9	43.64	56.03	38.04	14.8							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
25	Lo15BomK	97.89	87.6	38.1	48.77	34.16	12.92							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
26	Lo16BomK	86.07	78.42	34.18	42.96	30.03	12.78							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
27	Lo17BomK	67.07	60.25	26.01	34.06	23.9	9.79							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
28	Lo18JaK	163.88	149.73	61.32	82.42	54.95	19.12							Cameroon	Dja	riv. Ja, Kameroc	?	?	P-7071
29	Lo19NjaG	187.17	170.72	74.52	100.65	69.31	28.96					64		Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
30	Lo20NjaG	128.66	115.31	45.87	66.88	42.43	17.5					59		Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
31	Lo21MakG	98.69	88.05	38.82	48.38	34.96	12.35							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
32	Lo22MakG	69.95	61.81	27.09	33.72	23.81	9.68							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
33	Lo23MakG	33.91	29.89	15.11	13.96	13.18	5.55							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
34	Lo24OIG	74.25	67.21	29.94	37.1	27.36	11.86							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
35	Lo25OIG	63.08	56.03	23.66	30.81	21.97	9.92							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
36	Lo26OIG	70.84	63.8	28.68	37.46	26.15	10.28							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
37	Lo27NjG	220.81	197.47	75.96	113.33	71.59	25.58							Cameroon	Sangha	Kombetiko, riv. f	?	?	76-14-P-839
38	Lo28NjG	228.75	206.53	85.66	119.63	75.57	32.52						65	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
39	Lo29NjG	210.73	189.61	76.59	109.59	68.77	27.81						63	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
40	Lo30NjG	140.42	126.05	55.18	70.78	48.19	20.37						63	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
41	Lo31NjaG	62.18	53.11	25.01	26.94	21.87	10.31							Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	179086-110

# Dataset format – basic data

## Morphometrics:

- first total length and standard length
- group body and head measurements
- usually same order as on measurement sheets

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	<i>Code</i>	TL	SL	PAL	AFL	PPeL	PPcL		DFS	DFR	Scales	Vertebrae		Country	Basin	Location	Lat	Loag	Number
2	AtH	11	9.85	4.45	5.474	3.774	1.802							Cameroon	Unknown	Cameroon	?	?	
3	Br01G	185.2	169.5	56.1	114.9		18.7						76	Gabon	Unknown	Gabon	?	?	1930-0032
4	Br02	132	123.9	40.3	82.7	37.9	14.6						79	Congo Rep	Unknown		?	?	1930-0143
5	Br03	178.5	162	47.5	113.3	43.8	17.3						81	Congo Rep	Unknown		?	?	1931-0044
6	Br04	203.1	186.5	59.1	135.4	53.9	20.3						80	Congo Rep	Unknown		?	?	1931-0045
7	Br05	179.8	164.7	52.1	115	48.3	19.4						79	Congo Rep	Unknown		?	?	1931-0141
8	BrH	275.79	255.16	88.94	171.64	81.89	27.6						73	Gabon	Ogooue	Ngomo, Gabon	-0.8167	9.95	
9	BS01JaK	148.9	137.61	58.89	76.12	52.44	19.88							Cameroon	Dja	riv. Ja, Kameroe	?	?	1903.7.28.194-195
10	BS02JaK	93.4	87.88	38.07	48.63	33.49	14.21							Cameroon	Dja	riv. Ja, Kameroe	?	?	1903.7.28.194-195
11	Lo01JaK	195.54	172.37	71.8	98.81	65.65	28.22							Cameroon	Dja	riv. Ja, Kameroe	?	?	P-7039
12	Lo02BomK	171.06	153.28	64.97	87.3	57.49	22.61							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
13	Lo03BomK	170.96	155.45	63.11	91.41	55.54	22.61							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
14	Lo04BomK	135.03	122.64	52.04	69.23	47.07	18.35							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
15	Lo05BomK	109.39	100.47	43.55	54.88	39.93	15.54							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
16	Lo06BomK	107.78	99.86	42.15	54.35	37.74	14.99							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
17	Lo07BomK	120.92	108.76	47.84	61.79	41.75	16.59							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
18	Lo08BomK	116.88	105.16	45.51	62.68	40.97	15.85							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
19	Lo09BomK	107.92	99.07	42.65	54.14	37.68	14.92							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
20	Lo10BomK	105.8	96.84	39.49	55.23	35.19	15.23							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
21	Lo11BomK	110.2	99.65	44.58	56.55	39.05	15.69							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
22	Lo12BomK	78.08	70.9	28.75	41.6	26.7	10.57							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
23	Lo13BomK	103.28	93.74	39.16	52.84	36	14.43							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
24	Lo14BomK	110.51	99.9	43.64	56.03	38.04	14.8							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
25	Lo15BomK	97.89	87.6	38.1	48.77	34.16	12.92							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
26	Lo16BomK	86.07	78.42	34.18	42.96	30.03	12.78							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
27	Lo17BomK	67.07	60.25	26.01	34.06	23.9	9.79							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
28	Lo18JaK	163.88	149.73	61.32	82.42	54.95	19.12							Cameroon	Dja	riv. Ja, Kameroe	?	?	P-7071
29	Lo19NyaG	187.17	170.72	74.52	100.65	69.31	28.96						64	Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
30	Lo20NyaG	128.66	115.31	45.87	66.88	42.43	17.5						59	Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
31	Lo21MakG	98.69	88.05	38.82	48.38	34.96	12.35							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
32	Lo22MakG	69.95	61.81	27.09	33.72	23.81	9.68							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
33	Lo23MakG	33.91	29.89	15.11	13.96	13.18	5.55							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
34	Lo24OIG	74.25	67.21	29.94	37.1	27.36	11.86							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
35	Lo25OIG	63.08	56.03	23.66	30.81	21.97	9.92							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
36	Lo26OIG	70.84	63.8	28.68	37.46	26.15	10.28							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
37	Lo27NgK	220.81	197.47	75.96	113.33	71.59	25.58							Cameroon	Sangha	Kombetiko, riv. f	?	?	76-14-P-839
38	Lo28NyoK	228.75	206.53	85.66	119.63	75.57	32.52						65	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
39	Lo29NyoK	210.73	189.61	76.59	109.59	68.77	27.81						63	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
40	Lo30NyoK	140.42	126.05	55.18	70.78	48.19	20.37						63	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
41	Lo31NyaG	62.18	53.11	25.01	26.94	21.87	10.31							Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	179086-110

# Dataset format – basic data

## Meristics:

- group fin ray counts together (dorsal spines and soft rays, anal spines and soft rays,...), as well as scale counts (longitudinal, transversal,...)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Code	TL	SL	PAL	AFL	PPeL	PPcL		DFS	DFR	Scales	Vertebrae		Country	Basin	Location	Lat	Loag	Number
2	AtH	11	9.85	4.45	5.474	3.774	1.802							Cameroon	Unknown	Cameroon	?	?	
3	Br01G	185.2	169.5	56.1	114.9		18.7					76		Gabon	Unknown	Gabon	?	?	1930-0032
4	Br02	132	123.9	40.3	82.7	37.9	14.6					79		Congo Rep	Unknown		?	?	1930-0143
5	Br03	178.5	162	47.5	113.3	43.8	17.3					81		Congo Rep	Unknown		?	?	1931-0044
6	Br04	203.1	186.5	59.1	135.4	53.9	20.3					80		Congo Rep	Unknown		?	?	1931-0045
7	Br05	179.8	164.7	52.1	115	48.3	19.4					79		Congo Rep	Unknown		?	?	1931-0141
8	BrH	275.79	255.16	88.94	171.64	81.89	27.6					73		Gabon	Ogooue	Ngomo, Gabon	-0.8167	9.95	
9	BS01JaK	148.9	137.61	58.89	76.12	52.44	19.88							Cameroon	Dja	riv. Ja, Kameroe	?	?	1903.7.28.194-195
10	BS02JaK	93.4	87.88	38.07	48.63	33.49	14.21							Cameroon	Dja	riv. Ja, Kameroe	?	?	1903.7.28.194-195
11	Lo01JaK	195.54	172.37	71.8	98.81	65.65	28.22							Cameroon	Dja	riv. Ja, Kameroe	?	?	P-7039
12	Lo02BomK	171.06	153.28	64.97	87.3	57.49	22.61							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
13	Lo03BomK	170.96	155.45	63.11	91.41	55.54	22.61							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
14	Lo04BomK	135.03	122.64	52.04	69.23	47.07	18.35							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
15	Lo05BomK	109.39	100.47	43.55	54.88	39.93	15.54							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
16	Lo06BomK	107.78	99.86	42.15	54.35	37.74	14.99							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
17	Lo07BomK	120.92	108.76	47.84	61.79	41.75	16.59							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
18	Lo08BomK	116.88	105.16	45.51	62.68	40.97	15.85							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
19	Lo09BomK	107.92	99.07	42.65	54.14	37.68	14.92							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
20	Lo10BomK	105.8	96.84	39.49	55.23	35.19	15.23							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
21	Lo11BomK	110.2	99.65	44.58	56.55	39.05	15.69							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
22	Lo12BomK	78.08	70.9	28.75	41.6	26.7	10.57							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
23	Lo13BomK	103.28	93.74	39.16	52.84	36	14.43							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
24	Lo14BomK	110.51	99.9	43.64	56.03	38.04	14.8							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
25	Lo15BomK	97.89	87.6	38.1	48.77	34.16	12.92							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
26	Lo16BomK	86.07	78.42	34.18	42.96	30.03	12.78							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
27	Lo17BomK	67.07	60.25	26.01	34.06	23.9	9.79							Cameroon	Dja	Méséa, riv. Borr	2.8167	12.9333	P 77032.0017-0032
28	Lo18JaK	163.88	149.73	61.32	82.42	54.95	19.12							Cameroon	Dja	riv. Ja, Kameroe	?	?	P-7071
29	Lo19NyaG	187.17	170.72	74.52	100.65	69.31	28.96					64		Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
30	Lo20NyaG	128.66	115.31	45.87	66.88	42.43	17.5					59		Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
31	Lo21MakG	98.69	88.05	38.82	48.38	34.96	12.35							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
32	Lo22MakG	69.95	61.81	27.09	33.72	23.81	9.68							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
33	Lo23MakG	33.91	29.89	15.11	13.96	13.18	5.55							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
34	Lo24OIG	74.25	67.21	29.94	37.1	27.36	11.86							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
35	Lo25OIG	63.08	56.03	23.66	30.81	21.97	9.92							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
36	Lo26OIG	70.84	63.8	28.68	37.46	26.15	10.28							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
37	Lo27NgK	220.81	197.47	75.96	113.33	71.59	25.58							Cameroon	Sangha	Kombetiko, riv. f	?	?	76-14-P-839
38	Lo28NyoK	228.75	206.53	85.66	119.63	75.57	32.52							Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
39	Lo29NyoK	210.73	189.61	76.59	109.59	68.77	27.81							Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
40	Lo30NyoK	140.42	126.05	55.18	70.78	48.19	20.37							Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
41	Lo31NyaG	62.18	53.11	25.01	26.94	21.87	10.31							Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	179086-110

# Dataset format – basic data

Additional information, mostly based on label information:

- country, basin, exact locality,...
- collection number
- remarks on the specimen (from own observations)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Code	TL	SL	PAL	AFL	PPeL	PPcL		DFS	DFR	Scales	Vertebrae		Country	Basin	Location	Lat	Loag	Number
2	AtH	11	9.85	4.45	5.474	3.774	1.802							Cameroon	Unknown	Cameroon	?	?	
3	Br01G	185.2	169.5	56.1	114.9		18.7					76		Gabon	Unknown	Gabon	?	?	1930-0032
4	Br02	132	123.9	40.3	82.7	37.9	14.6					79		Congo Rep	Unknown		?	?	1930-0143
5	Br03	178.5	162	47.5	113.3	43.8	17.3					81		Congo Rep	Unknown		?	?	1931-0044
6	Br04	203.1	186.5	59.1	135.4	53.9	20.3					80		Congo Rep	Unknown		?	?	1931-0045
7	Br05	179.8	164.7	52.1	115	48.3	19.4					79		Congo Rep	Unknown		?	?	1931-0141
8	BrH	275.79	255.16	88.94	171.64	81.89	27.6					73		Gabon	Ogooue	Ngomo, Gabon	-0.8167	9.95	
9	BS01JaK	148.9	137.61	58.89	76.12	52.44	19.88							Cameroon	Dja	riv. Ja, Kameroe	?	?	1903.7.28.194-195
10	BS02JaK	93.4	87.88	38.07	48.63	33.49	14.21							Cameroon	Dja	riv. Ja, Kameroe	?	?	1903.7.28.194-195
11	Lo01JaK	195.54	172.37	71.8	98.81	65.65	28.22							Cameroon	Dja	riv. Ja, Kameroe	?	?	P-7039
12	Lo02BomK	171.06	153.28	64.97	87.3	57.49	22.61							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
13	Lo03BomK	170.96	155.45	63.11	91.41	55.54	22.61							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
14	Lo04BomK	135.03	122.64	52.04	69.23	47.07	18.35							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
15	Lo05BomK	109.39	100.47	43.55	54.88	39.93	15.54							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
16	Lo06BomK	107.78	99.86	42.15	54.35	37.74	14.99							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
17	Lo07BomK	120.92	108.76	47.84	61.79	41.75	16.59							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
18	Lo08BomK	116.88	105.16	45.51	62.68	40.97	15.85							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
19	Lo09BomK	107.92	99.07	42.65	54.14	37.68	14.92							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
20	Lo10BomK	105.8	96.84	39.49	55.23	35.19	15.23							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
21	Lo11BomK	110.2	99.65	44.58	56.55	39.05	15.69							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
22	Lo12BomK	78.08	70.9	28.75	41.6	26.7	10.57							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
23	Lo13BomK	103.28	93.74	39.16	52.84	36	14.43							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
24	Lo14BomK	110.51	99.9	43.64	56.03	38.04	14.8							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
25	Lo15BomK	97.89	87.6	38.1	48.77	34.16	12.92							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
26	Lo16BomK	86.07	78.42	34.18	42.96	30.03	12.78							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
27	Lo17BomK	67.07	60.25	26.01	34.06	23.9	9.79							Cameroon	Dja	Méséa, riv. Bor	2.8167	12.9333	P 77032.0017-0032
28	Lo18JaK	163.88	149.73	61.32	82.42	54.95	19.12							Cameroon	Dja	riv. Ja, Kameroe	?	?	P-7071
29	Lo19NyaG	187.17	170.72	74.52	100.65	69.31	28.96					64		Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
30	Lo20NyaG	128.66	115.31	45.87	66.88	42.43	17.5					59		Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	P-179114-115
31	Lo21MakG	98.69	88.05	38.82	48.38	34.96	12.35							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
32	Lo22MakG	69.95	61.81	27.09	33.72	23.81	9.68							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
33	Lo23MakG	33.91	29.89	15.11	13.96	13.18	5.55							Gabon	Ivindo	Nzingmeyong, Iv	0.58	12.87	178859
34	Lo24DIG	74.25	67.21	29.94	37.1	27.36	11.86							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
35	Lo25DIG	63.08	56.03	23.66	30.81	21.97	9.92							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
36	Lo26DIG	70.84	63.8	28.68	37.46	26.15	10.28							Cameroon	Nyong or Dja	Olounou, beek N	2.82	12.13	73-16-P-6651-659
37	Lo27NjgK	220.81	197.47	75.96	113.33	71.59	25.58							Cameroon	Sangha	Kombetiko, riv. f	?	?	76-14-P-839
38	Lo28NjgK	228.75	206.53	85.66	119.63	75.57	32.52						65	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
39	Lo29NjgK	210.73	189.61	76.59	109.59	68.77	27.81						63	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
40	Lo30NjgK	140.42	126.05	55.18	70.78	48.19	20.37						63	Cameroon	Nyong	Ebogo, riv. Nyor	3.38	11.47	73-18-P-3311-3313
41	Lo31NyaG	62.18	53.11	25.01	26.94	21.87	10.31							Gabon	Nyanga	Tchibanga, riv. N	-2.85	11.03	179086-110

# Dataset format – modified data

## General

- Modified data = datasets derived from the original (basic) dataset with the original measurements.
- Includes LOG-transformed datasets and percentage calculations (%SL, %HL), which are only performed on morphometric information (measurements); meristics are not transformed.
- PAST allows LOG-transformation of an imported dataset, but not percentage calculations, so the latter have to be done before importing data in PAST.
- Morphometric and meristic data are analysed separately.

# Dataset format – modified data

## Modifying data in MS Excel:

- Worksheet 1 = original data; worksheet 2 = %SL; worksheet 3 = %HL; LOG-transformation can be done in PAST; only measurements are LOG-transformed or used for percentage calculations, meristics not.
- By using formulae in worksheets 2 and 3, corrections of the original data in worksheet 1 are immediately applied to these worksheets.  
  
%SL:  $(\text{variable}/\text{SL}) * 100$   
%HL:  $(\text{variable}/\text{HL}) * 100$
- The “additional information” part of worksheet 1 can be excluded from the other worksheets.

# PAST: entering data

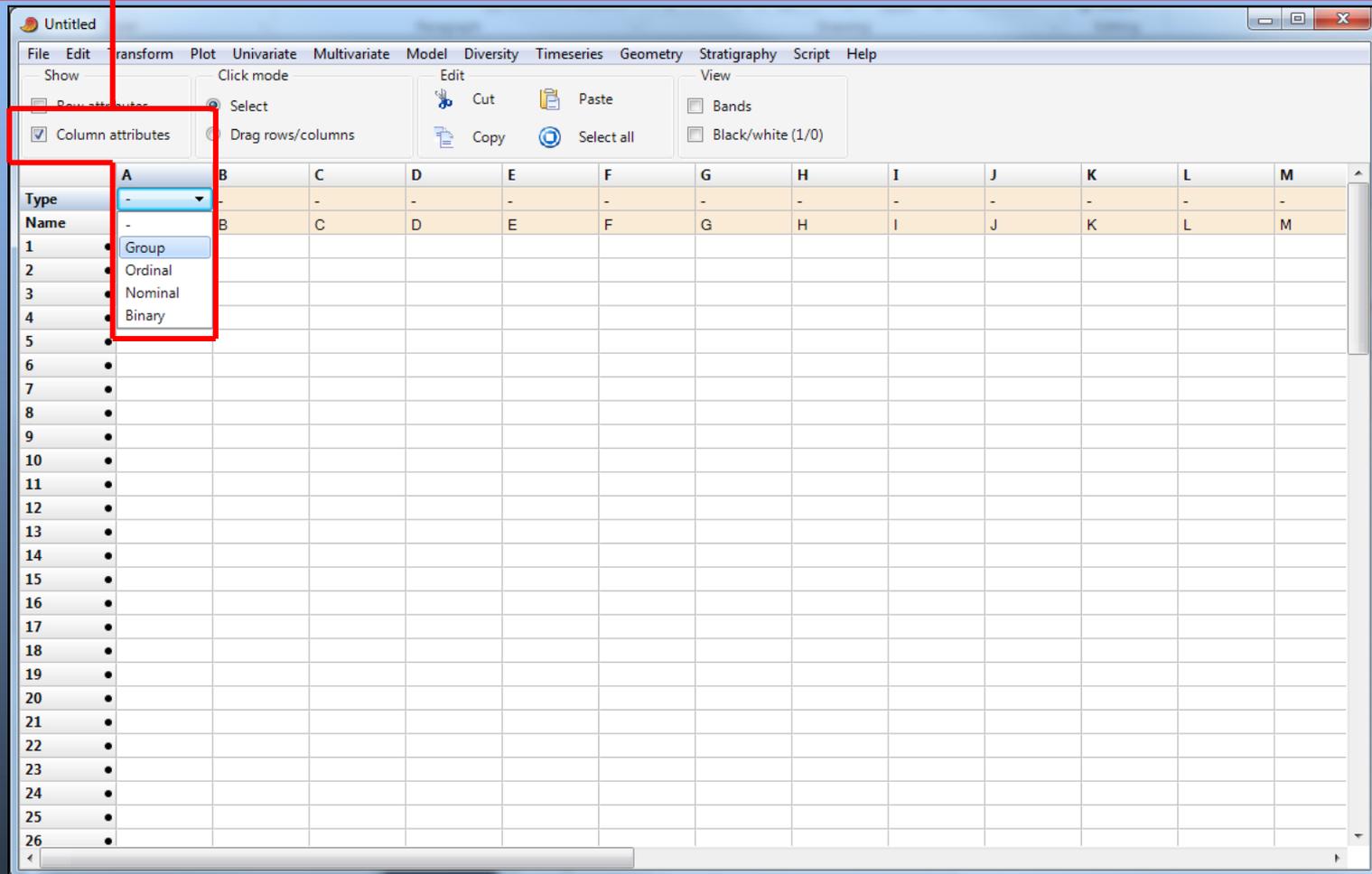
1) Excel: Select and copy your data (measurements or meristics, not the additional information)

The screenshot shows the PAST software interface with a spreadsheet. The menu bar includes File, Edit, Transform, Plot, Univariate, Multivariate, Model, Diversity, Time series, Geometry, Zoogeography, Script, and Help. The 'Show' dropdown is set to 'Click mode'. The 'Row attributes' and 'Column attributes' checkboxes are checked and circled in red. A red box highlights the text '2) PAST: Check "Row attributes" and "Column attributes"'. The spreadsheet has columns labeled Color, Symbol, Name, A, B, C, D, E, F, G, H, I. The 'Name' column contains numbers 1 through 26. The 'A' column contains letters A through I. A green box highlights the cell at the intersection of the 'Name' column and the 'A' column, with the text '3) Select the "name-name" cell and paste your copied data; this will add column (variables) and row (specimens) codes in the correct column and row in PAST' overlaid on it.

Type	Color	Symbol	Name	A	B	C	D	E	F	G	H	I
Name				A	B	C	D	E	F	G	H	I
1		Dot	1									
2		Dot	2									
3		Dot	3									
4		Dot	4									
5		Dot	5									
6		Dot	6									
7		Dot	7									
8		Dot	8									
9		Dot	9									
10		Dot	10									
11		Dot	11									
12		Dot	12									
13		Dot	13									
14		Dot	14									
15		Dot	15									
16		Dot	16									
17		Dot	17									
18		Dot	18									
19		Dot	19									
20		Dot	20									
21		Dot	21									
22		Dot	22									
23		Dot	23									
24		Dot	24									
25		Dot	25									
26		Dot	26									

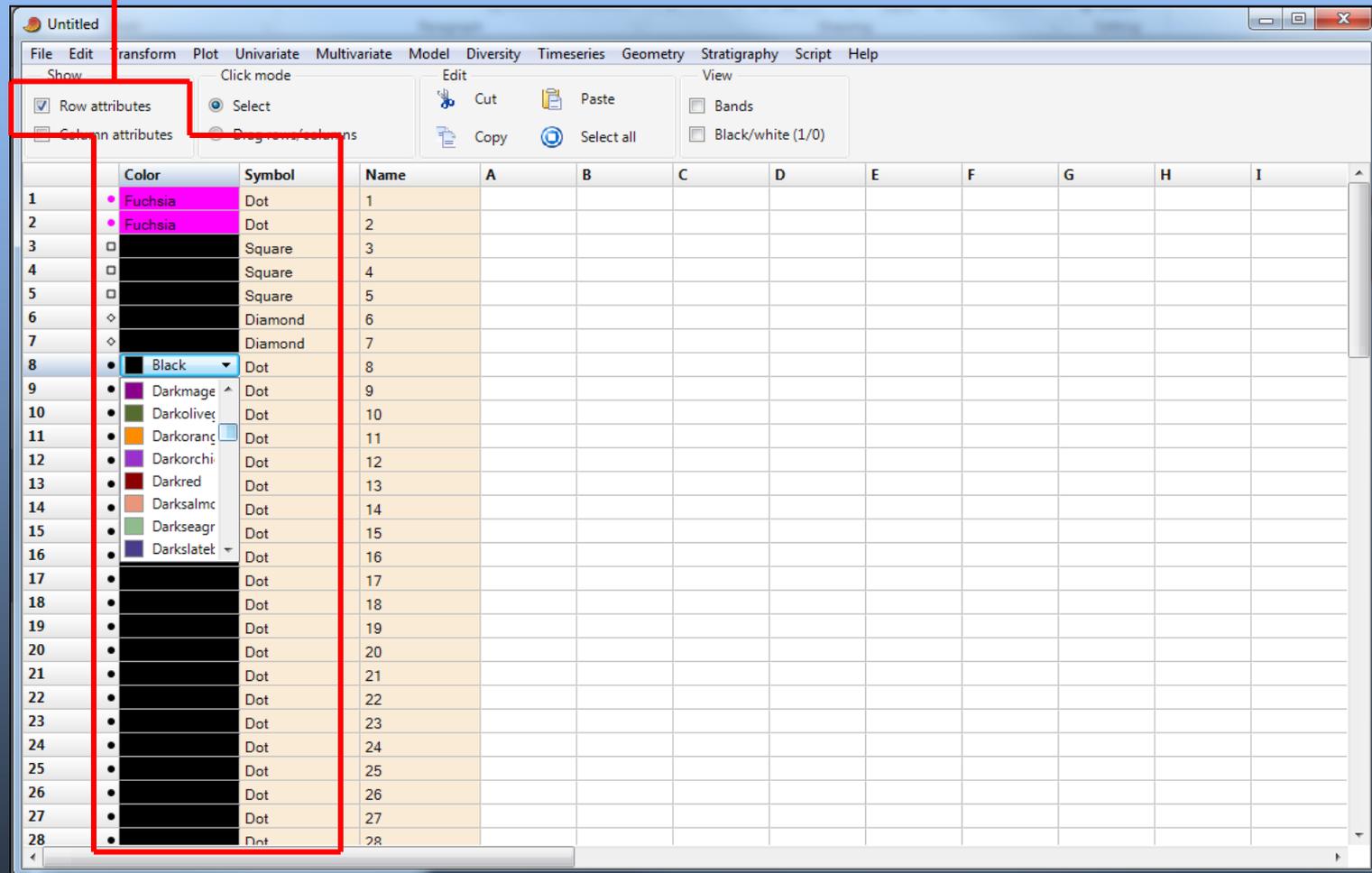
# PAST: entering data

Columns can be identified as containing a grouping variable by changing the column type. Grouping variables can be text (e.g. “male” and “female”) or a numeric value (e.g. “1”, “2”, etc.).



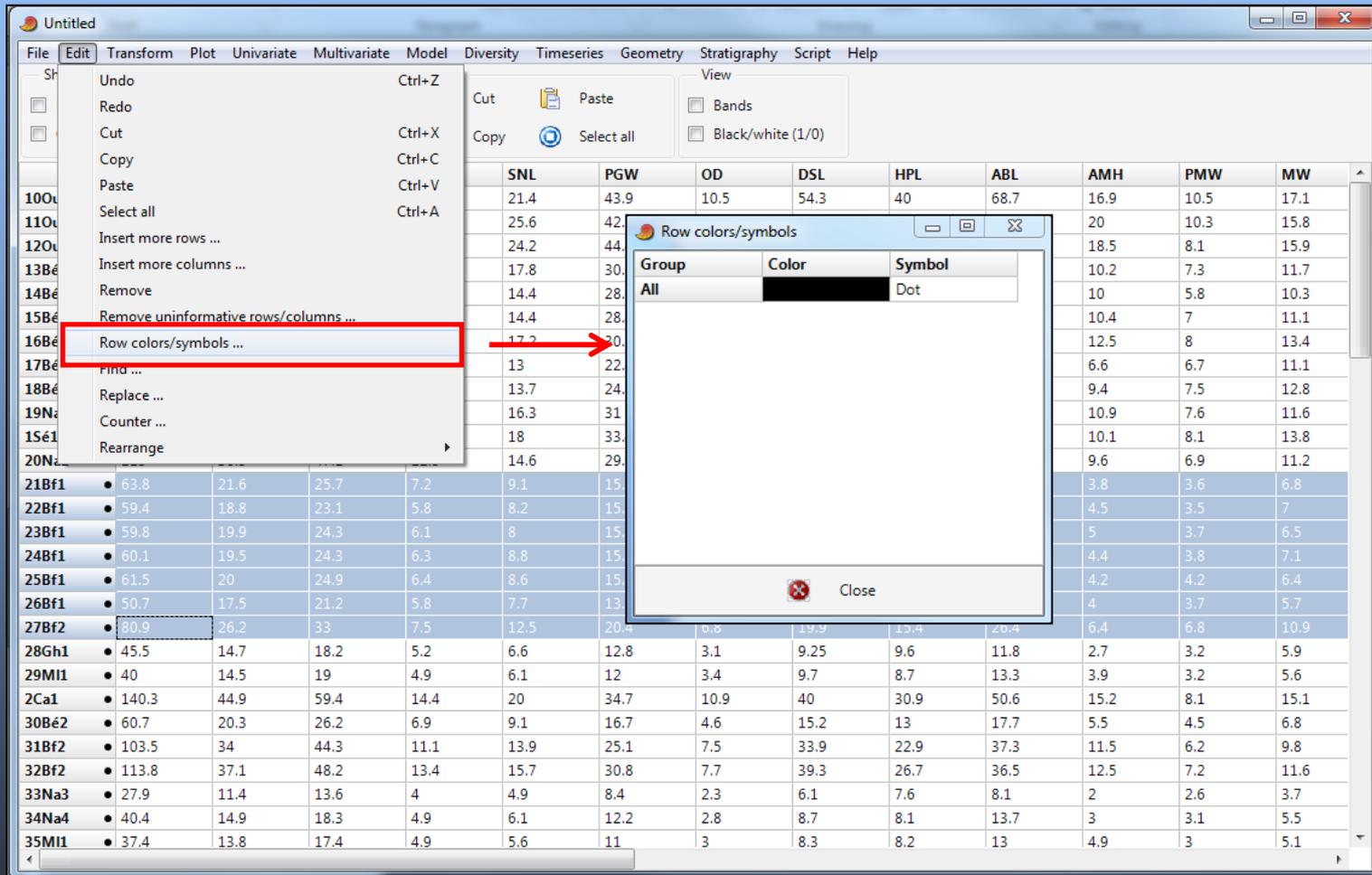
# PAST: entering data

Symbols (and colours) can be set for individual specimens or groups of specimens.



# PAST: entering data

Alternatively, choose “Edit – Row colors/symbols” after selecting multiple specimens to quickly set group symbols or colours.



The screenshot shows the PAST software interface with a data table and a dialog box for setting row colors and symbols. The data table has columns: SNL, PGW, OD, DSL, HPL, ABL, AMH, PMW, MW. The dialog box has columns: Group, Color, Symbol. The 'All' group is selected, and the color is set to black and the symbol to a dot.

	SNL	PGW	OD	DSL	HPL	ABL	AMH	PMW	MW				
100u	21.4	43.9	10.5	54.3	40	68.7	16.9	10.5	17.1				
110u	25.6	42.2					20	10.3	15.8				
120u	24.2	44.1					18.5	8.1	15.9				
13Be	17.8	30.1					10.2	7.3	11.7				
14Be	14.4	28.1					10	5.8	10.3				
15Be	14.4	28.1					10.4	7	11.1				
16Be	17.2	30.1					12.5	8	13.4				
17Be	13	22.1					6.6	6.7	11.1				
18Be	13.7	24.1					9.4	7.5	12.8				
19Na	16.3	31.1					10.9	7.6	11.6				
15e1	18	33.1					10.1	8.1	13.8				
20Na	14.6	29.1					9.6	6.9	11.2				
21Bf1	63.8	21.6	25.7	7.2	9.1	15.1	3.8	3.6	6.8				
22Bf1	59.4	18.8	23.1	5.8	8.2	15.1	4.5	3.5	7				
23Bf1	59.8	19.9	24.3	6.1	8	15.1	5	3.7	6.5				
24Bf1	60.1	19.5	24.3	6.3	8.8	15.1	4.4	3.8	7.1				
25Bf1	61.5	20	24.9	6.4	8.6	15.1	4.2	4.2	6.4				
26Bf1	50.7	17.5	21.2	5.8	7.7	13.1	4	3.7	5.7				
27Bf2	80.9	26.2	33	7.5	12.5	20.4	6.4	6.8	10.9				
28Gh1	45.5	14.7	18.2	5.2	6.6	12.8	3.1	9.25	9.6	11.8	2.7	3.2	5.9
29MII	40	14.5	19	4.9	6.1	12	3.4	9.7	8.7	13.3	3.9	3.2	5.6
2Ca1	140.3	44.9	59.4	14.4	20	34.7	10.9	40	30.9	50.6	15.2	8.1	15.1
30Be2	60.7	20.3	26.2	6.9	9.1	16.7	4.6	15.2	13	17.7	5.5	4.5	6.8
31Bf2	103.5	34	44.3	11.1	13.9	25.1	7.5	33.9	22.9	37.3	11.5	6.2	9.8
32Bf2	113.8	37.1	48.2	13.4	15.7	30.8	7.7	39.3	26.7	36.5	12.5	7.2	11.6
33Na3	27.9	11.4	13.6	4	4.9	8.4	2.3	6.1	7.6	8.1	2	2.6	3.7
34Na4	40.4	14.9	18.3	4.9	6.1	12.2	2.8	8.7	8.1	13.7	3	3.1	5.5
35MII	37.4	13.8	17.4	4.9	5.6	11	3	8.3	8.2	13	4.9	3	5.1

# PAST: log transformation

1) Select your data; the cell indicated below will select all data

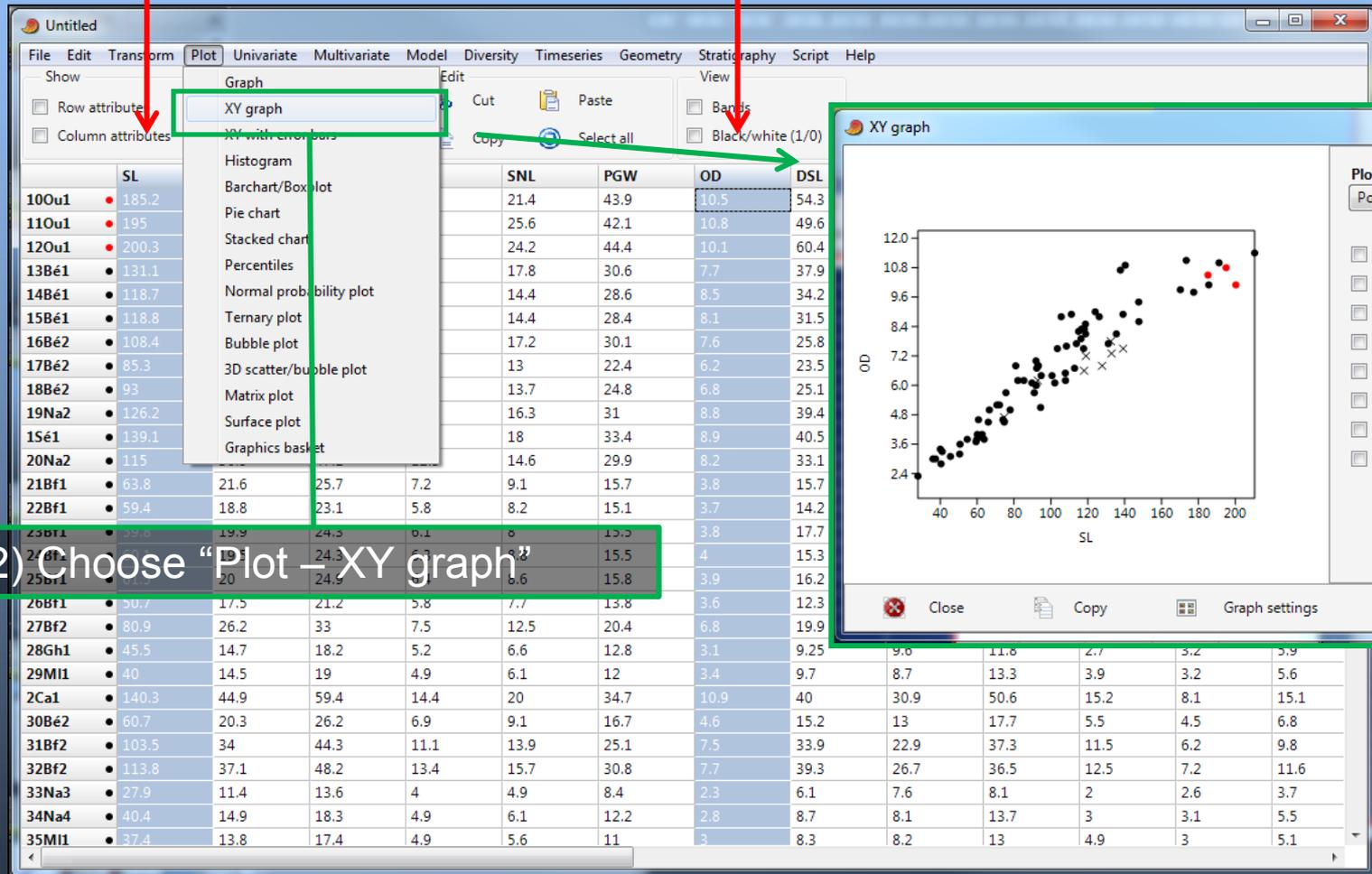
2) Choose « Transform - Log »

Note that log transformation is not possible when there are empty cells in the selected range. Either replace the empty cell(s) by "?", remove the specimen or remove the variable. Missing values should NOT be replaced by zero!

	INL	SNI	PGW	OD	DSL	HPL	ABL	AMH	PMW	MW			
100u1	20.2								10.5	17.1			
110u1	24.3								10.3	15.8			
120u1	23.5	24.2	44.4	10.1	60.4	50	60.9	18.5	8.1	15.9			
13Be1	14.1	17.8	30.6	7.7	37.9	27.3	42	10.2	7.3	11.7			
14Be1	10.7	14.4	28.6	8.5	34.2	25.6	41.3	10	5.8	10.3			
15Be1	12.1	14.4	28.4	8.1	31.5	28.3	40	10.4	7	11.1			
16Be2	108.4	37.1	46.3	12.2	17.2	30.1	7.6	25.8	23.7	38.7	12.5	8	13.4
17Be2	85.3	28.7	35.2	9	13	22.4	6.2	23.5	17.2	29.8	6.6	6.7	11.1
18Be2	93	29.8	37.1	9.5	13.7	24.8	6.8	25.1	21.9	31.2	9.4	7.5	12.8
19Na2	126.2	41	52.4	13.9	16.3	31	8.8	39.4	26	41.4	10.9	7.6	11.6
15e1	139.1	43.6	55.7	14.7	18	33.4	8.9	40.5	29.9	43.4	10.1	8.1	13.8
20Na2	115	36.5	47.1	12.5	14.6	29.9	8.2	33.1	24.5	38	9.6	6.9	11.2
21Bf1	63.8	21.6	25.7	7.2	9.1	15.7	3.8	15.7	12.2	19.4	3.8	3.6	6.8
22Bf1	59.4	18.8	23.1	5.8	8.2	15.1	3.7	14.2	11.8	19.6	4.5	3.5	7
23Bf1	59.8	19.9	24.3	6.1	8	15.5	3.8	17.7	11.9	16.9	5	3.7	6.5
24Bf1	60.1	19.5	24.3	6.3	8.8	15.5	4	15.3	12.1	19.8	4.4	3.8	7.1
25Bf1	61.5	20	24.9	6.4	8.6	15.8	3.9	16.2	11.8	19.6	4.2	4.2	6.4
26Bf1	50.7	17.5	21.2	5.8	7.7	13.8	3.6	12.3	10.6	16	4	3.7	5.7
27Bf2	80.9	26.2	33	7.5	12.5	20.4	6.8	19.9	15.4	26.4	6.4	6.8	10.9
28Gh1	45.5	14.7	18.2	5.2	6.6	12.8	3.1	18.25	9.6	11.8	2.7	3.2	5.9
29MII	40	14.5	19	4.9	6.1	12	3.4	9.7	8.7	13.3	3.9	3.2	5.6
30Be2	60.7	30.3	26.2	6.9	9.1	16.7	4.6	15.2	13	17.7	4.5	4.5	6.8
31Na2	113.5	37.1	46.3	13.4	15.7	30.1	7.7	36.7	26.7	36.5	12.5	11.6	11.6
32Bf2	113.8	37.1	46.3	13.4	15.7	30.1	7.7	36.7	26.7	36.5	12.5	11.6	11.6
33Na2	113.8	37.1	46.3	13.4	15.7	30.1	7.7	36.7	26.7	36.5	12.5	11.6	11.6
34Na2	113.8	37.1	46.3	13.4	15.7	30.1	7.7	36.7	26.7	36.5	12.5	11.6	11.6
35MII	37.4	13.8	17.4	4.9	5.6	11	3	8.3	8.2	13	4.9	3	5.1

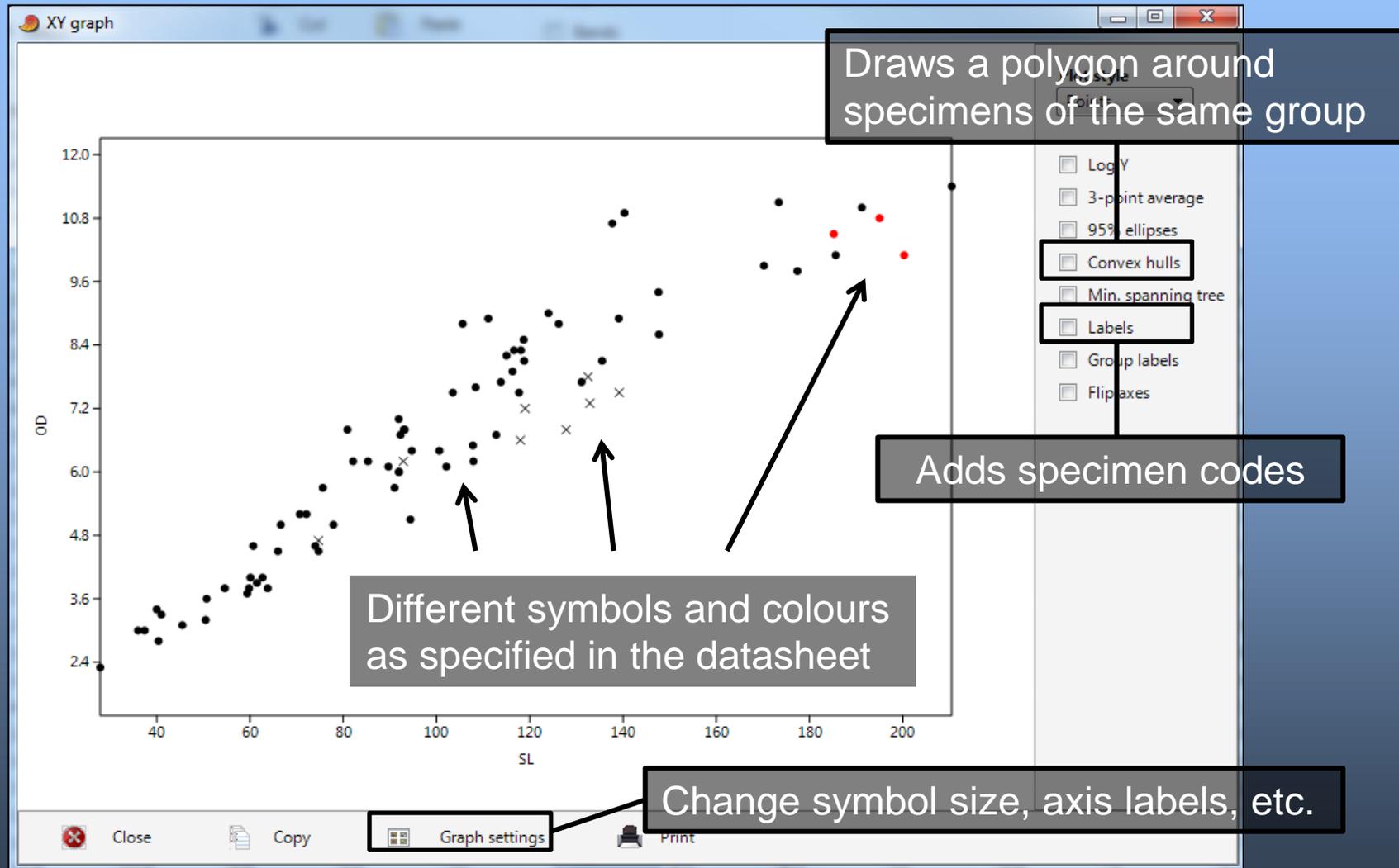
# PAST: X/Y scatterplots

1) Select 2 columns



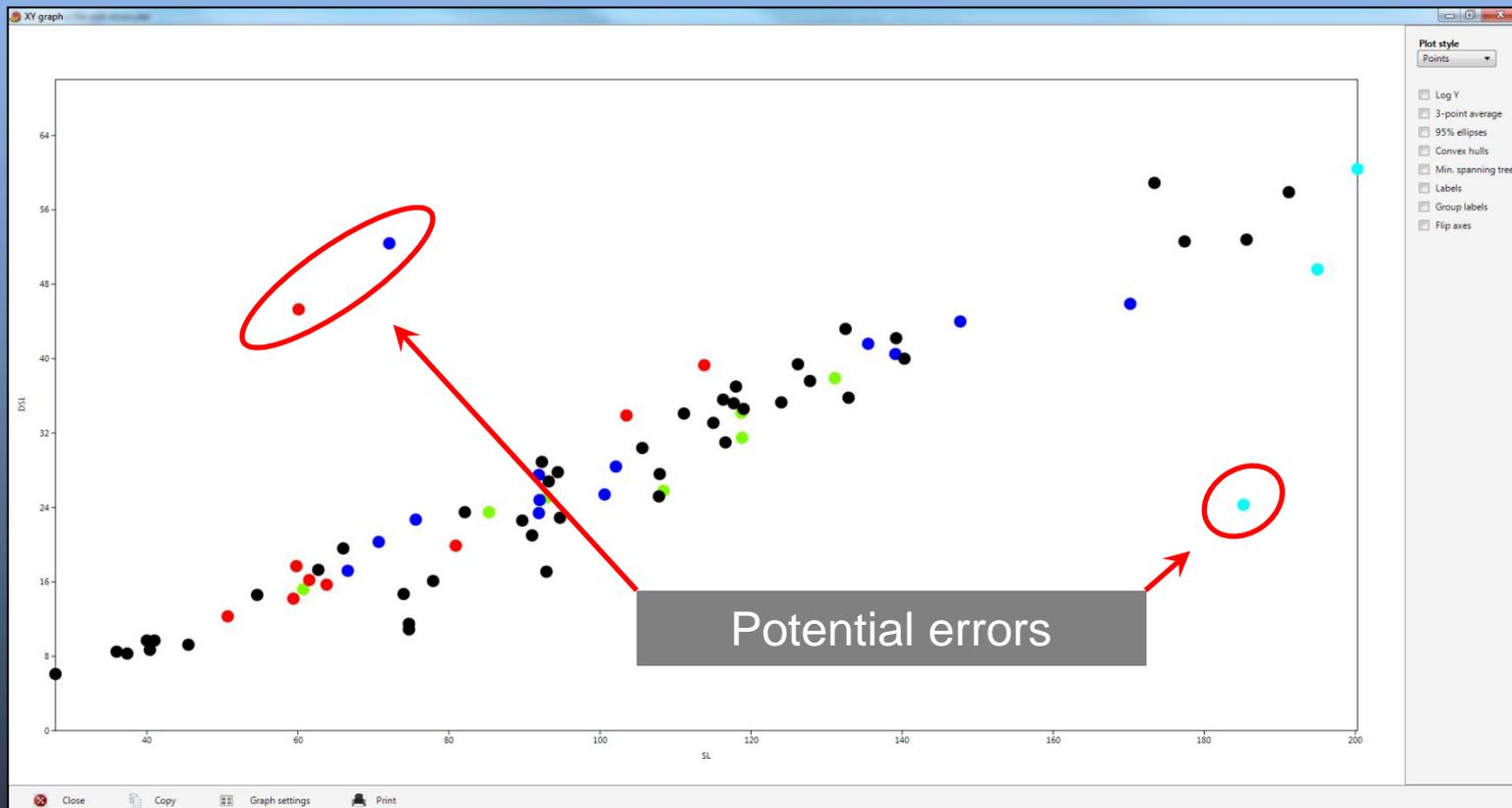
2) Choose "Plot - XY graph"

# PAST: X/Y scatterplots



# PAST: finding errors

- Big data errors become clear after PCA: an isolated specimen and a large associated *factor loading* indicate what variable for what specimen needs verification.
- Scatterplots of all variables vs SL (or TL) can also be used as a quick initial control of data quality.



# PAST: Principal Component Analysis

- Before performing a PCA, measurements should be either log transformed or calculated as %SL (or %HL). Meristics are never transformed!

The image shows a screenshot of the PAST software interface. The main window displays a data table with columns labeled SL, HL, AB, AMH, PMW, and MW. A red box highlights the first few rows of data. A green box highlights the 'Multivariate' menu, with a sub-menu open showing 'Principal components (PCA)' selected. A green arrow points from this menu to a text box on the right. Another text box on the left points to the data table.

1) Selects all data; part of the data can be analysed by selecting columns and/or rows

2) Choose « Multivariate – Ordination – Principal components (PCA) »

**Principal components analysis**

PC	Eigenvalue	% variance
1	0.932095	94.139
2	0.0211009	2.1311
3	0.0088566	0.89449
4	0.0066403	0.67065
5	0.0041778	0.42195
6	0.0031593	0.31908
7	0.0029321	0.29614
8	0.0018185	0.18367
9	0.0015414	0.15568
10	0.0013087	0.13218
11	0.0012195	0.12317
12	0.0009403	0.094972
13	0.0008008	0.080881
14	0.0007194	0.072665
15	0.0005307	0.053601
16	0.0004957	0.05007

# PAST: Principal Component Analysis

Use the “Var-covar” matrix for measurements, and the correlation matrix for meristics.

Eigenvalues give the degree of the total dataset variation explained by the corresponding Principal Component.

“% variance” explains the percentage of the total dataset variation explained by the corresponding Principal Component.

PC	Eigenvalue	% variance
1	0.932095	94.139
2	0.0211009	2.1311
3	0.0088566	0.89449
4	0.0066403	0.67065
5	0.0041778	0.42195
6	0.0031593	0.31908
7	0.0029321	0.29614
8	0.0018185	0.18367
9	0.0015414	0.15568
10	0.0013087	0.13218
11	0.0012195	0.12317
12	0.0009403	0.094972
13	0.0008008	0.080881
14	0.0007194	0.072665
15	0.0005307	0.053601
16	0.0004957	0.05007

Matrix: Variance-covariance

Groups: Disregard

Missing values: Mean value imputation

Most variation is (usually) explained by the first Principal Components.

# PAST: Principal Component Analysis

Missing values in your data (represented by "?") will always influence the PCA results. Preferably, the specimen(s) or variable(s) should be excluded from the analysis. If this is not possible/feasible, choose « Iterative imputation » instead of « Mean value imputation ».

The screenshot shows the 'Principal components analysis' window in PAST. The 'Summary' tab is active, displaying a table of eigenvalues and variance percentages for 16 principal components. The 'Missing values' dropdown menu is set to 'Mean value imputation' and is highlighted with a red box. Other settings include 'Matrix: Variance-covariance', 'Groups: Disregard', and 'Bootstrap N: 0'. A 'Recompute' button is visible at the bottom right of the settings panel.

PC	Eigenvalue	% variance
1	0.932095	94.139
2	0.0211009	2.1311
3	0.00385667	0.89449
4	0.00140006	0.140006
5	0.00415731	0.415731
6	0.00315931	0.315931
7	0.00293215	0.29614
8	0.00181857	0.18367
9	0.00154148	0.15568
10	0.00130875	0.13218
11	0.00121957	0.12317
12	0.00094035	0.094972
13	0.00080083	0.080881
14	0.00071948	0.072665
15	0.00053071	0.053601
16	0.00049576	0.05007

# PAST: Principal Component Analysis

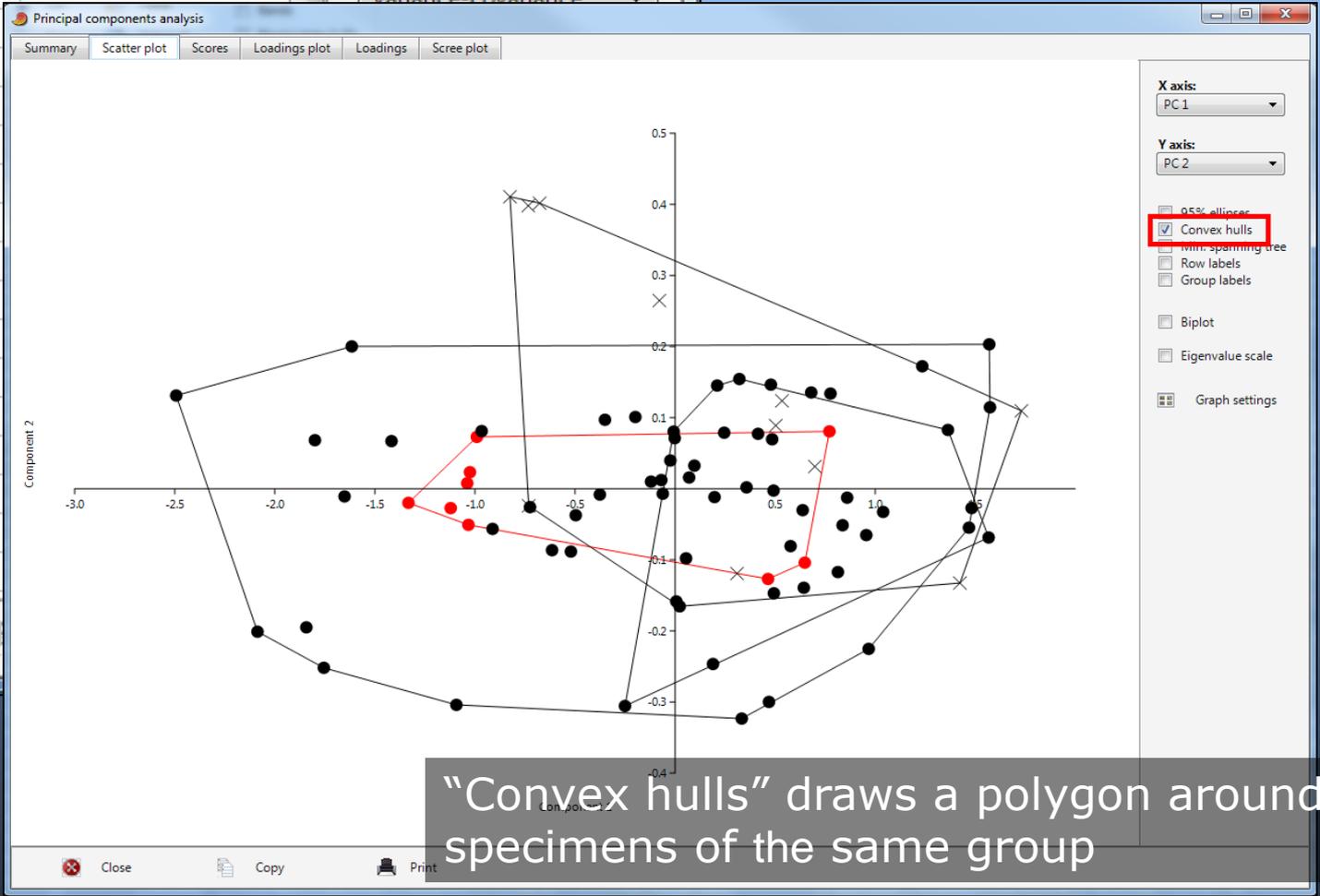
Principal components analysis

Summary Scatter plot Scores Loadings plot Loadings Scree plot

PC	Eigenvalue	% variance
1	0.932095	94.139
2	0.0211009	2.1311
3	0.0088566	0.89449
4	0.0066403	0.67065
5	0.0041778	0.42195
6	0.0031593	0.31908
7	0.0029321	0.29614
8	0.0018185	0.18367
9	0.0015414	0.15568
10	0.0013087	0.13218
11	0.0012195	0.12317
12	0.0009403	0.094972
13	0.0008008	0.080881
14	0.0007194	0.072665
15	0.0005307	0.053601
16	0.0004957	0.05007

Matrix  
Variance-covariance

Close



“Convex hulls” draws a polygon around specimens of the same group

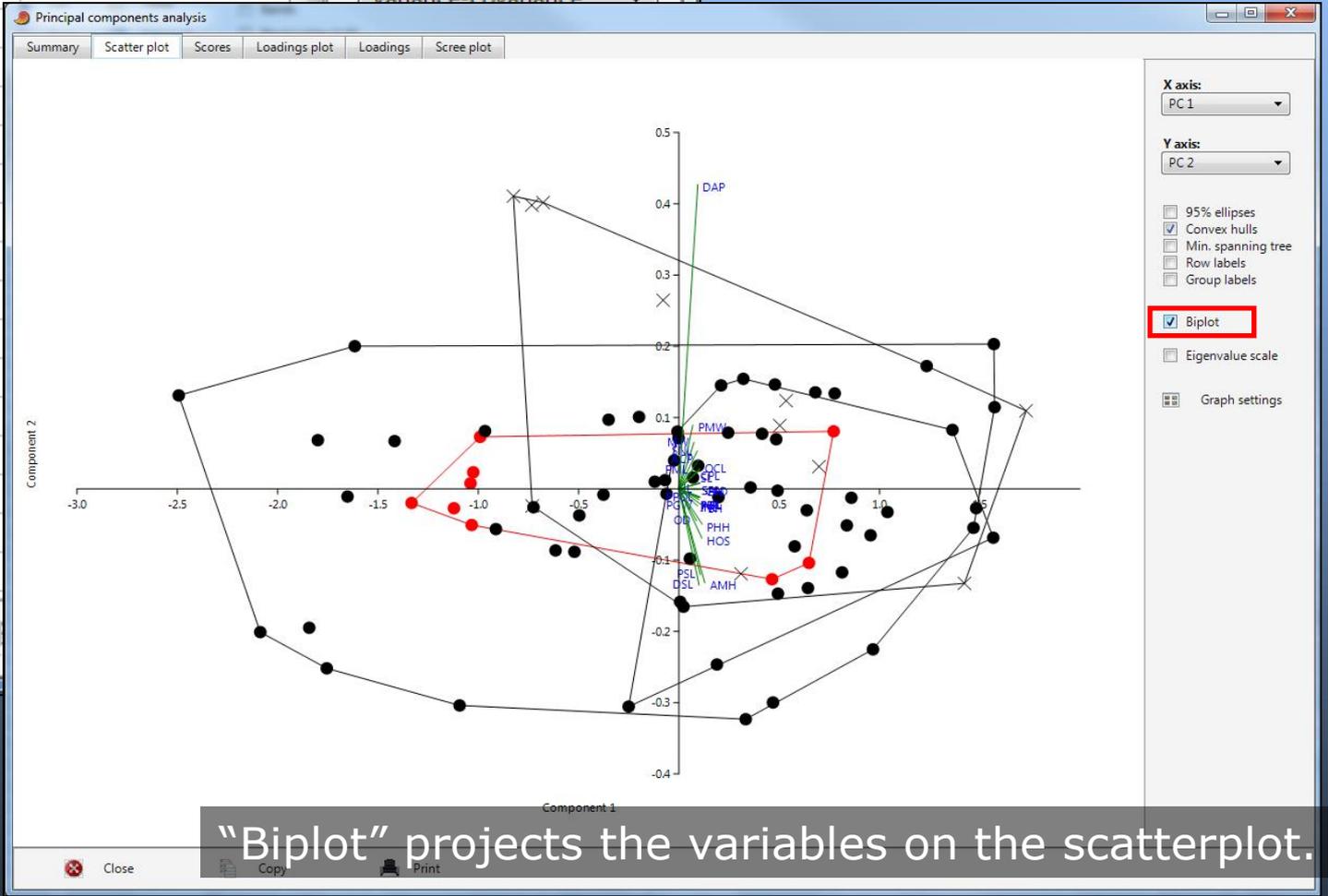
# PAST: Principal Component Analysis

Principal components analysis

Summary Scatter plot Scores Loadings plot Loadings Scree plot

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7	0.0029321	0.29614
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15	0.0005307	0.053601
16	0.0004957	0.05007

Close



“Biplot” projects the variables on the scatterplot.

# PAST: Principal Component Analysis

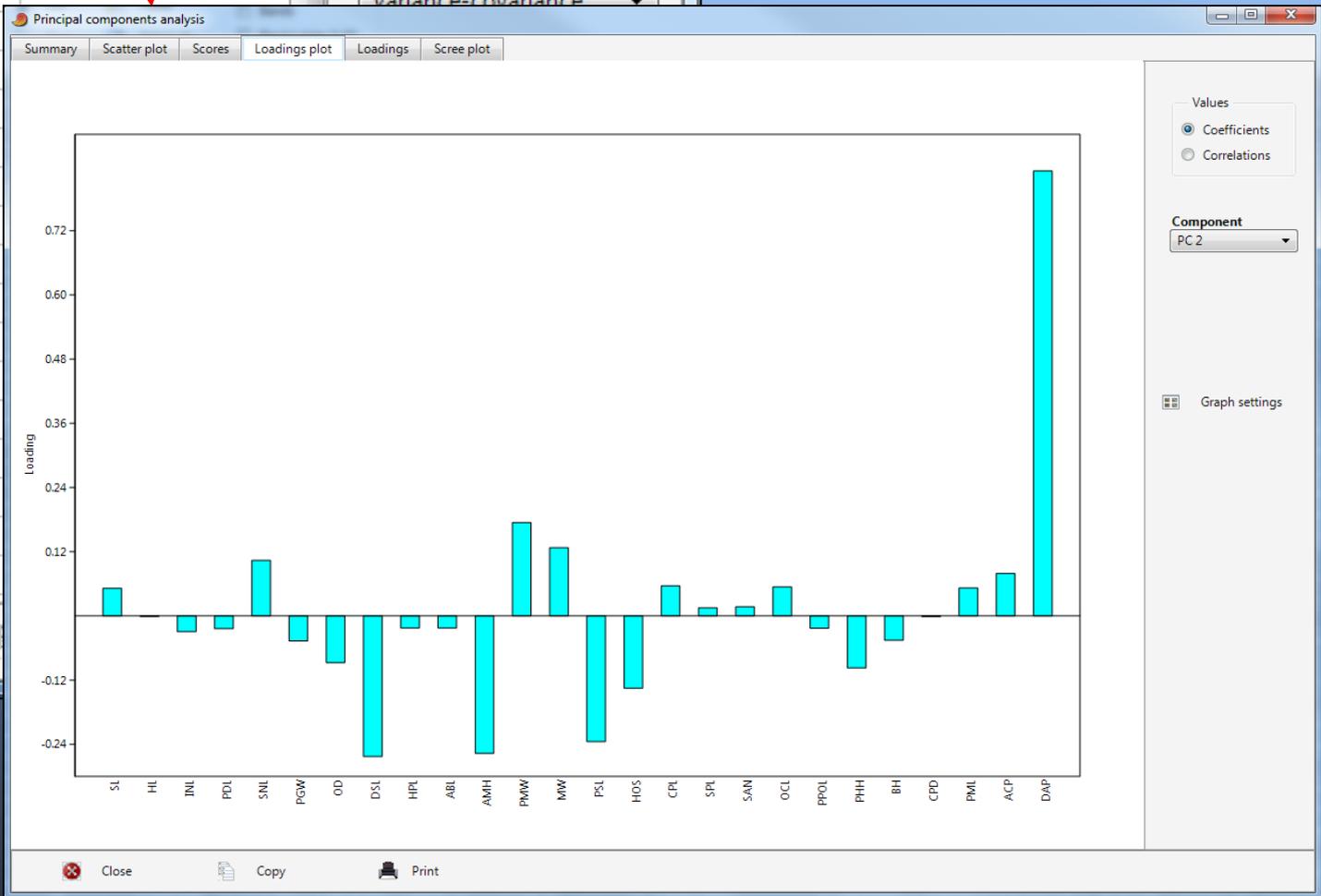
Principal components analysis

Summary Scatter plot Scores **Loadings plot** Loadings Scree plot

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Matrix  
Variance-covariance

Close



# PAST: Principal Component Analysis

Principal components analysis

Summary Scatter plot Scores Loadings plot **Loadings** Scree plot

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Matrix  
Variance-covariance

Close

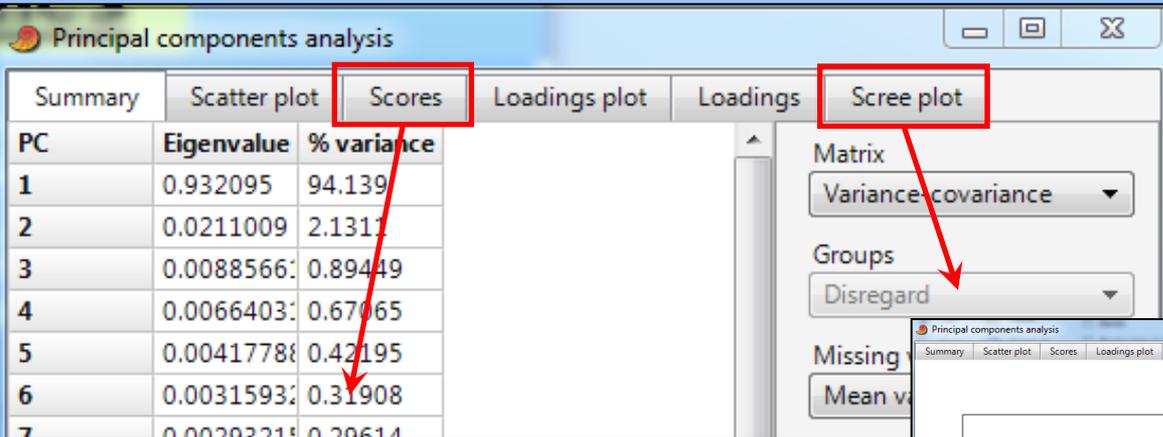
Principal components analysis

Summary Scatter plot Scores Loadings plot Loadings Scree plot

	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	PC 8	PC 9	PC 10	PC 11	PC 12	PC 13	PC 14	PC
SL	0.19985	0.051599	0.024922	0.059151	0.036897	-0.12557	-0.068117	-0.034024	0.055952	0.012618	-0.17281	-0.14917	0.045589	-0.025548	-0.
HL	0.18544	-0.0010172	0.04924	-0.025745	0.054117	-0.0044926	0.015208	0.076226	0.1116	0.1185	0.0095561	-0.052437	0.098388	-0.024802	-0.
INL	0.19473	-0.02949	0.036952	-0.14262	0.036442	-0.043597	-0.011575	0.23573	0.14222	0.3881	0.30335	-0.065894	-0.32546	0.25531	0.0
PDL	0.19505	-0.023785	0.045613	-0.046756	0.03289	-0.021425	0.0058785	0.099638	0.19099	0.13464	0.067229	-0.010219	-0.017972	0.042	-0.
SNL	0.17848	0.10388	0.046446	0.091997	0.14763	0.011534	0.12457	0.027288	-0.014653	0.26837	-0.10812	0.044756	-0.053382	-0.0026861	0.0
PGW	0.1799	-0.046559	0.029383	-0.060185	0.0090993	-0.034566	0.030224	0.17856	-0.007743	0.16078	-0.17197	-0.0097078	-0.033165	0.017254	0.1
OD	0.16976	-0.08723	0.083035	0.15137	0.03569	0.045919	0.11195	0.33718	0.20711	-0.6467	0.28985	-0.14733	0.28112	0.11925	0.2
DSL	0.19464	-0.26272	-0.91423	0.17285	-0.02571	-0.063543	0.0051557	-0.016201	-0.044683	0.060997	0.095368	-0.0054751	0.054126	-0.028301	0.0
HPL	0.20401	-0.022447	0.044289	-0.092923	0.083809	-0.0090176	0.014194	0.095414	0.40213	-0.002352	0.11863	0.093871	-0.26593	-0.42607	0.1
ABL	0.2045	-0.022461	0.041129	0.20066	-0.10214	-0.17385	-0.030951	-0.11954	0.040521	-0.21619	-0.30568	-0.029585	-0.087207	-0.17145	0.1
AMH	0.25045	-0.25684	0.095423	-0.16086	-0.48969	0.46138	0.43434	-0.06845	-0.22179	0.0042281	0.028229	-0.25507	-0.10492	-0.209	-0.
PMW	0.13508	0.17448	0.064492	0.4929	0.1458	-0.040658	0.46785	0.011594	0.086028	0.039196	0.23478	0.22122	-0.13657	0.063283	-0.
MW	0.14623	0.12753	0.07681	0.34072	0.020115	-0.053133	0.27245	-0.10378	-0.29523	0.051554	-0.14253	0.22139	0.049722	-0.0070669	0.1
PSL	0.20785	-0.23481	0.041714	-0.21274	0.7091	0.3266	0.045492	-0.42975	-0.089579	-0.083081	0.074475	0.0055173	0.090022	0.057275	-0.
HOS	0.22316	-0.135	0.0020052	-0.1015	-0.20527	-0.10355	-0.06933	-0.29316	0.44136	-0.17214	-0.12218	0.12539	-0.093459	0.22472	-0.
CPL	0.20169	0.056177	0.068552	0.16646	0.036681	-0.20686	-0.22152	-0.21299	-0.27611	-0.13249	0.10218	-0.51622	-0.46239	0.16835	0.1
SPL	0.20391	0.015135	0.061671	-0.015564	0.023734	-0.10962	-0.023354	0.0087458	-0.02177	0.089275	-0.18644	-0.072496	0.29125	-0.10387	-0.
SAN	0.20598	0.017201	0.062361	0.029932	0.036435	-0.096371	-0.013933	-0.006676	0.034191	0.13625	-0.19751	-0.13691	0.31207	-0.18521	-0.
OCL	0.20409	0.05432	0.035361	0.0358	0.033703	-0.17858	-0.055652	-0.07336	0.10708	-0.0091601	-0.15456	-0.14483	0.03931	-0.093037	-0.
PPOL	0.18677	-0.023016	0.036721	-0.10981	0.011491	-0.043042	0.007038	0.24384	-0.033023	0.23474	0.049281	-0.18469	0.34998	0.14693	0.2
PHH	0.22592	-0.097183	-0.042458	-0.20512	0.17731	0.010787	-0.090332	0.5119	-0.34162	-0.27326	-0.32221	0.32784	-0.30551	-0.01948	-0.
BH	0.22942	-0.045507	0.056519	-0.11523	-0.26123	-0.022398	-0.10294	-0.28165	0.051015	0.013982	0.013762	0.49757	0.015656	0.16143	0.5
CPD	0.21453	-0.0012371	0.087546	-0.04314	-0.17316	-0.10265	-0.059991	0.00063017	-0.25405	-0.020802	0.10612	0.11504	0.19661	0.50541	-0.
PML	0.13601	0.052399	0.055483	0.47009	-0.065221	0.62372	-0.56495	0.099168	0.061244	0.10707	-0.020077	0.04224	0.01842	-0.0071823	-0.
ACP	0.19313	0.079437	0.09888	-0.079887	-0.085755	-0.24064	-0.2785	-0.082366	-0.30594	-0.020796	0.5555	0.19613	0.12701	-0.46615	-0.
DAP	0.18241	0.83158	-0.2876	-0.30219	-0.028453	0.2311	0.064276	-0.05506	0.031494	-0.1526	-0.011224	-0.064569	0.0047252	0.033237	0.0

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# PAST: Principal Component Analysis



	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7
1Sé1	1.363	0.082766	-0.061385	0.12042	-0.2072	-0.18513	0.00000
2Ca1	1.5729	0.1146	-0.040986	-0.092898	0.031919	-0.0024534	0.00000
3Ca1	1.5692	0.20322	0.24124	-0.1556	0.040469	0.034723	-0.00000
4Sé2	0.63715	-0.030044	-0.062984	0.021974	0.1028	-0.0011704	-0.00000
5MI1	0.33263	-0.32317	0.16915	0.065537	0.072083	-0.074643	-0.00000
6Ca2	0.48445	0.069634	-0.059875	-0.091033	0.05845	-0.03868	0.00000
7Ca2	0.41414	0.077285	0.055081	0.10004	-0.044488	0.11452	0.00000
8Sd1	-0.19904	0.10093	-0.036909	0.0499	0.10576	-0.040193	0.00000
9Rc1	-0.0020793	0.071239	-0.014971	0.091514	0.043171	0.061123	0.00000
10Ou1	0.64777	-0.10394	-0.052331	-0.022989	0.077195	-0.11917	0.00000
11Ou1	0.77067	0.080715	-0.061376	0.086616	-0.038597	-0.14293	-0.00000
12Ou1	0.46386	-0.12688	-0.002462	-0.0093231	0.03044	-0.083079	-0.00000
13Bé1	-0.99068	0.072944	-0.025396	-0.086318	0.064092	-0.09107	-0.00000
14Bé1	-1.1217	-0.027163	0.030768	-0.0040681	-0.032021	-0.01913	-0.00000
15Bé1	-1.0256	0.02335	-0.093468	-0.13052	-0.01971	0.017611	0.0051282
16Bé2	-1.0391	0.007856	0.00094595	-0.027041	0.0080786	-0.04275	-0.021481
17Bé2	-1.0332	-0.050747	-0.0036755	-0.0056298	0.059796	-0.066202	-0.031651
18Bé2	-1.3325	-0.019776	0.048119	0.008792	0.020499	0.072924	-0.089206
19Na2	-0.35077	0.097023	0.030824	0.18238	0.077633	0.085498	0.043523

