Appendix 1

Selected Ecological Classifications for diatoms

(mainly from Lowe, 1974)

pH spectrum - after Hustedt, 1937-1939

Acidobiontic	: occurring at pH < 7, best at < 5.5
Acidophilous	: occurring at pH 7, best at < 7
Indifferent	: best at around pH 7
Alkaliphilous	: occurring at pH 7, best at > 7
Alkalibiontic	: occurring only in alkaline water

Halobian (salinity) spectrum - after Kolbe, 1927

Polyhalobous	: occurring in salt concentrations over 40,000 mg/1
Euhalobous	: marine forms, occurring in salt concentrations of 30,000 - 40,000 mg/1
Mesohalobous	: brackish water forms, salt concentration 500 - 30,000 mg/1
(alpha range)	: in salt concentrations of 10,000 - 30,000 mg/1
(beta range)	: in salt concentrations of 500 - 10,000 mg/1
Oligohalobous	: freshwater forms occurring in salt concentrations < 500 mg/1
(halophilous)	: stimulated by small amounts of salt
(indifferent)	: tolerates small amounts
(halophobous)	: does not tolerate even small

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amounts

Euryhalobous : occurring over broad ranges of salt concentration

Temperature spectrum

Euthermal : warm water forms usually occurring at > 30 °C

Mesothermal : temperate water forms usually occurring between 15 - 30 °C

Oligothermal : cold water forms usually occurring between 0 - 15 °C

Stenothermal : occurring over a temperature range < 5 °C

Metathermal : occurring over a temperature range from 5 - 15 °C

Eurythermal : occurring over a temperature range >15 °C

Habitat or Microhabitat

Euplanktonic : normally suspended in water

Tychoplanktonic : normally associated with periphytic or terrestrial habitats but often suspended in water

Periphytic,littoral or benthic : occurring on substrate or submerged objects (sometimes used for diatoms found near margin of water body)

(epipelic) : occurring on mud

(epilithic)	: occurring on rock
(epidendric)	: occurring on wood
(epiphytic)	: occurring on plants
(epizooic)	: occurring on animals
(epipsammic)	: occurring on sand grains
attached	: normally sessil
unattached	: normally "free"

Appendix 2

LIST OF DIATOM TAXA RECORDED FROM CENTRAL MEXICO

ACHNANTHES	
affinis Grunow	Patrick & Reimer (1966), 254, pl. 16/11-12
buccula Cholnoky	Cholnoky (1966), 6, fig. 1/1-3
clevei Grunow	Patrick & Reimer, (1966), 267, pl. 17/21-22
conspicua A.Mayer	Hustedt (1959), 387, fig. 833 a-d
delicatula (Kutz.) Grunow	Hustedt (1959), 389, fig. 836
exigua Grunow	Patrick & Reimer (1966), 257, pl. 16/21-22
exigua var. heterovalva Krasske	Patrick & Reimer (1966), 258, pl. 16/25-26
hauckiana var. rostrata Schulz	Patrick & Reimer (1966), 269, pl. 17/33-34
hungarica Grunow	Hustedt (1959), 383, fig. 829
	Patrick & Reimer (1966), 259, pl. 16/27-28
cf hungarica in ZC1	
lanceolata (Bréb.) Grunow	Patrick & Reimer (1966), 269, pl. 18/1-10
lanceolata var. apiculata Patrick	Patrick & Reimer (1966), 270, pl. 18/24-25
lanceolata var. dubia Grunow	Patrick & Reimer (1966), 271, pl. 18/11-15
lanceolata var. lanceolatoides (Sov.) Reimer comb. nov.	Patrick & Reimer (1966), 272, pl. 18/18-19
lanceolata var. omissa	Patrick & Reimer (1966), 272, pl. 18/16-17
linearis (W. Smith) Grunow	Patrick & Reimer (1966), 251, pl. 16/3-4
linearis f. curta H. L. Sm.	Patrick & Reimer (1966), 252, pl. 16/13-14
microcephala (Kütz.) Grunow	Patrick & Reimer (1966), 250, pl. 16/1-2
minuscula Hustedt	Hustedt (1945), 907, fig. 39/8-12
minutissima Kützing	Hustedt (1959), 377, fig. 820 a-c
	Patrick & Reimer (1966), 253, pl. 16/9-10
saxonica Krasske	Patrick & Reimer (1966), 265, pl. 17/13-14
AMPHORA	
bullatoides Hohn. & Hellerm	Patrick & Reimer (1975), 74, pl. 14/4
coffeiformis (Ag.) Kützing	Patrick & Reimer (1975), 78, pl. 14/11-12
montana Krasske	Krasske (1932), 119, pl. 2/27
ovalis (Kütz.) Kützing	Patrick & Reimer (1975), 68, pl. 13/1-2
ovalis var. affinis (Kütz.) V. H. ex DeT.	Patrick & Reimer (1975), 69, pl. 13/3-4
ovalis var pediculus V. H. ex DeT.	Patrick & Reimer (1975)
perpusilla (Grun.) Grunow	Patrick & Reimer (1975), 70, pl. 13/8a-11b
veneta Kützing	Patrick & Reimer (1975), 72, pl. 14/2-3
spp in Alb. sed 1/2	
ANOMOEONEIS	
costata (Kütz.) Hustedt	Hustedt (1959), 744, fig. 1111
	Patrick & Remier (1966), 376, pl. 32/3+8
sphaerophora (Ehr.) Pfitz.	Patrick & Reimer (1966), 374, pl. 32/1
sphaerophora var. Güntheri O.Müller	Hustedt (1959), 741, fig. 1108 b
sphaerophora var. sculpta O.Müller	Patrick & Reimer (1966), 375, pl. 32/2
vitrea (Grun.) Ross comb. nov.	Patrick & Reimer (1966), 380, pl. 30/12-13
CALONEIS	
alpestris (Grun.) Cleve	Patrick & Reimer (1966), 587, pl. 54/9
bacillum (Grun.) Cleve	Patrick & Reimer (1966), 586, pl. 54/8
lewisii Patrick	Patrick & Reimer (1966), 588, pl. 54/11
lewisii var. inflata (Schultze)	Patrick & Reimer (1966), 589, pl. 54/12

Partick comb. nov.	
oregonica (Ehr.) Patrick comb. nov.	Patrick & Reimer (1966), 581, pl. 53/6
patagonica Cleve	Cleve-Euler (1955), 92, fig. 1131
ventricosa (Ehr.) Meist	Patrick & Reimer (1966), 583, pl. 54/3
ventricosa var. alpina (Cl.) Patrick comb. nov.	Patrick & Reimer (1966), 583, pl. 54/1
ventricosa var. minuta (Grun.) Partick comb. nov.	Patrick & Reimer (1966), 584, pl. 54/2
ventricosa var. subundulata (Grun.) Patrick comb. nov.	Patrick & Reimer (1966), 584, pl. 54/?
ventricosa var. truncatula (Grun.) Meist	Patrick & Reimer (1966), 585, pl. 54/5
CAMPYLODISCUS	
clypeus Ehrenberg	Hustedt (1930a), 448, fig. 873
COCCONEIS	
diminuta Pantocesk	Hustedt (1930a), 190, fig. 265
disculus Schumann	Hustedt (1930a), 191, fig. 266
fluviatalis Wallace	Patrick & Reimer (1966), 243, pl. 15/11-12
pediculus Ehrenberg	Patrick & Reimer (1966), 240, pl. 15/3-4
placentula Ehrenberg	Patrick & Reimer (1966), 240, pl. 15/7
placentula var. euglypta (Ehr.) Cleve	Patrick & Reimer (1966), 241, pl. 15/8
placentula var. lineata (Ehr.) Van Heurck	Patrick & Reimer (1966), 242, pl. 15/5-6
CYCLOSTEPHANOS	
sp in core ZC1	
CYCLOTELLA	
caspia Grunow	Hustedt (1930b), 347, fig. 177
catenata Brunthaler	Hustedt (1930b), 365, fig. 191
glomerata Bachmann	Hustedt (1930a), 105, fig. 81
Kützingiana Thwaites	Hustedt (1930b), 339, fig. 171 a
meneghiniana Kützing	Hustedt (1930b), 341, fig. 174
ocellata Pantocsek	Hustedt (1930b), 340, fig. 173
planctonica Brunnthaler	Hustedt (1930b), 360, fig. 187
pseudostelligera Hustedt	Gasse (1980), 36, fig. 12/9-11
guillensis Bailey	Bailey (1921), 157 + 164, pl. 1-2
stelligera Cleve und Grunow	Hustedt (1930b), 339, fig. 172
sp in ZC1/ 462, 482	
CYMATOPLEURA	
solea (Brèb.) W.Smith	Hustedt (1930a), 425, fig. 823 a
CYMBELLA	
affinis Kützing	Hustedt (1930a), 362, fig. 671
aspera (Ehr.) H.Peragallo	Patrick & Reimer (1975), 53, pl. 10/2
cymbiformis Agardh	Patrick & Reimer (1975), 54, pl. 10/3-4
cymbiformis var. nonpunctata Font?	Patrick & Reimer (1975), 55, pl. 10/5
lanceolata (Ag.) Agardh	Patrick & Reimer (1975), 52, pl. 10/1
mexicana (Ehr.) Cleve	Patrick & Reimer (1975), 59, pl. 12/1-2
microcephala Grunow	Patrick & Reimer (1975), 33, pl. 4/12a-13b
microcephala var. crassa Reimer	Patrick & Reimer (1975), 34, pl. 4/14a-15b
minuta Hilse ex Rabenhorst	Patrick & Reimer (1975), 47, pl. 8/1a-4b

minuta var. pseudogracilis (Choln.) Reimer comb. nov.	Patrick & Reimer (1975), 50, pl. 9/1a-2b
minuta var. silesiaca (Bleisch ex Rabh.) Reimer comb. nov.	Patrick & Reimer (1975), 49, pl. 8/7a-10b
muelleri Hustedt	Patrick & Reimer (1975), 43, pl. 7/1-2
prostrata (Berk.) Cleve	Patrick & Reimer (1975), 40, pl. 6/4
prostrata var. auerswaldii (Rabh.) Reimer comb. nov.	Patrick & Reimer (1975), 41, pl. 6/5-6
pusilla Grunow	Patrick & Reimer (1975), 25, pl. 3/18
tumida (Bréb. ex Kütz.) Van Heurck	Patrick & Reimer (1975), 58, pl. 10/8
tumidula Grun. ex A.Schmidt	Patrick & Reimer (1975), 56, pl. 10/6
sp in ZC1/36-38	
DENTICULA	
elegans Kützing	Patrick & Reimer (1975), 170, pl. 22/3
DIATOMA	
elongatum var minor Grunow	Hustedt (1930a), 128, fig. 113
tenue Agardh	Patrick & Reimer (1966), 108, pl. 2/5
DIPLONEIS	
elliptica (Kütz.) Cleve	Patrick & Reimer (1966), 414, pl. 38/10
marginestriata Hustedt	Patrick & Reimer (1966), 413, pl. 38/7
oblongella (Naeg. ex Kütz.) Ross	Patrick & Reimer (1966), 413, pl. 38/8
oculata (Bréb.) Cleve	Hustedt (1959), 675, fig. 1068a
ostracodarum (Pant.) Jur?	Patrick & Reimer (1966), 415, pl. 38/11
pseudovalis Hustedt	Patrick & Reimer (1966), 412, pl. 38/5
puella (Schum.) Cleve	Patrick & Reimer (1966), 414, pl. 38/9
ENTOMONEIS	
alata (Ehr.) Ehrenberg	Hustedt (1930a), 340, fig. 625 Patrick & Reimer (1975), 3, pl. 1/2
EPITHEMIA	
sp in ZC1/132-133	
adnata (Kütz.) Brébisson	Patrick & Reimer (1975), 179, pl. 24/3-4
adnata var. minor (Perag. & Hérib.) Patrick comb. nov.	Patrick & Reimer (1975), 180, pl. 24/7-8
adnata var. porcellus (Kütz.) Patrick comb. nov.	Patrick & Reimer (1975), 180, pl. 24/6
adnata var. proboscidea (Kütz.) Patrick comb. nov.	Patrick & Reimer (1975), 181, pl. 24/5
adnata var. saxonica (Kütz.) Patrick comb. nov.	Patrick & Reimer (1975), 182, pl. 24/9
argus sp?	
argus (Ehr.) Kützing	Patrick & Reimer (1975), 175, pl. 32/1
argus var. longicornis (Ehr.) Grunow	Patrick & Reimer (1975), 177, pl. 23/2-3
argus var. protracta A.Mayer	Patrick & Reimer (1975), 177, pl. 23/5
hyndmanii W.Smith	Patrick & Reimer (1975), 185, pl. 26/3-4
sorex Kützing	Patrick & Reimer (1975), 188, pl. 27/4
turgida (Ehr.) Kützing	Patrick & Reimer (1975), 182, pl. 25/1a-b
turgida var. capitata Fricke	At. Schmidt (1913), fig. 250/7-9
turgida var. westermanii (Ehr.) Grunow	Patrick & Reimer (1975), 184, pl. 25/2a-b

EUNOTIA	
bigibba var. pumila Grunow	Hustedt (1959), 282, fig. 747 c-h
curvata Kütz. Lagerst ?	Patrick & Reimer (1966), 189, pl. 10/4
diodon Ehrenberg	Hustedt (1959), 276, fig. 742
eruca Ehrenberg	At. Schmidt (1913), fig. 293/14-19
	Van Landigham (1969) p. 1512
flexuosa Brèb. ex Kützing	Patrick & Reimer (1966), 187, pl. 10/1
formica Ehrenberg	Patrick & Reimer (1966), 190, pl. 10/7
glacialis Meist?	Patrick & Reimer (1966), 188, pl. 10/3
incisa W.Sm. ex Gregory	Patrick & Reimer (1966), 208, pl. 13/4
maior (W.Sm.) Rabenhorst	Patrick & Reimer (1966), 196, pl. 11/5
monodon Ehrenberg	Patrick & Reimer (1966), 198, pl. 11/6
naegelii Migula	Patrick & Reimer (1966), 190, pl. 10/6
pectinalis (O.F.Müll.?) Rabenhorst	Patrick & Reimer (1966), 204, pl. 12/8+10
pectinalis var. minor (Kütz.) Rabenhorst	Patrick & Reimer (1966), 207, pl. 12/13-14
pectinalis var. rostrata Germain	Germain (1981), 96, pl. 33/8-14
pectinalis var. undulata (Ralfs) Rabenhorst	Patrick & Reimer (1966), 206, pl. 12/11
pectinalis var. ventricosa Grunow	Patrick & Reimer (1966), 205, pl. 12/9
af. pectinalis	Hustedt (1959), 310, fig. 776
sibirica Cleve	Patrick & Reimer (1966), 192, pl. 10/11
valida Hustedt	Patrick & Reimer (1966), 211, pl. 13/8
vanheurckii var. intermedia (Krasske ex Hust.) Patrick	
veneris (Kütz.) O.Müller	Hustedt (1959), 300, fig. 766
FRAGILARIA	
africana Hustedt	Hustedt (1949), 62, fig. 2/29-34
bicapitata A.Mayer	Hustedt (1959), 165, fig. 637
brevistriata Grunow	Hustedt (1959), 168, fig. 676 a-e
brevistriata var. capitata Hèribaud	Patrick & Reimer (1966), 129, pl. 4/15
brevistriata var. elliptica Hèribaud	Hustedt (1959), 169, fig. 676 f
brevistriata var. inflata (Pant.) Hustedt	Hustedt (1959), 169, fig. 676 h
brevistriata var. subcapitata Grunow	Hustedt (1959), 169, fig. 676 g
capucina Desmazières	Patrick & Reimer (1966), 118, pl. 3/5
capucina var. mesolepta Rabenhorst	Patrick & Reimer (1966), 119, pl. 3/6
construens (Ehr.) Grunow	Hustedt (1959), 156, fig. 670 a-c
construens var. binodis (Ehr.) Grunow	Hustedt (1959), 158, fig. 670 d-g
construens var. pumila Grunow	Patrick & Reimer (1966), 126, pl. 4/5-6
construens var. subsalina Hustedt	Hustedt (1959), 159, fig. 670 p-s
construens var. triundulata Reichelt	Hustedt (1959), 158, fig. 670 n,o
construens var. venter (Ehr.) Grunow	Hustedt (1959), 158, fig. 670 h-m
crotonensis Kitton	Patrick & Reimer (1966), 121, pl. 3/11-12
crotonensis var. oregona Sov?	Patrick & Reimer (1966), 122, pl. 3/13
inflata (Heid.) Hustedt	Hustedt (1959), 155, fig. 669 a,b,d,f-i
leptostauron (Ehr.) Hustedt	Hustedt (1959), 153, fig. 668 a-f
leptostauron var. dubia (Grun.) Hustedt	Hustedt (1959), 154, fig. 668 h-i
leptostauron var. rhomboides Grunow	Hustedt (1959), 154, fig. 668 g
nitzschioides Grunow	Patrick & Reimer (1966), 123, pl. 4/1
pinnata Ehrenberg	Hustedt (1959), 160, fig. 671 a-i
pinnata var. lancettula (Schum.)	Hustedt (1959), 161, fig. 671 m-o

	Hustedt	
	vaucheriae (Kütz.) Peters	Patrick & Reimer (1966), 120, pl. 3/14-15
	virescens Ralfs	Hustedt (1930a), 142, fig. 144
		Patrick & Reimer (1966), 119, pl. 3/7-9
	virescens var. capitata Östrup	Patrick & Reimer (1966), 120, pl. 3/10
	virescens var. elliptica Hustedt	Hustedt (1930a), 142, fig. 147
	FRUSTULIA	
	vulgaris (Thwaites) De Toni	Patrick & Reimer (1966), 309, pl. 22/3
	GOMPHONEIS	
	herculeana (Ehr.) Cleve	
	mammilla (Ehr.) Cleve	Patrick & Reimer (1975), 148, pl. 20/2
	GOMPHONEMA	
	acuminatum Ehrenberg	Patrick & Reimer (1975), 112, pl. 15/2,4,7
	acuminatum var. clavus (Brèb.) Grunow	Patrick & Reimer (1975), 113, pl. 15/6
	acuminatum var. intermedium Grunow	Cleve-Euler (1955), 175, fig. 1263 b,c
	acuminatum var. pusilla	Patrick & Reimer (1975), 114, pl. 15/3
	affine Kützing	Hustedt (1930a), 376, fig. 700
		Patrick & Reimer (1975), 133, pl. 17/5
	affine var. insigne (Greg.) Andrews	Patrick & Reimer (1975), 133, pl. 17/4
	angustatum (Kütz.) Rabenhorst	Patrick & Reimer (1975), 125, pl. 17/17-19
	angustatum var. productum Grunow	Patrick & Reimer (1975), 127, pl. 17/22
	cf brasiliense	
	clevei Fricke	Patrick & Reimer (1975), 138, pl. 18/6
	clevei var. javanica Hustedt	Hustedt (1938), 441, pl. 27/6-13
	cumbhis Hohn & Hellerman	Patrick & Reimer (1975), 124, pl. 17/15a-b
	fanensis Maillard	Germain (1981), 302, pl. 111/7
	gracile Ehr. emend. Van Heurck	Patrick & Reimer (1975), 131, pl. 17/1-3
	grunowii Patrick	Patrick & Reimer (1975), 131, pl. 17/6
	intricatum Kützing	Patrick & Reimer (1975), 134, pl. 18/1
	intricatum var. lunata Germain	Germain (1981), 306, pl. 113/6-10
	cf. intricatum var. pulvinatum (Braun.) Grunow	
	intricatum var. pumila Grunow	Cleve-Euler (1955), 188, fig. 1283 n,o,
	intricatum var. pusilla Mayer	Cleve-Euler (1955), 188, fig. 1283 k-m
	Martini Fricke	At. Schmidt (1902), fig. 238/23-25
	montanum var. medium Grunow	Cleve-Euler (1955), 182, fig. 1276 o
	montanum var. suecium Grunow	Cleve-Euler (1955), 182, fig. 1276 c,d
	olivaceum (Lyngb.) Kützing	Patrick & Reimer (1975), 139, pl. 18/13-14
*	parvulum (Kütz.) Grunow	Hustedt (1930a), 372, fig. 713 a
*	parvulum var. excilissima Grunow	Cleve-Euler (1955), 178, fig. 1269 d-f
*	parvulum var. lagenula (Kütz.? Grun.) Hustedt	Hustedt (1930a), 373
*	parvulum var. micropus (Kütz.) Cleve	Cleve-Euler (1955), 178, fig. 1269 k-m
*	parvulum var. subelliptica Cleve	Cleve-Euler (1955), 178, fig. 1269 h-j
	subclavatum (Grun.) Grunow	Patrick & Reimer (1975), 129, pl. 16/10
	subclavatum var ?	see Cleve-Euler (1955), 183, fig. 1277
	subclavatum var. commutatum (Grun.) A.Mayer	Patrick & Reimer (1975), 129, pl. 16/11
	subclavatum var. mexicanum (Grun.) Patrick	Patrick & Reimer (1975), 130, pl. 16/12-13

subtile Ehrenberg	Patrick & Reimer (1975), 117, pl. 16/1
subtile var. sagittum Schum	Cleve-Euler (1955), 177, fig. 1268 d,c
tenellum Kützing	Patrick & Reimer (1975), 124, pl. 17/16a-b
tergestinum (Grun.) Fricke	Patrick & Reimer (1975), 136, pl. 18/5
truncatum Ehrenberg	Patrick & Reimer (1975), 118, pl. 16/3
truncatum var. capitatum (Ehr.) Patrick nom. nov.	Patrick & Reimer (1975), 119, pl. 16/4
truncatum var. turgidum (Ehr.) Patrick nom. nov.	Patrick & Reimer (1975), 120, pl. 16/5
ventricosum Gregory	Patrick & Reimer (1975), 137, pl. 19/2
sp 1	
sp 2	
* all G.parvulum acc. to P&R	Patrick & Reimer (1975), 122, pl. 17/7-12
GOMPHONITZSCHIA	
? Grunow	Cleve-Euler (1952), 94
GYROSIGMA	
scalproides (Rabh.) Cleve	Patrick & Reimer (1966), 318, pl. 23/7
spencerii (Quek.) Griff & Henrf.?	Patrick & Reimer (1966), 315, pl. 23/4
sp	
HANTZSCHIA	
amphioxys (Ehr.) Grunow	Hustedt (1930a), 394, fig. 747
amphioxys var. maior Grunow	Hustedt (1930a), 394, fig. 749
amphioxys var. vivax (Hantzsch) Grunow	Hustedt (1930a), 394, fig. 750
MASTOGLIA	
elliptica Agardh	Hustedt (1930a), 217, fig. 317
elliptica var. danseii (Thwaites) Cleve	Patrick & Reimer (1966), 300, pl. 20/20-23
MELOSIRA	
agassizii Ostenfeld	Huber-Pestalozzi (1942), 383, fig. 458
ambigua (Grun.) O.Müller	Hustedt (1930b), 256, fig. 108 Gasse (1980), 32, pl. 7/3-17, pl. 8/1-24
ambigua var. robusta Gasse	Gasse (1980), 33, pl. 7/3-7, pl. 9/2-4
distans (Ehren.) Kützing	Hustedt (1930b), 262, fig. 110 a-f, i
distans var. alpigena Grunow	Hustedt (1930b), 260, fig. 110 g
distans var. africana Müller	Hustedt (1930b), 264, fig. 110 h
granulata (Ehr.) Ralfs	Hustedt (1930b), 248, fig. 104 Gasse (1980), 28, pl. 14/1-2
granulata var. angustissima Müller	Hustedt (1930b), 250, fig. 104 d
granulata var. angustissima f. curvata	
granulata var. valida Hustedt f. valida	Gasse (1980), 30, pl. 1/1-15, 2/1-6, 3/1-4
granulata var. valida f. robusta (Okuno) Gasse	
islandica Muller	Hustedt (1930b), 252, fig. 106 a
islandica subsp. helvetica Muller	Hustedt (1930b), 254, fig. 107
italica (Ehr.) Kützing	Hustedt (1930b), 257, fig. 109 c,d
italica subsp. subarctica Müller	Hustedt (1930b), 261, fig. 109 b

italica var. valida Grunow	Hustedt (1930b), 260, fig. 109 a
monospina Gasse	Gasse (1980), 31, pl. 4/9-11
roseana Rabenhorst	Hustedt (1930b), 266, fig. 112 a,b
af granulata ZC1	
NAVICULA	
acceptata Hustedt	Hustedt (1961-66), 247, fig. 1372
accomoda Hustedt	Patrick & Reimer (1966), 468, pl. 44/7
adamantiformis Archibald	Schoeman & Archibald (1977) no. 2
americana Ehrenberg	Patrick & Reimer (1966), 493, pl. 47/3
anglica Ralfs	Hustedt (1930a), 303, fig. 530, 531
anglica var. subsalsa (Grun.) Cleve	Patrick & Reimer (1966), 520, pl. 49/20
arenaria Donkin	Patrick & Reimer (1966), 512, pl. 48/21
atomus (Kütz.) Grunow	Hustedt (1961-66), 169, fig. 1303
	Patrick & Reimer (1966), 488, pl. 46/16
aurora Sov.?	Patrick & Reimer (1966), 532, pl. 51/3-4
bacillum Ehrenberg	Patrick & Reimer (1966), 494, pl. 47/4-5
begeri Krasske	Krasske (1932), 113, fig. 3/16
canalis Patrick	Patrick & Reimer (1966), 528, pl. 50/12
capitata Ehrenberg	Patrick & Reimer (1966), 536, pl. 52/1-2
capitata var. hungarica (Grun.) Ross	Patrick & Reimer (1966), 537, pl. 52/3
cari Ehrenberg	Hustedt (1930a), 299, fig. 512
cf cari	Lange-Bertalot, (1980b), 37, pl. 7/1-23
cari var. cincta Lange-Bertalot	Patrick & Reimer (1966), 516, pl. 49/8
cincta (Ehr.) Ralfs	Patrick & Reimer (1966), 442, pl. 39/3
circumtexta Meist. ex Hustedt	Hustedt (1961-66), 780, fig. 1753
citrus Krasske	Patrick & Reimer (1966), 451, pl. 41/5
cocconeiformis Greg. ex Grev.?	Hustedt (1961-66), 205, fig. 1324 a-d
confervacea (Kütz.) Grunow	Hustedt (1930a), 307, fig. 547
contempta Krasske	Patrick & Reimer (1966), 503, pl. 48/3
cryptocephala Kützing	Patrick & Reimer (1966), 504, pl. 48/4
cryptocephala var. excilis (Kütz.) Grunow	Hustedt (1930a), 295, fig. 497 b
cryptocephala var. intermedia Grunow	Patrick & Reimer (1966), 504, pl. 48/5
cryptocephala var. veneta (Kütz.) Rabenhorst	
cuspidata (Kütz.) Kützing	Patrick & Reimer (1966), 464, pl. 43/9-10
cuspidata var. ambigua (Ehr.) Cleve	Germain (1981), 168, pl. 63/2
	synonimised with nominate var. by P&R
cuspidata var. curta f. rostrata Germain	Germain (1981), 168, pl. 63/3-4
cymbula Donkin	Germain (1981), 192, pl. 74/9-10
damasii Hustedt	Hustedt (1961-66), 203, fig. 1322
dicephala (Ehr.) W.Smith	Hustedt (1930a), 302, fig. 526
dicephala var. undulata Ostrup	Ostrup (1920), 25, fig. 3/33
digitoradiata (Greg.) Schmidt	Hustedt (1930a), 301, fig. 518
elkab O.Müller	O.Müller (1899), 331, fig. 12/22
excelsa Krasske	Hustedt (1961-66), 164, fig. 1298
exigua Greg. ex Grunow	Patrick & Reimer (1966), 522, pl. 49/23
exigua var. capitata Patrick	Patrick & Reimer (1966), 522, pl. 49/24
fluens Hustedt	Hustedt (1930a), 285, fig. 474
frugalis Hustedt	Hustedt (1961-66), 234, fig. 1356
fluviatalis Hustedt	Hustedt (1961-66), 158, fig. 1291
gastrum (Ehr.) Kützing	Patrick & Reimer (1966), 518, pl. 49/14
globosa Meister	Hustedt (1961-66), 222, fig. 1339

goeppertiana (Bleisch.) Grunow	Germain (1981), 209, pl. 79/8-13
gottlandica Grunow	Patrick & Reimer (1966), 509, pl. 48/14
graciloides A.Mayer	Patrick & Reimer (1966), 516, pl. 49/9-10
cf graciloides	
gregaria Donkin	Patrick & Reimer (1966), 467, pl. 44/6
grimmei Krasske	Hustedt (1961-66), 769, fig. 1742 a-d
halophila (Grun.) Cleve	Patrick & Reimer (1966), 467, pl. 44/4
homburgiana Hustedt	Hustedt (1961-66), 753, fig. 1729 a
heufleri Grunow	Patrick & Reimer (1966), 515, pl. 49/6
heufleri var. leptocephala (Brb. ex. Grun.) Patrick comb. nov.	Patrick & Reimer (1966), 515, pl. 49/7
hustedtii Krasske	Hustedt (1961-66), 150, fig. 1281 a-c
hustedtii var. japonica Hustedt	At. Schmidt (1872-1959), pl. 400/59-61
insociabilis Krasske	Hustedt (1961-66), 181, fig. 1315 a-h
insociabilis var. dissipatoides Hustedt	Hustedt (1961-66), 181, fig. 1315 i,k
laevissima Kützing	Patrick & Reimer (1966), 497, pl. 47/13
laevissima f. fusticulus Östr.?	Hustedt (1961-66), 124, fig. 1257 (recorded as N. Wittrockii f fusticulus)
lanceolata (Agardh) Ehrenberg	Hustedt (1930a), 305, fig. 540 Lange-Bertalot (1980), 30, pl. 1 Germain (1981), 180, pl. 68/1-3
laterostrata Hustedt	Patrick & Reimer (1966), 523, pl. 49/25
libonensis Schoeman	
luzonensis Hustedt	Patrick & Reimer (1966), 492, pl. 46/24
menisculus Schumann	Hustedt (1930a), 301, fig. 517
menisculus var. upsaliensis (Grun.) Grunow	Patrick & Reimer (1966), 519, pl. 49/17-18
minima Grunow	Hustedt (1961-66), 249, fig. 1374
minnewaukonensis Elm.?	Patrick & Reimer (1966), 520, pl. 49/19
minuscula Grunow	Patrick & Reimer (1966), 487, pl. 46/14
cf. minusculoides Hustedt	Hustedt (1961-66), 255, fig. 1382
modica Hustedt	Hustedt (1961-66), 154, fig. 1286 a-g
molestiformis Hustedt	Hustedt (1949), 86, fig. 5/9
monoculata Hustedt	Hustedt (1961-66), 183, fig. 1317
muralis Grunow	Patrick & Reimer (1966), 488, pl. 46/15
mutica Kützing	Patrick & Reimer (1966), 454, pl. 42/2
mutica var. undulata (Hilse) Grunow	Patrick & Reimer (1966), 456, pl. 42/6-9
notha Wallace	Patrick & Reimer (1966), 528, pl. 50/10,11
oblonga (Kütz.) Kützing	Patrick & Reimer (1966), 534, pl. 51/6
omissa Hustedt	Hustedt (1961-66), 160, fig. 1295
peregrina (Ehr.) Kützing	Patrick & Reimer (1966), 533, pl. 51/5
perpusilla (Kütz.) Grunow	Patrick & Reimer (1966), 478, pl. 45/14
placentula (Ehr.) Kützing	Patrick & Reimer (1966), 523, pl. 50/1
protracta Grunow	Patrick & Reimer (1966), 471, pl. 45/3
protracta f. elliptica Gallik	Hustedt (1961-66), 316, fig. 1435
protractoides Hustedt	Hustedt (1961-66), 228, fig. 1347
pseudohalophila Cholnoky	Schoeman & Archibald (1976), 2
pseudomuralis Hustedt	Hustedt (1961-66), 236, fig. 1360
pseudoreinhardtii Patrick	Patrick & Reimer (1966), 516, pl. 49/11
pseudoventralis Hustedt	Hustedt (1961-66), 153, fig. 1285
pupula Kützing	Patrick & Reimer (1966), 495, pl. 47/7
pupula var. capitata Skvortzow & Meyer	Patrick & Reimer (1966), 496, pl. 47/8
pupula var. elliptica Hustedt	Patrick & Reimer (1966), 496, pl. 47/11

pupula var. mutata (Krasske) Hustedt	Patrick & Reimer (1966), 496, pl. 47/9-10
pupula var. rectangularis (Greg.) Grunow	Patrick & Reimer (1966), 497, pl. 47/12
pygmaea Kützing	Patrick & Reimer (1966), 442, pl. 39/4
radiosa Kützing	Patrick & Reimer (1966), 509, pl. 48/15
radiosa var. parva Wallace	Patrick & Reimer (1966), 510, pl. 48/16
radiosa var. tenella (Bréb. ex Kütz.) Grunow	Patrick & Reimer (1966), 510, pl. 48/17 Germain (1981), 184, pl. 70/9-12
reinhardtii (Grun.) Grunow	Patrick & Reimer (1966), 517, pl. 49/12
rhynchocephala Kützing	Patrick & Reimer (1966), 505, pl. 48/6
rhyncocephala var. elongata Mayer	Germain (1981), 182, pl. 69/4-6
rhyncocephala var. germainii (Wallace) Patrick comb. nov.	Patrick & Reimer (1966), 506, pl. 48/8
sabiana Patrick	Patrick & Reimer (1966), 472, pl. 45/4
salinarum var. intermedia (Grun.) Cleve	Patrick & Reimer (1966), 503, pl. 48/2
schonfeldii var. pusilla (Hust.) Gasse	Gasse (1980), 70, pl. 40/43-50, pl. 43/6-7
schroeteri Meister	At. Schmidt (1872-1959), pl. 405/6-11
sclesvicencis Grunow	Lange-Bertalot (1980b), 35, pl. 4/6-9 (acc. Hustedt (1930a) = N.viridula var sclesvicencis)
secura Patrick	Patrick & Reimer (1966), 490, pl. 46/21
secreta var. apiculata Patrick	Patrick & Reimer (1966), 463, pl. 43/7
seminuloides Hustedt	Hustedt (1961-66), 244, fig. 1369
seminulum Grunow	Hustedt (1961-66), 241, fig. 1367
seminulum var. intermedia Hustedt	Hustedt (1961-66), 242, fig. 1368
seminulum var. radiosa Hustedt	Hustedt (1961-66), 242, fig. 1368 b
cf. strenzkei Hustedt	Hustedt (1961-66), 246, fig. 1371
subbacillum Hustedt	Hustedt (1961-66), 117, fig. 1251
subminuscula Manguin	Hustedt (1961-66), 257, fig. 1384
subrotundata Hustedt	Hustedt (1961-66), 272, fig. 1402 a-m
subtilissima Cleve	Hustedt (1930a), 285, fig. 475
symmetrica Patrick	Patrick & Reimer (1966), 513, pl. 49/2
tantula Hustedt	Hustedt (1961-66), 250, fig. 1375
tripunctata (O.F,Müll.) Bory	Patrick & Reimer (1966), 513, pl. 49/3
tripunctata var. schizonemoides (V.H.) Patrick	Patrick & Reimer (1966), 514, pl. 49/4
trivialis Lange-Bertalot	Lange-Bertalot (1980b), 31, pl. 4,5
twymaniana Archibald	Schoeman & Archibald (1977)
vaucheriae Hustedt	Hustedt (1961-66), 159, fig. 1292
ventralis Krasske	Hustedt (1961-66), 140, fig. 1273 a-d
verecunda Hustedt	Hustedt (1930a), 302, fig. 522
viridula (Kütz.) Ehrenberg	Lange-Bertalot (1980), 34, pl. 4/1-5, 5/1-2, 9/5-6
viridula var. avenacea (Bréb. ex Grun.) Van Heurck	Patrick & Reimer (1966), 507, pl. 48/10
viridula var. linearis Hustedt	Patrick & Reimer (1966), 507, pl. 48/11
viridula var. rostellata (Kütz.?) Cleve	Patrick & Reimer (1966), 507, pl. 48/2
cf viridula	
vitabunda Hustedt	Hustedt (1961-66), 223, fig. 1341
sp (1) in PY/2/C & /CS	
sp (2) in V/1/B	
sp (3) in Alch. 1981	

sp (4) in H/1/C
sp (5) recorded as spp c in UL2/55-56
sp (6) in P/1/C
sp (7) in ZN/1/D
sp (8) in AN/1/C af. viridula?
sp (9) recorded as spp b in TA/2/C
sp (10) in RL/1/B
sp (11) tripinctata/gracilis
sp (12) in ZC1/567-568

NEIDIUM

affine (Ehr.) Pfitzer	Patrick & Reimer (1966), 390, pl. 35/2
affine var. longiceps (Greg.) Cleve	Patrick & Reimer (1966), 393, pl. 35/4
bisulcatum (Lagerst.) Cleve	Patrick & Reimer (1966), 397. pl. 36/5
? bisculatum var. nipponicum Skvortzow	Patrick & Reimer (1966), 398, pl. 36/13
herrmannii Hustedt	Patrick & Reimer (1966), 399, pl. 36/14
iridis (Ehr.) Cleve	Patrick & Reimer (1966), 386, pl. 34/1
iridis var. amphigomphus (Ehr.) A.Mayer	Patrick & Reimer (1966), 387, pl. 34/2
iridis var. ampliatum (Ehr.) Cleve	Patrick & Reimer (1966), 388, pl. 34/5
temperei Reimer	Patrick & Reimer (1966), 406, pl. 37/9

NITZSCHIA

acicularis W.Smith	Hustedt (1930a), 432, fig. 821
amphibia Grunow	Hustedt (1930a), 414, pl. 793
bicapitellata Hustedt	
clausii Hantzsch	Hustedt (1930a), 421, fig. 814
closterium (Ehr.) W.Smith	Hustedt (1930a), 424, fig. 822
communis Rabenhorst	Lange-Bertalot (1976), 275, table 7/11-13
denticula Grunow	Hustedt (1930a), 407, fig. 780
denticula var. delognei Grunow	Germain (1981), 330, pl. 123/8
dissipata (Kütz.) Grunow	Hustedt (1930a), 412, fig. 789
epiphytica O.Müller	Hustedt (1949), 143, fig. 13/56-64
filiformis (W.Sm.) Hustedt	Hustedt (1930a), 422, fig. 818
frustulum (Kütz.) Grunow	Lange-Bertalot & Simonsen (1978), 23, pl. 1
gandersheimiensis Krasske	Lange-Bertalot & Simonsen (1978), 28, fig. 40-53, 60-112, 289
à gracilis Hantzsch	Hustedt (1930a), 416, fig. 794 Lange-Bertalot (1976), 259, pl. 2/1-5 Lange-Bertalot & Simonsen (1978), 33, pl. 10/168-170
granulata Grunow	At. Schmidt (1872-1959), pl. 330/4-9
hantzschiana Rabenhorst	Hustedt (1930a), 415, fig. 797 Lange-Bertalot (1976), 263, pl. 2/14-21
hungarica Grunow	Hustedt (1930a), 401, fig. 766
ignorata Krasske	Hustedt (1930a), 422, fig. 819
af. ignorata in ZC/1?Aii	
af. ignorata in AN/1/C & AN/1/D	
inconspicua Grunow	Lange-Bertalot (1976), 265, pl. 2/22-25, 27 (called N. frustulum by Lange-Bertalot & Simonsen, 1978)
intermedia Hantzsch ex Cleve & Grunow	Lange-Bertalot (1976), 267, pl. 4, 5
linearis W.Smith	Hustedt (1930a), 409, fig. 784
littoralis Grunow	Germain (1981), 334, pl. 125/3-5
longissima (Bréb.) Ralfs	Germain (1981), 364, pl. 137/12

longissima var. reversa Grunow	Cleve-Euler (1952), 92, fig. 1508 d
microcephala Grunow	Hustedt (1930a), 414, fig. 791
	Lange-Bertalot (1980), 51, pl. 1/28-29
minuta Bleisch.?	Lange-Bertalot (1976), 273, pl. 3/14-16
ovalis Arnott	Hustedt (1930a), 417, fig. 808
palea (Kütz.) W.Smith	Lange-Bertalot (1976), 271, pl. 3/17-22
* palea var. debilis (Kütz.) Grunow	Germain (1981), 350, pl. 132/15-20
à palea var. tenuirostris Grunow	Lange-Bertalot (1976), 271, pl. 3/24-25
paleacea Grunow	Lange-Bertalot (1976), 257, pl. 1/5-16
parvula Lewis	Hustedt (1930a), 421, fig. 816
punctata (W.Sm.) Grunow	At.Schmidt (1872-1959), pl. 330/10-15
	Hustedt (1930a), 401, fig. 762
pusilla (Kütz.) Grunow emend. Lange-Bertalot	Lange-Bertalot (1976), 273, pl. 7/1-10
cf pusilla in ZC1/307-308	
recta Hantzsch	Hustedt (1930a), 411, fig. 785
robusta Hustedt	Hustedt (1949), 141, pl. 13/35-38
romana Grunow	Lange-Bertalot (1976), 269, pl. 3/1-6
	Lange-Bertalot & Simonsen (1978), 61, pl. 8/126-138
rostellata Hustedt	Lange-Bertalot & Simonsen (1978), 49, figs. 118-123
	Hustedt (1930a), 420, fig. 813
sigma (Kütz.) W.Smith	Van Heurck (1885), , pl. 66/9
sigma var. diminuta Grunow	Cleve-Euler (1952), 75, fig. 1470 i
	Hustedt (1930a), 419, fig. 810
sigmoidea (Ehr.) W.Smith	Hustedt (1930a), 405, fig. 773
sigmoides	
stagnorum Rabenhorst	Hustedt (1949), 147, fig. 11/34-48
tropica Hustedt	Hustedt (1930a), 399, fig. 757
tryblionella Hantzsch	
tryblionella var ?	Germain (1981), 334, pl. 126/1-6
tryblionella var. levidensis (W.Sm.) Grunow	Hustedt (1930a), 399, fig. 758
tryblionella var. victoriae Grunow	Lange-Bertalot (1978), 648, pl. 1/1-2
umbonata (Ehr.) Lange-Bertalot comb. nov.	
* incl. under N.palea by L.-Bertalot (1976)	
à L.-Bertalot (1980) suggests that these spp. might be included in N. palea var. debilis	
sp in ZC1/232-233	
OPEPHORA	
martyi Héribaud	Patrick & Reimer (1966), 115, pl. 3/3
PINNULARIA	
abaujensis Pant. Ross	Patrick & Reimer (1966), 612, pl. 58/1-2
abaujensis var. linearis (Hust.) Patrick comb. nov.	Patrick & Reimer (1966), 613, pl. 58/3
abaujensis var. parva (Grunow) comb. nov.	this study
abaujensis var. subundulata (A.Mayer ex Hust.) Patrick	Patrick & Reimer (1966), 614, pl. 58/5
abaujensis var. rostrata (Patr.) Patrick comb. nov.	Patrick & Reimer (1966), 614, pl. 58/4

	acuminata W.Smith	Patrick & Reimer (1966), 621, pl. 59/4
	acoricola Hustedt	Germain (1981), 249, pl. 89/13-14
	appendiculata (Agardh) Cleve	Hustedt (1930a), 317, fig. 570 a
	biceps f petersenii Ross	Patrick & Reimer (1966), 600, pl. 55/16
?	biceps var. minor (B.Pet.) Cleve-Euler	Cleve-Euler (1955), 63, fig. 1088 k-n
	borealis Ehrenberg	Patrick & Reimer (1966), 618, pl. 58/13
	braunii var. amphicephala (A.Meyer) Hustedt	Hustedt (1930a), 319, fig. 578
	brebissonii (Kütz.) Rabenhorst	Patrick & Reimer (1966), 614, pl. 58/6
	brebissonii var. diminuta (Grun.) Cleve	Patrick & Reimer (1966), 616, pl. 58/7
	brevicostata Cleve	Patrick & Reimer (1966), 623, pl. 60/1
	divergentissima var. genuina Grunow	Cleve-Euler (1955), 57, fig. 1077 a-d
	gentilis (Donk.) Cleve	Cleve-Euler (1955), 82, fig. 1114
	leptosoma Grunow	Hustedt (1930a), 316, fig. 567
	maior (Kütz.) Rabenhorst	Patrick & Reimer (1966), 629, pl. 61/4
	maior var. pulchella Boyer	Patrick & Reimer (1966), 629, pl. 61/5
	mesogongyla Ehrenberg	Patrick & Reimer (1966), 608, pl. 57/3
	microstauron (Ehr.) Cleve	Patrick & Reimer (1966), 597, pl. 55/12
	microstauron f. biundulata O.Müller	Hustedt (1930a), 320, fig. 583
	mormonorum (Grun.) Patrick comb. nov.	Patrick & Reimer (1966), 598, pl. 55/13
?	stauroptera var. minuta Mayer	Cleve-Euler (1955), 68, fig. 1091 o,p
	subcapitata Gregory	Patrick & Reimer (1966), 596, pl. 55/8-10
	subcapitata var. paucistriata (Grun.) Cleve	Patrick & Reimer (1966), 597, pl. 55/11
	subrostrata var. similis Krasske	Cleve-Euler (1955), 58, fig. 1078 c
	substomatophora Hustedt	At. Schmidt (1874-1959), 392/14-15
	subviridis Cleve-Euler	Cleve-Euler (1955), 21, fig. 1012
	termitina (Ehr.) Patrick comb. nov.	Patrick & Reimer (1966), 595, pl. 55/6
	viridis (Nitz.) Ehrenberg	Patrick & Reimer (1966), 639, pl. 64/5
	sp (1) in Zac. Sed. 2	
	sp (2) in ZN/1/C + I/1/B	
RHOICOSPHENIA		
	curvata (Kütz.) Grunow ex Rabenhorst	Patrick & Reimer (1966), 282, pl. 20/1-5
RHOPALODIA		
	gibba (Ehr.) O.Müller	Patrick & Reimer (1975), 189, pl. 28/1
	gibba var. ventricosa (Kütz.) H.& M. Perag.?	Patrick & Reimer (1975), 190, pl. 28/3-4
	gibberula var Van Heurckii O.Müller: (type 1) distinctly punctate (type 2) thick costae, punctae less distinct	Patrick & Reimer (1975), 192, pl. 28/7
	musculus (Kütz.) O.Müller	Patrick & Reimer (1975), 191, pl. 28/5
	parallela (Grun.) O.Müller	Patrick & Reimer (1975), 190, pl. 28/2
STAURONEIS		
	anceps Ehrenberg	Patrick & Reimer (1966), 361, pl. 30/1
	anceps f. gracilis Rabenhorst	Patrick & Reimer (1966), 361, pl. 30/2
	densestriata Hustedt	Hustedt (1937), 223, fig. 15/2
	kriegeri Patrick	Patrick & Reimer (1966), 362, pl. 30/15
	[illegible]	Hustedt (1958), 788, fig. 1146

phoenicenteron (Nitz.) Ehrenberg	Patrick & Reimer (1966), 359, pl. 29/1-2
phoenicenteron f. gracilis (Ehr.) Hustedt	Patrick & Reimer (1966), 359, pl. 29/3-4
smithii Grunow	Patrick & Reimer (1966), 365, pl. 30/12
sp in ZC1	

STEPHANODISCUS

asteroides Gasse	Gasse (1980), 49, pl. 19/5-10
asteroides var. intermedia Gasse	Gasse (1980), 50, pl. 17/16-32
astraea (Ehr.) Grunow	Huber-Pestalozzi (1942), 409, pl. 122/505 a-c
astraea var. intermedia Fricke	Gasse (1980), 46, pl. 17/4-5, 11-15
astraea var. minutula (Kütz.) Grunow	Gasse (1980), 46, pl. 17/6-10
carconensis Grunow	Gasse (1980), 52, pl. 20/31, pl. 21/1-3
carconensis var. minor Grunow	Gasse (1980), 53, pl. 20/5-10
hantzschii Grunow	Bradbury (1975), pl. 1/1-2, pl. 5/1-2
	Gasse (1980), 42, pl. 16/16-17
	Haworth (1981), fig. 2-7
hantzschii var. pusilla Grunow	Haworth (1981), 119, fig. 1
minutus (Ehr.) Grunow	Bradbury (1975), pl. 1/3-4
	Gasse (1980), 45, pl. 16/18-30
niagarae Ehrenberg	Huber-Pestalozzi (1942), 411, pl. 122/507 a-c
* novaezelandiae (Cl.) Hustedt	Gasse (1980), 49, pl. 18/10, pl. 19/2-4
subtilis Van Goor	Gasse (1980), 42, pl. 16/13
subtransylvanicus Gasse	Gasse (1980), 34, pl. 18/6-9
tenuis Hustedt	Huber-Pestalozzi (1942), 411, pl. 506
tenuis f. minor Gasse	Gasse (1980), 43, pl. 16/1-12
transylvanicus Pantocsek	Gasse (1980), 47, pl. 17/1
sp/ Cyclostephanos sp 1	

* = Cyclostephanos novaezelandiae

SURIRELLA

biseriata Brébisson	Hustedt (1930), 342, figs. 831, 832
elegans Ehrenberg	Hustedt (1930a), 440, fig. 858-859
linearis W.Smith	Germain (1981), 380, pl. 144/1-3,8-14
linearis var. constricta (Ehr.) Grunow	Germain (1981), 380, pl. 144/4-7
ovalis Brébisson	Hustedt (1930a), 441, fig. 860-861
ovata Kützing	Hustedt (1930a), 442, fig. 863-864
ovata var apiculata W.Smith	Germain (1981), 390, pl. 152/16-18
robusta Ehrenberg	Germain (1981), 384, pl. 149/1
robusta var. splendida (Ehr.) Van Heurck	Germain (1981), 384, pl. 149/2-3
striatula Turpin	Hustedt (1930a), 445, fig. 869
tenera Gregory	Hustedt (1930a), 438, fig. 853
tenera var nervosa	Hustedt (1930), 439, figs. 854, 855
sp in ZC1	

SYNEDRA

acus Kützing	Patrick & Reimer (1966), 135, pl. 5/1
acus var. neogena (Grun.) comb. nov.	Hustedt (1930a), 155, fig. 170
	Huber-Pestalozzi (1942), 459, fig. 537
? affinis var. fasciculata (Kütz.) Grunow	Hustedt (1930a), 159, fig. 186
amphicephala var. austriaca (Grun.)	Patrick & Reimer (1966), 138, pl. 5/8

Hustedt	
delicatissima W.Smith	Patrick & Reimer (1966), 136, pl. 5/2
delicatissima var. angustissima Grunow	Patrick & Reimer (1966), 136, pl. 5/3
fasciculata (Ag.) Kützing	Patrick & Reimer (1966), 141, pl. 5/17-18
fasciculata var. truncata (Grev.) Patrick comb. nov.	Patrick & Reimer (1966), 142, pl. 5/16
goulardi Brébisson	At. Schmidt (1874-1959), 300, fig. 10-18
pulchella Ralfs. ex Kützing	Patrick & Reimer (1966), 146, pl. 6/10
radians Kützing	Patrick & Reimer (1966), 137, pl. 5/4
rumpens Kützing	Patrick & Reimer (1966), 143, pl. 5/19
rumpens var. familiaris (Kütz.) Hustedt	Patrick & Reimer (1966), 143, pl. 5/20
rumpens var. fragilarioides Grunow	Patrick & Reimer (1966), 144, pl. 6/1
rumpens var. meneghiniana Grunow	Patrick & Reimer (1966), 145, pl. 6/3
rumpens var. scotica Grunow	Patrick & Reimer (1966), 144, pl. 6/2
socia Wallace	Patrick & Reimer (1966), 145, pl. 6/4-6
ulna (Nitz.) Ehrenberg	Hustedt (1930a), 151, fig. 158, 159
ulna var. danica (Kütz.) Van Heurck	Patrick & Reimer (1966), 151, pl. 7/10
ulna var. oxyrhynchus f. mediocontracta (Forti) Hustedt	Patrick & Reimer (1966), 152, pl. 7/4
ulna var. ramesi (Hérib.) Hustedt	Patrick & Reimer (1966), 153, pl. 6/9
ulna var. spathulifera (Grun.) Van Heurck	Patrick & Reimer (1966), 153, pl. 7/8
ulna var. subaequalis (Grun.) Van Heurck	Patrick & Reimer (1966), 154, pl. 7/5
THALASSIOSIRA	
rudolfii (Bachmann) Hasle	Hasle (1978), 279, figs. 51-60, 65, 69

Appendix 3

MODERN DIATOM ASSEMBLAGES, CENTRAL MEXICO

Zacapu Lake Sites

La Zarcita (Z/6/B)	Sample 1
Melosira granulata var angustissima	49.3%
Fragilaria pinnata var lancettula	33.4%
Stephanodiscus subtilis	2.7%
Nitzschia amphibia	2.7%
N. acicularis	1.5%
Cocconeis placentula var lineata	1.5%
Cyclotella meneghiniana	1.2%
Fragilaria construens var venter	0.7%
Nitzschia palea var tenuirostris	0.7%
Cymatopleura solea	0.5%
Amphora veneta	0.5%
A. ovalis var affinis	0.5%
Nitzschia palea var debilis	0.24%
N. intermedia	0.24%
Gomphonema subclavatum var commutatum	0.24%
Melosira agassizii	0.24%
Fragilaria pinnata	0.24%
Navicula seminulum	0.24%
Gomphomema parvulum	0.24%
Neidium iridis var ampliatum	0.24%
Synedra acus var neogena	0.24%
Stephanodiscus minutus	0.24%
S. niagarae	0.24%
Navicula anglica var subsalsa	0.24%
Cocconeis fluviatalis	0.24%
Achnanthes lanceolata var dubia	0.24%
Navicula laevissima	0.24%
N. cryptocephala var veneta	0.24%
Cymbella mexicana	0.24%
Melosira ambigua	0.24%
Stephanodiscus astraea var minutula	0.24%
Nitzschia gracilis	0.24%

Laguna Zacapu (Z/1/B)	Sample 2
Nitzschia palea	84.0%
Synedra acus var neogena	6.5%
Stephanodiscus subtilis	4.0%
Melosira granulata var angustissima	1.75%
N. palea var debilis	1.0%
Cocconeis placentula var lineata	1.0%
Stephanodiscus niagarae	0.25%
Nitzschia pusilla	0.25%
N. acicularis	0.25%
Rhoicosphenia curvata	0.25%
Fragilaria pinnata	0.25%
F. pinnata var lancettula	0.25%

Navicula pupula	0.25%
Laguna Zacapu (Z/2/B)	**Sample 3**
Nitzschia palea	67.0%
Stephanodiscus subtilis	16.5%
Cocconeis placentula var lineata	5.25%
Synedra acus var neogena	2.75%
Navicula radiosa var tenella	1.5%
Synedra goulardi	1.0%
Navicula seminulum	1.0%
N. heufleri var leptocephala	0.75%
Nitzschia intermedia	0.75%
N. palea var tenuirostris	0.5%
Stephanodiscus tenuis fo minor	0.5%
Nitzschia amphibia	0.5%
N.? rostellata	0.25%
Navicula cryptocephala var veneta	0.25%
Fragilaria pinnata var lancettula	0.25%
F. pinnata	0.25%
Gomphonema spp	0.25%
Synedra ulna var danica	0.25%
Cocconeis fluviatalis	0.25%
Rhoicosphenia curvata	0.25%
Laguna Zacapu (Z/2/C)	**Sample 4**
Stephanodiscus subtilis	43.0%
Nitzschia palea	24.5%
Synedra goulardi	6.0%
Cocconeis placentula var lineata	5.0%
Stephanodiscus hantzschii var pusilla	4.75%
Synedra acus var neogena	4.25%
Nitzschia palea var debilis	2.75%
N.palea var tenuirostris	1.25%
Fragilaria pinnata var lancettula	1.0%
Melosira italica subsp. subarctica	1.0%
Stephanodiscus tenuis fo minor	1.0%
Melosira granulata var angustissima	0.75%
Rhoicosphenia curvata	0.75%
Nitzschia intermedia	0.5%
N. amphibia	0.5%
Gomphonema angustatum	0.5%
Cymbella mexicana	0.25%
Fragilaria leptostauron var dubia	0.25%
Nitzschia rostellata	0.25%
Amphora ovalis var affinis	0.25%
Stephanodiscus/Cyclostephanos spp 1	0.25%
Navicula radiosa var tenella	0.25%
Cymbella lanceolata	0.25%
Stephanodiscus minutus	0.25%
Cyclotella meneghiniana	0.25%
Gyrosigma spencerii	0.25%

Laguna Zacapu (Z/4/A)	Sample 5
Cocconeis placentula var lineata	77.25%
Melosira italica subsp. subarctica	3.75%
Gomphonema angustatum	2.5%
Gomphonema parvulum	2.5%
Stephanodiscus minutus	1.75%
Fragilaria pinnata var lancettula	1.75%
Rhoicosphenia curvata	1.75%
Gomphonema clevei var javanica	1.25%
Navicula radiosa var tenella	1.0%
Melosira granulata var angustissima	0.75%
Stephanodiscus/Cyclostephanos spp 1	0.5%
Nitzschia palea var debilis	0.5%
Amphora veneta	0.5%
Synedra goulardi	0.5%
Nitzschia amphibia	0.5%
Stephanodiscus subtilis	0.25%
Navicula grimmei	0.25%
Cocconeis placentula	0.25%
Navicula seminulum	0.25%
Synedra acus var neogena	0.25%
Nitzschia romana	0.25%
N. palea	0.25%
Stephanodiscus hantzschii	0.25%
Navicula cryptocephala var veneta	0.25%
N. gottlandica	0.25%
Nitzschia gracilis	0.25%
Achnanthes minutissima	0.25%
A. lanceolata var dubia	0.25%

Zacapu Gardens (Z/5/B)	Sample 6
Melosira granulata var angustissima	35.3%
Fragilaria pinnata var lancettula	21.25%
F. pinnata	7.45%
F. construens var venter	5.05%
Stephanodiscus asteroides var intermedia	3.85%
S. subtilis	3.4%
Melosira ambigua	3.4%
Stephanodiscus astraea var intermedia	2.65%
Nitzschia amphibia	2.45%
Stephanodiscus niagarae	1.45%
Nitzschia palea	1.25%
Cocconeis placentula var lineata	1.0%
Navicula pupula	1.0%
Fragilaria leptostauron var dubia	1.0%
Stephanodiscus minutus	0.75%
S. novaezelandia	0.75%
Fragilaria construens	0.75%
Nitzschia dissipata	0.5%
Melosira agassizii	0.5%
Cyclotella meneghiniana	0.5%

Navicula vaucheriae	0.5%
Gomphonema subclavatum var mexicanum	0.5%
Amphora veneta	0.5%
Nitzschia gracilis	0.25%
N. acicularis	0.25%
N. intermedia	0.25%
Fragilaria construens var subsalina	0.25%
F. brevistriata	0.25%
Navicula seminulum	0.25%
Stephanodiscus hantzschii var pusilla	0.25%
Synedra ulna var danica	0.25%
Navicula heufleri var leptocephala	0.25%
Nitzschia romana	0.25%
N. palea var tenuirostris	0.25%
Stauroneis phoenicenteron	0.25%
Epithemia adnata var proboscidea	0.25%
Stephanodiscus astraea var minutula	0.25%
Synedra goulardi	0.25%
Gomphoneis hurculeana	0.25%
Gomphonema angustatum	0.25%

Zacapu Gardens (Z/5/C)	**Sample 7**
Melosira granulata var angustissima	57.1%
Fragilaria pinnata var lancettula	15.0%
Nitzschia acicularis	3.3%
Fragilaria construens var venter	3.1%
F. pinnata	2.86%
Stephanodiscus subtilis	2.1%
S. asteroides var intermedia	1.4%
Nitzschia palea var tenuirostris	1.2%
N. palea	1.2%
Cocconeis placentula var lineata	1.2%
Stephanodiscus minutus	0.95%
S. hantzschii var pusilla	0.95%
Nitzschia amphibia	0.95%
Stephanodiscus astraea var intermedia	0.7%
Gomphonema angustatum	0.7%
Melosira ambigua	0.7%
Nitzschia intermedia	0.7%
N. gracilis	0.7%
Fragilaria construens var subsalina	0.7%
Denticula elegans	0.48%
Fragilaria brevistriata	0.48%
F. construens	0.48%
Navicula pupula	0.48%
N. seminulum	0.2%
N. heufleri var leptocephala	0.2%
Fragilaria brevistriata var subcapitata	0.2%
F. virescens var elliptica	0.2%
Amphora veneta	0.2%
Cymbella mexicana	0.2%
Stephanodiscus novaezelandiae	0.2%
Nitzschia umbonata	0.2%
Amphora ovalis var affinis	0.2%

Synedra goulardi	0.2%

Laguna Zacapu (Z/4/B)	Sample 8
Nitzschia palea	45.75%
Cocconeis placentula var lineata	13.0%
Stephanodiscus subtilis	10.0%
Nitzschia amphibia	4.25%
Navicula radiosa var tenella	3.75%
Rhoicosphenia curvata	2.25%
Synedra goulardi	2.25%
Nitzschia romana	1.75%
Naivula heufleri var leptocephala	1.75%
Gomphonema intricatum var pumilum	1.75%
Navicula cryptocephala var veneta	1.5%
Gomphonema clevei	1.25%
Amphora veneta	1.25%
Nitzschia palea var debilis	1.25%
Gomphonema spp.	1.0%
Melosira italica subsp subarctica	1.0%
Gomphonema angustatum	1.0%
Stephanodiscus hantzschii var pusilla	0.75%
Gomphonema subclavatum var commutatum	0.5%
Nitzschia palea var tenuirostris	0.5%
N. paleacea	0.5%
Navicula radiosa var parva	0.5%
Cymbella mexicana	0.25%
Cyclotella stelligera	0.25%
Achnanthes minutissima	0.25%
Cocconeis placentula var euglypta	0.25%
Fragilaria pinnata var lancettula	0.25%
Navicula seminulum	0.25%
N. pupula var rectangularis	0.25%
Melosira granulata var angustissima	0.25%
Navicula halophila	0.25%
Stephanodiscus astraea var intermedia	0.25%

Laguna Zacapu (Z/4/C)	Sample 9
Cocconeis placentula var lineata	53.66%
Nitzschia palea	9.66%
Rhoicosphenia curvata	8.0%
Stephanodiscus subtilis	6.33%
Melosira italica subsp subarctica	4.33%
Nitzschia amphibia	3.0%
Navicula ? heufleri var leptocephala	2.66%
Melosira granulata var angustissima	2.66%
Synedra goulardi	2.32%
Fragilaria pinnata var lancettula	1.35%
Synedra acus var neogena	1.35%
Nitzschia paleacea	1.0%
Gomphonema spp	1.0%
Fragilaria pinnata	0.7%
Cymbella mexicana	0.33%
Nitzschia palea var debilis	0.33%

N. inconspicua	0.33%
N. palea var tenuirostris	0.33%
Navicula gottlandica	0.33%
Achnanthes minutissima	0.33%

Laguna Zacapu (Z/4/D)	Sample 10
Cocconeis placentula var lineata	21.66%
Gomphonema clevei var javanica	9.0%
Rhoicosphenia curvata	9.0%
Nitzschia palea	8.0%
N. paleacea	6.66%
Gomphonema intricatum var pumila/um?	6.66%
Navicula heufleri var leptocephala	5.0%
Nitzschia palea var debilis	4.66%
Achnanthes minutissima	4.66%
Gomphonema spp (girdle)	4.66%
Nitzschia amphibia	4.33%
Gomphonema clevei	2.0%
Amphora perpusilla	2.0%
Navicula radiosa var tenella	1.66%
Melosira italica subsp subarctica	1.33%
Nitzschia romana	1.33%
Gomphonema parvulum var micropus	1.0%
G. angustatum	1.0%
Stephanodiscus minutus	1.0%
Cocconeis placentula var euglypta	0.66%
Gomphonema ventricosum	0.34%
Diploneis elliptica	0.34%
Cymbella lanceolata	0.34%
Fragilaria construens var venter	0.34%
Gomphonema subclavatum var mexicanum	0.34%
Achnanthes linearis	0.34%
Navicula canalis	0.34%
Melosira granulata var angustissima	0.34%
Cyclotella meneghiniana	0.34%
Navicula cryptocephala	0.34%
Stephanodiscus subtilis	0.34%

Laguna Zacapu (Z/2/E)	Sample 11
Nitzschia romana	23.75%
Cocconeis placentula var lineata	15.25%
Amphora veneta	12.75%
Nitzschia paleacea	7.75%
Synedra ulna	6.0%
Nitzschia palea var debilis	4.75%
Synedra ulna var danica	4.75%
Gomphonema subclavatum var commutatum	4.25%
Achnanthes hungarica	4.0%
Synedra acus var neogena	3.75%
Nitzschia palea	2.75%
Gomphonema subclavatum var mexicanum	1.25%
Synedra goulardi	1.25%
Gomphonema parvulum	0.75%

G. angustatum	0.75%
Navicula seminuloides	0.75%
N. radiosa var tenella	0.75%
Stephanodiscus subtilis	0.75%
Nitzschia palea var tenuirostris	0.5%
Rhoicosphenia curvata	0.5%
Navicual heufleri var leptocephala	0.5%
Nitzschia amphibia	0.25%
Melosira italica	0.25%
Gomphonema clevei	0.25%
Melosira italica subsp subarctica	0.25%
Gomphonema clevei var javanica	0.25%
Fragilaria pinnata var lancettula	0.25%
Achnanthes affinis	0.25%
Navicula cincta	0.25%
Cymbella lanceolata	0.25%
Gomphonema affine	0.25%

Zacapu 1, bottom sediment Sample 12

Stephanodiscus subtilis	29.41%
Synedra goulardi	23.85%
S. acus var neogena	14.47%
Cocconeis placentula var lineata	7.7%
Melosira italica subsp subarctica	5.8%
Stephanodiscus tenuis	5.07%
Fragilaria pinnata var lancettula	1.9%
Nitzschia amphibia	1.41%
Fragilaria pinnata	1.41%
Nitzschia palea	1.41%
N. palea var debilis	1.2%
N. intermedia	0.97%
Cymbella mexicana	0.7%
Nitzschia palea var tenuirostris	0.7%
Stephanodiscus niagarae	0.5%
Nitzschia romana	0.5%
Stephanodiscus minutus	0.5%
Nitzschia dissipata	0.25%
Navicula damasii	0.25%
Rhoicosphenia curvata	0.25%
Nitzschia acicularis	0.25%
Navicula heufleri var leptocephala	0.25%
Stephanodiscus carconensis	0.25%
S. novaezelandiae	0.25%
S. asteroides var intermedia	0.25%
Cymbella muelleri	0.25%
Melosira granulata var angustissima	0.25%

Zacapu 2, bottom sediment Sample 13

Stephanodiscus subtilis	29.4%
Synedra goulardi	21.0%
S. acus var neogena	11.58%
Melosira italica subsp subarctica	9.17%
Cocconeis placentula var lineata	7.0%

Fragilaria pinnata var lancettula	2.65%
Rhoicosphenia curvata	1.9%
Stephanodiscus tenuis	1.7%
Melosira granulata var angustissima	1.4%
Nitzschia palea var debilis	1.4%
Stephanodiscus minutus	1.2%
Nitzschia palea var tenuirostris	1.2%
N. amphibia	1.2%
Cymbella lanceolata	0.7%
Cyclotella meneghiniana	0.7%
Nitzschia palea	0.7%
Fragilaria construens var venter	0.7%
Denticula elegans	0.48%
Synedra delicatissima var angustissima	0.48%
Cymbella mexicana	0.48%
Stephanodiscus asteroides var intermedia	0.48%
Nitzschia dissipata	0.48%
Navicula heufleri var leptocephala	0.25%
N. capitata var hungarica	0.25%
Achnanthes lanceolata var dubia	0.25%
Nitzschia intermedia	0.25%
Fragilaria construens var binodis	0.25%
Stephanodiscus transylvanicus	0.25%
S. tenuis fo minor	0.25%
S. novaezelandiae	0.25%
Fragilaria brevistriata	0.25%
S. astraea var intermedia	0.25%
Surirella tenera	0.25%
Pinnularia spp	0.25%
Navicula pupula var rectangularis	0.25%
Synedra rumpens	0.25%
Melosira granulata	0.25%
Cyclotella stelligera	0.25%

Zacapu 3, bottom sediment	Sample 14
Stephanodiscus subtilis	41.67%
Synedra acus var neogena	16.2%
Cocconeis placentula var lineata	13.3%
Synedra goulardi	12.4%
Nitzschi palea var tenuirostris	2.15%
N. palea var debilis	1.66%
N. amphibia	1.66%
N. intermedia	1.43%
Stephanodiscus tenuis	0.95%
Melosira granulata var angustissima	0.95%
Nitzschia palea	0.95%
N. dissipata	0.7%
Cyclotella meneghiniana	0.7%
Rhoicosphenia curvata	0.48%
Cymbella mexicana	0.48%
Synedra delicatissima var angustissima	0.48%
Stephanodiscus asteroides var intermedia	0.24%
S. minutus	0.24%
Navicula seminuloides	0.24%

Gomphonema angustatum	0.24%
Fragilaria pinnata var lancettula	0.24%
Cymbella lanceolata	0.24%
Nitzschia paleacea	0.24%
Gomphonema affine	0.24%
Achnanthes lanceolata	0.24%
Nitzschia gracilis	0.24%
N. romana	0.24%
Navicula cryptocephala var veneta	0.24%
Stephanodiscus niagarae	0.24%
Synedra rumpens	0.24%
Gomphonema subclavatum var commutatum	0.24%
Fragilaria construens var venter	0.24%

Zacapu Celanese (ZC/1/Ai) **Sample 15**

Nitzschia palea	64.75%
Stephanodiscus subtilis	13.5%
Nitzschia palea var debilis	6.25%
Synedra acus var neogena	4.75%
Nitzschia acicularis	2.0%
Melosira granulata var angustissima	1.5%
Synedra goulardi	1.0%
Melosira ambigua	0.75%
Cocconeis placentula var lineata	0.75%
Nitzschia dissipata	0.5%
Synedra rumpens var familiaris	0.5%
Nitzschia recta	0.25%
Melosira monospina	0.25%
Fragilaria pinnata var lancettula	0.25%
Nitzschia romana	0.25%
Navicula heufleri var leptocephala	0.25%
N. pupula	0.25%
Fragilaria pinnata	0.25%
Gomphonema angustatum	0.25%
Stephanodiscus carconensis	0.25%
S. hantzschii	0.25%
Nitzschia gracilis	0.25%
Stephanodiscus niagarae	0.25%
Navicula pygmaea	0.25%
Nitzschia ignorata	0.25%
Navicula pupula var rectangularis	0.25%

Zacapu Celanese (ZC/1/Bi) **Sample 16**

Cocconeis placentula var lineata	33.2%
Nitzschia palea	20.2%
N. amphibia	6.8%
Rhoicosphenia curvata	6.1%
Gomphonema angustatum	4.15%
G. parvulum	4.15%
Stephanodiscus subtilis	3.4%
Nitzschia dissipata	2.6%
Synedra acus var neogena	2.6%
Navicula cryptocephala var veneta	1.7%

Gomphonema affine	1.7%
Synedra goulardi	1.46%
Nitzschia romana	1.2%
Navicula radiosa var tenella	1.2%
N. heufleri var leptocephala	1.0%
Melosira italica subsp subarctica	1.0%
Amphora veneta	1.0%
Gomphonema intricatum var pumila	0.7%
Fragilaria pinnata var lancettula	0.49%
Stephanodiscus asteroides var intermedia	0.49%
Nitzschia palea var debilis	0.49%
Stephanodiscus niagarae	0.49%
S. astraea var intermedia	0.49%
Cyclotella stelligera	0.49%
Achnanthes hungarica	0.2%
Melosira monospina	0.2%
Fragilaria construens var venter	0.2%
Stephanodiscus minutus	0.2%
Achnanthes minutissima	0.2%
Amphora ovalis var affinis	0.2%
Fragilaria brevistriata var inflata	0.2%
Navicula pupula	0.2%
Cymbella lanceolata	0.2%
Stephanodiscus novaezelandiae	0.2%
S. hantzschii	0.2%

Zacapu Celanese (ZC/1/Aii)	**Sample 17**
Nitzschia palea	40.6%
N. ignorata	20.86%
N. af ignorata	13.4%
N. microcephala	10.3%
Stephanodiscus subtilis	4.86%
Nitzschia parvula	3.4%
N. palea var debilis	2.86%
N. dissipata	0.6%
Cocconeis placentula var lineata	0.6%
Nitzschia sigma var diminuta	0.6%
N. hantzschiana	0.27%
Synedra goulardi	0.27%
S. rumpens	0.27%
Melosira ambigua	0.27%
Fragilaria pinnata var lancettula	0.27%
Melosira granulata var angustissima	0.27%
Nitzschia inconspicua	0.27%

Zacapu Celanese, sediment (ZC/1/Bii)	**Sample 18**
Melosira ambigua	24.3%
Stephanodiscus asteroides var intermedia	22.3%
S. astraea var intermedia	9.3%
Melosira monospina	5.67%
Stephanodiscus niagarae	5.67%
Fragilaria pinnata var lancettula	4.3%
Melosira granulata var angustissima	3.3%

Nitzschia palea	3.0%
Stephanodiscus hantzschii	3.0%
S. novaezelandiae	2.34%
S. astraea var minutula	1.0%
Nitzschia romana	1.0%
Cymbella lanceolata	1.0%
Rhoicosphenia curvata	1.0%
Fragilaria pinnata	1.0%
Rhopalodia gibberula (type 2)	0.67%
Epithemia adnata var proboscidea	0.67%
Cymbella mexicana	0.67%
Fragilaria construens var venter	0.67%
Cocconeis placentula var lineata	0.67%
Hantzschia amphioxys	0.67%
Stephanodiscus asteroides	0.67%
S. carconensis	0.67%
S. subtilis	0.34%
Synedra goulardi	0.34%
Stephanodiscus minutus	0.34%
Synedra acus var neogena	0.34%
Cyclotella stelligera	0.34%
Melosira italica	0.34%
Pinnularia termitina	0.34%
Nitzschia amphibia	0.34%
Navicula heufleri var leptocephala	0.34%
Anomoeoneis costata	0.34%
Fragilaria brevistriata	0.34%
Pinnularia maior	0.34%
Stephanodiscus subtransylvanicus	0.34%
Navicula mutica	0.34%
Fragilaria construens	0.34%
Achnanthes lanceolata var apiculata	0.34%
Denticula elegans	0.34%
Fragilaria brevistriata var inflata	0.34%
Stephanodiscus astraea	0.34%

Zacapu Celanese, sediment (ZC/1/Cii) **Sample 19**

Stephanodiscus asteroides var intermedia	21.25%
Fragilaria pinnata var lancettula	17.0%
Stephanodiscus astraea var intermedia	12.0%
Melosira ambigua	11.25%
M. granulata var angustissima	4.25%
M. monospina	4.25%
Nitzschia palea	4.0%
Stephanodiscus niagarae	3.0%
Fragilaria pinnata	2.5%
Stephanodiscus novaezelandiae	1.5%
Achnanthes lanceolata var apiculata	1.25%
Nitzschia romana	1.25%
Cymbella lanceolata	1.0%
Synedra acus var neogena	1.0%
Stephanodiscus astreae var minutula	1.0%
S. subtilis	1.0%
Cocconeis placentula var lineata	1.0%

Cyclotella meneghiniana	0.75%
Fragilaria brevistriata	0.75%
Nitzschia ignorata	0.75%
Melosira italica	0.75%
Amphora ovalis var affinis	0.75%
A. perpusilla	0.75%
Fragilaria construens	0.5%
Stephanodiscus minutus	0.5%
Navicula mutica	0.5%
Fragilaria construens var venter	0.5%
Cyclotella stelligera	0.5%
Navicula confervacea	0.5%
Rhoicosphenia curvata	0.5%
Synedra goulardi	0.5%
Stephanodiscus hantzschii	0.25%
Hantzschia amphioxys	0.25%
Nitzschia inconspicua	0.25%
Cymbella mexicana	0.25%
Nitzschia microcephala	0.25%
Gomphonema clevei var javanica	0.25%
Pinnularia viridis	0.25%
Nitzschia parvula	0.25%
N. dissipata	0.25%
Anomoeoneis sphaerophora	0.25%
Gomphonema ventricosum	0.25%
Achnanthes lanceolata var dubia	0.25%

Zacapu Celanese, sediments (ZC/2/Bii) **Sample 20**

Stephanodiscus asteroides var intermedia	27.1%
Melosira ambigua	16.8%
Stephanodiscus astraea var intermedia	12.0%
Melosira granulata var angustissima	10.85%
Stephanodiscus niagarae	5.7%
Melosira monospina	4.3%
Cyclotella meneghiniana	3.7%
Hantzschia amphioxys	2.0%
Stephanodiscus novaezelandiae	1.7%
Navicula mutica	1.43%
Amphora ovalis var affinis	1.43%
Cyclotella stelligera	1.43%
Fragilaria pinnata var lancettula	1.14%
Campylodiscus clypeus	1.14%
Cymbella mexicana	1.14%
Nitzschia romana	0.86%
Cocconeis placentula var lineata	0.86%
Synedra goulardi	0.86%
Anomoeoneis costata	0.86%
Nitzschia palea	0.57%
Synedra acus var neogena	0.57%
Denticula elegans	0.3%
Fragilaria construens	0.3%
F. brevistriata	0.3%
Navicula confervacea	0.3%
Pinnularia viridis	0.3%

Amphora veneta	0.3%
Fragilaria construens var venter	0.3%
F. brevistriata var elliptica	0.3%
Rhopalodia gibba var ventricosa	0.3%
Epithemia adnata	0.3%
Fragilaria pinnata	0.3%
Gomphonema affine	0.3%

Zacapu Basin, other sites

Tarejero (TA/1/B)	Sample 1
Fragilaria pinnata var lancettula	26.0%
F. leptostauron var dubia	12.75%
Nitzschia romana	10.25%
Navicula minima	6.5%
Fragilaria construens var venter	6.25%
Navicula seminuloides	5.75%
Nitzschia amphibia	4.0%
N. dissipata	2.75%
Cocconeis placentula var lineata	2.5%
Nitzschia palea var debilis	2.0%
Navicula heufleri var leptocephala	2.0%
Fragilaria pinnata	1.75%
Gomphonema subclavatum var commutatum	1.5%
Nitzschia palea	1.5%
Amphora perpusilla	1.5%
Navicula seminulum	1.5%
Nitzschia paleacea	1.5%
Cymbella mexicana	1.0%
Navicula modica	0.75%
Achnanthes lanceolata var dubia	0.75%
Cymbella lanceolata	0.75%
Navicula grimmei	0.75%
Gomphonema angustatum	0.5%
Synedra ulna var subaequalis	0.5%
Synedra goulardi	0.5%
Navicula vaucheriae	0.5%
N. pygmaea	0.5%
Fragilaria construens	0.5%
Nitzschia hantzschiana	0.25%
N. acicularis	0.25%
Navicula mutica	0.25%
Achnanthes hungarica	0.25%
Navicula pupula	0.25%
Achnanthes exigua var heterovalva	0.25%
Gomphonema affine var insigne	0.25%
Achnanthes lanceolata	0.25%
Gomphonema intricatum var pumila	0.25%
Amphora ovalis var affinis	0.25%
Gomphonema parvulum	0.25%
Anomoeoneis sphaerophora	0.25%

Tarejero (TA/2/C)	Sample 2
Achnanthes affinis	51.7%
Navicula seminuloides	21.46%
Nitzschia romana	12.7%
Synedra ulna var subaequalis	2.9%
Nitzschia tropica	2.4%
Achnanthes minutissima	1.2%

Nitzschia amphibia	1.2%
Synedra goulardi	1.2%
Rhoicosphenia curvata	1.0%
Achnanthes linearis	0.74%
Navicula tantula	0.5%
Amphora perpusilla	0.5%
Navicula spp 9	0.5%
Synedra ulna var danica	0.5%
Navicula seminulum	0.25%
Gomphonema angustatum	0.25%
Nitzschia palea var debilis	0.25%
Navicula heufleri var leptocephala	0.25%
Cymbella mexicana	0.25%
Synedra ulna var oxyrhnchus fo mediocontracta	0.25%

Tarejero, sediment	Sample 3
Fragilaria pinnata var lancettula	41.5%
Navicula seminuloides	12.7%
Fragilaria leptostauron var dubia	10.0%
Nitzschia romana	5.4%
N. amphibia	4.6%
Navicula minima	2.9%
Cocconeis placentula var lineata	2.7%
Fragilaria pinnata	1.98%
Amphora perpusilla	1.7%
Nitzschia dissipata	1.7%
Navicula heufleri var leptocephala	1.7%
Achnanthes lanceolata var dubia	1.5%
Gomphonema subclavatum var commutatum	1.2%
Nitzschia palea var debilis	1.0%
Navicula seminulum	0.7%
N. grimmei	0.7%
Achnanthes lanceolata	0.7%
Gomphonema affine	0.7%
Navicula tantula	0.5%
Achnanthes exigua var heterovalva	0.5%
Fragilaria brevistriata	0.5%
Synedra goulardi	0.5%
Cymbella mexicana	0.5%
Amphora veneta	0.5%
Cymbella lanceolata	0.5%
Melosira ambigua	0.24%
Amphora ovalis var affinis	0.24%
Rhoicosphenia curvata	0.24%
Gomphonema angustatum	0.24%
Navicula pygmaea	0.24%
N. pupula	0.24%
N. mutica	0.24%
Synedra ulna var subaequalis	0.24%
Gomphonema parvulum	0.24%
Achnanthes affinis	0.24%
Fragilaria africana	0.24%
Navicula cryptocephala var veneta	0.24%
Gomphonema intricatum var pumila	0.24%

El Angulo (AN/1/B)	Sample 4
Nitzschia palea	34.25%
Fragilaria pinnata var lancettula	9.0%
Stephanodiscus subtilis	7.75%
Synedra goulardi	5.75%
S. acus var neogena	4.5%
Nitzschia palea var debilis	4.0%
Fragilaria pinnata	3.0%
F. construens var venter	2.75%
Nitzschia palea var tenuirostris	2.75%
Melosira granulata var angustissima	2.5%
Fragilaria leptostauron var dubia	2.5%
Synedra goulardi	2.25%
Nitzschia amphibia	2.25%
N. gracilis	2.25%
Cocconeis placentula var lineata	2.0%
Nitzschia romana	2.0%
N. paleacea	1.25%
Stephanodiscus tenuis	1.25%
Rhoicosphenia curvata	0.75%
Melosira italica	0.75%
Gomphonema spp	0.75%
Fragilaria construens	0.75%
Stephanodiscus minutus	0.5%
Melosira ambigua	0.5%
Cymbella lanceolata	0.5%
Navicula pupula	0.5%
Amphora perpusilla	0.5%
Navicula seminuloides	0.5%
N. heufleri var leptocephala	0.5%
Gomphonema gracile	0.25%
Navicula vaucheriae	0.25%
Amphora veneta	0.25%
Navicula pupula var rectangularis	0.25%
Eunotia pectinalis	0.25%
Fragilaria construens var subsalina	0.25%
Cyclotella meneghiniana	0.25%
Nitzschia dissipata	0.25%
Epithemia turgida	0.25%
Stephanodiscus asteroides var intermedia	0.25%
Nitzschia intermedia	0.25%
Fragilaria africana	0.25%
Stephanodiscus hantzschii var pusilla	0.25%
Achnanthes humgarica	0.25%
Navicula pupula var elliptica	0.25%

El Angulo (AN/1/C)	Sample 5
Nitzschia palea	37.45%
Stephanodiscus subtilis	7.1%
Synedra acus var neogena	6.0%
S. goulardi	5.47%

Fragilaria pinnata var lancettula	4.87%
Nitzschia amphibia	4.0%
Cocconeis placentula var lineata	3.1%
Nitzschia palea var debilis	2.87%
Fragilaria leptostauron var dubia	2.87%
Melosira granulata var angustissima	2.87%
Fragilaria construens var venter	2.6%
Melosira italica	1.7%
Nitzschia paleacea	1.7%
Fragilaria pinnata	1.4%
Navicula muralis	1.4%
Fragilaria brevistriata	1.1%
Melosira granulata	1.1%
Navicula pupula	0.87%
Stephanodiscus tenuis	0.87%
Navicula heufleri var leptocephala	0.87%
Fragilaria construens	0.87%
Cyclotella meneghiniana	0.6%
Nitzschia inconspicua	0.6%
N. intermedia	0.6%
Navicula cryptocephala var veneta	0.6%
Nitzschia sigma var diminuta	0.6%
Melosira ambigua	0.6%
Nitzschia dissipata	0.28%
N. acicularis	0.28%
Cymbella minuta var silesiaca	0.28%
C. lanceolata	0.28%
Rhopalodia gibberula (type 2)	0.28%
Stephanodiscus minutus	0.28%
Navicula cuspidata	0.28%
N. symmetrica	0.28%
Nitzschia palea var tenuirostris	0.28%
Navicula spp 8	0.28%
Pinnularia brebissonii var diminuta	0.28%
Nitzschia af ignorata	0.28%
Gomphonema angustatum	0.28%
Achnanthes exigua var heterovalva	0.28%
Nitzschia romana	0.28%
Navicula seminuloides	0.28%
N. pupula var elliptica	0.28%
Rhoicosphenia curvata	0.28%
Nitzschia rostellata	0.28%

El Angulo, sediment (AN/1/D) **Sample 6**

Stephanodiscus subtilis	19.1%
Fragilaria pinnata var lancettula	12.9%
Cocconeis placentula var lineata	11.7%
Nitzschia amphibia	10.6%
Fragilaria leptostauron var dubia	7.1%
Melosira italica	5.1%
Fragilaria pinnata	4.0%
Synedra acus var neogena	3.4%
Fragilaria construens var venter	2.3%
F. brevistriata	2.3%

Synedra goulardi	1.95%
Nitzschia palea	1.4%
N. romana	1.4%
Achnanthes exigua var heterovalva	0.85%
Fragilaria construens	0.85%
Rhopolodia gibberula (type 2)	0.85%
Stephanodiscus tenuis	0.6%
Achnanthes affinis	0.6%
Navicula heufleri var leptocephala	0.6%
Rhoicosphenia curvata	0.6%
Epithemis turgida	0.6%
Navicula pupula var rectangularis	0.6%
Nitzschia palea var debilis	0.6%
Navicula confervacea	0.6%
Cymbella lanceolata	0.6%
Gomphonema affine	0.6%
Cymbella mexicana	0.6%
Pinnularia abaujensis var parva	0.6%
Cymbella minuta var silesiaca	0.28%
Amphora veneta	0.28%
Synedra rumpens var familiaris	0.28%
Navicula seminulum	0.28%
Hantzschia amphioxys	0.28%
Navicula muralis	0.28%
Pinnularia acrosphaeria	0.28%
Cyclotella stelligera	0.28%
Gomphonema angustatum	0.28%
Rhopalodia gibba var ventricosa	0.28%
Melosira granulata car angustissima	0.28%
M. monospina	0.28%
Nitzschia paleacea	0.28%
Achnanthes hungarica	0.28%
Nitzschia af ignorata	0.28%
Amphora ovalis var affinis	0.,28%
Eunotia curvata	0.28%
Eunotia glacialis (or gracilis)	0.28%
Synedra ulna var subaequalis	0.28%
Fragilaria leptostauron	0.28%
Amphora perpusilla	0.28%
Nitzschia gracilis	0.28%
Navicula seminuloides	0.28%
Eunotia maior	0.28%
Achnanthes lanceolata	0.28%

B. la Laguna (L/1/B)

	Sample 7
Melosira granulata var angustissima	36.6%
Stephanodiscus minutus	25.7%
Nitzschia acicularis	11.0%
Stephanodiscus tenuis fo minor	5.5%
Navicula rhynchocephala var germainii	4.5%
Nitzschia palea	4.04%
Thalassiosira rudolfi	3.3%
Nitzschia paleacea	1.4%
N. palea var debilis	1.22%
N. palea var tenuirostris	1.0%
Stephanodiscus subtilis	1.0%
Nitzschia gracilis	0.7%
Navicula capitata	0.5%
N. accomoda	0.5%
N. cryptocephala	0.5%
Nitzschia amphibia	0.5%
Navicula heufleri var leptocephala	0.5%
N. cryptocephala var veneta	0.22%
N. halophila	0.22%
Synedra goulardi	0.22%
Navicula pupula	0.22%
Fragilaria pinnata var lancettula	0.22%
Melosira italica	0.22%
Navicula cuspidata	0.22%

Loma el Cementerio (LC/1/B)

	Sample 8
Nitzschia palea	18.85%
Navicula omissa	14.2%
Amphora ovalis var affinis	8.3%
Fragilaria inflata	3.3%
Navicula pupula	2.8%
Nitzschia romana	2.5%
N. linearis	2.5%
Navicula pygmaea	2.5%
N. pupula var rectangularis	2.2%
Nitzschia amphibia	2.2%
Navicula rhynchocephala var germainii	2.2%
N. citrus	2.2%
Caloneis ventricosa var alpina	1.7%
Nitzschia hungarica	1.7%
Navicula lanceolata	1.4%
N. heufleri var leptocephala	1.4%
Nitzschia hantzschiana	1.1%
Navicula radiosa var tenella	1.1%
Nitzschia dissipata	1.1%
Navicula seminuloides	1.1%
Nitzschia paleacea	1.1%
Navicula cf viridula	1.1%
Thalassiosira ? rudolfi	0.8%
Rhoicosphenia curvata	0.8%
Cyclotella menghiniana	0.8%
Surirella tenera	0.8%

Navicula cryptocephala var veneta	0.8%
Melosira italica	0.8%
Diploneis puella	0.8%
Cymatopleura solea	0.8%
Surirella ovata var apiculata	0.8%
Gomphonema angustatum	0.8%
Nitzschia acicularis	0.55%
Navicula radiosa	0.55%
N. mutica	0.55%
N. mutica var undulata	0.55%
N. bacillum	0.55%
Nitzschia inconspicua	0.55%
N. tryblionella var levidensis	0.55%
N. rostellata	0.55%
Achnanthes hungarica	0.55%
Navicula confervacea	0.55%
Navicula anglica var subsalsa	0.55%
Cocconeis placentula var lineata	0.55%
Rhopalodia gibba var ventricosa	0.55%
Navicula minima	0.55%
N. insociabilis	0.55%
Pinnularia abaujensis var subundulata	0.3%
Amphora perpusilla	0.3%
Gyrosigma spencerii	0.3%
Caloneis ventricosa var minuta	0.3%
Pinnularia abaujensis var linearis	0.3%
Gomphonema gracile	0.3%
Nitzschia umbonata	0.3%
Pinnularia mormonorum	0.3%
Nitzschia palea var tenuirostris	0.3%
Gyrosigma scalproides	0.3%
Eunotia curvata	0.3%
Anomoeoneis sphaerophora var sculpta	0.3%
Nitzschia intermedia	0.3%
Fragilaria brevistriata var elliptica	0.3%
Navicula americana	0.3%
Gomphonema subclavatum var commutatum	0.3%
Navicula cryptocephala var intermedia	0.3%
N. tripunctata var schizonemoides	0.3%
N. perpusilla	0.3%
N. exigua	0.3%
N. seminulum	0.3%
Diatoma elongatum var minor	0.3%
Synedra goulardi	0.3%
Cymbella minuta var silesiaca	0.3%

Santa Fe de la Labor (SF/1/B)	**Sample 9**
Nitzschia palea	83.2%
Synedra acus var neogena	5.2%
Nitzschia amphibia	3.6%
Navicula seminulum	1.2%
Synedra goulardi	1.2%
Fragilaria construens var venter	0.8%
Nitzschia romana	0.8%

Achnanthes exigua var heterovalva	0.8%
Nitzschia palea var debilis	0.4%
Gomphonema parvulum	0.4%
Nitzschia linearis	0.4%
N. paleacea	0.4%
Melosira granulata var angustissima	0.4%
Stephanodiscus subtilis	0.4%
Nitzschia dissipata	0.4%
Achnanthes lanceolata	0.4%

Villa Jimenez (V/1/B) — Sample 10

Nitzschia palea	26.75%
Stephanodiscus subtilis	14.5%
Fragilaria pinnata var lancettula	9.25%
Synedra acus var neogena	7.75%
Synedra goulardi	5.5%
Fragilaria leptostauron var dubia	5.5%
Cocconeis placentula var lineata	4.5%
Fragilaria construens var venter	2.75%
Nitzschia amphibia	2.25%
N. palea var debilis	1.75%
Fragilaria pinnata	1.75%
Navicula seminuloides	1.25%
Stephanodiscus hantzschii var pusilla	1.0%
Nitzschia intermedia	0.75%
Cyclotella meneghiniana	0.75%
Nitzschia umbonata	0.75%
Navicula seminulum	0.75%
N. pupula	0.75%
Gomphonema angustatum	0.5%
Stephanodiscus astraea var intermedia	0.5%
Nitzschia ignorata	0.5%
N. linearis	0.5%
N. paleacea	0.5%
Fragilaria brevistriata	0.5%
Amphora ovalis var affinis	0.5%
Melosira italica	0.5%
Fragilaria construens	0.5%
Nitzschia romana	0.5%
N. acicularis	0.5%
Gomphonema parvulum	0.5%
Achnanthes exigua var heterovalva	0.5%
Navicula vaucheriae	0.5%
Nitzschia palea var tenuirostris	0.25%
Opephora martyi	0.25%
Navicula salinarum var intermedia	0.25%
N. fluviatalis	0.25%
Gomphonema subclavatum var commutatum	0.25%
Amphora veneta	0.25%
Stephanodiscus tenuis	0.25%
Nitzschia microcephala	0.25%
Navicula seminulum var intermedia	0.25%
Nitzschia gandersheimiensis	0.25%
Navicula heufleri var leptocephala	0.25%

Rhoicosphenia curvata	0.25%
Navicula mutica	0.25%
Gomphonema subclavatum var mexicanum	0.25%
Navicula spp 2	0.25%
Achnanthes lanceolata var dubia	0.25%
Eunotia curvata	0.25%
Nitzschia gracilis	0.25%
Navicula cuspidata	0.25%

Bellas Fuentes (BF/1/B)	**Sample 11**
Fragilaria pinnata var lancettula	34.9%
Nitzschia palea	24.2%
Stephanodiscus tenuis fo minor	8.5%
Fragilaria brevistriata	6.8%
Stephanodiscus subtilis	5.5%
Fragilaria pinnata	3.0%
F. construens	3.0%
Melosira granulata var angustissima	2.6%
Navicula cryptocephala	1.9%
N. muralis	1.5%
N. seminuloides	1.5%
Nitzschia palea var tenuirostris	0.9%
N. longissima var reversa	0.9%
Cocconeis placentula var lineata	0.65%
Nitzschia amphibia	0.65%
Synedra acus var neogena	0.65%
Cyclotella meneghiniana	0.45%
Navicula pupula var rectangularis	0.2%
Fragilaria brevistriata var elliptica	0.2%
Navicula pupula	0.2%
N. confervacea	0.2%
Nitzschia dissipata	0.2%
N. romana	0.2%
Gomphonema parvulum	0.2%
Synedra ulna	0.2%
Nitzschia intermedia	0.2%
Fragilaria construens var venter	0.2%
Rhopalodia gibberula (type 2)	0.2%
Achnanthes lanceolata	0.2%

Hoya la Alberca (H/1/C)	**Sample 12**
Nitzschia amphibia	22.0%
Navicula spp 4	13.3%
N. seminuloides	11.0%
Nitzschia palea	10.3%
Navicula heufleri var leptocephala	9.7%
N. tantula	9.3%
N. cryptocephala var veneta	5.0%
N. minima	2.7%
N. radiosa var tenella	2.7%
Nitzschia inconspicua	2.0%
Cocconeis placentula var lineata	1.7%
Navicula seminulum var intermedia	1.7%

Nitzschia romana	1.3%
Amphora veneta	1.0%
Gomphonitzschia spp	0.7%
Nitzschia microcephala	0.7%
N. palea var debilis	0.7%
Rhoicosphenia curvata	0.7%
Navicula cf strenzkei	0.7%
Achnanthes linearis fo curta	0.7%
Gomphonema parvulum	0.3%
Navicula secura	0.3%
Nitzschia paleacea	0.3%
Navicula seminulum	0.3%
Nitzschia communis	0.3%
Fragilaria pinnata var lancettula	0.3%
Achnanthes affinis	0.3%

Other sites, Central Mexico

Laguna del Rodeo	Sample 1
Nitzschia amphibia	33.04%
Achnanthes minutissima	32.72%
Navicula ryncocephala var germainii	7.8%
Nitzschia palea	6.1%
Navicula capitata	4.7%
Amphora ovalis var pediculus	4.2%
Nitzschia romana	3.04%
Cyclotella stelligera	1.39%
Navicula accomoda	0.8%
Gomphonema parvulum	0.54%
G. parvulum var lagenula	0.54%
G. affine var insigne	0.54%
Nitzschia palea	0.54%
Navicula vaucheriae	0.54%
Achnanthes affinis	0.27%
Gomphonema affine	0.27%
Cyclotella meneghiniana	0.27%
Navicula seminulum	0.27%
Cymbella minuta var pseudogracilis	0.27%
Caloneis bacillum	0.27%
Navicula halophila	0.27%
N. seminuloides	0.27%
Nitzschia palea var tenuirostris	0.27%
Navicula radiosa var tenella	0.27%
Gomphonema angustatum	0.27%
Achnanthes exigua var heterovalva	0.27%

Laguna del Rodeo (R/A/c)	Sample 2
Achnanthes minutissima	54.4%
Nitzschia amphibia	31.3%
Cyclotella stelligera	3.1%
Navicula rhyncocephala var germainii	1.98%
N. capitata	1.98%
N. seminuloides	1.1%
Nitzschia palea	1.1%
N. romama	0.84%
Achnanthes exigua var heterovalva	0.84%
Navicula seminulum	0.84%
N. pupula	0.56%
N. heufleri var leptocephala	0.56%
Amphora ovalis var pediculus	0.28%
Navicula pupula fo elliptica	0.28%
N. halophila	0.28%
Gomphonema gracile	0.28%
Nitzschia paleacea	0.28%

La Alberca (A/2/B)	Sample 3
Gomphonema parvulum	46.5%

G. angustatum	22.0%
Nitzschia palea	20.8%
Navicula mutica	2.3%
Achnanthes hungarica	1.7%
Gomphonema gracile	1.1%
Hantzschia amphioxys	1.1%
Cocconeis placentula	0.9%
Navicula seminulum	0.9%
N. heufleri var leptocephala	0.6%
Nitzschia amphibia	0.3%
Navicula cari	0.3%
N. subminuscula	0.3%
Cymbella muelleri	0.3%
Cocconeis placentula var lineata	0.3%
Fragilaria leptostauron var dubia	0.3%
Synedra ulna	0.3%

La Alberca (A/2/C)	Sample 4
Gomphonema parvulum	38.4%
Nitzschia palea	35.1%
Gomphonema angustatum	10.9%
Achnanthes hungarica	6.0%
Nitzschia gandersheimiensis	2.4%
Navicula mutica	2.2%
Cocconeis placentula	0.9%
Navicula seminulum	0.68%
Navicula heufleri var leptocephala	0.45%
Hantzschia amphioxys	0.45%
Gomphonema gracile	0.45%
Navicula seminulum var radiosa	0.23%
Gomphonema ventricosum	0.23%
Navicula goppertiana	0.23%
Melosira italica	0.23%
Nitzschia umbonata	0.23%
Fragilaria leptostauron var dubia	0.23%
Navicula subminuscula	0.23%
Nitzschia amphibia	0.23%
Fragilaria construens var subsalina	0.23%

La Alberca, bottom sediment	Sample 5
Gomphonema parvulum	36.0%
G. angustatum	15.4%
Nitzschia palea	8.57%
Navicula cuspidata	5.7%
Achnanthes hungarica	5.4%
Synedra ulna	5.1%
Nitzschia amphibia	2.85%
Amphora veneta	2.57%
Navicula heufleri var leptocephala	2.28%
Nitzschia frustulum	2.0%
Amphora spp	1.4%
Cocconeis placentula var lineata	1.4%
Hantzschia amphioxys	1.15%

Navicula mutica	0.9%
N. cincta	0.9%
Gomphonema affine	0.9%
Cocconeis placentula	0.6%
Caloneis bacillum	0.6%
Gomphonema parvulum var micropus	0.6%
Navicula pupula	0.6%
Surirella robusta	0.6%
Navicula seminulum	0.28%
Nitzschia palea var tenuirostris	0.28%
Melosira ambigua	0.28%
Fragilaria leptostauron var dubia	0.28%
Navicula subminuscula	0.28%
N. confervacea	0.28%
Epithemia spp	0.28%
Fragilaria pinnata var lancettula	0.28%
Surirella ovalis	0.28%
Denticula elegans	0.28%
Fragilaria pinnata	0.28%
Pinnularia abaujensis	0.28%
Fragilaria construens var subsalina	0.28%
Stephanodiscus astraea	0.28%
Nitzschia gandersheimiensis	0.28%
N. paleacea	0.28%

La Alberca, bottom sediment **Sample 6**

Gomphonema parvulum	29.75%
G. angustatum	14.05%
Nitzschia palea	9.75%
Synedra ulna	7.75%
Navicula cuspidata	7.05%
Achnanthes hungarica	4.05%
Nitzschia amphibia	3.01%
Navicula mutica	2.0%
Cocconeis placentula	1.38%
C. placentula var lineata	1.38%
Gomphonema subclavatum var commutatum	1.38%
Fragilaria construens	1.38%
Navicula heufleri var leptocephala	1.38%
Hantzschia amphioxys	1.38%
Stephanodiscus astraea var intermedia	1.02%
Melosira granulata	1.02%
Navicula confervacea	1.02%
Melosira ambigua	0.75%
Amphora veneta	0.75%
Fragilaria construens var subsalina	0.75%
Gomphonema parvulum var micropus	0.75%
Stephanodiscus minutus	0.75%
Navicula subminuscula	0.75%
Melosira italica	0.75%
Amphora spp	0.75%
Stephanodiscus astraea	0.35%
Navicula cincta	0.35%
N. radiosa var tenella	0.35%

Nitzschia palea var tenuirostris	0.35%
Gomphonema affine	0.35%
Fragilaria brevistriata	0.35%
Navicula pygmaea	0.35%
Synedra ulna var ramesi	0.35%
Eunotia curvata	0.35%
Navicula seminulum	0.35%
Stephanodiscus asteroides var intermedia	0.35%
Nitzschia hantzschiana	0.35%
Achnanthes exigua var heterovalva	0.35%
Gomphonema gracile	0.35%
Fragilaria pinnata var lancettula	0.35%

La Piscina de Yuriria (PY/2/C) **Sample 7**

Navicula elkab	18.75%
N. halophila (+N. pseudohalophila)	13.0%
Nitzschia communis	10.0%
N. romana	9.5%
N. sigma var diminuta	8.75%
N. gandersheimiensis	7.5%
N. palea	7.25%
N. frustulum	4.75%
N. intermedia	4.5%
N. inconspicua	4.5%
Gomphonema angustatum	1.5%
Surirella ovalis	1.25%
Nitzschia paleacea	1.25%
Navicula spp 1	1.25%
Rhopalodia gibberula (type 1)	1.0%
Denticula elegans	0.75%
Navicula heufleri var leptocephala	0.5%
N. mutica	0.5%
Navicula spp 2	0.5%
Nitzschia amphibia	0.5%
Navicula pupula	0.25%
Synedra ulna	0.25%
Amphora veneta	0.25%
Anomoeoneis (?) costata	0.25%
Gomphonema parvulum var micropus	0.25%
Navicula lanceolata	0.25%
Hantzschia amphioxys	0.25%
Navicula accomoda	0.25%
Surirella ovata	0.25%

La Piscina de Yuriria (PY/2/D) **Sample 8**

Nitzschia ignorata	55.2%
N. palea	30.0%
N. sigma var diminuta	2.4%
Stephanodiscus hantzschii var pusilla	2.4%
Nitzschia palea var tenuirostris	1.2%
N. romana	1.2%
N. pusilla	1.2%

N. inconspicua	0.8%
Navicula elkab	0.8%
Nitzschia frustulum	0.8%
Synedra ulna	0.8%
Rhopalodia gibberula (type 1)	0.8%
Navicula radiosa var tenella	0.8%
Cocconeis placentula	0.4%
Navicula halophila	0.4%
Pinnularia abaujensis var parva	0.4%
Melosira granulata	0.4%

La Piscina de Yuriria, bottom sediment **Sample 9**
(PY/2/CS)

Navicula elkab	22.0%
N. halophila	13.0%
Nitzschia gandersheimiensis	12.5%
N. romana	8.0%
N. frustulum	4.0%
N. communis	4.0%
Gomphonema angustatum	4.0%
Nitzschia sigma var diminuta	4.0%
N. palea	3.5%
N. inconspicua	3.5%
Rhopalodia gibberula (type 1)	3.0%
Nitzschia intermedia	3.0%
Navicula spp 1	2.5%
N. radiosa var tenella	2.0%
Denticula elegans	1.5%
Rhopalodia musculus	1.5%
Navicula cryptocephala var veneta	1.5%
Caloneis bacillum	1.0%
Anomoeoneis costata	1.0%
Rhopalodia gibberula (type 2)	0.5%
Navicula pupula	0.5%
N. acceptata	0.5%
Melosira granulata	0.5%
Navicula heufleri	0.5%
Gomphonema parvulum	0.5%
G. affine	0.5%
Surirella ovalis	0.5%
Navicula heufleri var leptocephala	0.5%

L. Alchichica (1981) **Sample 10**

Nitzschia inconspicua	55.15%
N. romana	11.65%
Navicula pygmaea	7.0%
Cyclotella caspia	4.45%
Amphora perpusilla	3.3%
Cymbella pusilla	3.05%
Mastogia elliptica	2.8%
Nitzschia frustulum	1.6%
Navicula heufleri var leptocephala	1.2%
N. capitata var hungarica	1.2%

Nitzschia microcephala	1.2%
Epithemia argus spp	0.9%
Nitzschia palea	0.9%
Amphora veneta	0.7%
Campylodiscus clypeus	0.5%
Amphora ovalis	0.5%
Fragilaria leptostauron var dubia	0.5%
Rhopalodia gibberula (type 2)	0.5%
Cyclotella guillensis	0.5%
Surirella striatula	0.2%
Nitzschia ignorata	0.2%
Navicula graciloides	0.2%
N. cryptocephala var veneta	0.2%
Nitzschia amphibia	0.2%
Rhopalodia musculus	0.2%
Cocconeis placentula var lineata	0.2%
Navicula radiosa var tenella	0.2%
Gomphonema olivaceum	0.2%
Amphora bullatoides	0.2%
Cocconeis placentula var euglypta	0.2%
Entomoneis alata	0.2%
Navicula spp 3	0.2%

Lago de Yuriria (Y/1/B) **Sample 11**

Nitzschia palea	30.25%
N. longissima var reversa	24.0%
N. palea var debilis	8.75%
Navicula tripunctata var schizonemoides	7.75%
Nitzschia intermedia	3.75%
N. hantzschiana	3.0%
N. rostellata	3.0%
N. palea var tenuirostris	1.75%
N. tryblionella var levidensis	1.75%
N. acicularis	1.75%
N. romana	1.75%
Navicula cryptocephala	1.5%
Nitzschia hungarica	1.5%
Navicula heufleri var leptocephala	1.0%
Anomoeoneis sphaerophora	0.75%
Nitzschia paleacea	0.75%
Achnanthes hungarica	0.75%
Navicula cincta	0.75%
Achnanthes delicatula	0.75%
Navicula rhyncocephala var germainii	0.5%
N. cryptocephala var veneta	0.5%
Nitzschia punctata	0.5%
N. dissipata	0.5%
Gomphonema parvulum var micropus	0.25%
Navicula heufleri	0.25%
N. cuspidata	0.25%
Nitzschia communis	0.25%
Thalassiosira rudolfii	0.25%
Cyclotella glomerata	0.25%
Navicula gregaria	0.25%

N. arenaria	0.25%
Nitzschia tryblionella	0.25%
Rhopalodia gibberula (type 2)	0.25%
Stephanodiscus minutus	0.25%

Lago de Yuriria (Y/1/C) **Sample 12**

Nitzschia palea	15.6%
Stephanodiscus minutus	10.0%
S. astraea var minutula	5.6%
Nitzschia punctata	5.3%
N. romana	4.75%
N. hungarica	4.75%
N. palea var debilis	3.8%
N. tryblionella var levidensis	3.8%
N. amphibia	3.1%
Navicula radiosa var tenella	2.8%
N. tripunctata var schizonemoides	2.5%
Nitzschia dissipata	2.2%
Stephanodiscus astraea var intermedia	2.2%
Navicula libonensis	2.2%
N. secreta var apiculata	2.2%
Cocconeis placentula var lineata	1.9%
Rhopalodia gibberula (type 2)	1.6%
Navicula cuspidata	1.6%
Synedra rumpens var fragilariodes	1.6%
Gomphonema affine	1.6%
Rhoicosphenia curvata	1.3%
Nitzschia hantzschiana	1.3%
Navicula cryptocephala	1.3%
Amphora veneta	1.3%
Nitzschia palea var tenuirostris	1.3%
Stauroneis densistriata	0.9%
Achnanthes delicatula	0.9%
Nitzschia tryblionella	0.9%
N. gracilis	0.9%
Synedra ulna	0.9%
Nitzschia microcephala	0.9%
Amphora ovalis var affinis	0.9%
Nitzschia closterium	0.9%
Navicula graciloides	0.6%
N. cincta	0.6%
N. rhyncocephala var germainii	0.6%
Navicula circumtexta	0.6%
N. cryptocephala var veneta	0.6%
N. halophila	0.3%
Nitzschia accicularis	0.3%
Caloneis ventricosa	0.3%
Navicula pupula var elliptica	0.3%
N. pupula	0.3%
Cymbella mexicana	0.3%
Nitzschia rostellata	0.3%
N. sigma	0.3%
N. intermedia	0.3%
Navicula salinarum var intermedia	0.3%

Gomphonema affine var insigne	0.3%
Hantzschia amphioxys	0.3%
Nitzschia clausii	0.3%
N. pusilla	0.3%

L. Zirahuén (ZN/1/C) — Sample 13

Melosira distans var alpigena	43.22%
Cyclotella stelligera	15.4%
Cymbella microcephala	5.8%
Anomoeoneis vitrea	4.9%
Achnanthes minutissima	3.9%
Synedra rumpens var fragilarioides	3.6%
Eunotia incisa	2.7%
Nitzschia palea	1.5%
Cymbella cymbiformis	1.2%
Fragilaria pinnata	1.2%
F. vaucheriae	1.0%
Nitzschia amphibia	1.0%
N. dissipata	0.7%
Navicula radiosa var tenella	0.7%
N. cryptocephala	0.7%
N. pupula	0.5%
N. monoculata	0.5%
N. rhyncocephala	0.5%
Achnanthes exigua var heterovalva	0.5%
Amphora ovalis var affinis	0.5%
Cocconeis placentula var lineata	0.5%
Cymbella minuta var pseudogracilis	0.5%
Gomphonema fanensis	0.5%
Diploneis elliptica	0.5%
Nitzschia sigmoidea	0.5%
Fragilaria construens	0.5%
F. pinnata var lancettula	0.5%
Cyclotella glomerata	0.24%
Eunotia curvata	0.24%
Nitzschia intermedia	0.24%
Navicula pupula var elliptica	0.24%
N. anglica var subsalsa	0.24%
Cyclotella meneghiniana	0.24%
Gomphonema acuminatum	0.24%
Navicula lanceolata	0.24%
N. viridula var linearis	0.24%
Surirella linearis var constricta	0.24%
Nitzschia romana	0.24%
Surirella tenera	0.24%
Stauroneis phoenicenteron	0.24%
Cymbella pusilla	0.24%
Nitzschia gracilis	0.24%
Navicula pupula var rectangularis	0.24%
Cymbella minuta var silesiaca	0.24%
Nitzschia tropica	0.24%
Eunotia maior	0.24%
Navicula rhyncocephala var germainii	0.24%
Synedra radians	0.24%

Navicula pupula var mutata	0.24%
Nitzschia palea var tenuirostris	0.24%
N. denticula	0.24%
N. stagnorum	0.24%
Pinnularia spp	0.24%
Navicula subrotundata	0.24%

L. Zirahuén (ZN/2/C)	Sample 14
Synedra radians	15.5%
Achnanthes minutissima	8.0%
Anomoeoneis vitrea	8.0%
Nitzschia palea	7.25%
Synedra delicatissima	6.25%
Cymbella microcephala	4.75%
Cyclotella stelligera	4.5%
Synedra rumpens var fragilariodes	3.75%
Melosira distans var alpigena	3.25%
Gomphonema fanensis	3.0%
Synedra ulna	2.5%
Cocconeis placentula var lineata	2.25%
Fragilaria vaucheriae	2.25%
Synedra rumpens	2.25%
Cymbella cymbiformis	2.0%
Synedra rumpens var meneghiniana	1.75%
Nitzschia romana	1.75%
Eunotia incisa	1.5%
Synedra ulna var danica	1.5%
Navicula radiosa var tenella	1.25%
Synedra ulna var subaequalis	1.0%
Epithemia sorex	1.0%
Nitzschia dissipata	1.0%
N. paleacea	1.0%
Cymbella minuta var silesiaca	1.0%
Fragilaria pinnata	0.75%
Surirella linearis	0.75%
Gomphonema gracile	0.75%
Navicula cryptocephala	0.5%
Cymbella minuta	0.5%
Nitzschia denticula var delongei	0.5%
Cymbella cymbiformis var nonpunctata	0.5%
Nitzschia microcephala	0.5%
N. sigmoides	0.5%
Fragilaria construens	0.5%
Achnanthes linearis	0.5%
Amphora ovalis var affinis	0.5%
Navicula monoculata	0.25%
Cyclotella meneghiniana	0.25%
Epithemia turgida	0.25%
Eunotia flexuosa	0.25%
Stauroneis smithii	0.25%
Fragilaria brevistriata var inflata	0.25%
Nitzschia ignorata	0.25%
Navicula pupula	0.25%
Synedra acus	0.25%

Cymbella minuta var pseudogracilis	0.25%
Diploneis oculata	0.25%
Nitzschia amphibia	0.25%
Neidium iridis var amphigomphus	0.25%
Melosira ambigua	0.25%
Rhopalodia gibba var ventricosa	0.25%
Navicula radiosa	0.25%
Nitzschia tropica	0.25%
Gyrosigma spencerii	0.25%
Nitzschia palea var debilis	0.25%
Navicula lanceolata	0.25%

L. Zirahuén, bottom sediment (ZN/1/D) — **Sample 15**

Melosira distans var alpigena	27.6%
Cyclotella stelligera	8.9%
Achnanthes minutissima	7.6%
Anomoeoneis vitrea	6.5%
Cymbella microcephala	5.9%
C. cymbiformis	5.0%
Cyclotella glomerata	2.6%
Achnanthes linearis	2.4%
Gomphonema spp	2.18%
Cocconeis placentula var lineata	1.95%
Gomphonema fanensis	1.5%
Rhopalodia gibba var ventricosa	1.3%
Amphora ovalis var affinis	1.1%
Epithemia adnata var proboscidea	1.1%
Synedra rumpens var meneghiniana	1.1%
Epithemia sorex	0.88%
Gomphonema gracile	0.88%
Nitzschia palea	0.88%
Amphora montana	0.88%
Synedra rumpens var fragilariodes	0.88%
Surirella linearis	0.88%
Nitzschia tryblionella	0.88%
Denticula elegans	0.88%
Nitzschia romana	0.65%
N. dissipata	0.65%
Navicula viridula	0.65%
Fragilaria pinnata var lancettula	0.65%
Eunotia incisa	0.65%
Synedra ulna	0.65%
Fragilaria construens	0.65%
Gomphonema intricatum var pusillum	0.43%
Caloneis alpestris	0.43%
Gomphonema acuminatum	0.43%
Navicula radiosa var tenella	0.43%
N. globosa	0.43%
Nitzschia amphibia	0.43%
Gomphonema subtile	0.43%
Synedra rumpens	0.43%
Fragilaria pinnata	0.43%
Nitzschia sigmoides	0.43%
Fragilaria vaucheriae	0.43%

Navicula notha	0.43%
Diploneis oculata	0.43%
Melosira ambigua	0.43%
Rhopalodia gibba	0.43%
Navicula viridula var linearis	0.43%
Fragilaria construens var venter	0.43%
F. construens var subsalina	0.43%
Nitzschia tropica	0.43%
N. denticula	0.43%
N. tryblionella	0.22%
Navicula pupula	0.22%
Navicula sp⌀ 7	0.22%
Synedra radians	0.22%
Nitzschia gandersheimiensis	0.22%
Navicula insociabilis	0.22%
N. cryptocephala	0.22%
Epithemia adnata	0.22%
Navicula radiosa	0.22%
Surirella tenera	0.22%
Cymbella affinis	0.22%
Surirella ovata var apiculata	0.22%
Diploneis elliptica	0.22%
Synedra delicatissima	0.22%

Lago de Pátzcuaro (P/1/B)	Sample 16
Cocconeis placentula var lineata	45.75%
Epithemia sorex	12.0%
Stephanodiscus minutus	3.5%
S. astraea var intermedia	3.5%
Epithemia adnata	2.0%
Nitzschia palea	2.0%
Stephanodiscus astraea var minutula	2.0%
Navicula grimmei	2.0%
Nitzschia amphibia	1.75%
Epithemia adnata var minor	1.5%
Nitzschia tryblionella var levidensis	1.5%
Achnanthes linearis	1.5%
Nitzschia romana	1.25%
Fragilaria pinnata var lancettula	1.25%
Nitzschia inconspicua	1.25%
Navicula radiosa	1.0%
Melosira granulata var angustissima	1.0%
Navicula seminuloides	1.0%
N. mutica	0.75%
N. cryptocephala var veneta	0.75%
Achnanthes minutissima	0.75%
Rhoicosphenia curvata	0.75%
Navicula heufleri var leptocephala	0.75%
Epithemia argus var longicornis	0.5%
Navicula radiosa var tenella	0.5%
Cocconeis placentula var euglypta	0.5%
Nitzschia hantzschiana	0.5%
Melosira granulata	0.5%
Cymbella mexicana	0.5%

Navicula muralis	0.5%
Hantzschia amphioxys	0.5%
Amphora veneta	0.5%
Navicula minima	0.5%
Synedra acus	0.5%
Navicula cryptocephala	0.25%
Nitzschia bicapitellata	0.25%
N. palea var debilis	0.25%
N. dissipata	0.25%
Epithemia turgida	0.25%
Rhopalodia gibba var ventricosa	0.25%
Navicula pupula	0.25%
Diploneis puella	0.25%
Fragilaria construens var venter	0.25%
Navicula cuspidata	0.25%
Nitzschia gandersheimiensis	0.25%
Navicula capitata	0.25%
Nitzschia gracilis	0.25%
Cymbella aspera	0.25%
Surirella linearis	0.25%
Gomphonema parvulum	0.25%
Cymbella lanceolata	0.25%
Diploneis elliptica	0.25%
Nitzschia recta	0.25%
N. paleacea	0.25%

Lago de Pátzcuaro (P/1/C)	Sample 17
Achnanthes affinis	27.6%
A. linearis fo curta	13.8%
Nitzschia paleacea	9.8%
Achnanthes linearis	9.3%
Nitzschia romana	8.8%
N. inconspicua	7.1%
N. palea	6.6%
Cocconeis placentula var lineata	4.8%
Navicula muralis	1.2%
N. symmetrica	1.2%
Nitzschia microcephala	1.2%
Stephanodiscus minutus	0.95%
Nitzschia palea var debilis	0.95%
Rhoicosphenia curvata	0.7%
Achnanthes minutissima	0.7%
Gomphonema parvulum var micropus	0.5%
Amphora montana	0.5%
Stephanodiscus astraea var minutula	0.5%
Navicula radiosa var tenella	0.5%
Stephanodiscus astraea var intermedia	0.5%
Epithemia sorex	0.5%
Amphora veneta	0.23%
Navicula cryptocephala var excilis	0.23%
Navicula spp 6	0.23%
Fragilaria pinnata	0.23%
Nitzschia hantzschiana	0.23%
Navicula cryptocephala var veneta	0.23%

Nitzschia gracilis	0.23%
Diploneis elliptica	0.23%
Navicula heufleri var leptocephala	0.23%
Epithemia turgida	0.23%

Lago de Pátzcuaro (P/1/D)

Sample 18

Cocconeis placentula var lineata	40.75%
Nitzschia inconspicua	11.0%
N. paleacea	8.5%
N. romana	8.25%
N. palea	5.5%
Epithemia sorex	4.25%
Nitzschia palea var debilis	3.5%
Amphora veneta	3.0%
Nitzschia gracilis	1.5%
Navicula heufleri var leptocephala	1.5%
Achnanthes affinis	1.5%
Rhoicosphenia curvata	1.25%
Rhopalodia gibba var ventricosa	1.0%
Gomphonema parvulum	1.0%
Cocconeis placentula	0.75%
Navicula radiosa var tenella	0.75%
Gomphonema intricatum var pusilla	0.75%
Nitzschia microcephala	0.75%
N. palea var tenuirostris	0.5%
Navicula radiosa	0.5%
Achnanthes linearis fo curta	0.5%
Cocconeis placentula var euglypta	0.5%
Rhopalodia gibberula (type 2)	0.25%
Gomphonema gracile	0.25%
Nitschia pusilla	0.25%
Achnanthes minutissima	0.25%
Gomphonema fanensis	0.25%
Rhopalodia gibba	0.25%
Cymbella mexicana	0.25%
Synedra delicatissima	0.25%
Melosira granulata	0.25%
Navicula muralis	0.25%

Lago de Pátzcuaro (P/2/B)

Sample 19

Cocconeis placentula var lineata	86.75%
Navicula heufleri var leptocephala	2.25%
Nitzschia paleacea	2.0%
Amphora veneta	1.5%
Synedra ulna	1.25%
Gomphonema parvulum	1.25%
Navicula radiosa	1.0%
Epithemia sorex	0.75%
Navicula radiosa var tenella	0.5%
Nitzschia inconspicua	0.5%
Rhopalodia gibba var ventricosa	0.5%
Epithemia adnata var proboscidea	0.25%
Diploneis puella	0.25%

Rhoicosphenia curvata	0.25%
Melosira granulata var angustissima	0.25%
Nitzschia palea var debilis	0.25%
Achnanthes affinis	0.25%
Nitzschia palea var tenuirostris	0.25%

Lago de Pátzcuaro, sediment (P/2/D) — Sample 20

Nitzschia amphibia	11.9%
Fragilaria construens var venter	9.0%
F. pinnata var lancettula	7.4%
Rhopalodia gibberula (type 2)	5.95%
Navicula confervacea	5.5%
Denticula elegans	4.5%
Melosira italica	4.0%
Cocconeis placentula var lineata	3.3%
Fragilaria brevistriata	3.1%
Navicula seminuloides	3.1%
Rhopalodia gibba var ventricosa	2.4%
Melosira italica var valida	2.4%
Nitzschia romana	1.9%
Navicula minima	1.7%
Eunotia curvata	1.41%
Amphora veneta	1.41%
Navicula pupula	1.41%
Gomphonema parvulum	1.2%
Fragilaria construens	1.2%
Navicula seminulum	1.2%
N. pupula var rectangularis	1.2%
Achnanthes lanceolata	1.2%
Melosira granulata var angustissima	1.2%
Achnanthes exigua	0.95%
A. hungarica	0.95%
Cyclotella menghiniana	0.95%
Pinnularia viridis	0.7%
Navicula tantula	0.7%
Amphora ovalis var affinis	0.7%
Nitzschia palea	0.7%
Synedra ulna	0.7%
S. rumpens var menghiniana	0.7%
Fragilaria pinnata	0.7%
Epithemia turgida	0.5%
Nitzschia palea var debilis	0.5%
Cymbella minuta var pseudogracilis	0.5%
Fragilaria brevistriata var elliptica	0.5%
Navicula muralis	0.5%
N. radiosa var tenella	0.5%
N. mutica	0.5%
Nitzschia microcephala	0.5%
Rhopalodia musculus	0.5%
Navicula anglica var subsalsa	0.5%
Gomphonema angustatum	0.5%
Amphora perpusilla	0.5%
Diploneis pseudovalis	0.5%
Melosira ambigua	0.5%

Navicula gastrum	0.5%
Nitzschia dissipata	0.5%
Epithemia adnata	0.23%
Gomphonema intricatum var pumilla	0.23%
Hantzschia amphioxys	0.23%
Stephanodiscus novaezelandiae	0.23%
Eunotia maior	0.23%
Pinnularia acrosphaeria	0.23%
P. maior var pulchella	0.23%
Caloneis bacillum	0.23%
Navicula pupula var capitata	0.23%
N. cryptocephala	0.23%
N. cryptocephala var veneta	0.23%
Gomphonema parvulum var micropus	0.23%
Nitzschia intermedia	0.23%
Pinnularia appendiculata	0.23%
Eunotia bigibba var pumila	0.23%
Achnanthes exigua var heterovalva	0.23%
Navicula heufleri var leptocephala	0.23%
Gomphonema clevei	0.23%
Pinnularia abaujensis var linearis	0.23%
Fragilaria vaucheriae	0.23%
Gomphonema subclavatum var commutatum	0.23%
Navicula homburgiana	0.23%
N. modica	0.23%
Eunotia sp pectinalis	0.23%
Achnanthes affinis	0.23%
Stauroneis phoenicenteron fo gracilis	0.23%
Navicula cf viridula	0.23%
Gomphonema intricatum	0.23%
Epithemia sorex	0.23%

Querendaro (Q/2/B)

Sample 21

Melosira granulata var angustissima	51.25%
M. ambigua	45.0%
Fragilaria construens var venter	1.0%
Nitzschia paleacea	0.5%
Navicula heufleri var leptocephala	0.5%
Achnanthes lanceolata	0.5%
Navicula pupula	0.5%
Cocconeis placentula var lineata	0.25%
Nitzschia amphibia	0.25%
N. palea	0.25%
Cyclotella glomerata	0.25%
	0.25%

Valle de Bravo (VB/2/C)

Sample 22

Cocconeis placentula	31.2%
Fragilaria crotonensis	23.2%
Epithemia adnata var proboscidea	8.75%
Navicula radiosa var tenella	6.0%
Nitzschia palea	5.2%
Cymbella microcephala	4.0%
Nitzschia amphibia	3.2%

Fragilaria crotonensis var oregona	3.2%
Cocconeis placentula var lineata	3.2%
Epithemia sorex	2.75%
Navicula cryptocephala	1.2%
Melosira granulata	1.2%
Gomphonema clevei var javanica	0.75%
Epithemia adnata var porcellus	0.75%
Rhopalodia gibba var ventricosa	0.75%
Cymbella tumidula (?)	0.75%
Nitzschia hantzschiana	0.75%
Epithemia adnata var minor	0.75%
Nitzschia pusilla	0.4%
Navicula cryptocephala var veneta	0.4%
Amphora veneta	0.4%
Navicula confervacea	0.4%
Epithemia adnata	0.4%
Gomphonema parvulum	0.4%

Ixtlahuaca (I/1/B) **Sample 23**

Nitzschia palea	51.0%
Stephanodiscus subtilis	12.75%
Navicula capitata	8.5%
Cyclotella meneghiniana	5.75%
Nitzschia palea var debilis	2.5%
Navicula rhyncocephala var germainii	2.5%
Nitzschia acicularis	2.25%
Melosira ambigua	1.5%
Nitzschia palea var tenuirostris	1.0%
Navicula vaucheriae	1.0%
Nitzschia romana	1.0%
Navicula cryptocephala	0.75%
Pinnularia spp	0.75%
Nitzschia gandersheimiensis	0.75%
N. dissipata	0.75%
N. amphibia	0.75%
Navicula pupula	0.75%
Nitzschia longissima	0.5%
N. intermedia	0.5%
Synedra ulna	0.5%
Nitzschia hungarica	0.5%
Navicula mutica var undulata	0.25%
Stephanodiscus hantzschii	0.25%
Nitzschia paleacea	0.25%
Surirella ovata	0.25%
Fragilaria virescens var elliptica	0.25%
Cymbella pusilla	0.25%
Caloneis bacillum	0.25%
Nitzschia hantzschiana	0.25%
Pinnularia braunii var amphicephala	0.25%
Navicula seminuloides	0.25%
N. lanceolata	0.25%
N. mutica	0.25%
Synedra acus	0.25%
Pinnularia abaujensis var parva	0.25%

C. placentula var lineata	0.25%

Campo Hermoso (CH/1/B)	Sample 24
Navicula adamantiformis	31.7%
N. radiosa var tenella	19.1%
Stephanodiscus minutus	19.1%
Nitzschia palea	18.0%
N. palea var debilis	1.7%
Navicula menisculus var upsaliensis	1.4%
N. mutica	0.8%
N. heufleri var leptocephala	0.8%
Cymbella minuta var silesiaca	0.8%
Navicula atomus	0.6%
Amphora montana	0.6%
Navicula cuspidata	0.6%
N. radiosa	0.6%
Cyclotella meneghiniana	0.6%
Navicula accomoda	0.3%
Synedra ulna	0.3%
Nitzschia palea var tenuirostris	0.3%
Pinnularia borealis	0.3%
Synedra goulardi	0.3%
Fragilaria pinnata	0.3%
Melosria granulata var valida fo valida	0.3%
Amphora veneta	0.3%
Neidium affine var longiceps	0.3%
Navicula confervacea	0.3%
Fragilaria leptostauron var dubia	0.3%
Stephanodiscus astraea var minutula	0.3%

Cuto de la Esperanza (CE/1/B)	Sample 25
Achnanthes hungarica	31.75%
Nitzschia palea	30.25%
N. gandersheimiensis	7.75%
Pinnularia abaujensis var parva	7.0%
Hantzschia amphioxys	4.0%
Navicula mutica	4.0%
Nitzschia umbonata	2.25%
Navicula seminuloides	1.75%
N. tantula	1.5%
Gomphonema parvulum	1.5%
Nitzschia intermedia	1.0%
Achnanthes affinis	1.0%
Melosira granulata var angustissima	0.75%
Achnanthes minutissima	0.5%
Nitzschia romana	0.5%
N. communis	0.5%
Fragilaria pinnata var lancettula	0.5%
Amphora montana	0.5%
Navicula minima	0.5%
N. pupula	0.5%
Nitzschia pusilla	0.5%
Navicula vaucheriae	0.25%

N. muralis	0.25%
Gomphonema angustatum var productum	0.25%
G. gracile	0.25%
Navicula fluens	0.25%
Fragilaria construens var venter	0.25%

Cuto de la Esperanza (CE/1/C) — Sample 26

Nitzschia palea	41.5%
N. gandersheimiensis	18.0%
Pinnularia abaujensis var parva	15.5%
Achnanthes hungarica	11.0%
Nitzschia intermedia	3.5%
Gomphonema parvulum	2.0%
Navicula seminuloides	2.0%
N. minima	1.5%
Achnanthes affinis	1.0%
Navicula tantula	1.0%
Stephanodiscus subtilis	1.0%
Navicula mutica	1.0%
Nitzschia palea var tenuirostris	0.5%
Navicula cuspidata	0.5%

Presa Villa Victoria (VV/1/B) — Sample 27

Melosira distans var alpigena	59.2%
Achnanthes minutissima	29.2%
Melosira granulata	4.0%
Cyclotella stelligera	2.8%
Achnanthes linearis	1.6%
A. linearis fo curta	0.8%
Stephanodiscus niagarae	0.4%
Synedra rumpens var scotica	0.4%
Fragilaria pinnata	0.4%
Navicula mutica	0.4%
Nitzschia acicularis	0.4%
N. amphibia	0.4%

Presa Villa Victoria (VV/1/C) — Sample 28

Gomphonema intricatum var pumilla	68.0%
Achnanthes minutissima	19.2%
Melosira distans var alpigena	3.2%
Achnanthes linearis fo curta	2.8%
Fragilaria vaucheriae	1.6%
Melosira granulata	1.2%
Navicula mutica	0.8%
Synedra rumpens var scotica	0.8%
Navicula gregaria	0.4%
Nitzschia denticula var delognei	0.4%
Synedra delicatissima	0.4%
Achnathes linearis	0.4%
Fragilaria pinnata	0.4%

Presa del Bosque (PB/1/B)	Sample 29
Melosira distans var alpigena	65.0%
M. granulata	17.85%
Cyclotella glomerata	4.5%
Stephanodiscus astraea var minutula	4.0%
Cyclotella pseudostelligera	3.1%
Nitzschia dissipata	1.4%
Navicula cryptocephala	0.95%
Nitzschia palea	0.7%
Navicula rhyncocephala var germainii	0.5%
Amphora montana	0.25%
Nitzschia hantzschiana	0.25%
Fragilaria construens	0.25%
Nitzschia inconspicua	0.25%
Navicula radiosa var tenella	0.25%
Nitzschia sigmoidea	0.25%
Cymbella tumida	0.25%
Achnanthes minutissima	0.25%

Presa del Bosque (PB/1/C)	Sample 30
Melosira distans var alpigena	24.5%
Nitzschia inconspicua	20.5%
N. romana	12.75%
N. dissipata	7.75%
N. amphibia	6.25%
Navicula seminuloides	6.25%
Cyclotella pseudostelligera	3.75%
Stephanodiscus astraea var minutula	3.0%
Nitzschia sigma var diminuta	1.75%
Navicula minima	1.5%
N. tantula	1.25%
N. cryptocephala	1.0%
Nitzschia palea	1.0%
Melosira granulata	0.75%
Cyclotella glomerata	0.75%
Navicula seminulum	0.75%
Achnanthes lanceolata	0.75%
Nitzschia tryblionella var levidensis	0.5%
Amphora montana	0.5%
Melosira granulata var angustissima	0.5%
Navicula insociabilis var dissipatoides	0.5%
N. rhyncocephala var germainii	0.5%
Gomphonema subclavatum var commutatum	0.5%
Navicula mutica	0.5%
N. excelsa	0.25%
N. confervacea	0.25%
Achnanthes lanceolata var lanceolatoides	0.25%
Navicula radiosa var tenella	0.25%
Cymbella minuta var pseudogracilis	0.25%
Navicula symmetrica	0.25%
N. pupula var capitata	0.25%

N. vaucheriae	0.25%
Nitzschia paleacea	0.25%

Rfo Lerma (RL/1/B)	Sample 31
Nitzschia palea	25.0%
Fragilaria construens var venter	7.0%
Navicula mutica	7.0%
Cocconeis placentula var lineata	5.0%
Fragilaria pinnata var lancettula	5.0%
F. pinnata	3.0%
Cyclotella meneghiniana	2.7%
Nitzschia dissipata	2.7%
Stephanodiscus asteroides var intermedia	2.3%
Gomphonema parvulum	2.3%
Melosira distans	2.3%
Navicula heufleri var leptocephala	1.7%
N. pupula	1.7%
Nitzschia palea var tenuirostris	1.7%
Fragilaria construens	1.7%
Nitzschia linearis	1.3%
Fragilaria brevistriata	1.3%
Stephanodiscus astraea var intermedia	1.3%
Achnanthes lanceolata var dubia	1.3%
Melosira italica	1.0%
Nitzschia palea var debilis	1.0%
Achnanthes minutissima	0.7%
Nitzschia intermedia	0.7%
Opephora martyi	0.7%
Stephanodiscus astraea var minutula	0.7%
Navicula symmetrica	0.7%
Pinnularia borealis	0.7%
Nitzschia gandersheimiensis	0.7%
Stephanodiscus minutus	0.7%
Cocconeis placentula var euglypta	0.7%
Amphora perpusilla	0.7%
Navicula cryptocephala	0.7%
Fragilaria leptostauron	0.7%
F. brevistriata var elliptica	0.7%
Navicula tripunctata var schizonemoides	0.7%
Nitzschia hungarica	0.32%
Pinnularia subcapitata	0.32%
Gomphonema parvulum var micropus	0.32%
Stauroneis phoenicenteron	0.32%
Fragilaria leptostauron var dubia	0.32%
Neidium iridis var ampliatum	0.32%
Melosira granulata	0.32%
Navicula cuspidata	0.32%
Achnanthes conspicua	0.32%
Navicula rhyncocephala var germainii	0.32%
Nitzschia amphibia	0.32%
Gomphonema intricatum var pulvinatum	0.32%
Eunotia incisa	0.32%
Fragilaria construens var subsalina	0.32%
Navicula capitata var hungarica	0.32%

Surirella ovata	0.32%
Synedra socia	0.32%
Navicula confervacea	0.32%
Hantzschia amphioxys	0.32%
Navicula gregaria	0.32%
Epithemia adnata var proboscidea	0.32%
Cymbella prostrata var auerswaldii	0.32%
Nitzschia umbonata	0.32%
N. pusilla	0.32%
Navicula mutica var undulata	0.32%
Fragilaria vaucheriae	0.32%
Navicula contempta	0.32%
Pinnularia abaujensis var subundulata	0.32%
Rhopalodia gibba var ventricosa	0.32%
Navicula secura	0.32%
Nitzschia epiphytica	0.32%
Gomphonema ventricosa	0.32%
Navicula spp	0.32%
Navicula muralis	0.32%
N. pupula var elliptica	0.32%
N. monoculata	0.32%
Stephanodiscus niagarae	0.32%

Xochimilco (X/1/B)

Sample 32

Cyclotella meneghiniana	31.5%
Nitzschia gracilis	15.0%
Fragilaria pinnata var lancettula	13.0%
F. construens var venter	12.0%
F. construens var subsalina	7.75%
Nitzschia longissima	3.0%
Fragilaria pinnata	2.75%
F. brevistriata	2.25%
Cocconeis placentula var lineata	2.0%
Nitzschia palea	1.25%
N. amphibia	1.25%
Melosira granulata var angustissima	1.0%
Nitzschia palea var tenuirostris	1.0%
N. intermedia	1.0%
Fragilaria leptostauron var dubia	0.75%
Nitzschia microcephala	0.5%
Rhoicosphenia curvata	0.5%
Navicula heufleri var leptocephala	0.5%
Nitzschia inconspicua	0.5%
Amphora veneta	0.5%
Achnanthes minutissima	0.25%
Nitzschia romana	0.25%
Amphora ovalis var affinis	0.25%
Fragilria construens	0.25%
Cymbella aspera	0.25%
Nitzschia dissipata	0.25%
Gomphonema angustatum	0.25%
Navicula digitoradiata	0.25%

Mixquic (M/1/B)

	Sample 33
Fragilaria construens var subsalina	20.0%
Melosira italica	10.5%
Cocconeis placentula var lineata	8.25%
Fragilaria pinnata var lancettula	7.75%
Cyclotella meneghiniana	7.5%
Fragilaria construens var venter	6.75%
Amphora veneta	6.25%
Nitzschia palea	4.25%
Melosira italica var valida	3.5%
Nitzschia amphibia	2.5%
Fragilaria pinnata	2.0%
Achnanthes hungarica	1.5%
Epithemia turgida var westermanii	1.0%
Gomphonema angustatum	1.0%
Achnanthes ovalis var affinis	0.75%
Fragilaria brevistriata	0.75%
Nitzschia palea var tenuirostris	0.75%
Navicula seminulum	0.75%
Nitzschia romana	0.75%
N. pusilla	0.75%
Melosira distans var alpigena	0.75%
Thalassiosira rudolfi	0.5%
Nitzschia inconspicua	0.5%
Navicula halophila	0.5%
N. seminuloides	0.5%
Synedra ulna	0.5%
Nitzschia dissipata	0.5%
Navicula radiosa var tenella	0.5%
Synedra ulna var danica	0.5%
Amphora perpusilla	0.5%
Cocconeis placentula var euglypta	0.5%
Stephanodiscus subtilis	0.5%
Cymbella lanceolata	0.5%
Navicula heufleri var leptocephala	0.5%
N. confervacea	0.25%
Rhoicosphenia curvata	0.25%
Fragilaria construens	0.25%
Nitzschia paleacea	0.25%
N. microcephala	0.25%
Cymbella mexicana	0.25%
Fragilaria leptostauron var dubia	0.25%
Anomoeoneis costata	0.25%
Navicula pupula var capitata	0.25%
Hantzschia amphioxys	0.25%
Navicula laevissima fo fusticulus	0.25%
Epithemia adnata	0.25%
Navicula pupula var rectangularis	0.25%
Pinnularia acrosphaeria	0.25%
Achnanthes exigua	0.25%
Synedra socia	0.25%
Nitzschia umbonata	0.25%

Navicula cryptocephala	0.25%
Fragilaria brevistriata var elliptica	0.25%
Navicula minima	0.25%
Eunotia curvata	0.25%
Epithemia argus var longicornis	0.25%

Mixquic (M/1/C) — **Sample 34**

Fragilaria construens var subsalina	15.2%
F. construens var venter	13.1%
Achnanthes hungarica	12.6%
Fragilaria pinnata var lancettula	7.1%
Amphora veneta	6.7%
Cocconeis placentula var lineata	6.0%
Cyclotella meneghiniana	4.8%
Gomphonema angustatum	4.5%
G. angustatum var productum	3.6%
Nitzschia amphibia	3.1%
N. palea	2.9%
N. inconspicua	2.6%
Fragilaria pinnata	2.3%
Nitzschia romana	1.7%
Gomphonema grunowii	1.4%
Melosira italica	1.4%
Fraglaria brevistriata	1.2%
Stephanodiscus subtilis	1.0%
Gomphonema affine	0.7%
Rhoicosphenia curvata	0.53%
Amphora ovalis var affinis	0.53%
Fragilaria construens	0.53%
Mastoglia elliptica var danseii	0.53%
Nitzschia pusilla	0.53%
Navicula heufleri var leptocephala	0.53%
Cyclotella caspia	0.53%
Gomphonema gracile	0.53%
Melosira ambigua	0.53%
Amphora perpusilla	0.53%
Navicula pygmaea	0.2%
Gomphonema parvulum	0.2%
Cymbella mexicana	0.2%
Navicula cryptocephala var veneta	0.2%
Synedra ulna var danica	0.2%
Fragilaria construens var binodis	0.2%
Cymbella prostrata var auerswaldii	0.2%
Gomphonema montanum var suecicum	0.2%
Synedra acus	0.2%
Nitzschia intermedia	0.2%
Epithemia adnata	0.2%
Nitzschia dissipata	0.2%
Amphora coffeiformis	0.2%
Nitzschia paleacea	0.2%

Mixquic (M/1/D) — **Sample 35**

Fragilaria construens var venter	15.6%

Cocconeis placentula var lineata	10.7%
Melosira italica	9.0%
Achnanthes hungarica	9.0%
Fragilaria construens var subsalina	8.3%
Nitzschia amphibia	6.3%
Amphora veneta	4.1%
Fragilaria pinnata var lancettula	3.6%
Melosria italica var valida	3.2%
Nitzschia palea	2.7%
Epithemia turgida	2.4%
Cyclotella meneghiniana	2.2%
Nitzschia inconspicua	2.2%
N. romana	2.2%
Rhoicosphenia curvata	1.95%
Fragilaria brevistriata	1.7%
Gomphonema angustatum	1.2%
Nitzschia microcephala	1.2%
Navicula minima	1.2%
Fragilaria pinnata	0.75%
Nitzschia pusilla	0.75%
Cymbella mexicana	0.75%
Stephanodiscus subtilis	0.75%
Fragilaria construens	0.75%
Rhopalodia gibba var ventricosa	0.75%
Cymbella lanceolata	0.75%
C. minuta var pseudogracilis	0.75%
Synedra ulna var danica	0.5%
Navicula modica	0.5%
Epithemia turgida var westermanii	0.5%
Eunotia flexuosa	0.25%
Navicula vaucheriae	0.25%
Gomphonema subclavatum var commutatum	0.25%
Finnularia acrosphaeria	0.25%
Navicula pupula	0.25%
Rhopalodia gibberula (type 2)	0.25%
Synedra ulna	0.25%
Navicula cincta	0.25%
Gomphonmena intricatum var pumila	0.25%
Rhopalodia gibba	0.25%
Navicula seminuloides	0.25%
N. pupula var rectangularis	0.25%
Melosira ambigua	0.25%
Stephanodiscus hantzschii	0.25%
Amphora montana	0.25%

Upper Lerma, near Almoloya del Rio

Cocconeis placentula var. lineata	23.0%
Fragilaria construens var. venter	22.0%
F. construens var. subsalina	11.5%
F. pinnata var. lancettula	3.5%
F. leptostauron var. dubia	3.0%
F. pinnata	3.0%
Achnanthes hungarica	2.5%
Cymbella lanceolata	2.5%
Rhopalodia gibberula (type 2)	2.5%
Nitzschia amphibia	2.0%
Amphora ovalis var. affinis	1.5%
Gomphonema ventricosum	1.5%
Pinnularia abaujensis var. subundulata	1.5%
Melosira italica	1.5%
Nitzschia romana	1.5%
Rhopalodia gibba var. ventricosa	1.0%
Eunotia maior	1.0%
Rhoicosphenia curvata	1.0%
Epithemia turgida	1.0%
Cymbella mexicana	1.0%
Navicula heufleri var. leptocephala	1.0%
Cyclotella meneghiniana	1.0%
Nitzschia palea	0.5%
N. palea var. tenuirostris	0.5%
Navicula tantula	0.5%
Synedra acus	0.5%
S. ulna	0.5%
Gomphonema parvulum	0.5%
G. parvulum var. micropus	0.5%
Navicula pupula var. rectangularis	0.5%
Gomphonema intricatum var. pumilla	0.5%
Amphora veneta	0.5%
Navicula pupula	0.5%
Eunotia curvata	0.5%
Gomphonema subclavatum var. commutatum	0.5%
Nitzschia gracilis	0.5%
Gomphonema angustatum	0.5%
Navicula anglica var. subsalsa	0.5%
Synedra rumpens var. familiaris	0.5%
Fragilaria construens	0.5%

Appendix 4

ECOLOGY OF TAXA RECORDED FROM CENTRAL MEXICO

Species	Habitat	Temperature	Salinity	pH
ACHNANTHES				
affinis			o	Aph
buccula	l		o	
clevei	lbe	So	o	Aph
conspicua	le	Mom	o	Aph?
delicatula			m	Aph
exigua	l,c	E	o	Aph
exigua var. heterovalva	l,c	E	o	I
hauckiana var. rostrata			o,Hf	
hungarica	le	Mom	o(I)	Aph
lanceolata	le,c	E	o	Aph
lanceolata var. apiculata				
lanceolata var. dubia	le,c	E	o(I)	Aph,I
lanceolata var. lanceolatoides				Aph(?)
lanceolata var. omissa				
linearis	l,a	So	o	I,Aph
linearis f. curta				
microcephala	le,c	E	o	I,Aph
minuscula	le	So(?)	o	
minutissima	le	E	o	I,Aph
saxonica				
AMPHORA				
bullatoides				
coffeiformis	l		P	Aph
montana				
ovalis	lbe	E	o	Aph
ovalis var. affinis				
perpusilla	le		o(I)	Aph
veneta	le	E	o	I,Aph
ANOMOEONEIS				
costata	lb,c	E	m	Ab
sphaerophora	lb	E	o,E	Ab
sphaerophora var. Güntheri	lb	E	m	Ab
phaerophora var. sculpta	lb	E	m	Ab
vitrae	l		o(I)	I,(Ab)
CALONEIS				
alpestris	l		o,Hf	Aph
bacillum	lb,c	E	o,E	Aph
lewisii				
lewisii var. inflata			o,Hf	Aph
oregonica			M	Aph, Ab
patagonica				
ventricosa	lb			
ventricosa var. alpina				
ventricosa var. minuta	lb			
ventricosa var. subundulata				

ventricosa var. truncatula	l		o(I)	Aph
CAMPYLODISCUS				
clypeus	lb		M	Ab
COCCONEIS				
diminuta	le	Mom	o,Hf	Aph,Ab
disculus	lb	So	o	Aph
fluviatalis			o(I)	Aph
pediculus	e		o(I)	Aph
placentula	le	E	o,Hf	Aph,I
placentula var. euglypta	le	E	o,Hf	Aph
placentula var. lineata	le	E	o	Aph
CYCLOSTEPHANOS				
sp				
CYCLOTELLA				
caspia			m	
catenata				
glomerata	p,l	So	o	Ac
Kützingiana	l,p	Mom	o	I
meneghiniana	l,p	E	E	Aph,Ab
ocellata	l,p	Mom	o	Aph,I
planctonica	l,p			
pseudostelligera	l,p	Mom	o	I,Ac
quillensis	p		M	Ab
stelligera	l,p	Mom	o	I,Aph
CYMATOPLEURA				
solea	l,p	Mom	o	Aph
CYMBELLA				
affinis	le	E	o,E	Aph,Ab
aspera	le,a	Mom	o	Aph
cymbiformis	l	E	o	Aph,I
cymbiformis var.nonpunctata			o	Aph
lanceolata	l	E	o	Aph
mexicana			o,Hf	Aph
microcephala	l,e	E	o	Aph,I
microcephala var. crassa				
minuta	t			
minuta var. pseudogracilis				
minuta var. silesiaca				
muelleri				
prostrata	l,a,e	So	o,Hp	Aph
prostrata var. auerswaldii				
pusilla	l,c	E	m,e	I,Aph
tumida	l	Mom	o,Hp	Aph,Ab
tumidula			o	
DENTICULA				
elegans	e		o	Aph,(Ab?)

DIATOMA				
elongatum var. *minor*				
tenue	p,l		o,Hf	Aph,I
DIPLONEIS				
elliptica	lb	Mom	o	Aph,I
marginestriata	l,a		o	I
oblongella	l,a		o(I)	Aph
oculata			o	I
ostracodarum				
pseudovalis	l	E	o,E	Aph
puella	l,a			
ENTOMONEIS				
alata	l		m	
EPITHEMIA				
adnata	le	E	o	Aph,Ab
adnata var. *minor*	le			
adnata var. *porcellus*	le	E	o,m?	Aph
adnata var. *proboscidea*				
adnata var. *saxonica*	le	E	o,Hf	Aph,Ab
argus	le	E	o,Hf	Aph
argus var. *longicornis*				
argus var. *protracta*				
hyndmanii	le	E	o	Aph
sorex	le	E	o,Hf	Aph
turgida	le	E	o,Hf	
turgida var. *capitata*				
turgida var. *westermanii*				
EUNOTIA				
bigibba var. *pumila*	l			
curvata	l,a	Mom	o	I,Ac
diodon	l,a	So	o	Ac
eruca				
flexuosa	l,a	Mom	o	Ac
formica	l		o	I
glacialis			Hp	I
incisa	l			
maior				Ac
monodon	l,a	Mom	Hp	Ac
naegelii				Ac
pectinalis	l,a	Mom	Hp	Ac,I
pectinalis var. *minor*	l,a	Mom	Hp	Ac
pectinalis var. *rostrata*				Ac
pectinalis var. *undulata*	l,a	So	o,Hp	Ac,I
pectinalis var. *ventricosa*	l		o,Hp	Ac
sibirica				Ac
valida			Hp	Ac
vanheurckii			Hp	Ac
veneris				Ac
FRAGILARIA				
africana	l,p	Se	o	Aph

bicapitata			o	I
brevistriata	l,p	E	o,m	Aph
brevistriata var. capitata				Aph
brevistriata var. elliptica	l,p	E	o	Aph
brevistriata var. inflata			o	Aph
brevistriata var. subcapitata				
capucina	l,t	o,m	o(I)	Aph
capucina var. mesolepta			o(I)	Aph
construens	l,t	E	o	Aph
construens var. binodis			o	Aph
construens var. pumila				
construens var. subsalina	l,t		Hf	Aph
construens var. triundulata	l,p	E	o	Aph
construens var. venter	l,p(t)	E	o(I)	Aph
crotonensis	p		o(I)	Aph
crotonensis var. oregona	p			Aph,Ab
inflata				
leptostauron	lb	Mom	o	Aph
leptostauron var. dubia	lb	Mom	o	Aph,I
leptostauron var. rhomboides				
nitzschioides				
pinnata	l,p	E	o,Hf	Aph
pinnata var. lancettula	l,p	E	o	Aph
vaucheriae	l	o	o(I)	Aph
virescens	l,p	Som	o,Hp	I
virescens var. capitata				
virescens var. elliptica				
FRUSTULIA				
vulgaris	l	e,m,o	o(I)	Aph
GOMPHONEIS				
burculeana	l			
mammilla	l			
GOMPHONEMA				
acuminatum	l	Mm	o(I)	Aph,I
acuminatum var. clavus				
acuminatum var. intermedium				
acuminatum var. pusilla				
affine	l	E	o	I
affine var. insigne				
angustatum	l	Mom	o	Aph
angustatum var. productum	l	E	o	Aph
clevei	l	Mme	o	I,Aph
clevei var. javanica				
cumrhis				
fanensis				Aph
gracile	le	E	o,Hf	I,Aph
grunowii				
intricatum	l	E	o	Aph
intricatum var. lunata				Aph
intricatum var. pumila	l	E	o	I
intricatum var. pusilla	l		o	
Martini				

montanum var. medium				
montanum var. suecium				
olivaceum	l	e,o,m	o(I)	Ab
parvulum	l	Mm	o	I
parvulum var. excilissima			o	I
parvulum var. lagenula				
parvulum var. micropus	l	E	o	I
parvulum var. subelliptica	l	E	o	I
subclavatum				
subclavatum var. commutatum				
subclavatum var. mexicanum				
subtile	l		o,Hp	I,Ac
subtile var. sagittum				
tenellum				
tergestinum				
truncatum	l			
truncatum var. capitatum	l			
truncatum var. turgidum	l			
ventricosum				
GOMPHONITZSCHIA				
sp.				
GYROSIGMA				
scalproides	a		o(I)	Aph
spencerii	l		m,o(I)	Aph,Ab
HANTZSCHIA				
amphioxys	l,a	E	o,E	Aph,I
amphioxys var. maior	l,a	E	o,E	I
amphioxys var. vivax			o,E	
MASTOGLIA				
elliptica			o,Hf,E	
elliptica var. danseii	lb	E	Hf,E	Aph
MELOSIRA				
agassizii	p	Se	o	Aph,Ab
ambigua	p(eup)	E(m)	o	Aph
ambigua var. robusta				
distans	l,(p)	So	Hp	Ac
distans var. alpigena			Hp	Ac,I
distans var. africana			o	
granulata	p(eup)	E	o(I)	Aph
granulata var. angustissima	p(eup)	E	o(I)	Aph
granulata var. angustissima f. curvata	p	E	o	Aph
granulata var. valida f. valida	p	Se	o	Aph
granulata var. valida f. robusta			o(I)	Aph
islandica			o	
islandica subsp. helvetica	p(eup)			
italica	l,t	E	o	Aph,I
italica subsp. subarctica	p,lb	So	o	
italica var. valida	p(eup)			Aph
monospina				

roseana	l,a			
NAVICULA				
acceptata	l,a	So?	o	Aph
accomoda			o(I)	Aph
adamantiformis				
americana	lb	Mom	I	Aph
anglica	lb	E	o	Aph
anglica var. subsalsa				I
arenaria			o	
atomus				
aurora				
bacillum	lb	E	o	Aph
begeri				
canalis				
capitata				
capitata var. hungarica	l		o	Aph
cari	lb	E	o	Aph
cari var. cincta				
cincta	lb	E	o,Hf	Aph
circumtexta				
citrus				
cocconeiformis			o,Hp	
confervacea	lb,a	Mem	o	Aph,I
contempta				
cryptocephala	lb	E	E,om	Aph
cryptocephala var. excilis			o(I),Hf	
cryptocephala var. intermedia	lb	E	E,om	Aph
cuspidata	lb,a	E	E,om	Aph
cuspidata var. ambigua	lb	E	o	Aph
cuspidata var. curta f.	l		o(I)	Aph
rostrata	l			
cymbula	lb	Mom	o,Hf	Aph
damasii	lb	Se	o	
dicephala	lb	E	E	I,Aph
dicephala var. undulata				
digitoradiata	lb	E	m	Aph
elkab				
excelsa				
exigua	lb	E	o,Hp	Aph
exigua var. capitata			o	
fluens			Hf,m?	
frugalis				
fluviatalis				
gastrum	lb	E	o,Hp	I,Aph
globosa				
goppertiana	a			
gottlandica			o(I)	
gracilpides	lb	E	o,Hf	I,Ab
gregaria			o,Hf	
grimmei	lb,a	E,e	o,Hf	Aph
halophila	lb	E	E,m	Aph,Ab
homburgiana				

heufleri			o,Hf	Aph
heufleri var. leptocephala			o,Hf	
hustedtii	l			
hustedtii var. japonica	lb	E		
insociabilis	l			
insociabilis var. dissipatoides				
laevissima	lb	So	o	Ac,I
laevissima f. fusticulus	lb	So	o	Ac,I
lanceolata	lb	Mom	o,m	Aph
laterostrata	lb	So	E	
libonensis				
luzonensis			o,Hf	
menisculus	lb	E	o	Aph
menisculus var. upsaliensis				
minima	lb	E	o	Aph
minnewaukonensis			o,Hf	
minuscula			o	
modica	l			
molestiformis				
monoculata				
muralis	lb,a	E	o	I
mutica	a,lb	E	o,Hf	I,Aph
mutica var. undulata			o,Hf	
notha			o	
oblonga	lb	E	o,Hf	Aph
omissa				
peregrina			m	Aph
perpusilla	l,a		o(I)	I
placentula	lb	E	o	Aph
protracta			o,Hf	
protracta f. elliptica	l		o,Hf	
protractoides				
pseudohalophila	l		o,Hf	
pseudomuralis				
pseudoreinhardtii				
pseudovemtralis	lb	So	o	Aph
pupula	lb,c	E	o,Hf	I
pupula var. capitata			o,Hf	I
pupula var. elliptica			o,Hf	I
pupula var. mutata				
pupula var. rectangularis	lb	E	o,Hf	I
pygmaea	lb	E	o,m	Aph,Ab
radiosa	lb	E	o	I
radiosa var. parva			o	I
radiosa var. tenella	lb	E	o	I,Aph
reinhardtii			o(I)	Ab,Aph
rhyncocephala	lb	E	o,Hf	Aph
rhyncocephala var. elongata			Er	
rhyncocephala var. germainii				
sabiana			o,Hf,m?	
salinarum var. intermedia			o,Hf,m?	
schonfeldii var. pusilla				
schroeteri				
sclesvicencis	a			
secura			o	

secreta var. apiculata			o	
seminuloides	1b	M,me	o	Aph
seminulum	1b,cr	E	o,Hf	I
seminulum var. intermedia				
seminulum var. radiosa	1b,cr	E	o,Hf	I
subbacillum				
subminuscula				
subrotundata	1b	Mom?	o	Ac
subtilissima				
symmetrica				
tantula				
tripunctata	1	e,o,m	o,E	
tripunctata			o	
trivialis	1,a		E	
twymaniana				
vaucheriae				
ventralis				
verecunda				
viridula	1b	E	o	Aph,I
viridula var. avenacea		e,o,m	o,Hf	Aph
viridula var. linearis			o	
viridula var. rostellata				
vitabunda	1b	E	o,Hp	Aph
NEIDIUM				
affine			o(I)	I,Aph
affine var. longiceps				Ac
bisulcatum			o(I),E	I
bisculatum var. nipponicum				
herrmannii				Aph?
iridis	1b	Mom	o	I
iridis var. amphigomphus	1b	Mom	o	I,Ac
iridis var. ampliatum	1b	Mom	o	I
temperei	p			
NITZSCHIA				
acicularis	p(eup)	E	o	Aph
amphibia	1,p	E	o,E	Aph,Ab
bicapitellata				
clausii	1		o(I),m	Aph,I
closterium	p(eup)			
communis	1	E	o(I)	Aph,Ab
denticula	1	E	o,m	Aph
denticula var. delognei	b			
dissipata	1	E	o	Aph
epiphytica	e,p	Se	o	Aph
filiformis			m	I
frustulum	1,p	E	E	Aph
gandersheimiensis	b			
gracilis	1,p?	E	o	I
granulata	1	E	me	Aph
hantzschiana	1	Mom	o	Ac,Aph
hungarica	1		o,m	Aph
ignorata			o	
inconspicua	b			

intermedia	l	E	o	Aph
linearis	l,a	E	o(I)	Aph
littoralis			m	
longissima			o,Hf,m?	
longissima var. reversa			o,Hf,m?	
microcephala		e	o	Aph,Ab?
minuta				
ovalis				
palea	l,p(t)	E	o	I
palea var. debilis	l,p	E		
palea var. tenuirostris	l,p	E	o	I
paleacea	l,p	E	o	I
parvula			m,o(I)	I
punctata				Aph
pusilla	l	E	o	
recta	l	E	o	Aph
robusta				
romana				
rostellata	l,p	E	o	
sigma	l		m,E	Aph,I
sigma var. diminuta				
sigmoidea	l,p	E	o,m	Aph
sigmoides				
stagnorum			o(I)	I,Aph
tropica	l,p	Se	o	Aph
tryblionella			o,m	
tryblionella var. levidensis	l,a	E	o	Aph
tryblionella var. victoriae	l,p(t)		o(I)	
umbonata	c	E	E	I
OPEPHORA				
martyi	l	Mom	o,E	Aph,Ab
PINNULARIA				
abaujensis	l,c	E	o(I)	I,Ac
abaujensis var. linearis			o	
abaujensis var. parva			o	I
abaujensis var. subundulata	b		o	I
abaujensis var. rostrata				
acrosphaeria	lb	E	o	I
acuminata				Ac?
acoricola	b		o	Ac
appendiculata	a			
biceps f. petersenii				I
biceps var. minor				
borealis	l,a	So	o	I,Ac
braunii var. amphicephala				Ac
brebissonii		o	o	
brebissonii var. diminuta				
brevicostata	l	So	o,Hp	Ac
divergentissima		o		
gentilis			o	I
leptosoma			Hp	Aph
maior	l	E	o	I,Ac
maior var. pulchella			o	Ac

mesogongyla				
microstauron				I,Ac
microstauron f. biundulata				Ac,I
mormonorum				
? stauroptera var. minuta				
subcapitata	a	E	o,Hp	I,Ac
subcapitata var. paucistriata			o	
subrostrata var. similis				
substomatophora				
subviridis				
termitina				Ac
viridis	l,a	E	o(I)	I,Ac
RHOICOSPHENIA				
curvata	l	Mme	E,mo	Aph
RHOPALODIA				
gibba	l,e	E	o,Hf	Aph,Ab
gibba var. ventricosa	l,e			
gibberula var. Van Heurckii	l,e	E	E,m	Aph
musculus			m	I
parallela	l,e	So	o	I
STAURONEIS				
anceps	l	E	o(I)	I
anceps f. gracilis	l		o(I)	Ac,I
densestriata				
kriegeri	l	E	o	
Lundii				
muriella f. linearis				
phoenicenteron	l	Mom	o(I)	I
phoenicenteron f. gracilis				I
smithii			o(I)	I,Aph
STEPHANODISCUS				
asteroides				
asteroides var. intermedia				
astraea	p(eup)	E	o	Aph
astraea var. intermedia	p(eup)	E	o	Aph
astraea var. minutula	p(eup)	E	o	Aph
carconensis	p	Mom	o	I,Aph
carconensis var. minor	p	Mom	o	I,Aph
hantzschii	p(eup)	E	o(I)	Aph,Ab
hantzschii var. pusilla				
minutus	p	So	o	Aph
niagarae	p	o?	o(I)	
* novaezelandiae	p		o	
subtilis	p,l	m,e	o	Aph
subtransylvanicus				
tenuis	p	Mom	o	
tenuis f. minor				
transylvanicus	p	om	o	I,Aph

* = Cyclostephanos novaezelandiae

SURIRELLA

SURIRELLA				
biseriata	l,p	E	o	
elegans	l		o(I)	Aph,I
linearis	l,p	S,o	o	I,Ac
linearis var. *constricta*	l,p	S,o	o	I
ovalis	l	E	m	I,Aph
ovata	l	E	o(I)	Aph
ovata var. *apiculata*	l,a		E	
robusta	l,p	E	o	I
robusta var. *splendida*	p			
striatula			m	I
tenera	p			
tenera var. *nervosa*				
SYNEDRA				
acus	le,p(t)	E	o(I)	Aph
acus var. *neogena*	p?			
affinis var. *fasciculata*			m	
amphicephala var. *austriaca*		o		
delicatissima	p			
delicatissima var. *angustissima*	p(eup)		o(I)	I
fasciculata			o,Hf	
fasciculata var. *truncata*			o,Hf	
goulardi		E		
pulchella	l		o,Hf	I,Aph
radians	p(eup)		o(I)	Aph
rumpens	le,p	E	o	I
rumpens var. *familiaris*	le,p	E	o	I
rumpens var. *fragilarioides*	le,p	E	o	I
rumpens var. *meneghiniana*	le,p	E	o	I
rumpens var. *scotica*			o	I
socia			o	I
ulna	le,p	E	o,E	Aph
ulna var. *danica*	p		o(I)	I
ulna var. *oxyrhyncus* f. *mediocontracta*	p,le	E	o	Aph,I
ulna var. *ramesi*				
ulna var. *spathulifera*	p(eup)	o	o(I)	Aph
ulna var. *subaequalis*			o	
THALASSIOSIRA				
rudolfii				

Habitat:
l = littoral (periphytic)
e = epiphytic
b = benthic
c = crenophile
a = aerophilous
p = planktonic
(eup) = euplanktonic
t = tychoplanktonic

Salinity: o = oligohalobous
o(I) = indifferent
m = mesohalobous
e = euhalobous
Hf = halophilous
Hp = halophobe
E = euryhalobous
P = polyhalobous

Temperature:

S = stenothermal
M = metathermal
E = euthermal
o = oligothermal
m = mesothermal
e = eurythermal

pH:

Ac = acidophilous
I = indifferent
Aph = alcaliphilous
Ab = alcalibiontic

Diatom preservation, Zacapu
core 1

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
5.0			x		Strong Synedra spp. especially S. goulardi
15.0				x	
27.0			x		Good M.granulata and S. goulardi
37.0			x		
47.0		x			Only Cymbella and Synedra spp. good
58.0			x		Synedra spp. and Gomphonema spp. good. Pieces of large Stephanodiscus spp. ? washed in
81.5		x			
93.5			x		
102.5			x		Better than levels above
108.5			x		Better than 102.5
114.0				x	
125.0				x	Strong Melosira spp. often in chains
130.5				x	As above
136.0			x		Strong Melosira spp.
147.0			x		
158.5				x	Strong Melosira spp. (chains) and Cymbella spp.
164.0			x		

APPENDIX 5

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
186.0				x	Strong Melosira spp. and S. acus var. neogena
197.0			x		Melosira spp. heavily silicified, but more broken than above
201.5				x	Some broken up patches
213.0			x		
224.0			x		
235.5		x			
246.5			x		
258.0			x		M. italica subsp. subarctica rather broken Long S. acus var. neogena intact
280.5	x				Very broken up except M. italica subsp. subarctica
291.5			x		Strong M. italica subsp. subarctica
301.5		x			Melosira spp. very poor, long Synedra spp. intact
312.0			x		
323.0	x				Very broken up
333.5		x			
344.0				x	Particularly strong Melosira spp.
355.0			x		Some pieces of large Stephanodiscus spp. ? washed in
365.5				x	

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
386.5			x		Preservation very variable
397.5			x		
401.5			x		
413.0				x	M. italica subsp. subarctica very heavily silicified
424.0			x		Most valves very 'thin', only Melosira spp. heavily silicified
435.5		x			Traverse count probably affected by breakages
446.5		x			
457.5		x			Only small centrics and C. placentula var. lineata well preserved
480.5			x		Much better than levels above
491.5			x		Melosira spp. very broken, long Synedra intact
502.5			x		Melosira spp. broken up, long S. acus var. neogena intact
513.0	x				Mainly broken up and battered
523.5	x				Mainly broken up
534.0		x			Better than 2 samples above. Some heavily silicified Melosira spp.
544.5			x		
555.0			x		
566.0		x			Traverse validity ? due to breakages

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
587.0			x		M. granulata rather broken up
597.5			x		N. paleacea and N. gracilis often broken up
602.5			x		Better preserved than 597-598. Heavily silicified Melosira spp.
613.0		x			Only N. gracilis in good condition
623.5		x			Cyclostephanos sp. and Nitzschia spp.in the best condition
634.0	x				Mainly broken up
655.0			x		Heavily silicified Melosira spp.
666.0			x		Preservation variable
676.5			x		Many quite heavily silicified valves
687.0			x		Heavily silicified Melosira spp. Rather 'thin' Cyclostephanos sp. and Nitzschia spp.
697.5		x			Valves 'thin', many broken
701.5		x			M. granulata very broken up. Some heavily silicified M. italica subsp. subarctica
711.5			x		
722.0		x			Melosira spp. very variable preservation
733.0			x		Some heavily silicified Melosira spp.
743.5			x		Longer N. gracilis often broken
754.5			x		

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
776.0	x				Very broken up, but occasional clumps of heavily silicified Melosira spp.
786.5		x			Mainly broken except long Synedra spp.
797.5			x		Some strongly silicified Melosira spp.
802.0				x	Heavily silicified Melosira spp. with girdle bands
814.5				x	Some pieces of large Stephanodiscus spp. ? washed in
827.0			x		
839.5			x		Heavily silicified Melosira spp. present from here to 814-815 cm
852.5			x		
877.5				x	
890.5			x		Heavily silicified Melosira spp. best preserved
901.5		x			Only heavily silicified Melosira spp. well preserved
912.0			x		Long N. gracilis well preserved
923.0			x		Few heavily silicified Melosira spp. in in this level
934.5				x	N. paleacea and N. gracilis dominant
946.0		x			
957.5			x		Variable preservation. Heavily silicified Cymbella, Gomphonema and Melosira spp.
980.0		x			Melosira spp. well preserved

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
991.5				x	Long Synedra spp. and chains of Melosira spp.
1002.5		x			Validity of traverse questionable
1012.0				x	Long Nitzschia spp. well preserved
1023.0			x		Preservation very variable, some good long Synedra and Melosira chains
1033.5			x		As above
1044.0			x		As above
1054.5			x		Long Synedra intact, otherwise quite broken
1065.5			x		Few heavily silicified Melosira in this level
1086.5			x		
1097.5			x		Strongly silicified Melosira abundant. N. paleacea and N. gracilis rather broken A shift in flora
1102.5				x	
1112.5			x		
1122.5			x		Long N. gracilis and S. acus var neogena well preserved. Very few Melosira spp. in this level
1132.5			x		
1142.5			x		Rather variable, long Synedra spp. generally well preserved
1152.5			x		
1162.5			x		Nitzschia spp. rather battered. Some heavily silicified valves of Gomphonema, Cymbella, S. goulardi and Melosira spp.

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
1172.5				x	
1182.5				x	Particularly strong S. goulardi
1189.5			x		
1199.5			x		Variable preservation
1211.0			x		Variable. N. paleacea and N. gracilis often broken. Some good Melosira, Cymbella and Gomphonema spp.
1222.0		x			Generally broken, but exceptions in M. granulata, C. placentula var. lineata Cymbella and Epithemia spp.
1229.0			x		Many Nitzschia spp. broken
1240.0			x		Nitzschia spp. quite often broken Good Melosira spp. and S. goulardi
1261.0			x		Good S. goulardi (+ some C. placentula var. lineata, Cymbella and Gomphonema spp.)
1272.0				x	
1277.0			x		Variable, Nitzschia spp. rather broken up
1282.5			x		Variable, Nitzschia spp. rather broken up Good Melosira spp., Gomphonema spp., S. goulardi and C. placentula var. lineata
1286.5			x		Long Synedra intact, long Nitzschia spp. often broken
1291.5			x		Few heavily silicified valves
1297.0			x		Nitzschia spp. often broken
1302.0				x	Note marked change in assemblage from above
1312.0			x		Strong S. goulardi

Level (cm)	Unacceptable	Poor	Acceptable	Good	Comments
1322.5			x		Variable. Lightly silicified N. paleacea + N. gracilis. 'Heavier' S. goulardi, M. italica subsp. subarctica, C. placentula var. lineata
1327.5			x		Mainly thinly silicified, a bit battered
1333.0			x		
1345.0			x		Variable
1365.5	x				Possibly reworked. A few good, heavily silicified valves. ? desiccation
1373.5		x			A few well preserved Cymbella, Gomphonema and Epithemia spp.
1387.0				x	Some heavily silicified Melosira spp.
1400.5		x			A few good valves (e.g. C. placentula var. lineata, Melosira spp.)
1414.0		x			Quite a lot of opaque debris
1427.5			x		Still quite a lot broken

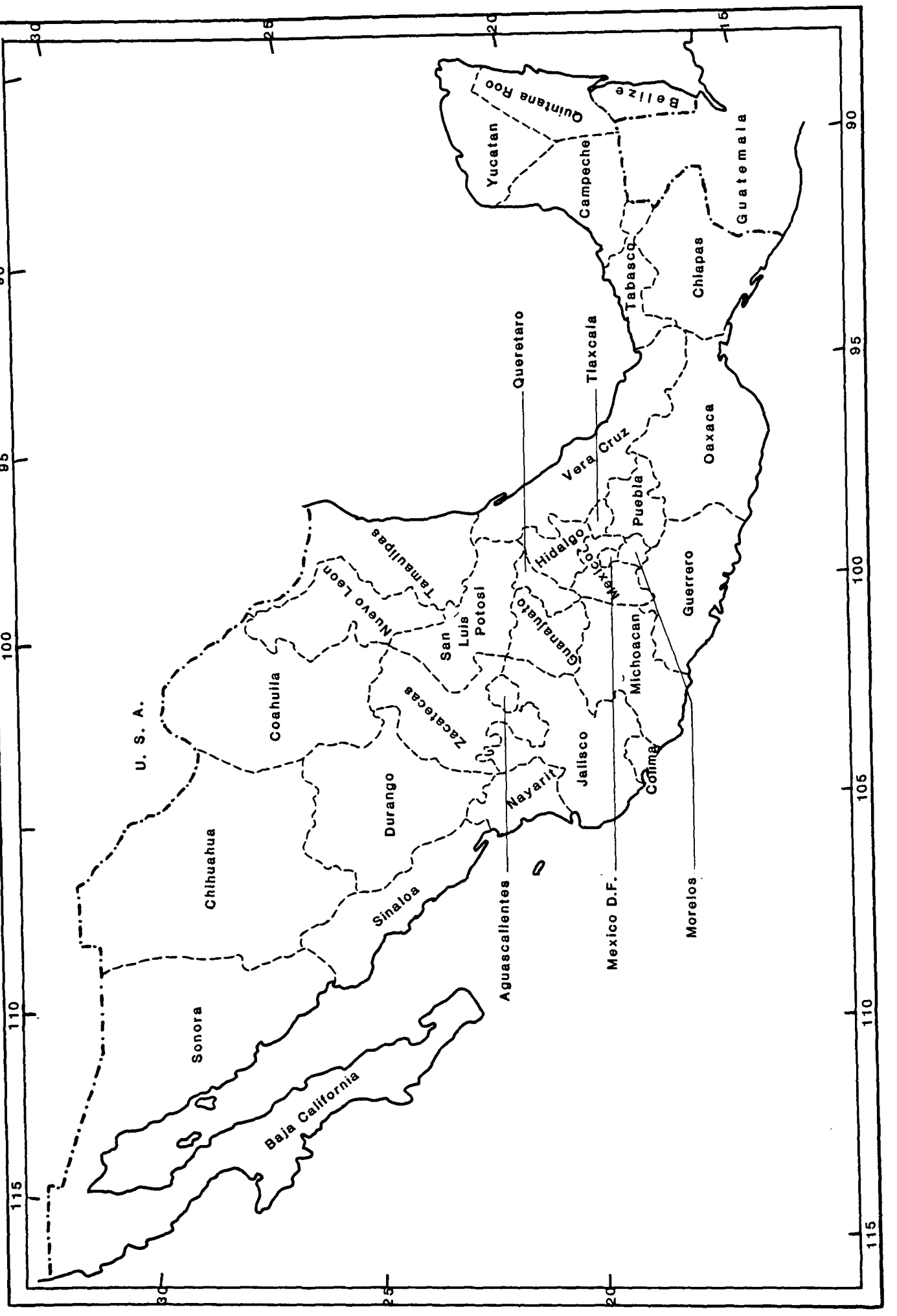


FIGURE 1.1

The States of Mexico

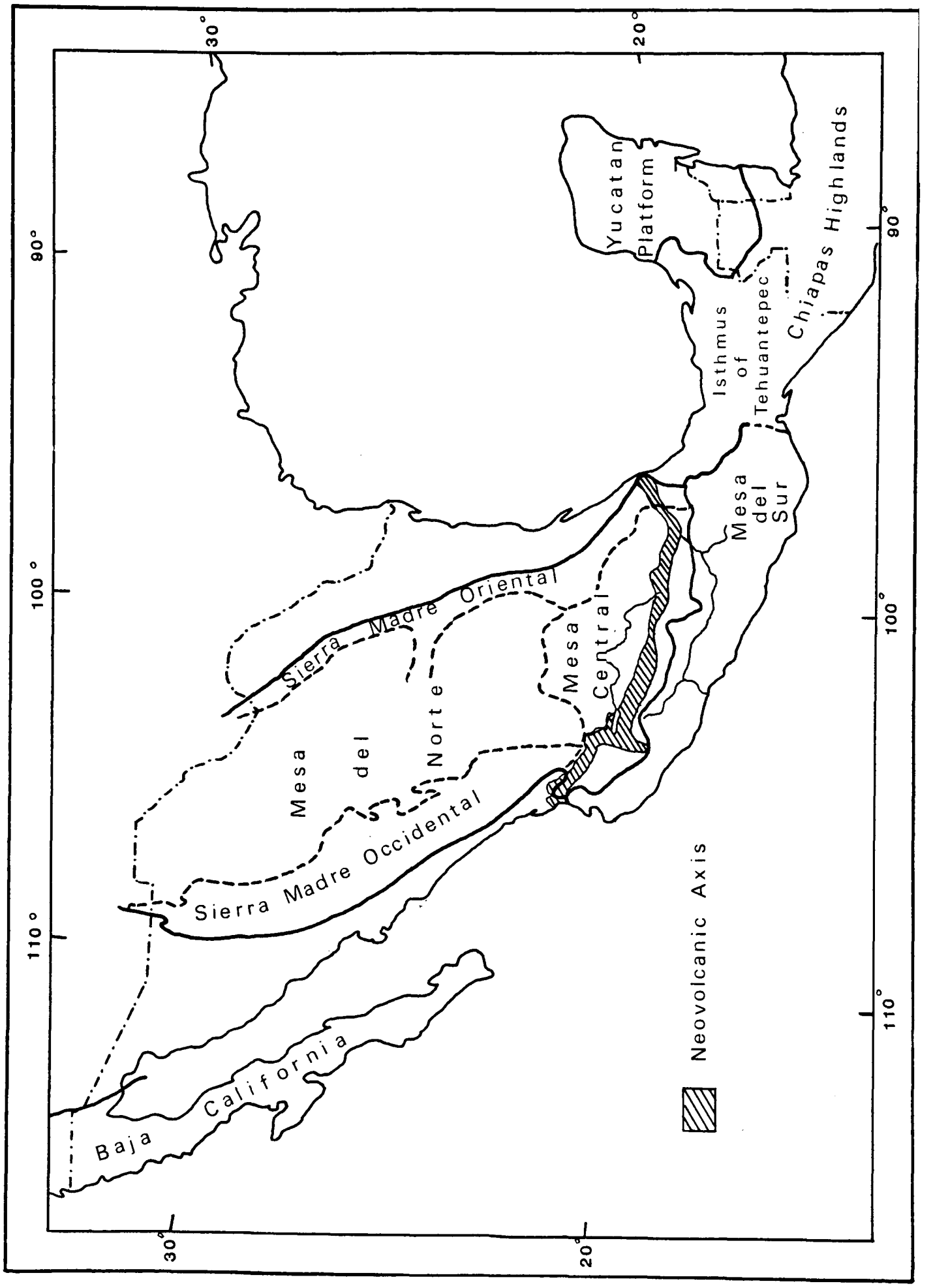


FIGURE 1.2
The major physiographic features of Mexico

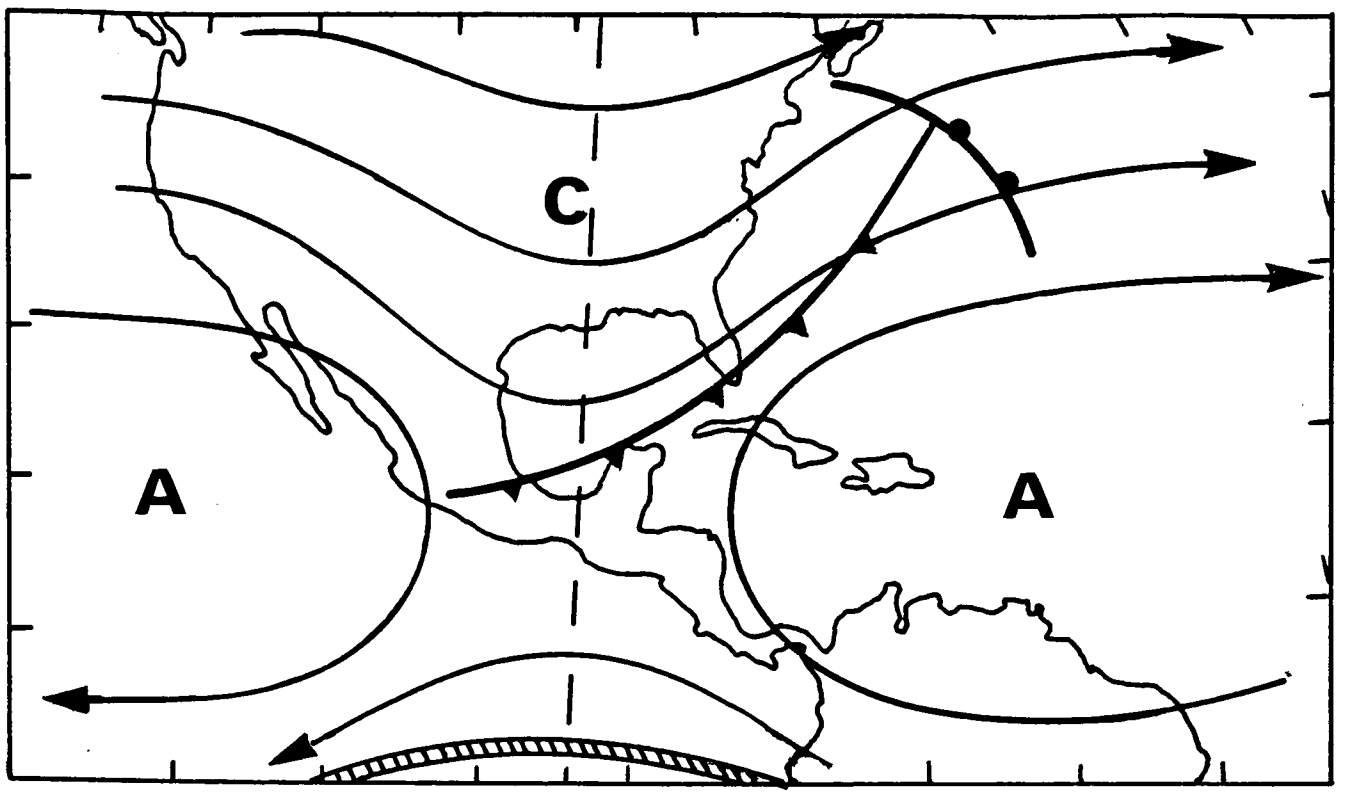


FIGURE 2.1

Winter

Schematic map of major atmospheric features during the winter

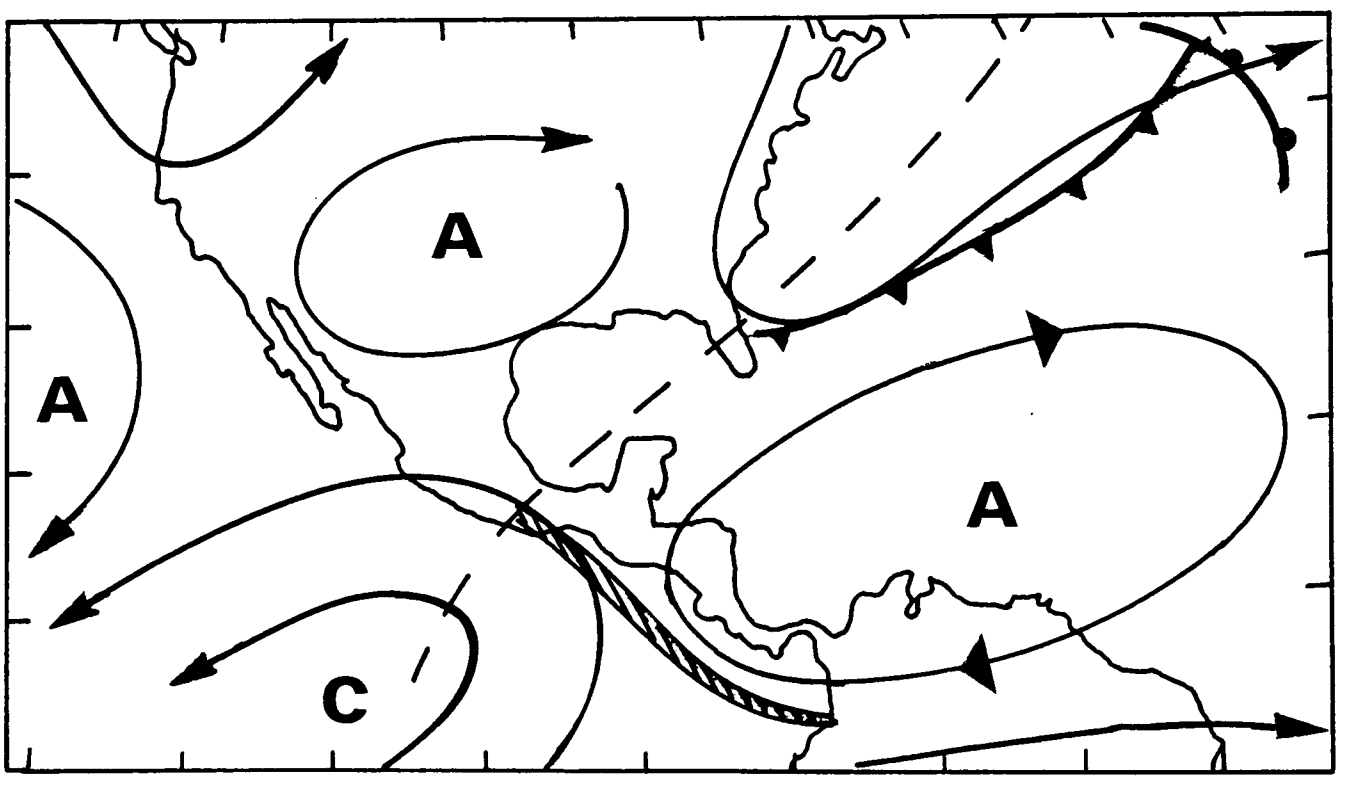


FIGURE2.2

Summer

Schematic map of major atmospheric features during the summer

Cold Front

I.T.C.Z.

Line of wave at 500 mb

Flow at 500 mb

A **Anticyclonic flow**

C **Cyclonic flow**

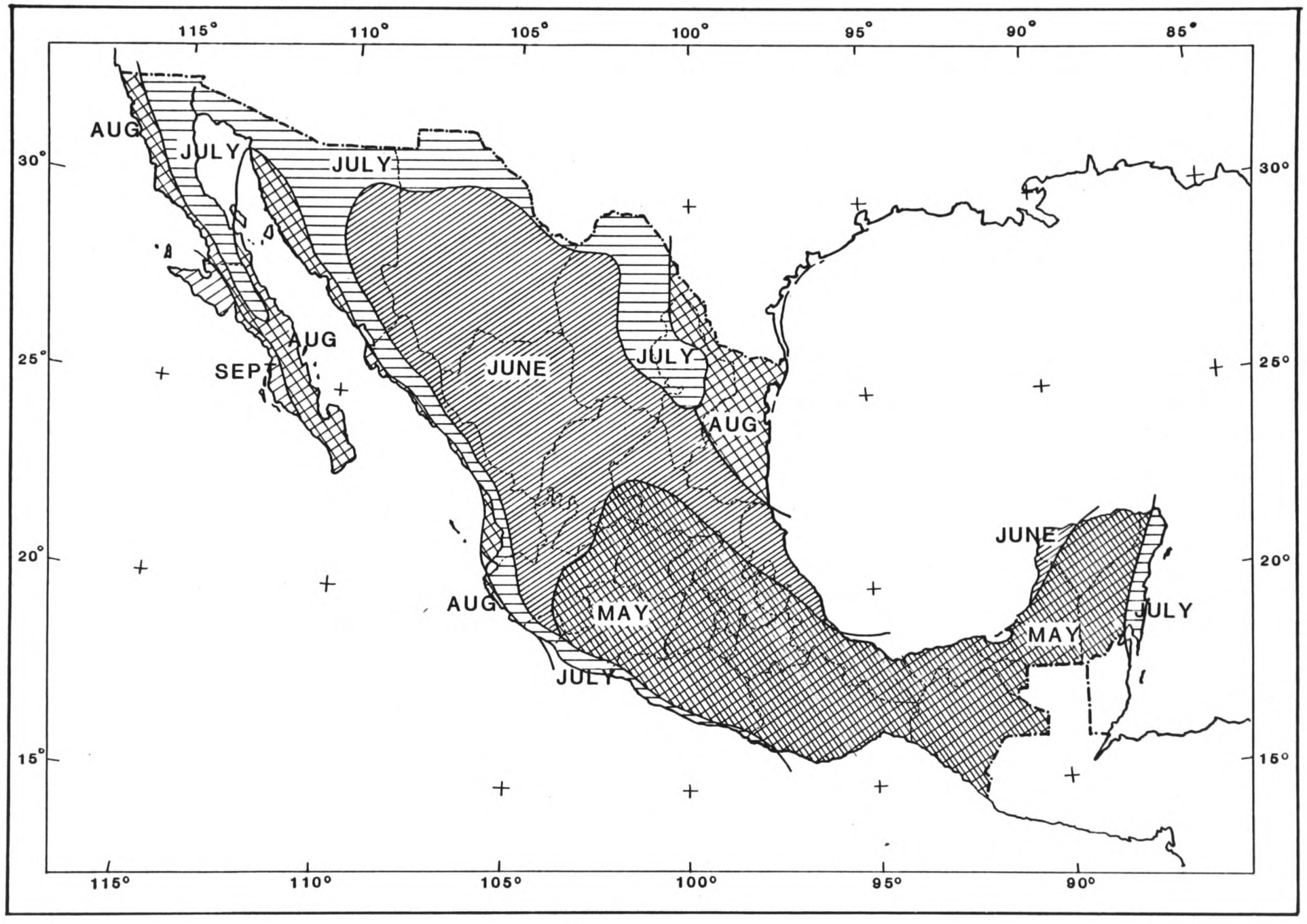
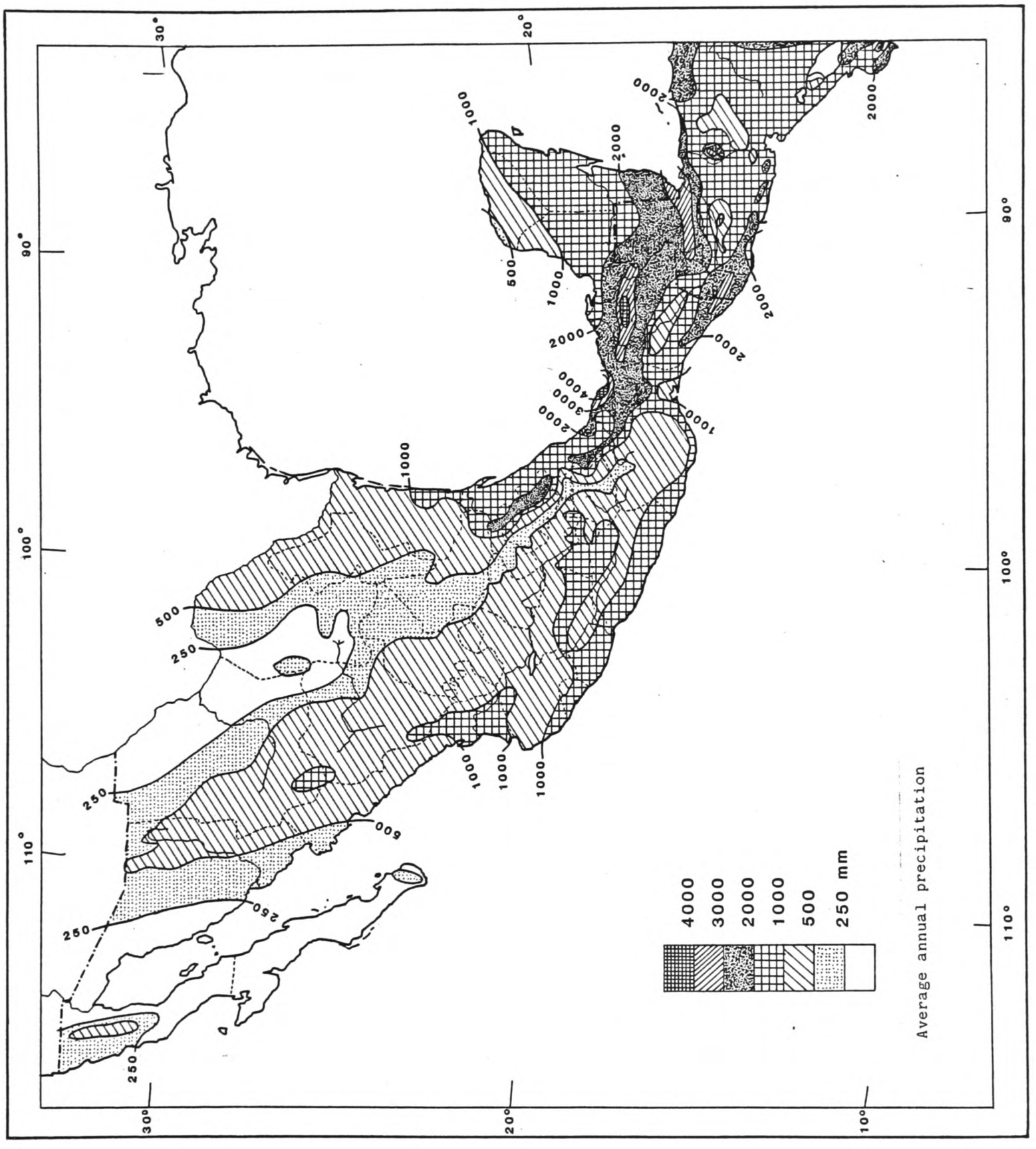


FIGURE 2.3

Month of maximum temperature

FIGURE 2.4


30°
20°
10°
90°
100°
110°
4000
3000
2000
1000
500
250 mm
Average annual precipitation

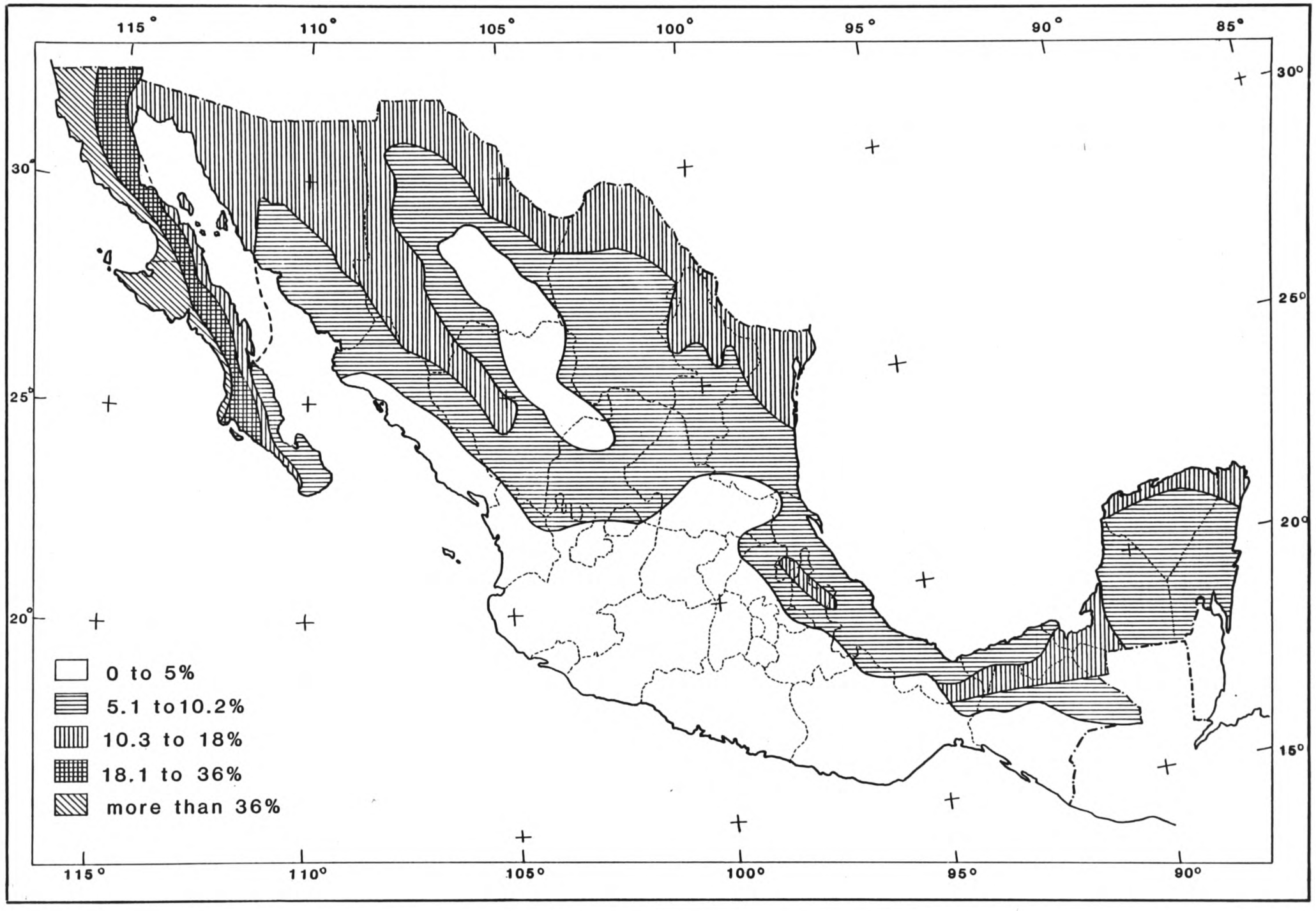


FIGURE 2.5

% of precipitation falling during the winter

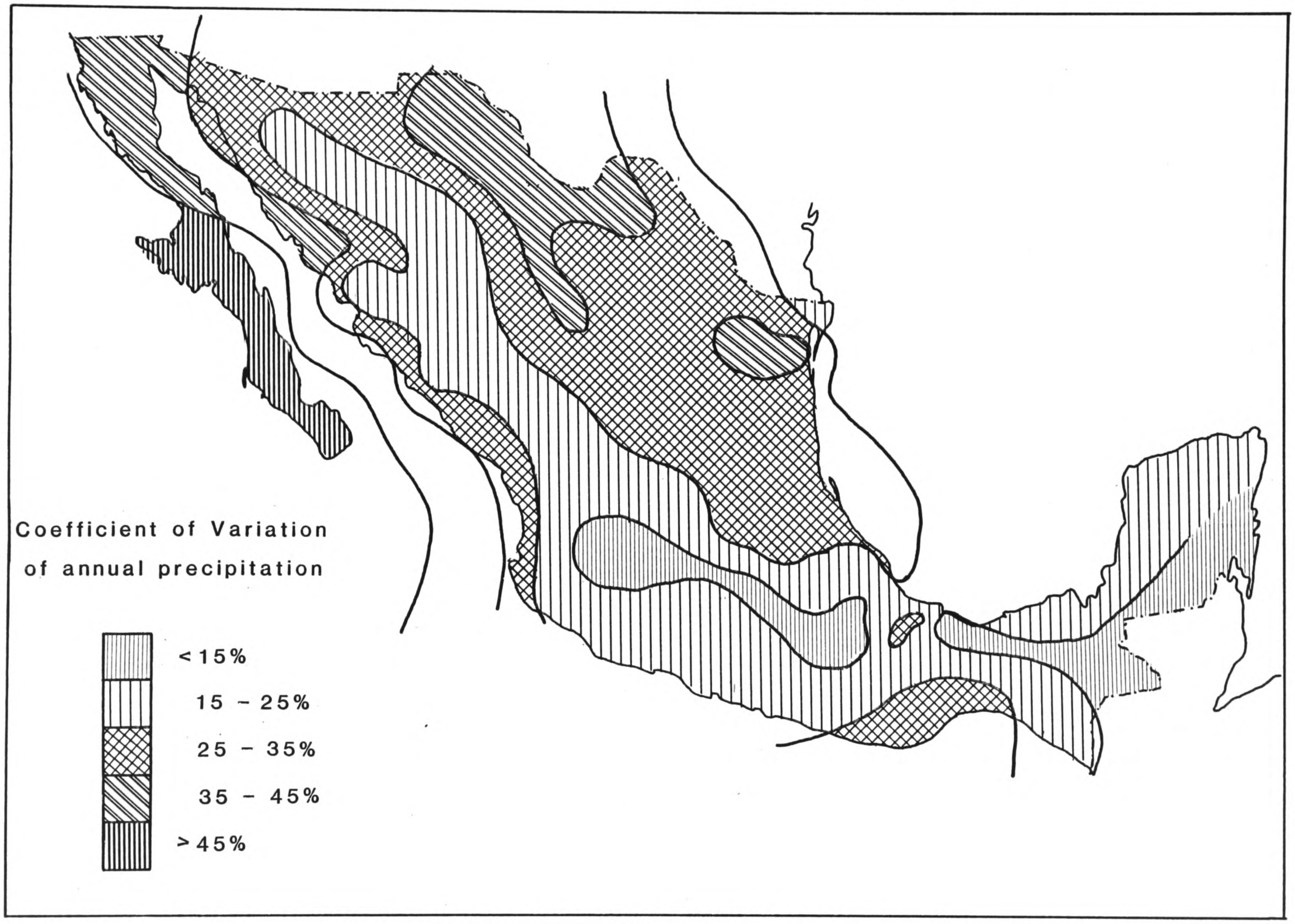

Coefficient of Variation
of annual precipitation
< 15%
15 - 25%
25 - 35%
35 - 45%
> 45%

FIGURE 2.6

Five year running means of precipitation at Tacubaya

1884 - 1974

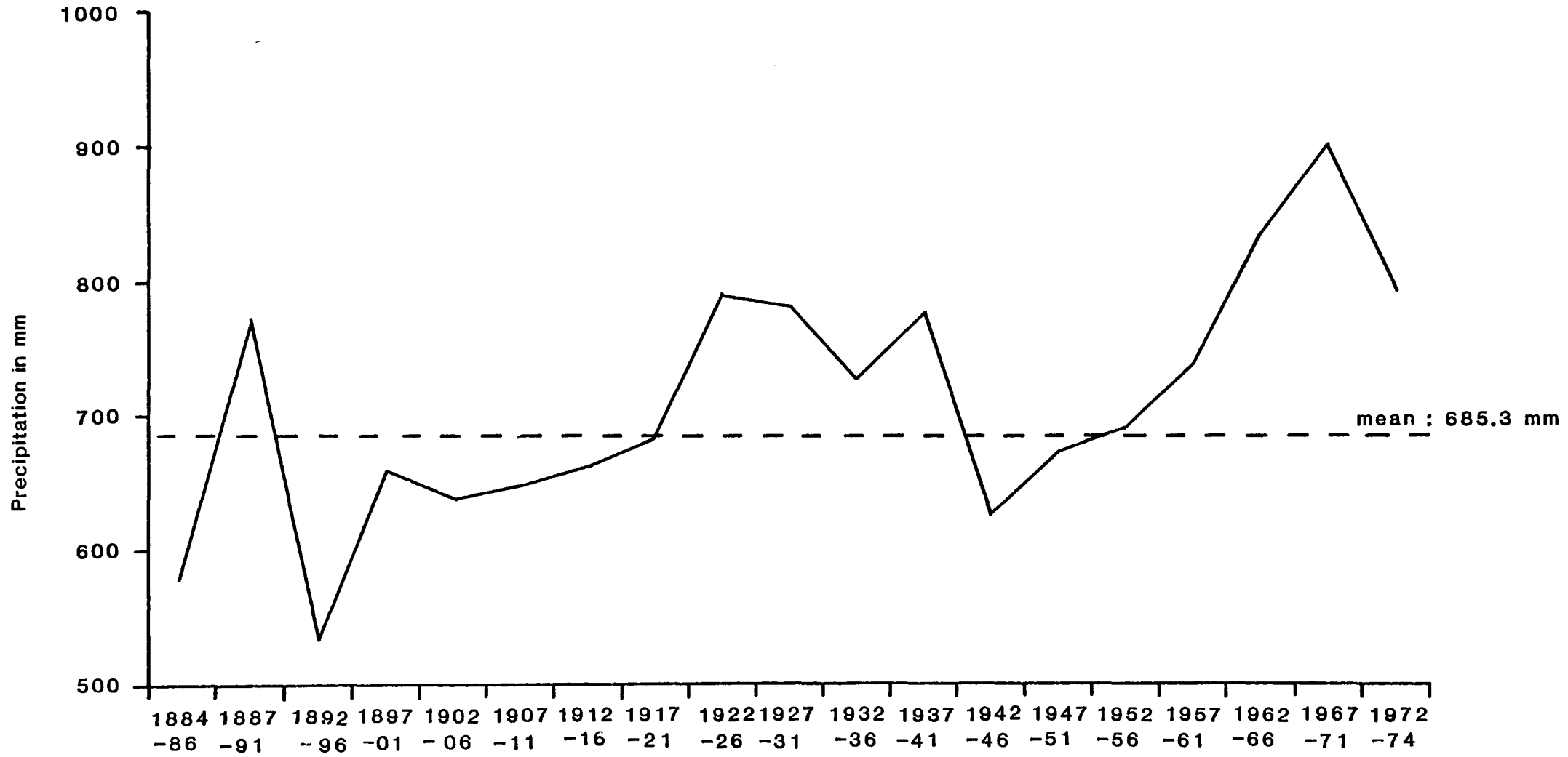


FIGURE 2.7

Annual precipitation for a dry year (1982) and a wet year (1984) recorded at Tacubaya, Mexico D.F.

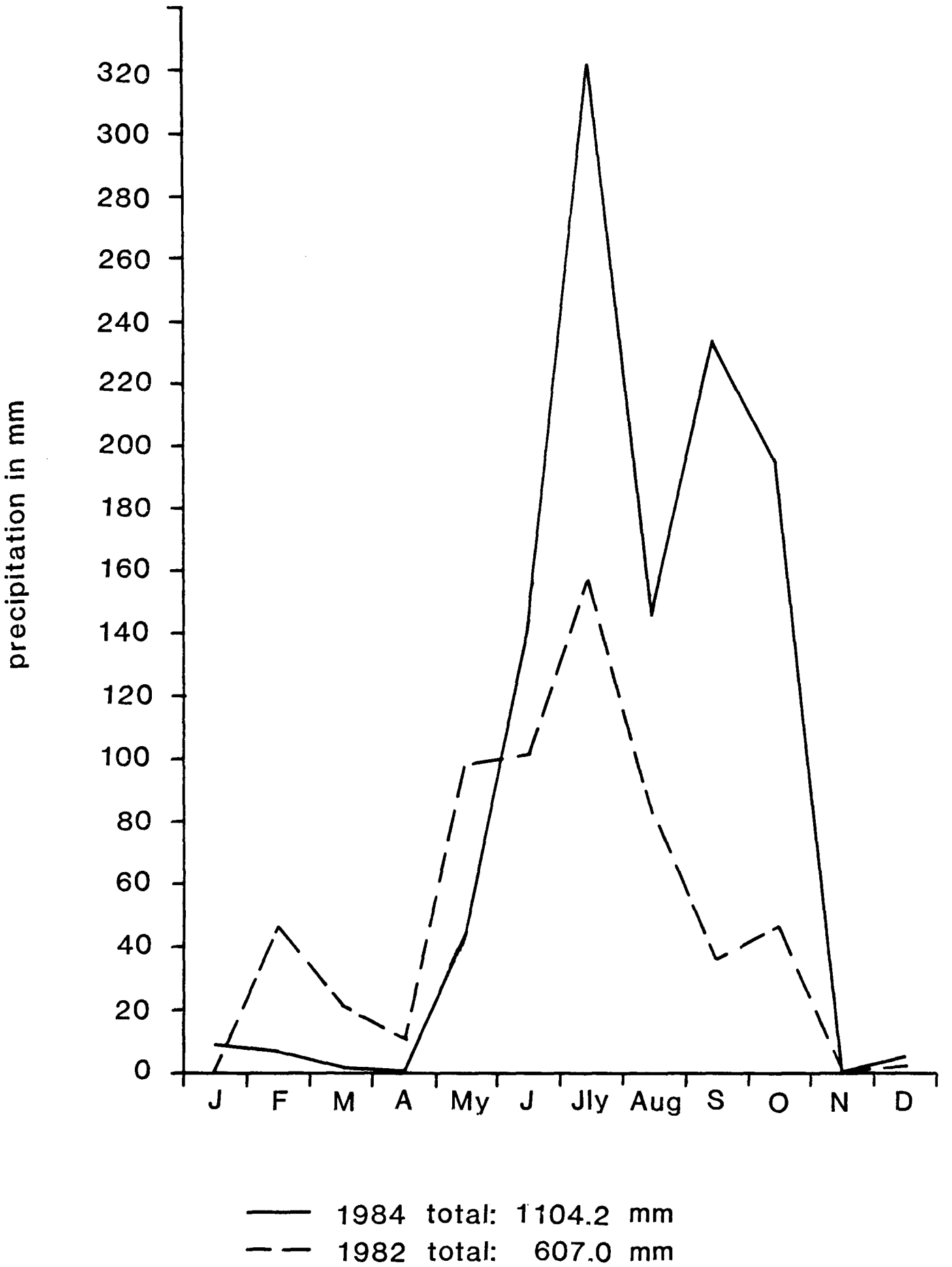
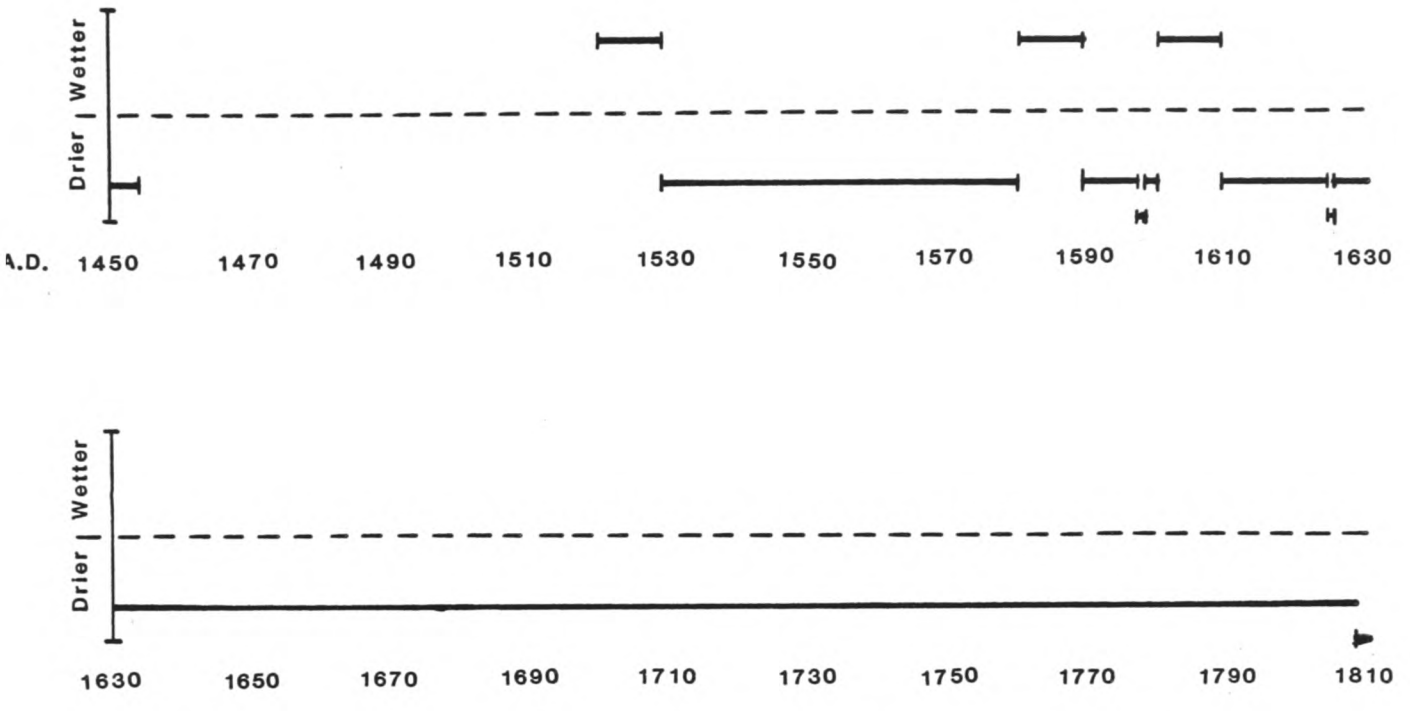


FIGURE 2.8



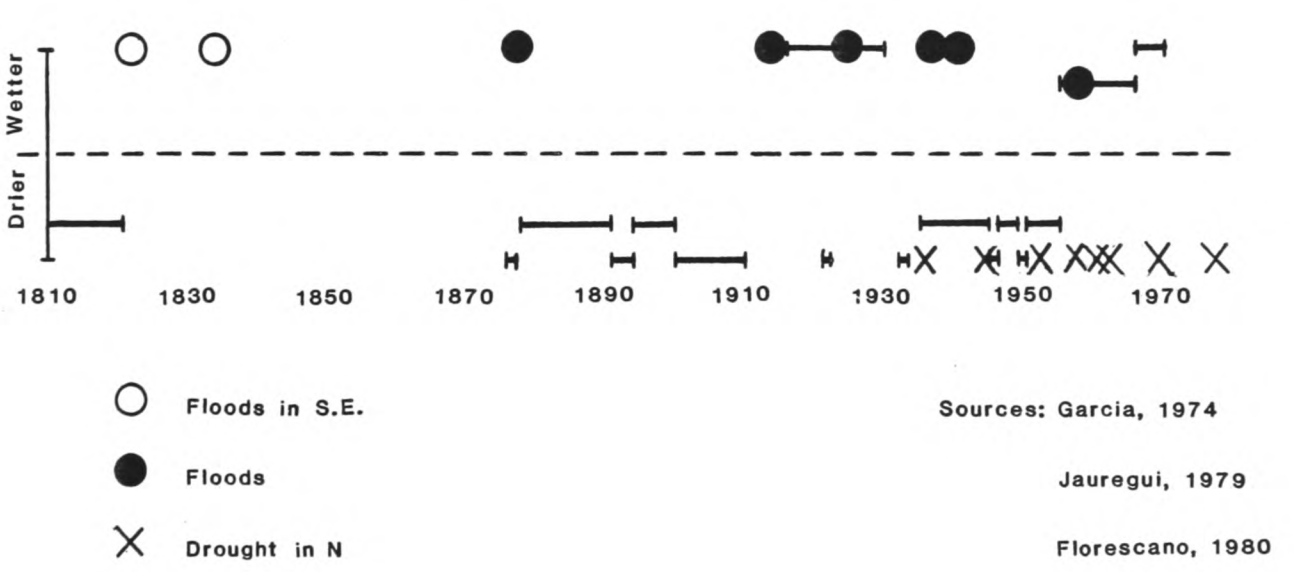


FIGURE 2.9

A summary of climatic trends
in Mexico 1450 - 1977

Pennate diatom

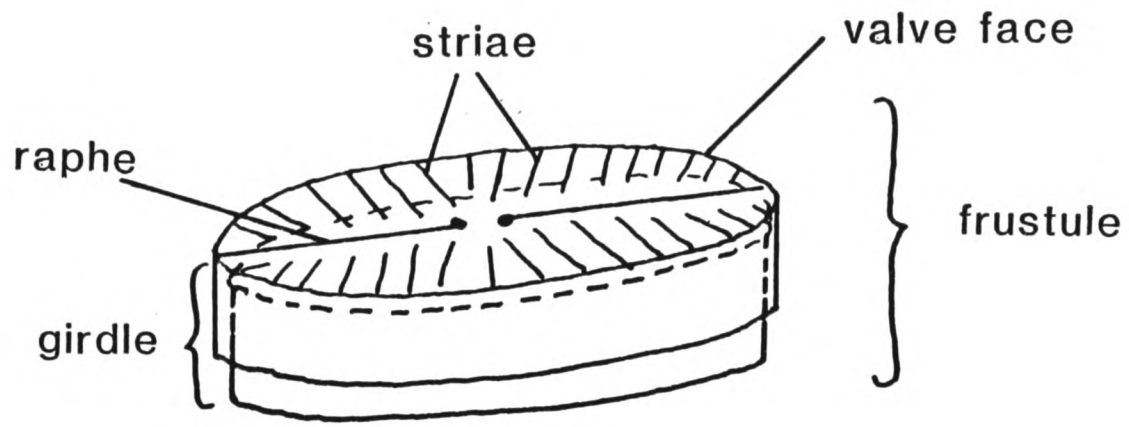
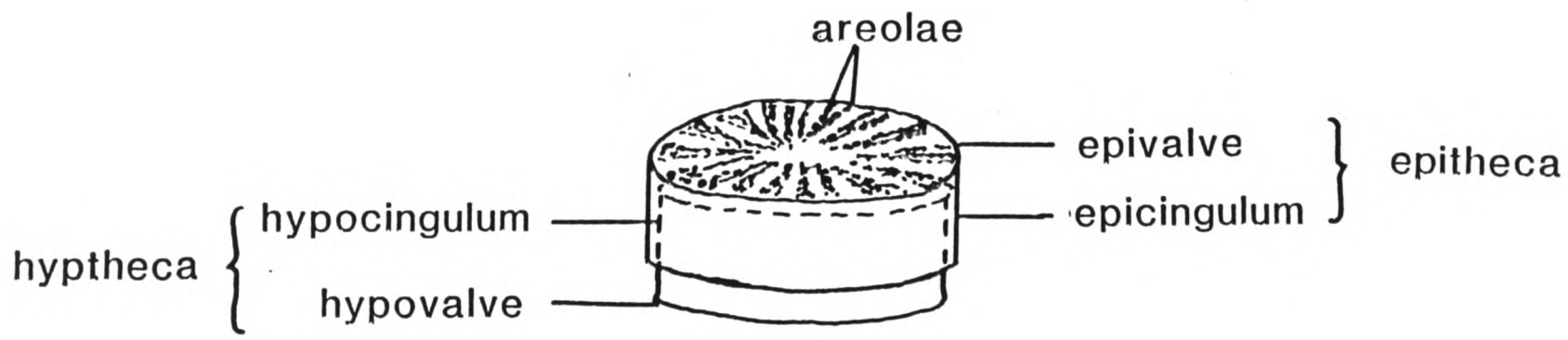


FIGURE 3.1

Form and structure of a pennate and a centric diatom frustule.

Centric diatom



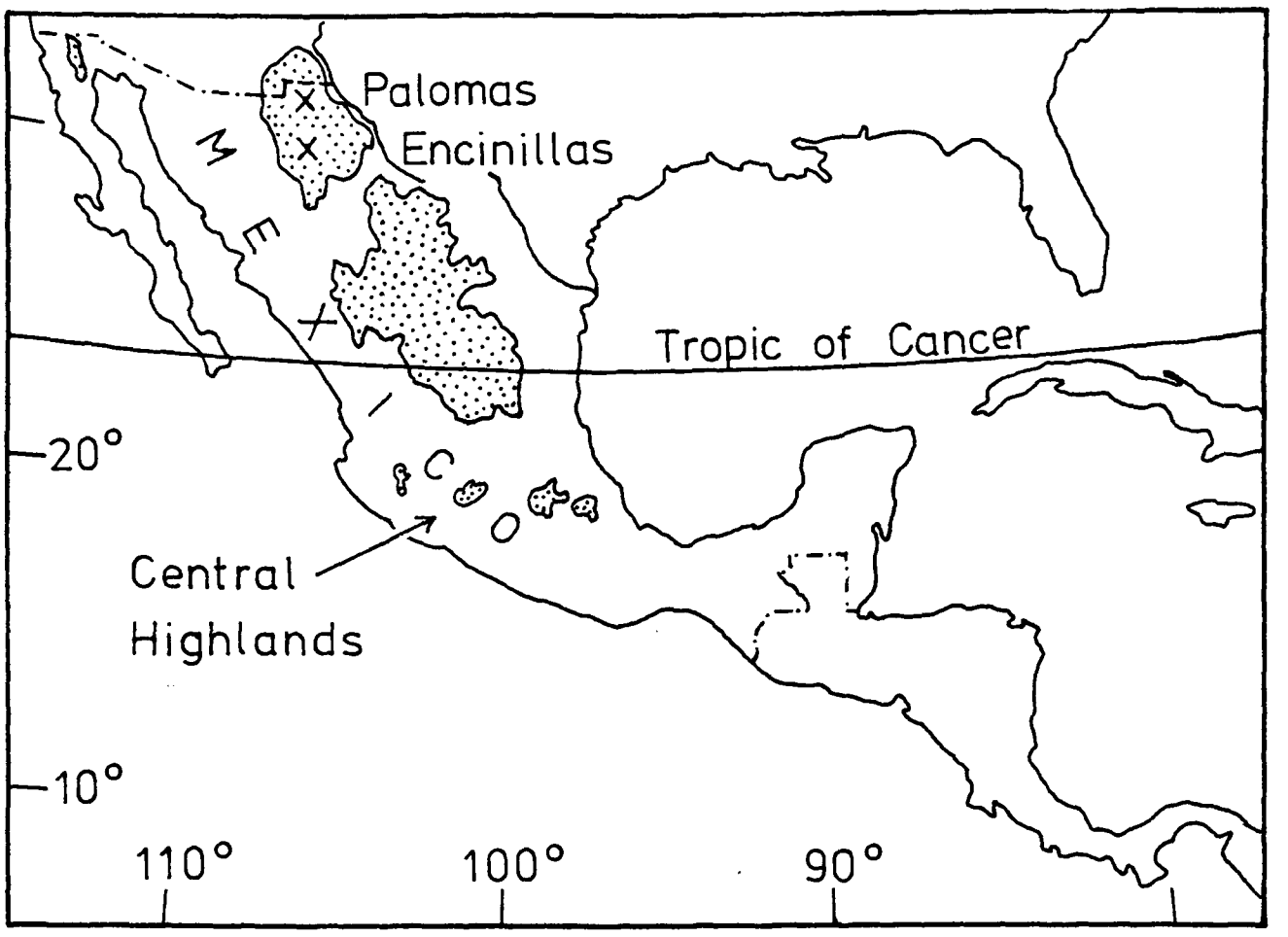


FIGURE 3.2

Distribution of areas of
internal drainage in Mexico.

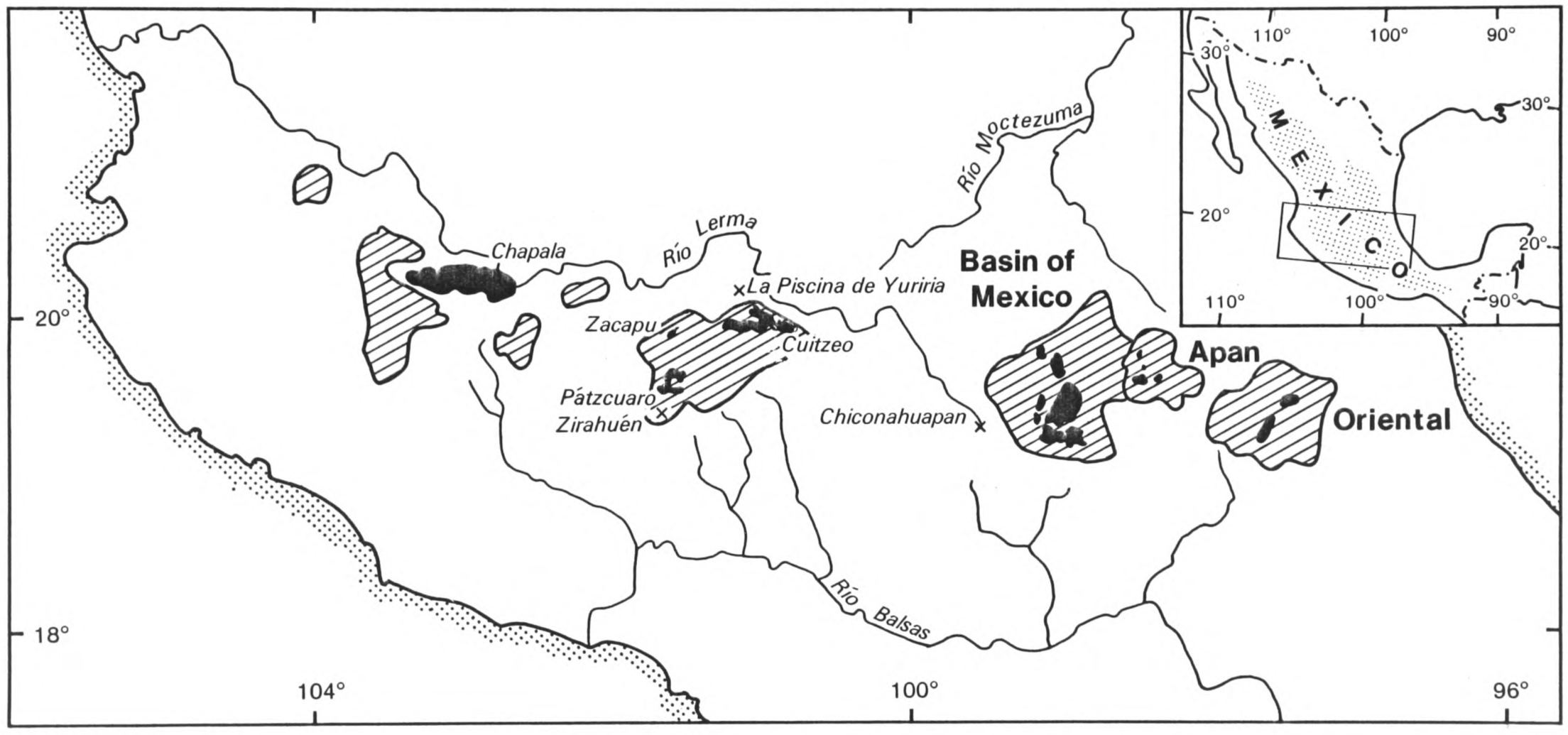


FIGURE 3.3

Closed basin

Lake

× Small lake (labelled)

Closed-basin lakes of the Neovolcanic axis.

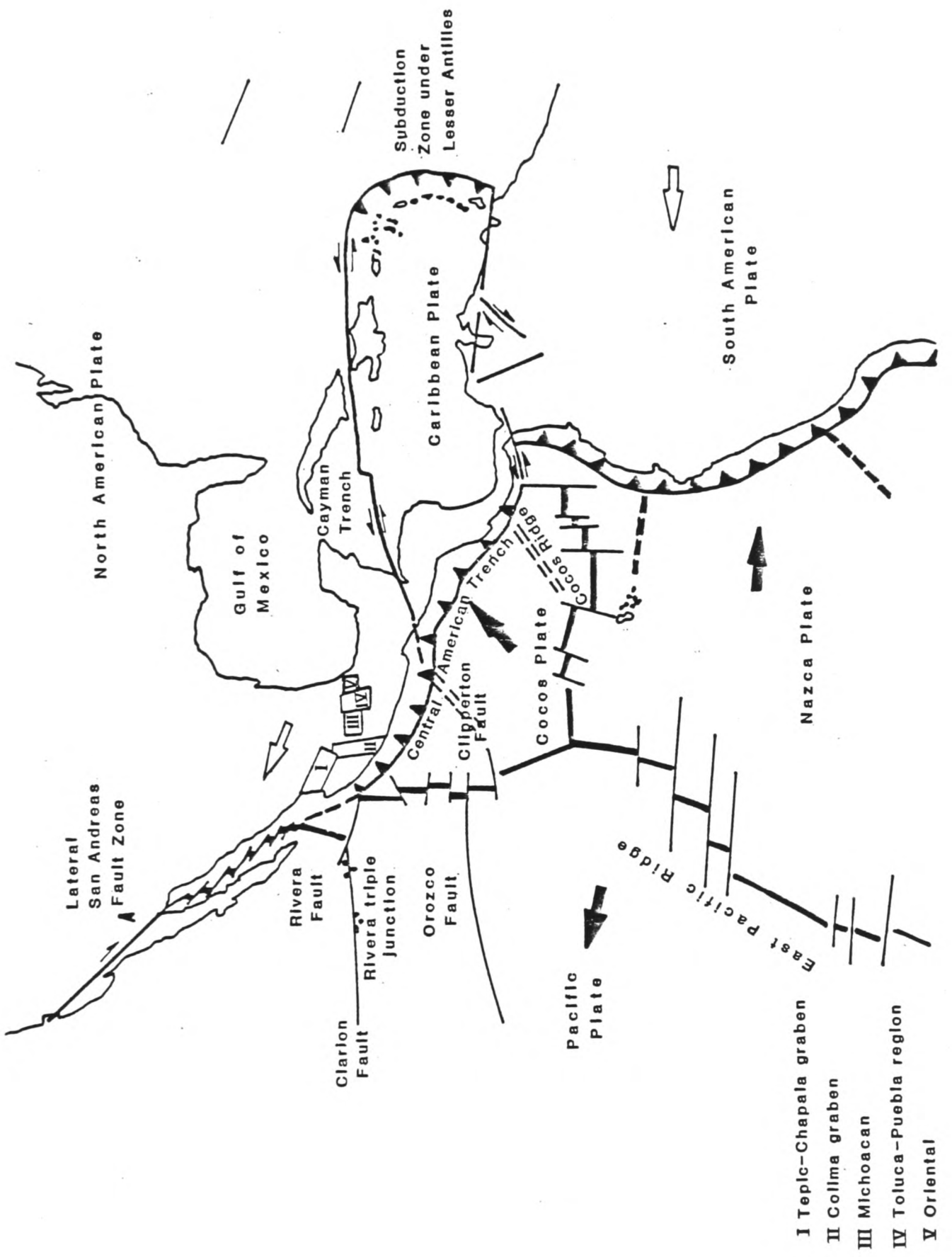
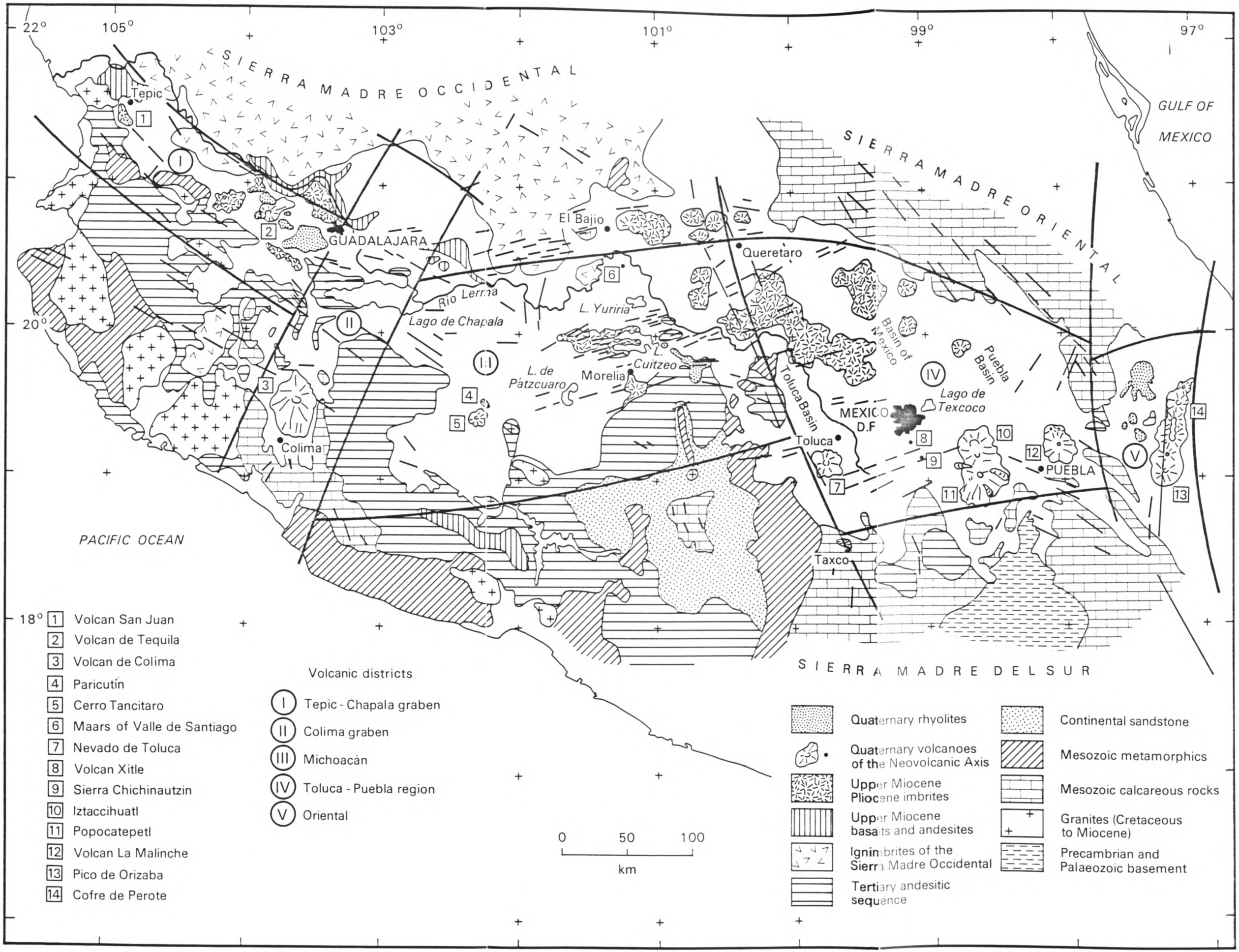


FIGURE 3.4

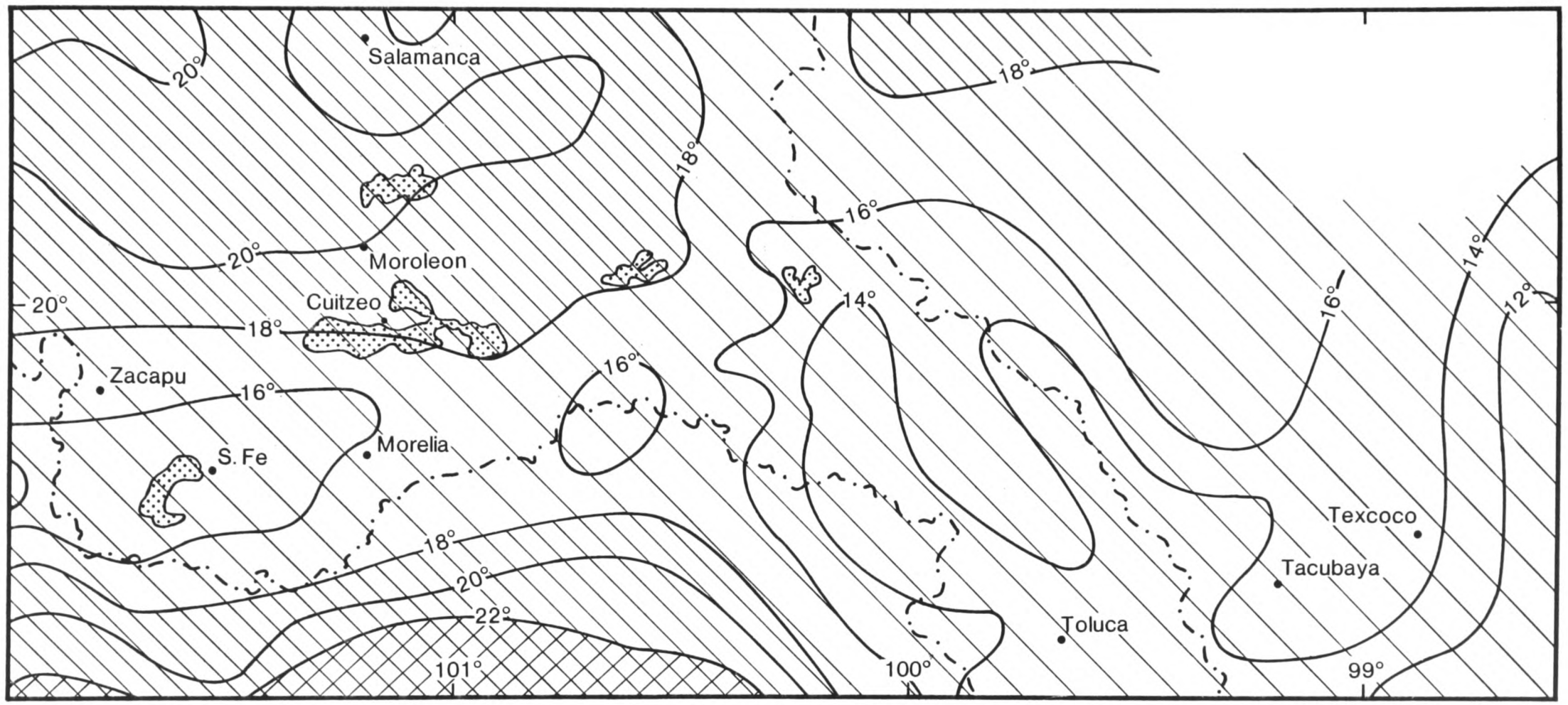
Plate boundaries affecting Mexico



Simplified geology of the Neovolcanic Axis

FIGURE 3.5

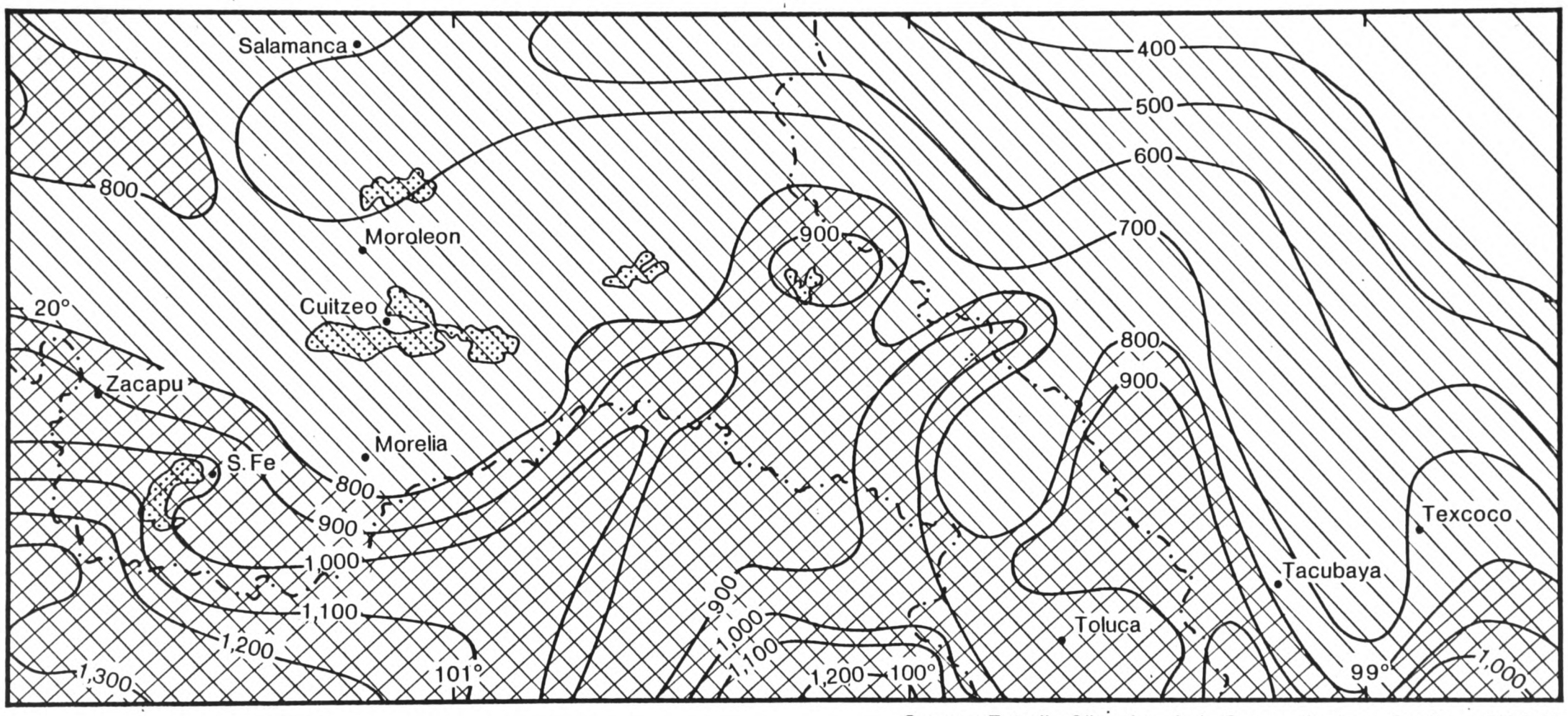
The distribution of average annual temperature in °C, (1941 - '63) for part of Central Mexico



Source- Estudio Climatico de la Cuenca Lerma - Santiago S.A.R.H.

FIGURE 3.6

The distribution of average annual precipitation in mm, (1941 - '63) for part of Central Mexico



Source: Estudio Climatico de la Cuenca Lerma - Santiago S.A.R.H.

FIGURE 3.7

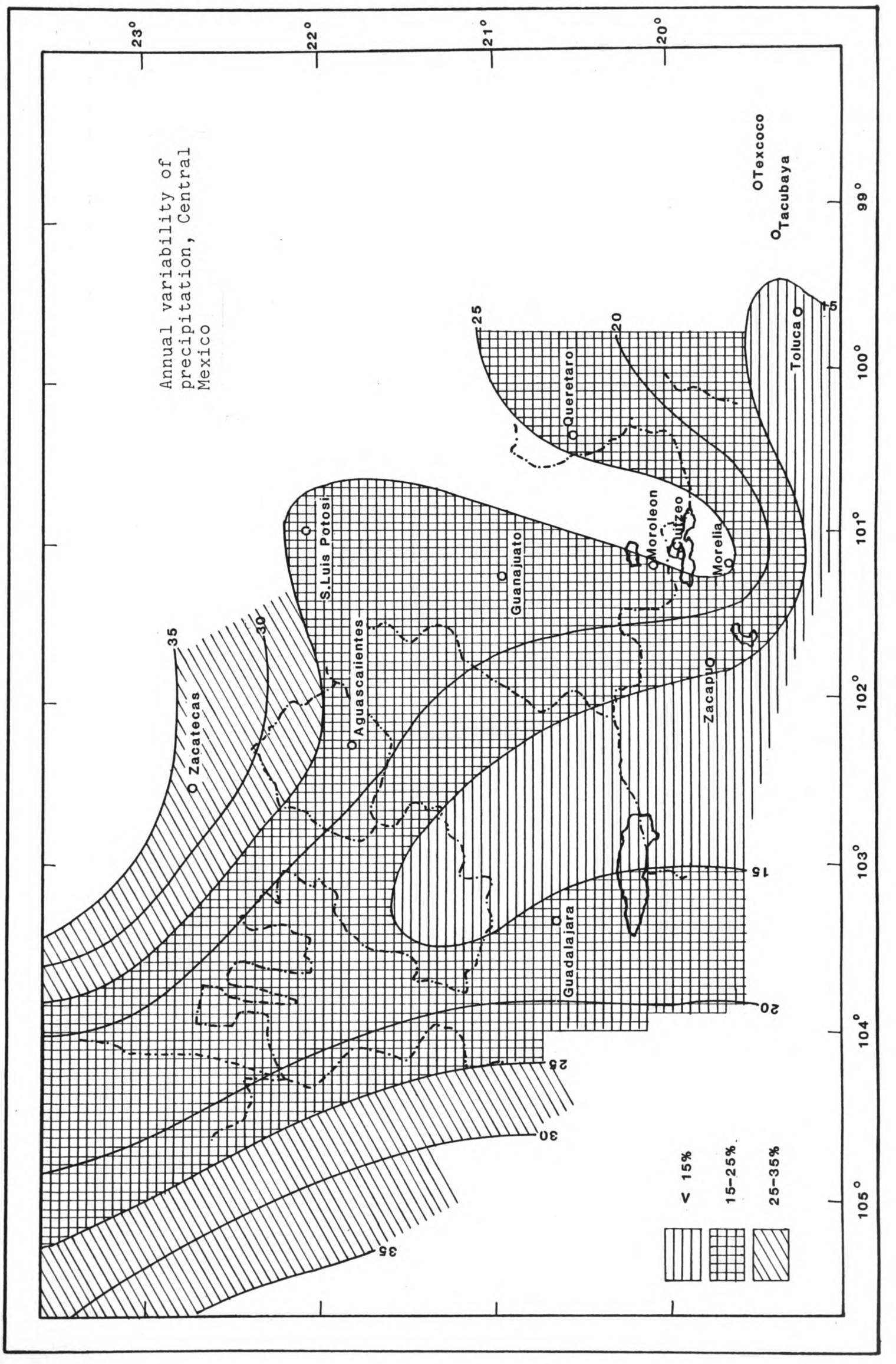

Annual variability of precipitation, Central Mexico
23°
22°
21°
20°
99°
100°
101°
102°
103°
104°
105°
Texcoco
Tacubaya
Toluca
Queretaro
Moroleon
Quiroeo
Morelia
Guanajuato
S.Luis Potosi
Aguascalientes
Zacatecas
Guadalajara
Zacapu
5
15
20
25
30
35
< 15%
15-25%
25-35%

FIGURE 3.8

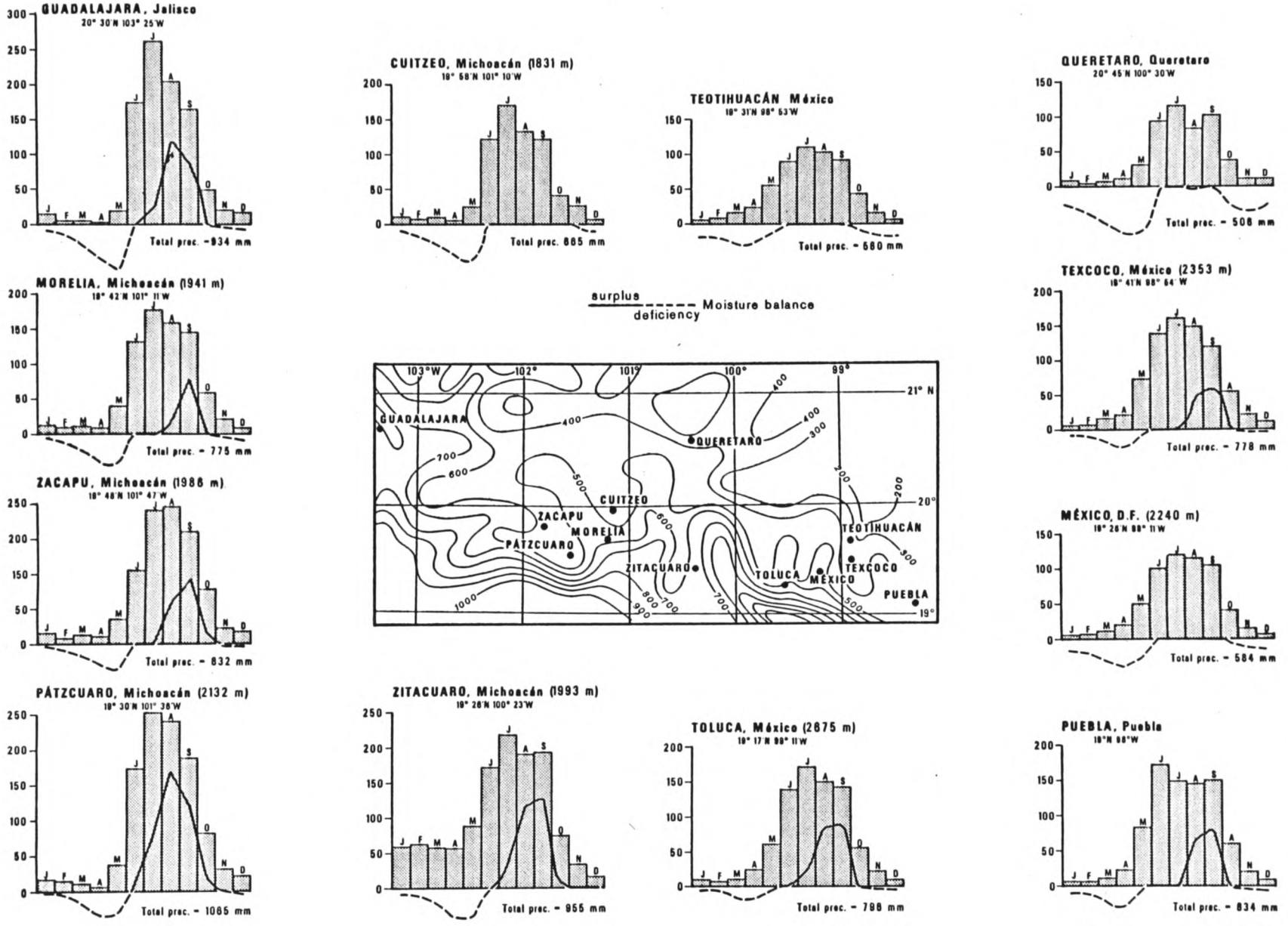
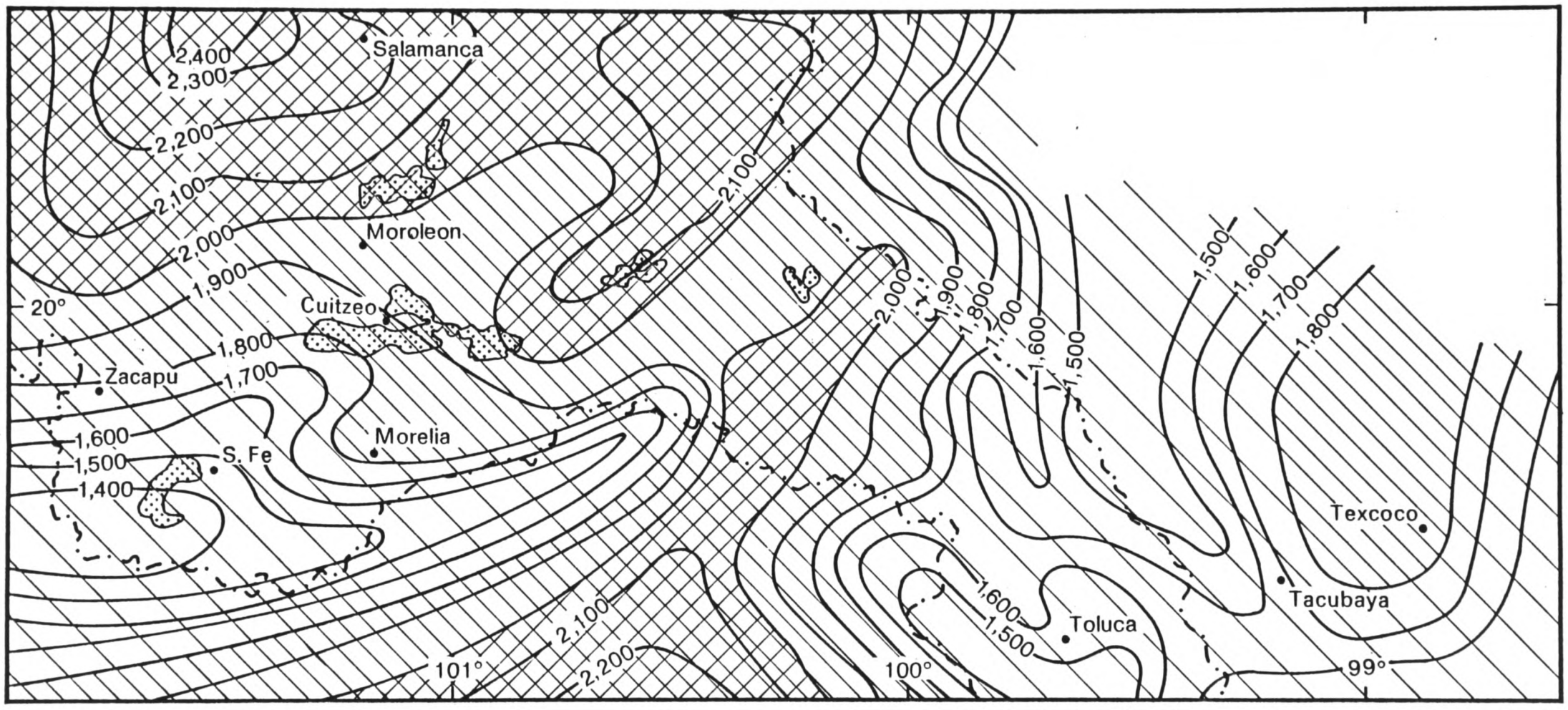


FIGURE 3.9

Graphs of annual precipitation and water balance for selected meteorological stations in Central Mexico

The distribution of average annual evaporation in mm, (1941 - '63) for part of Central Mexico



Source: Estudio Climatico de la Cuenca Lerma - Santiago S.A.R.H.

FIGURE 3.10

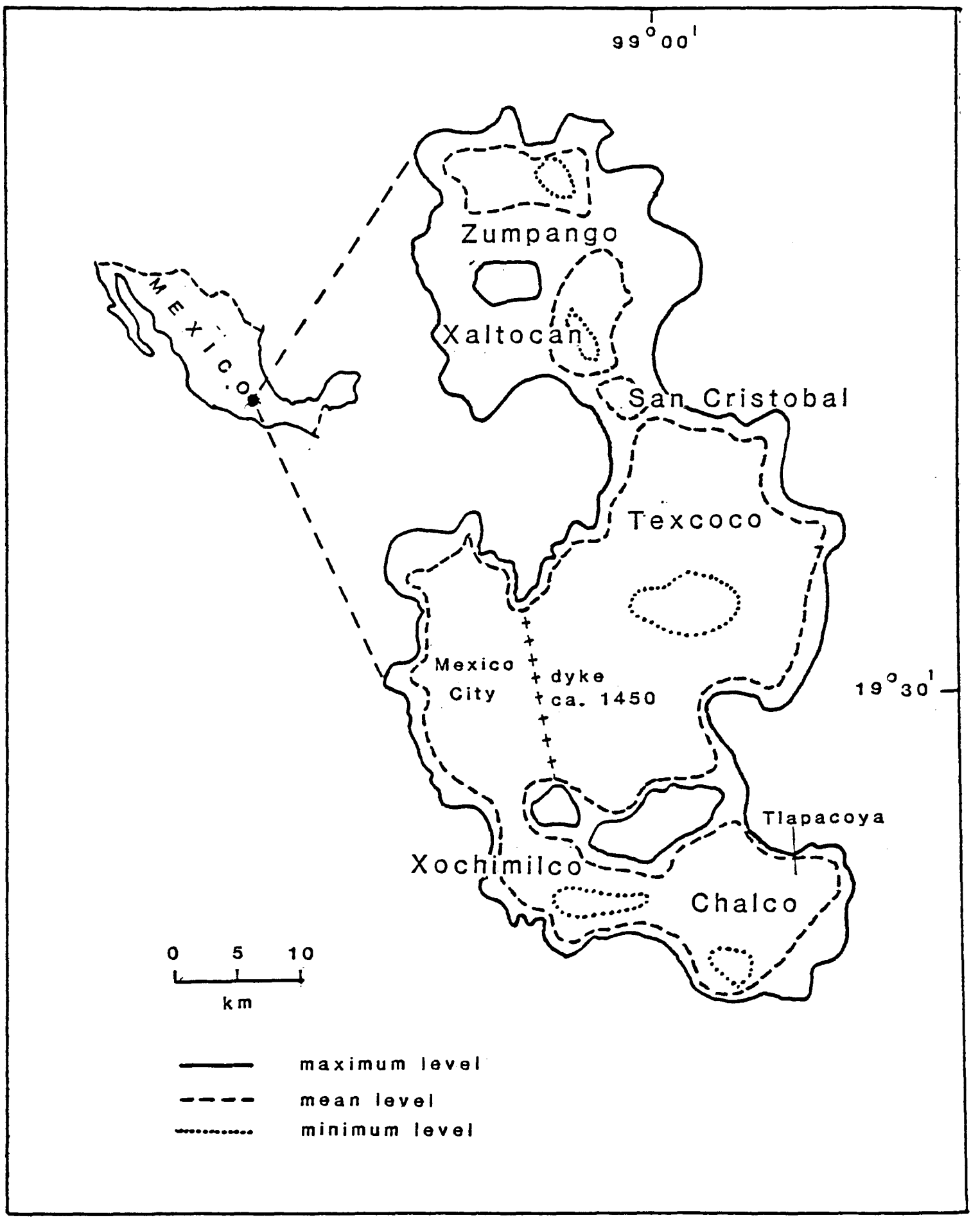


FIGURE 3.11

Sub-basins of the Basin
of Mexico

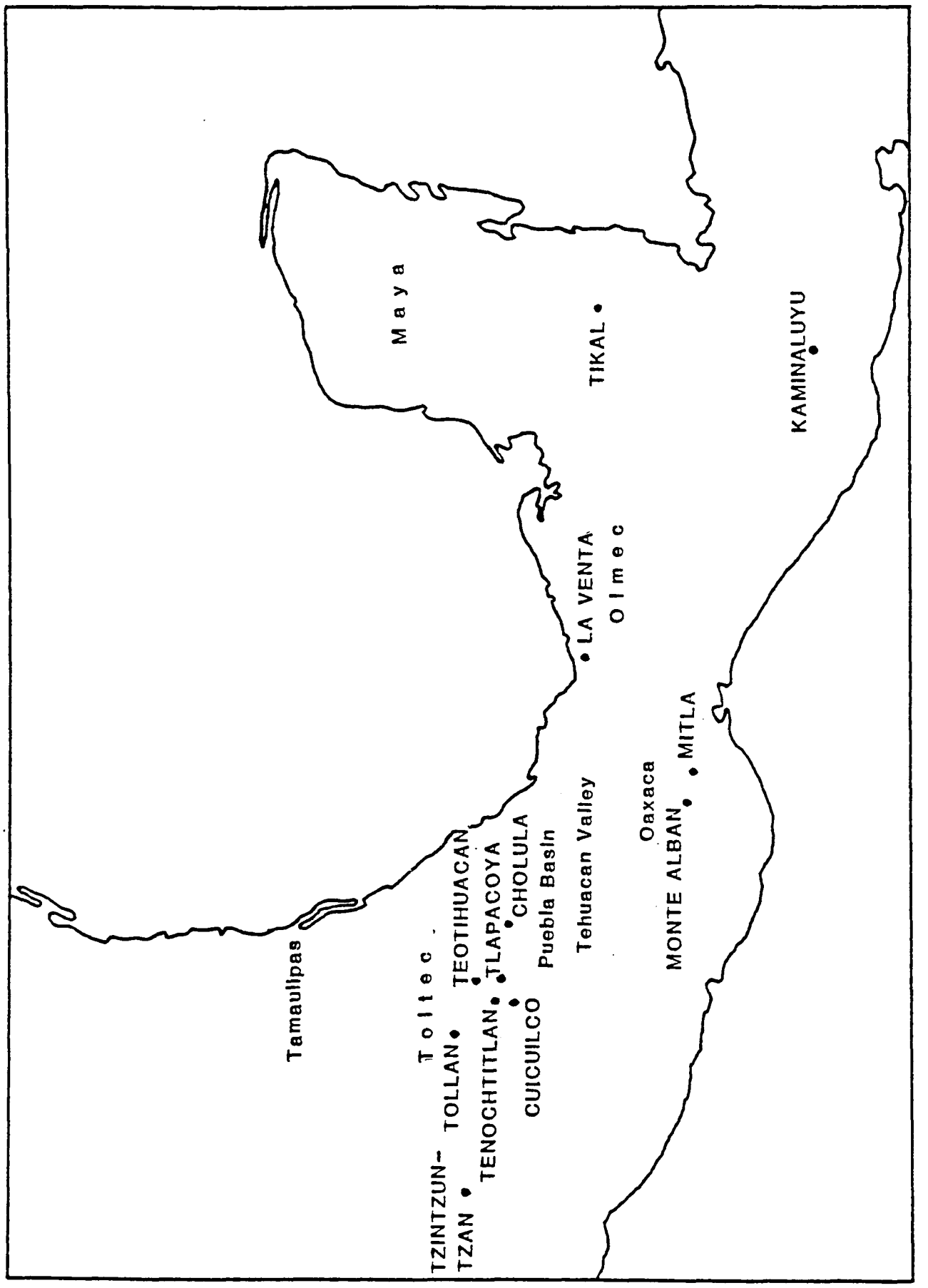


FIGURE 3.12

Major archaeological sites in Mexico

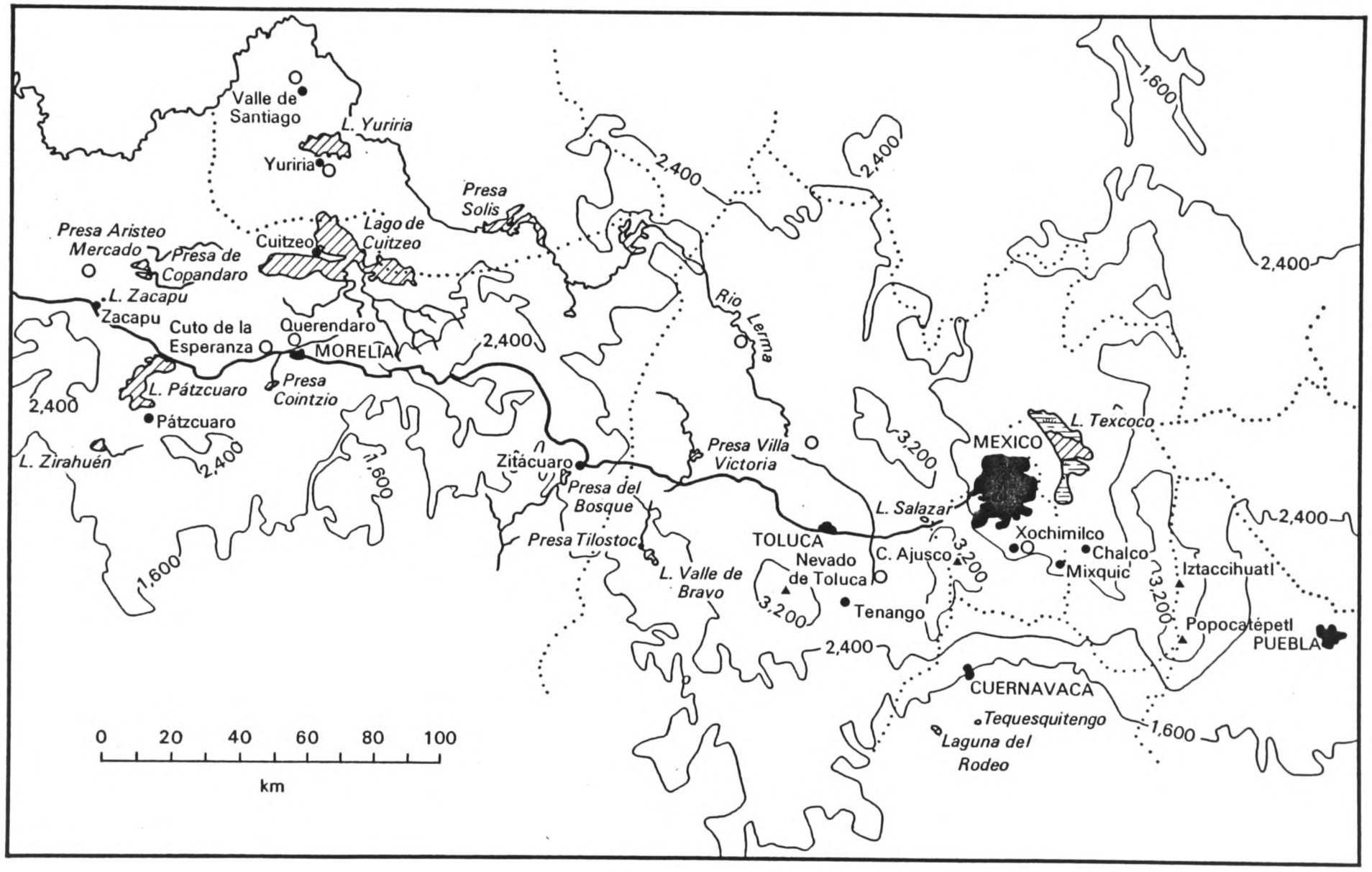


FIGURE 5.1

Sampling sites in Central Mexico

Pathways of evaporative concentration, from Eugster and Hardie (1978).

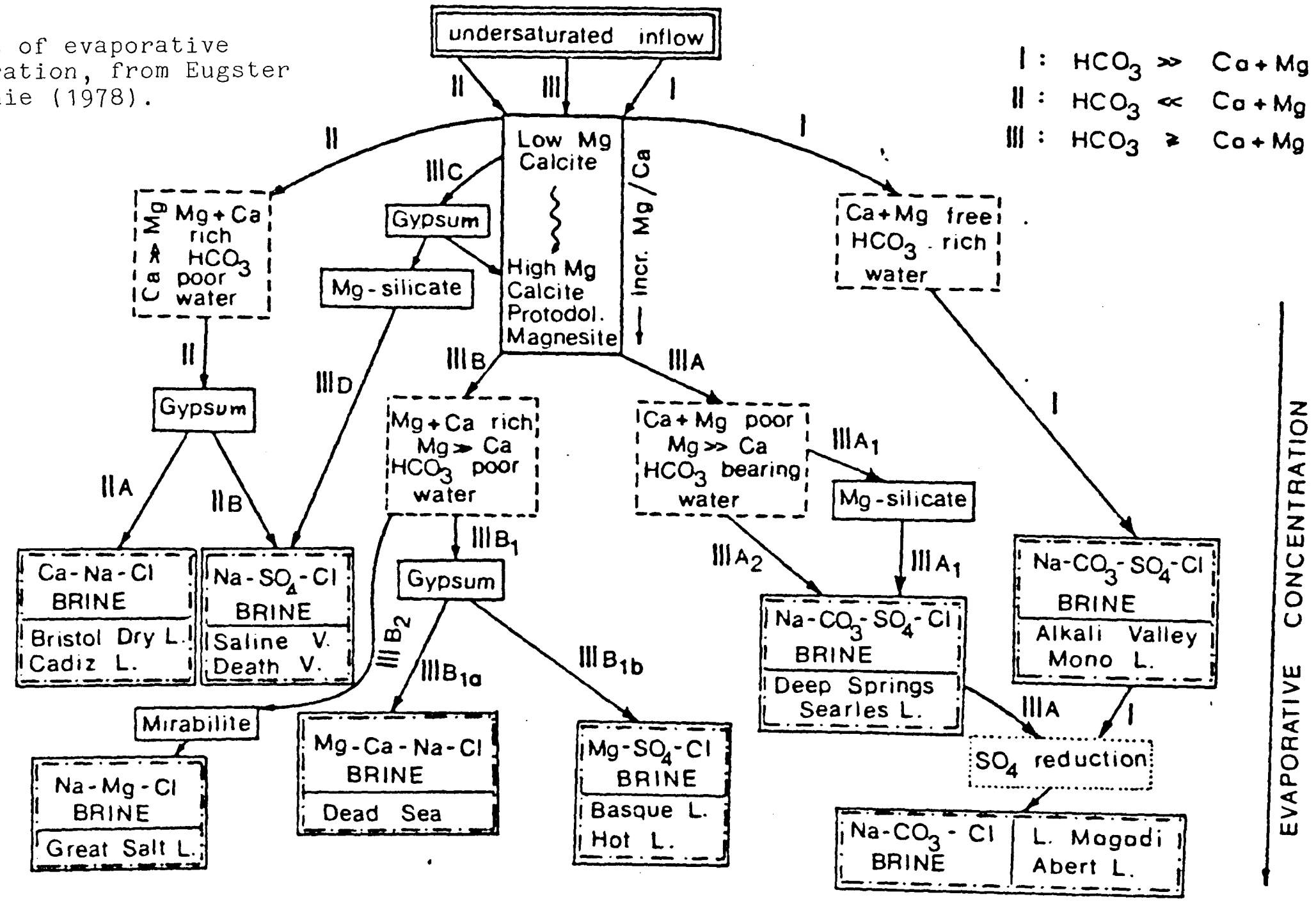
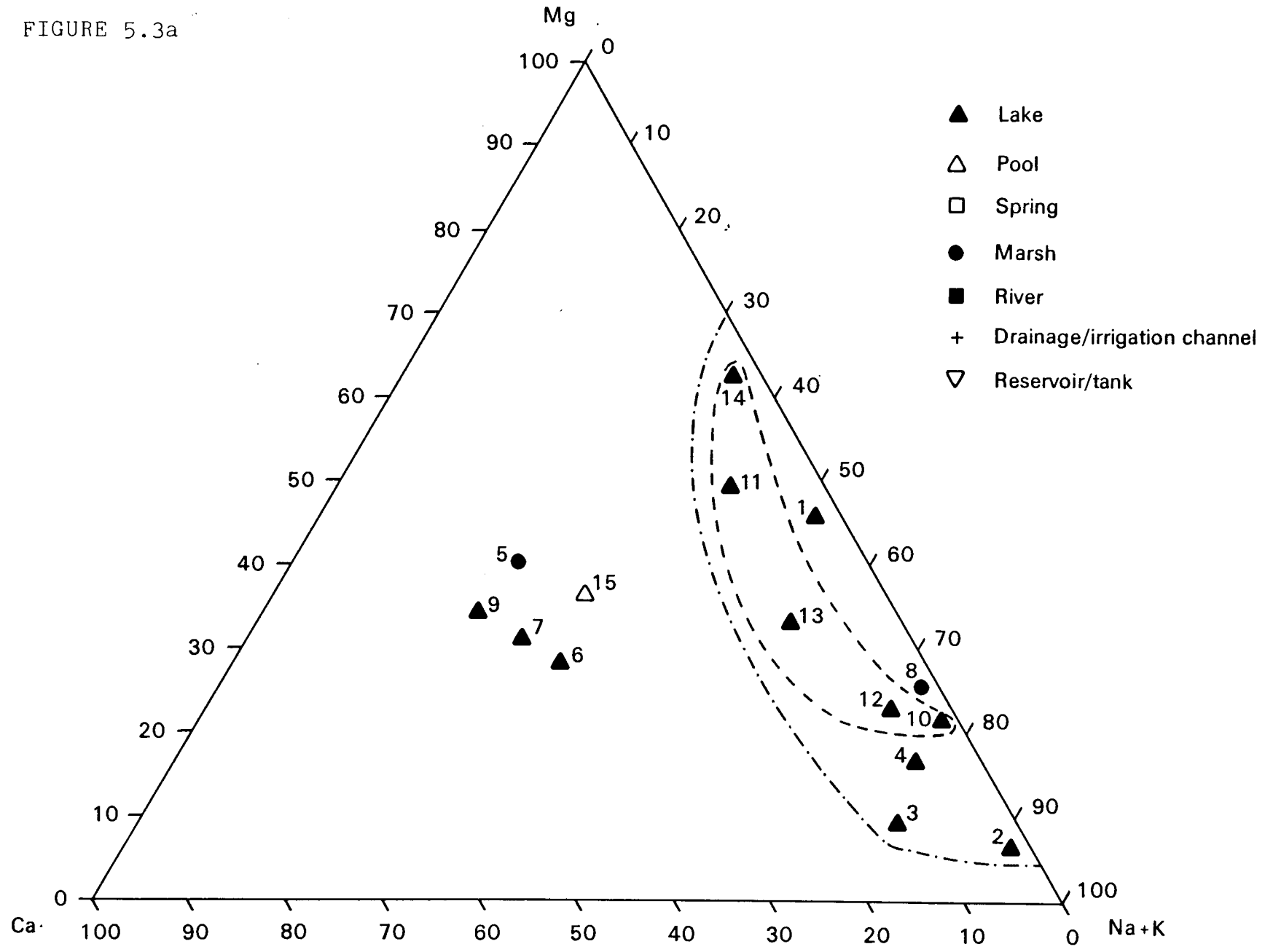


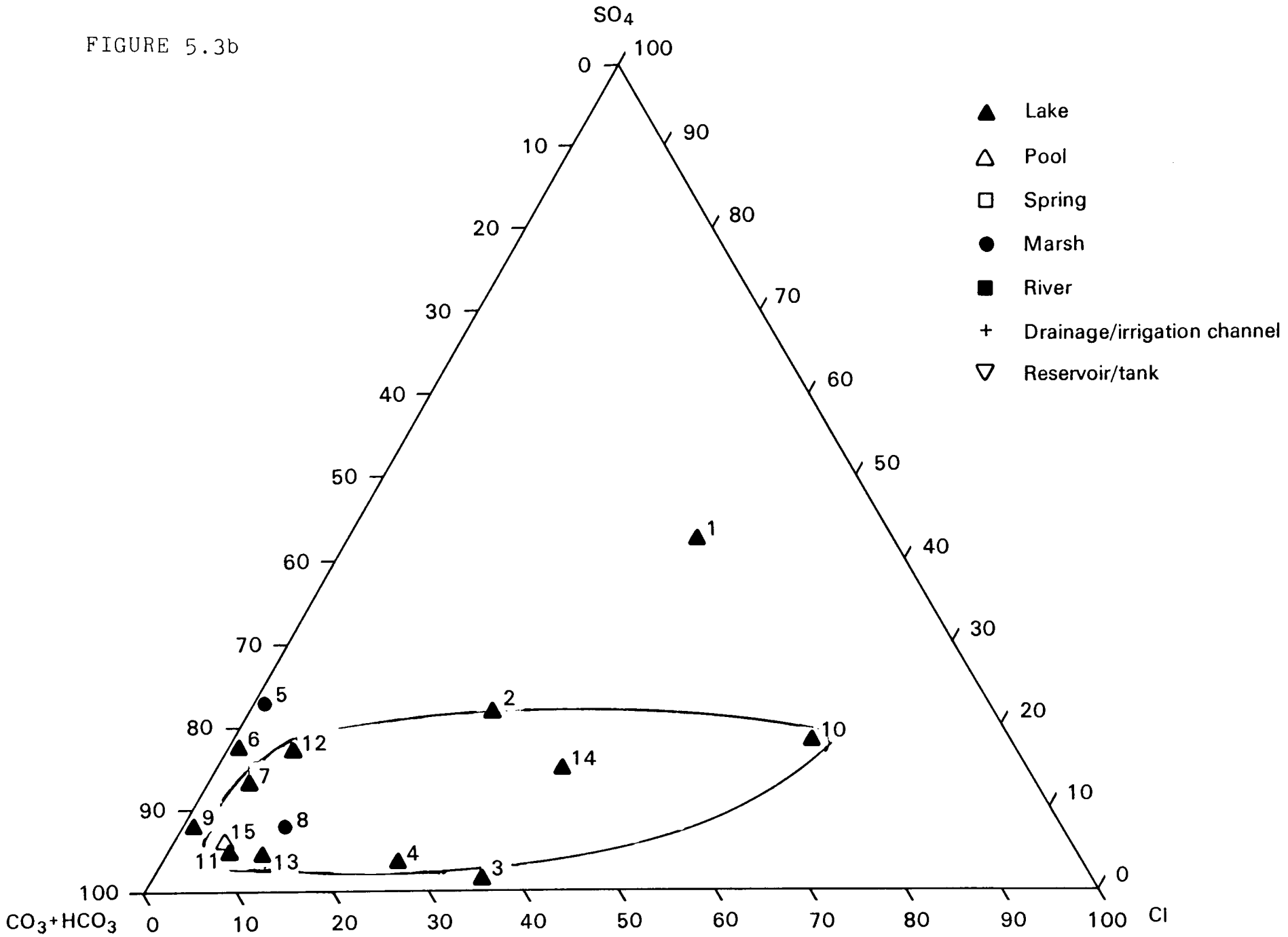
FIGURE 5.2

FIGURE 5.3a



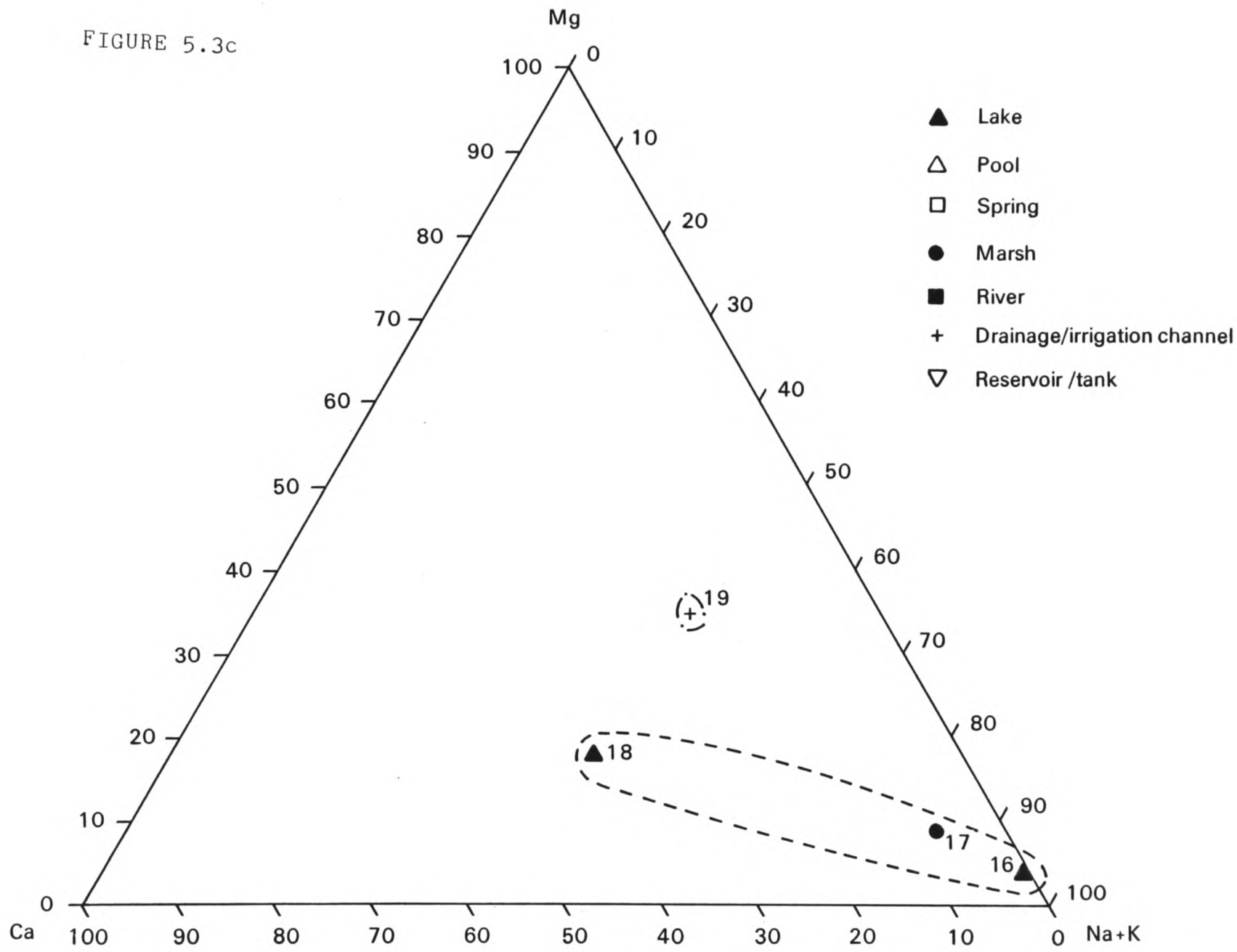
East of the Basin of Mexico, cations

FIGURE 5.3b



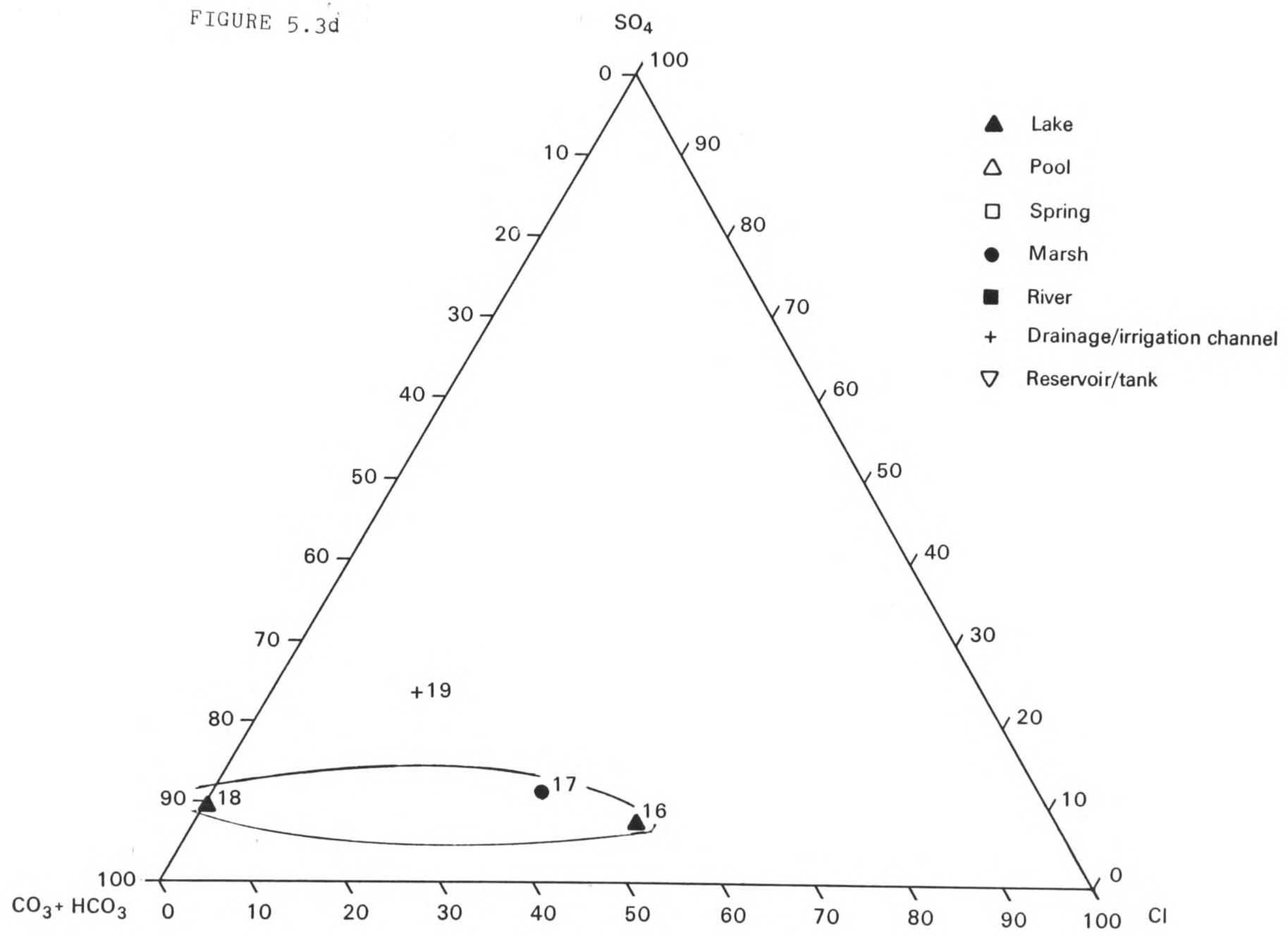
East of the Basin of Mexico, anions

FIGURE 5.3c



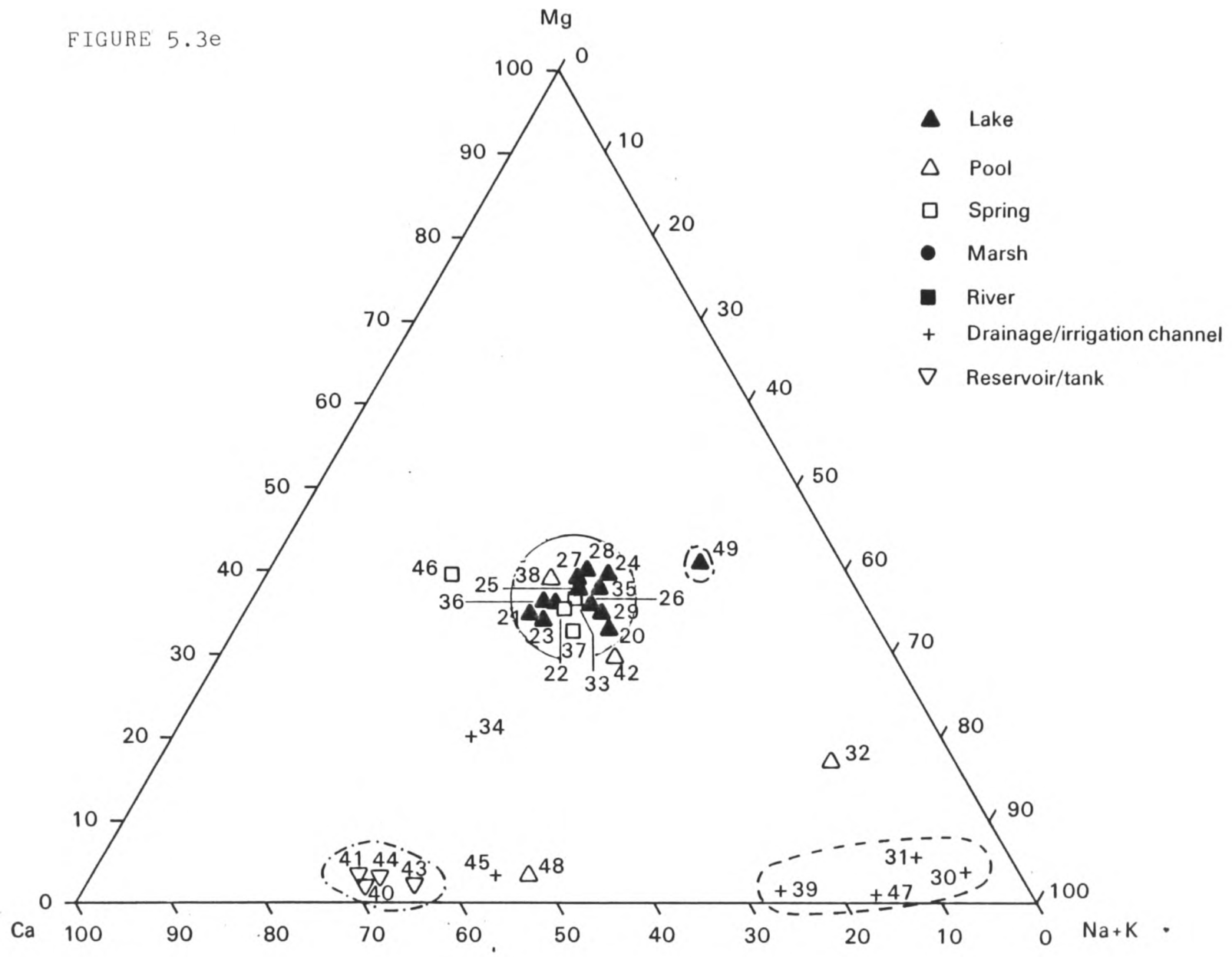
Basin of Mexico, cations

FIGURE 5.3d



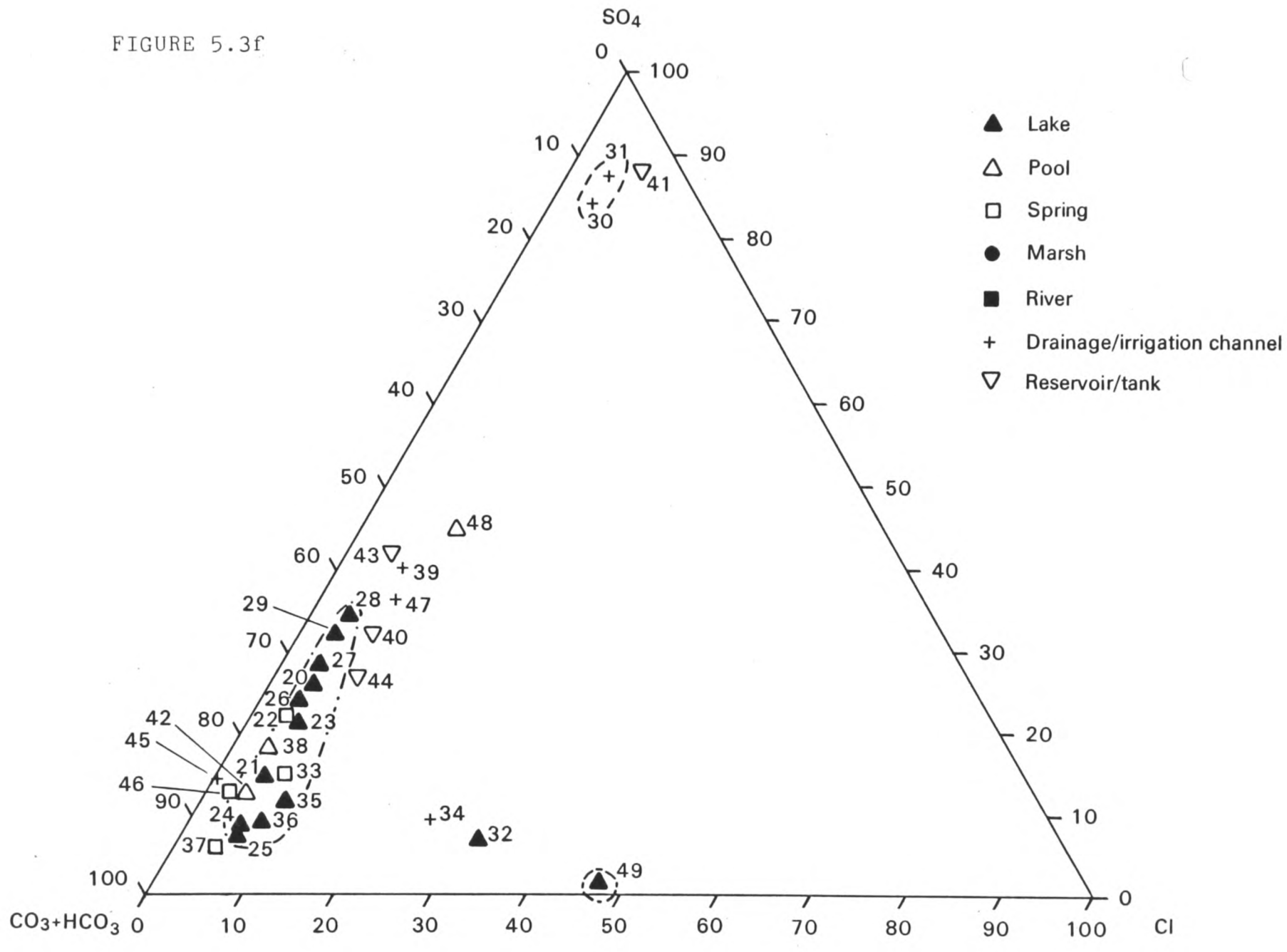
Basin of Mexico, anions

FIGURE 5.3e



Zacapu Basin, cations

FIGURE 5.3f



Zacapu Basin, anions

FIGURE 5.3g

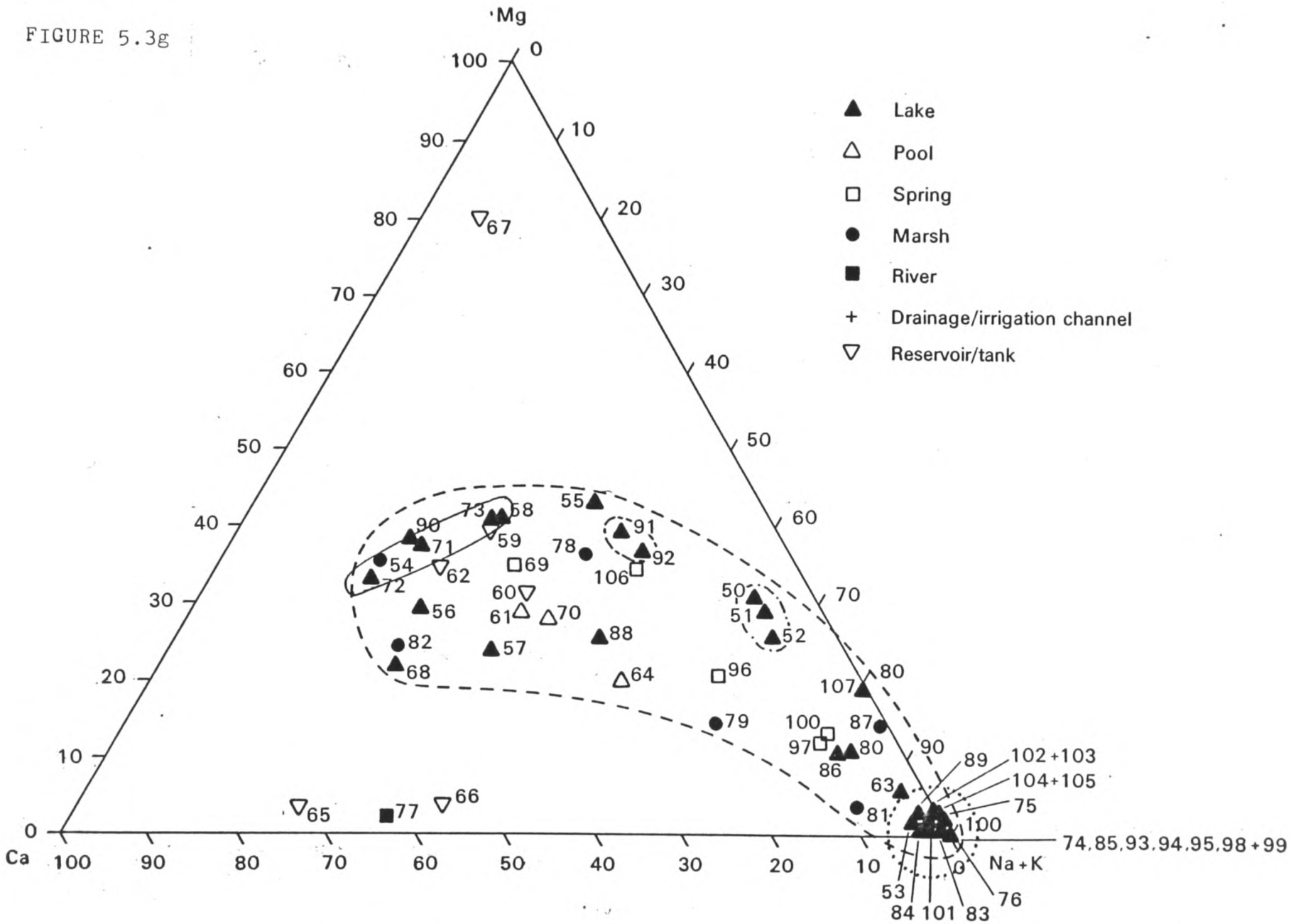
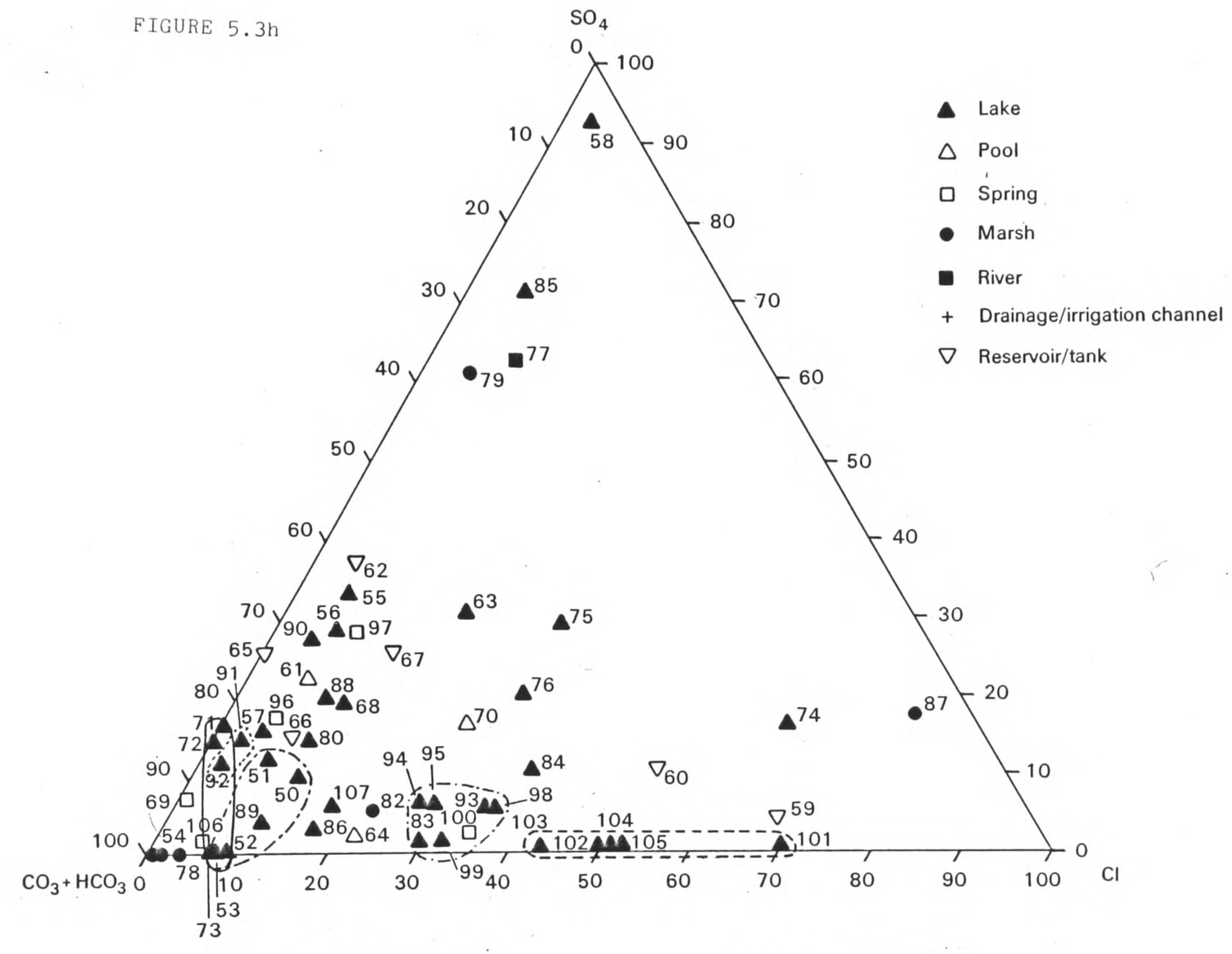

Mg
Ca
Na+K
Lake
Pool
Spring
Marsh
River
Drainage/irrigation channel
Reservoir/tank
74,85,93,94,95,98+99
102+103
104+105
La Alberca
L. Pátzcuaro
Zirahuén
Closed lakes
West-central Mexico, cations

FIGURE 5.3h



West-central Mexico, anions

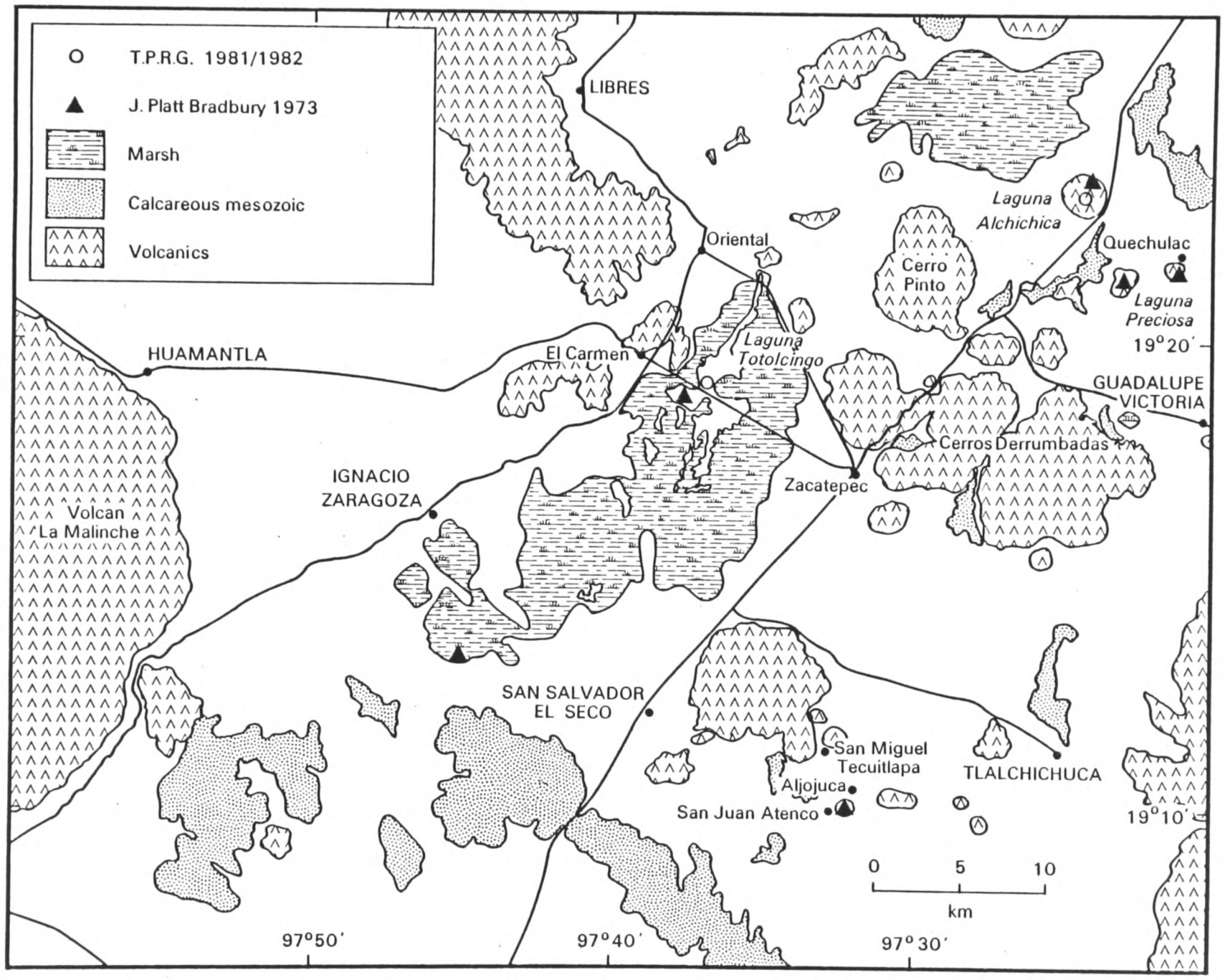
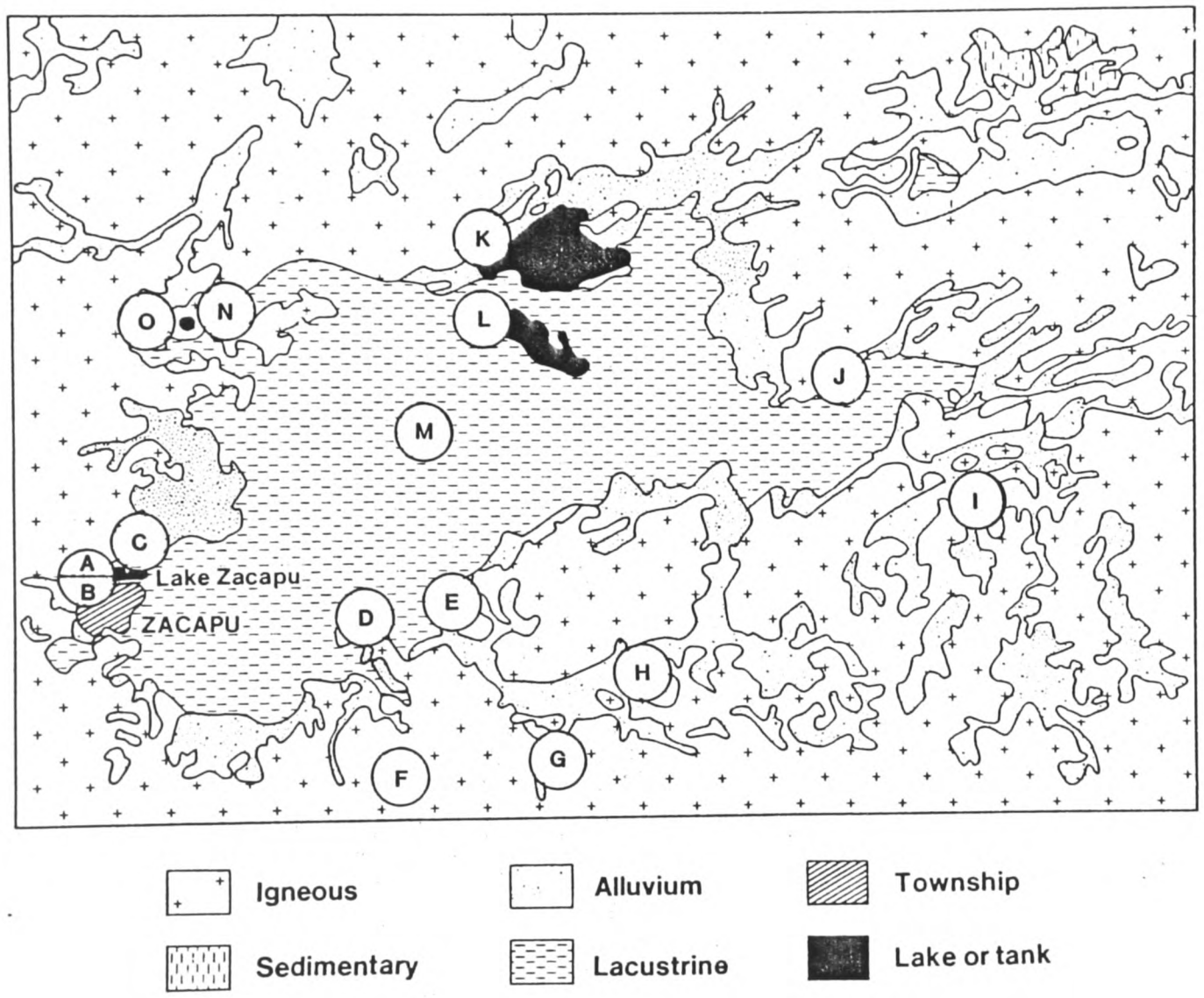


FIGURE 5.4 Sampling sites, Oriental Basin

Water and algal sampling
sites in the Zacapu Basin



A Laguna Zacapu
B La Zarcita
C Zacapu Celanese
D Tarejero
E Bellas Fuentes
F Comanja
G B. la Laguna
H Tunguitiro
I Loma el Cementerio
J Santa Fe de la Labor
K Presa Aristeo Mercado
L Copandaro (Tanque Elevado)
M El Angulo
N Villa Jimenez
O Hoya la Alberca (Zipimeo)

FIGURE 5.5

Depth profile, Laguna Zacapu

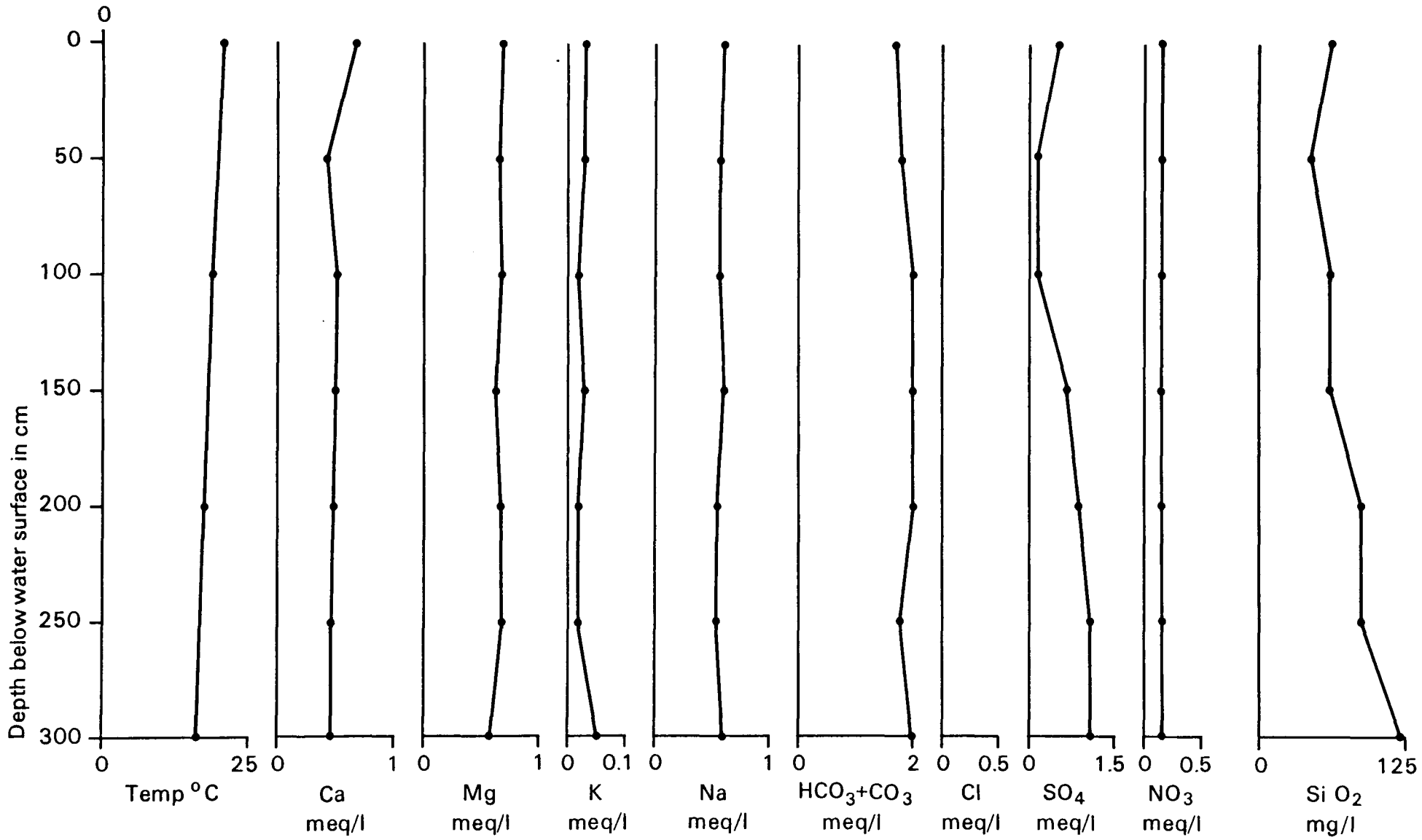


FIGURE 5.6

Depth profile, La Piscina
de Yuriria

La Piscina de Yuriria
8/4/1982

4700

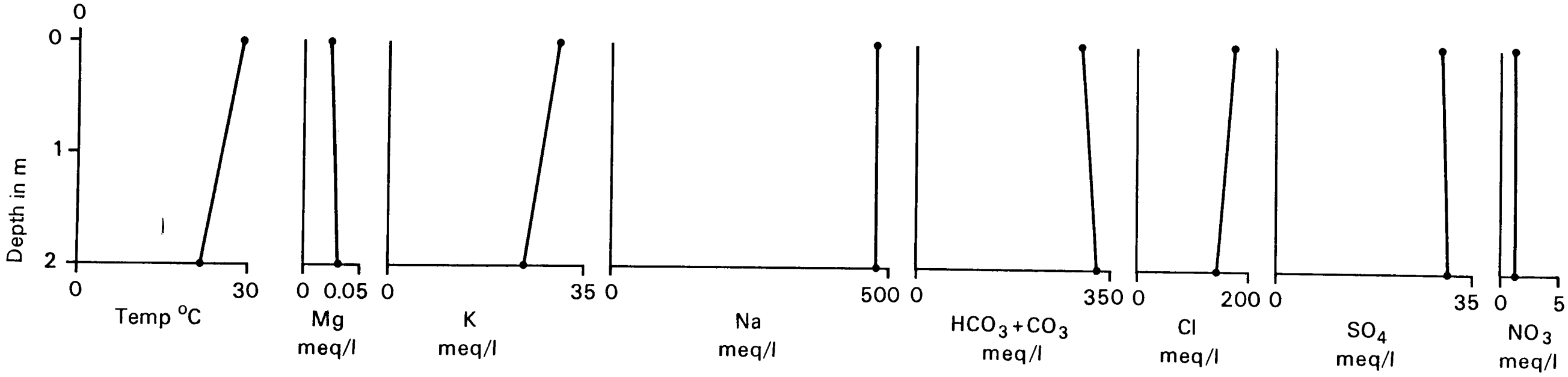


FIGURE 5.7

Depth profile, Hoya Rincón de Parangueo

Hoya Rincón de Parangueo
22/5/1982

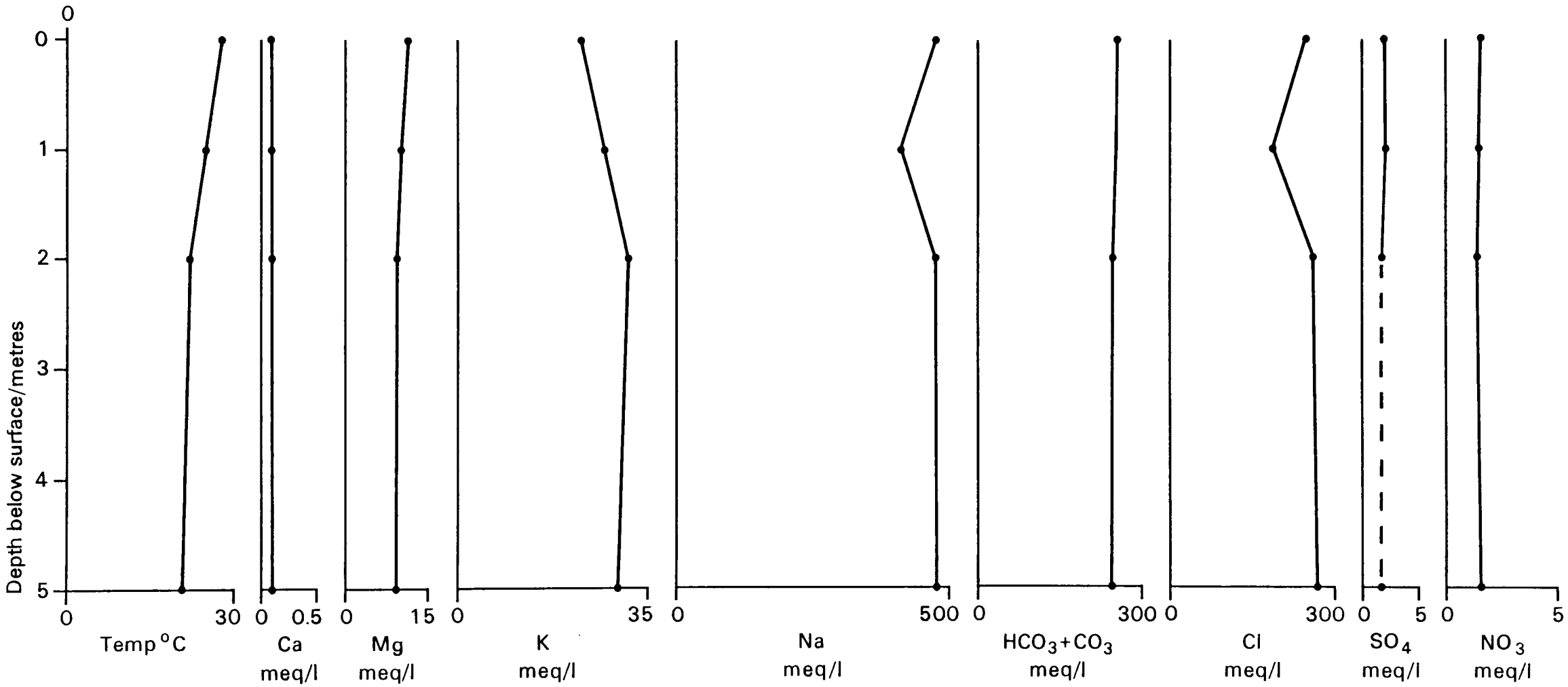
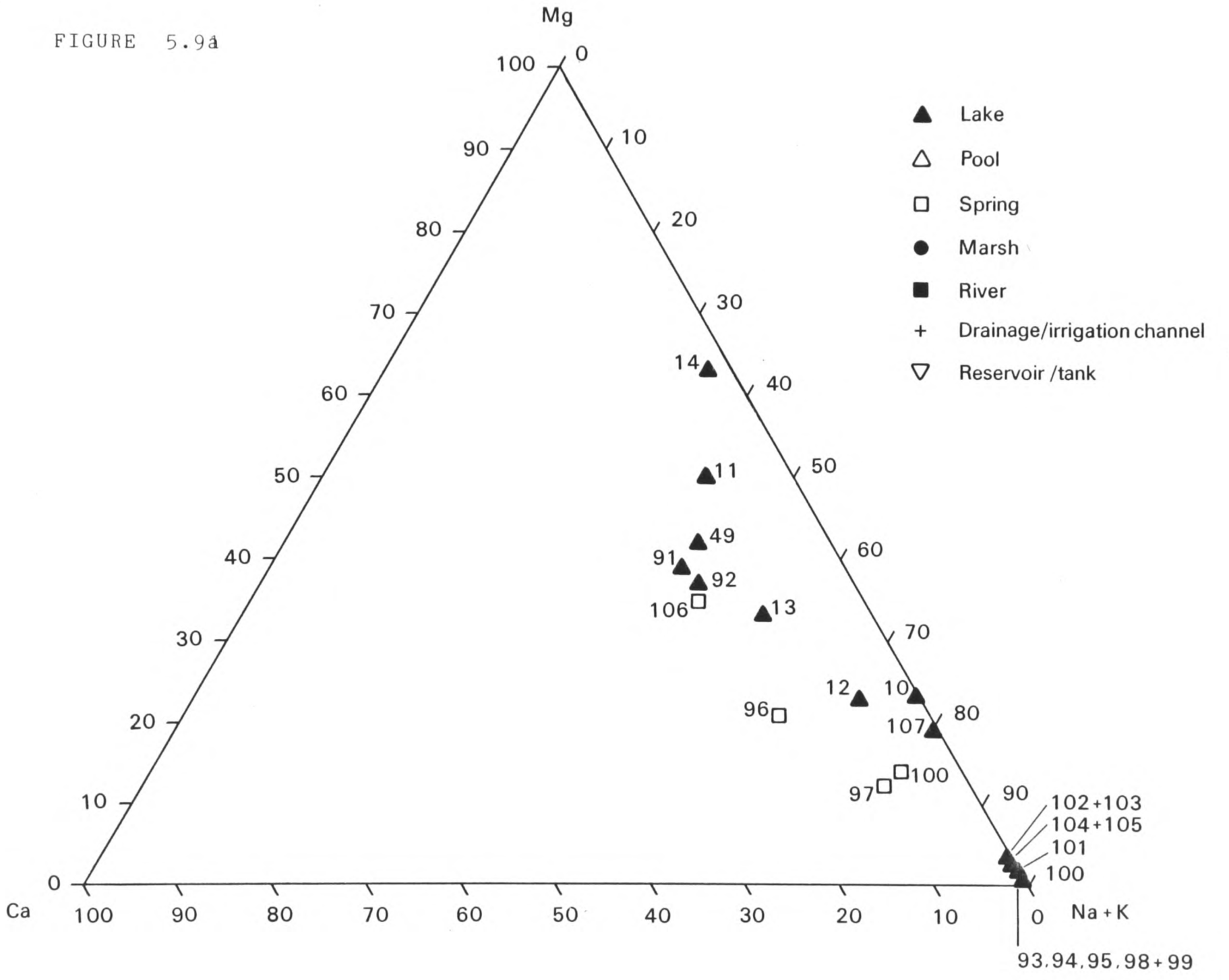


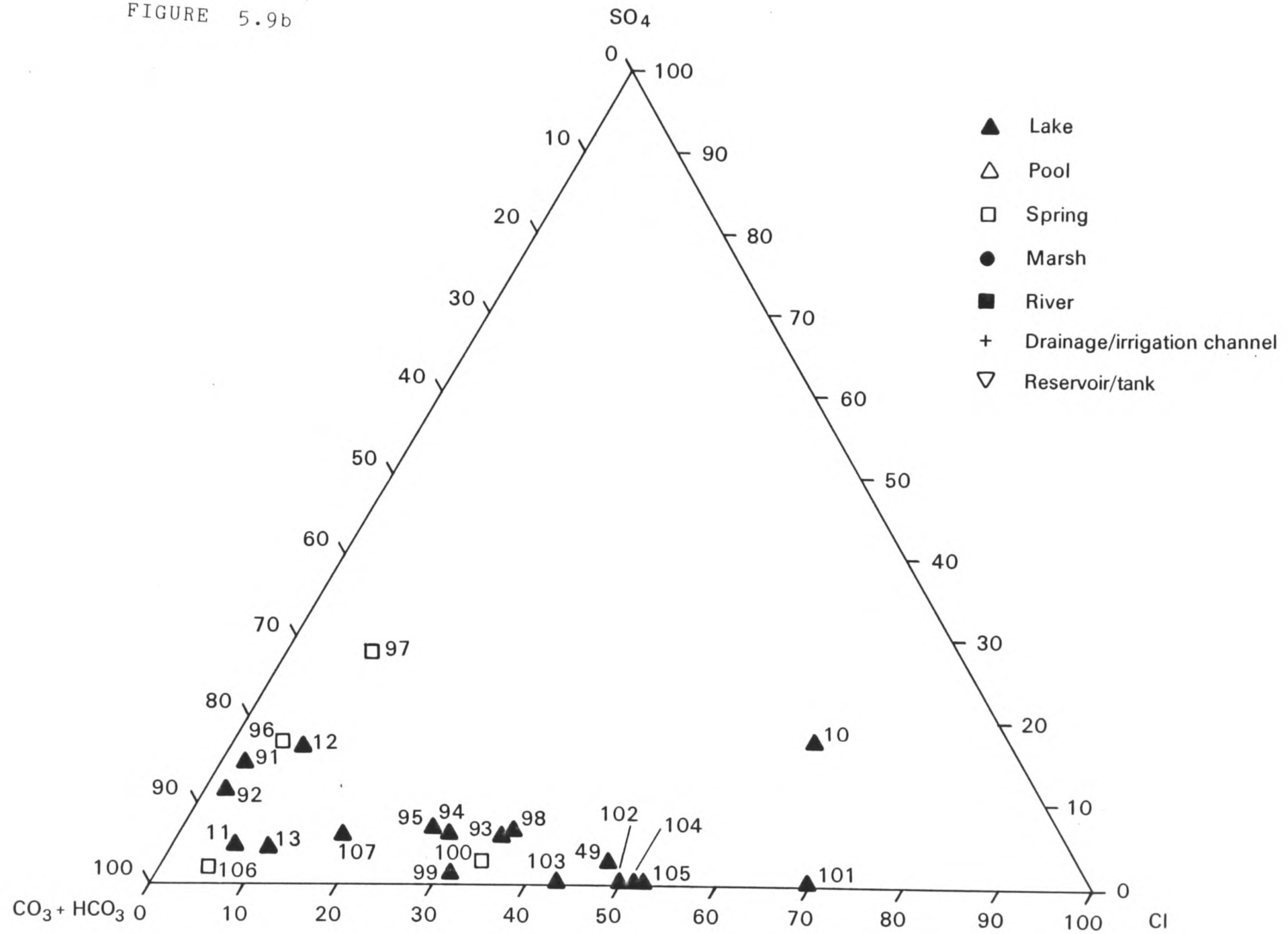
FIGURE 5.8

FIGURE 5.9a



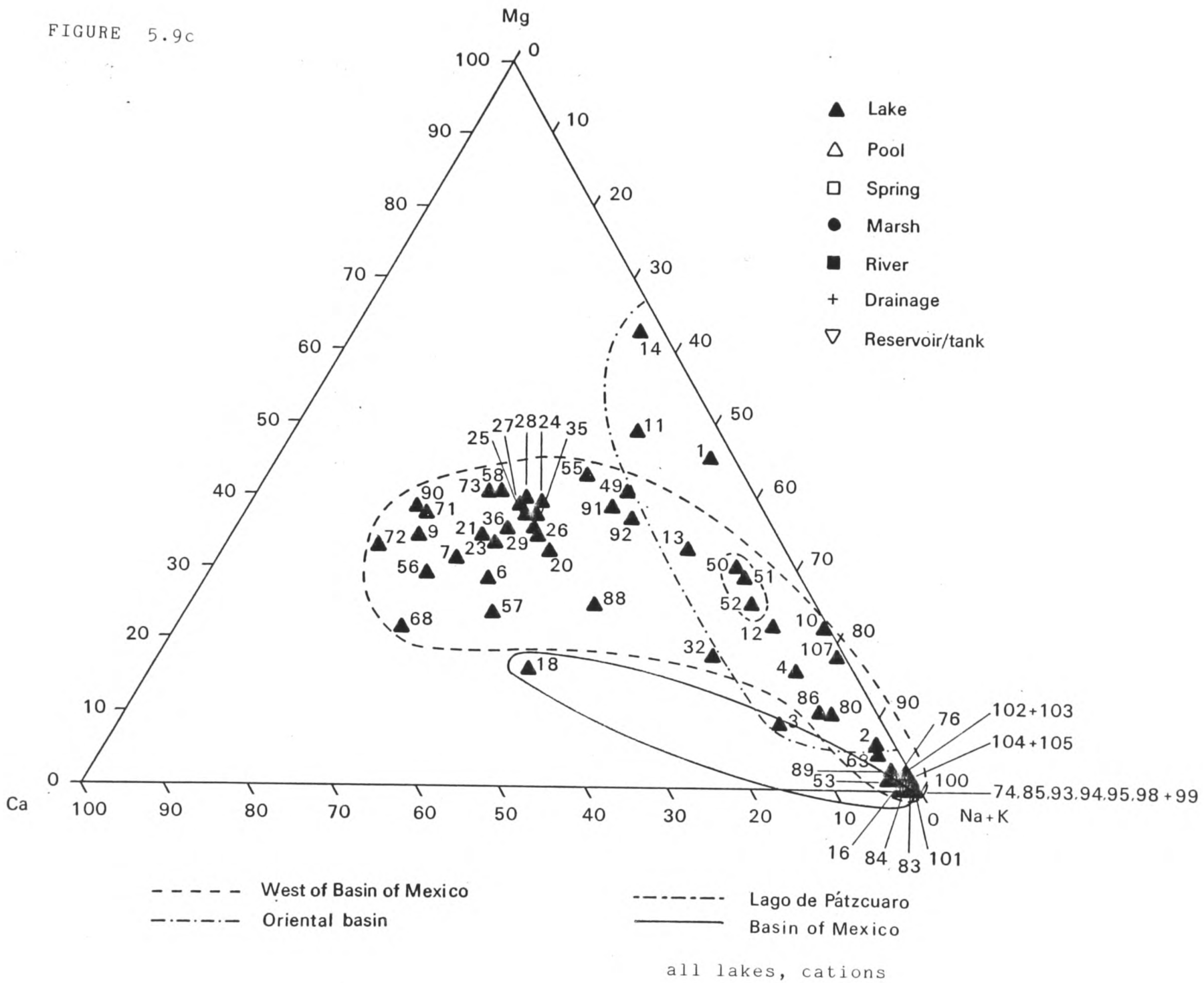
crater lakes, cations

FIGURE 5.9b



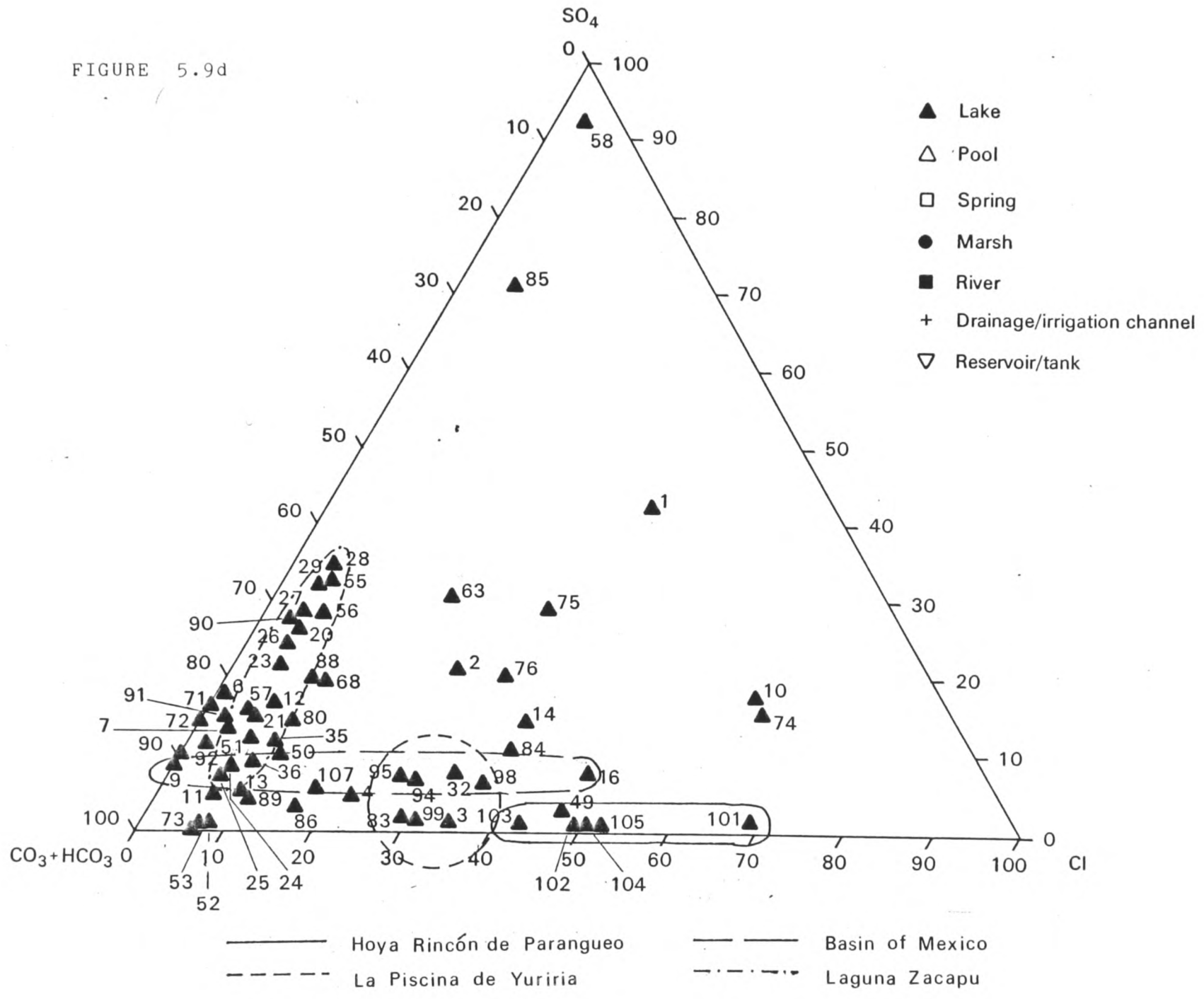
crater lakes , anions

FIGURE 5.9c



all lakes, cations

FIGURE 5.9d



all lakes, anions

FIGURE 5.10

Key

▲ Lake

△ Pool

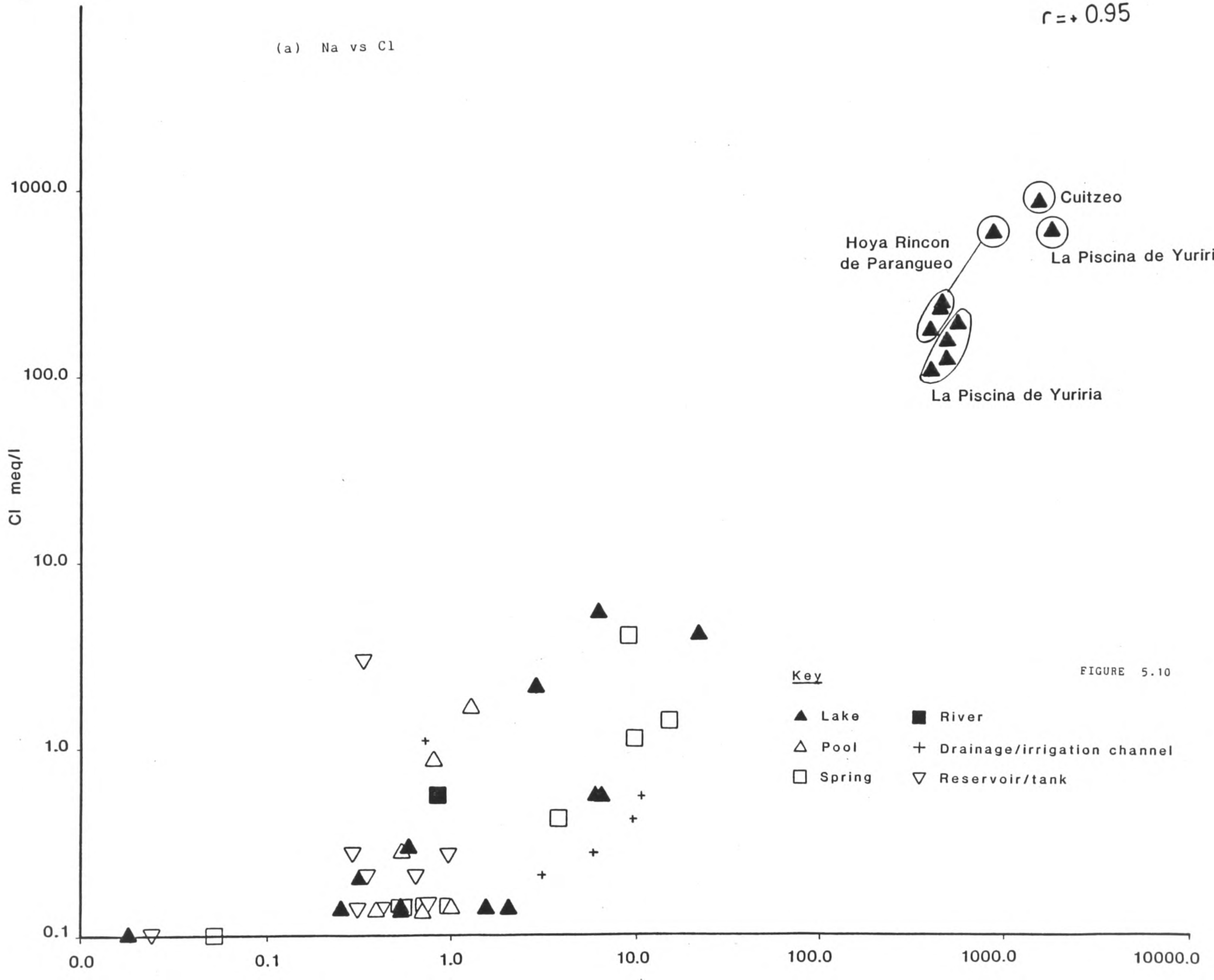
□ Spring

■ River

\+ Drainage/irrigation channel

▽ Reservoir/tank

(a) Na vs Cl

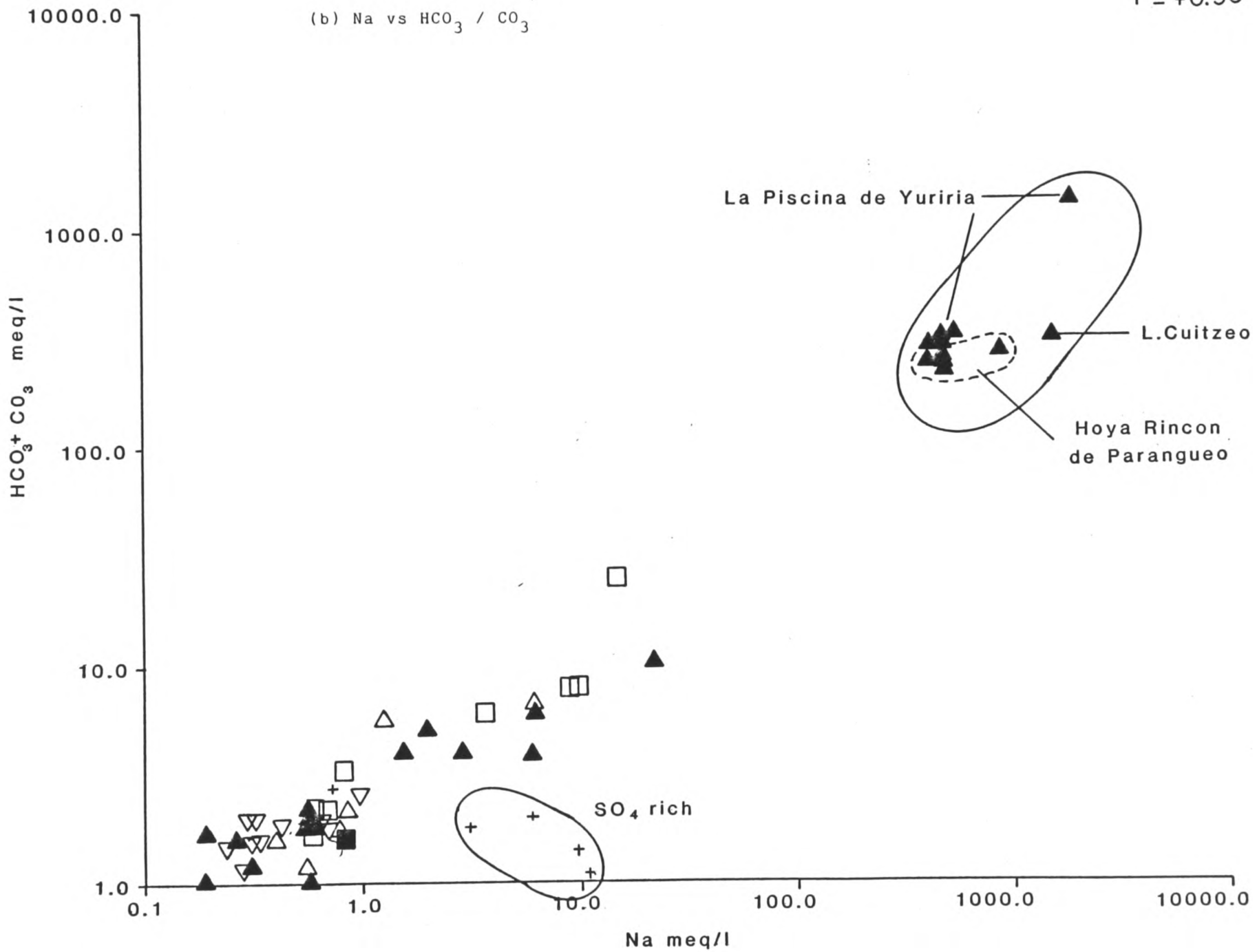


r = + 0.95

FIGURE 5.10

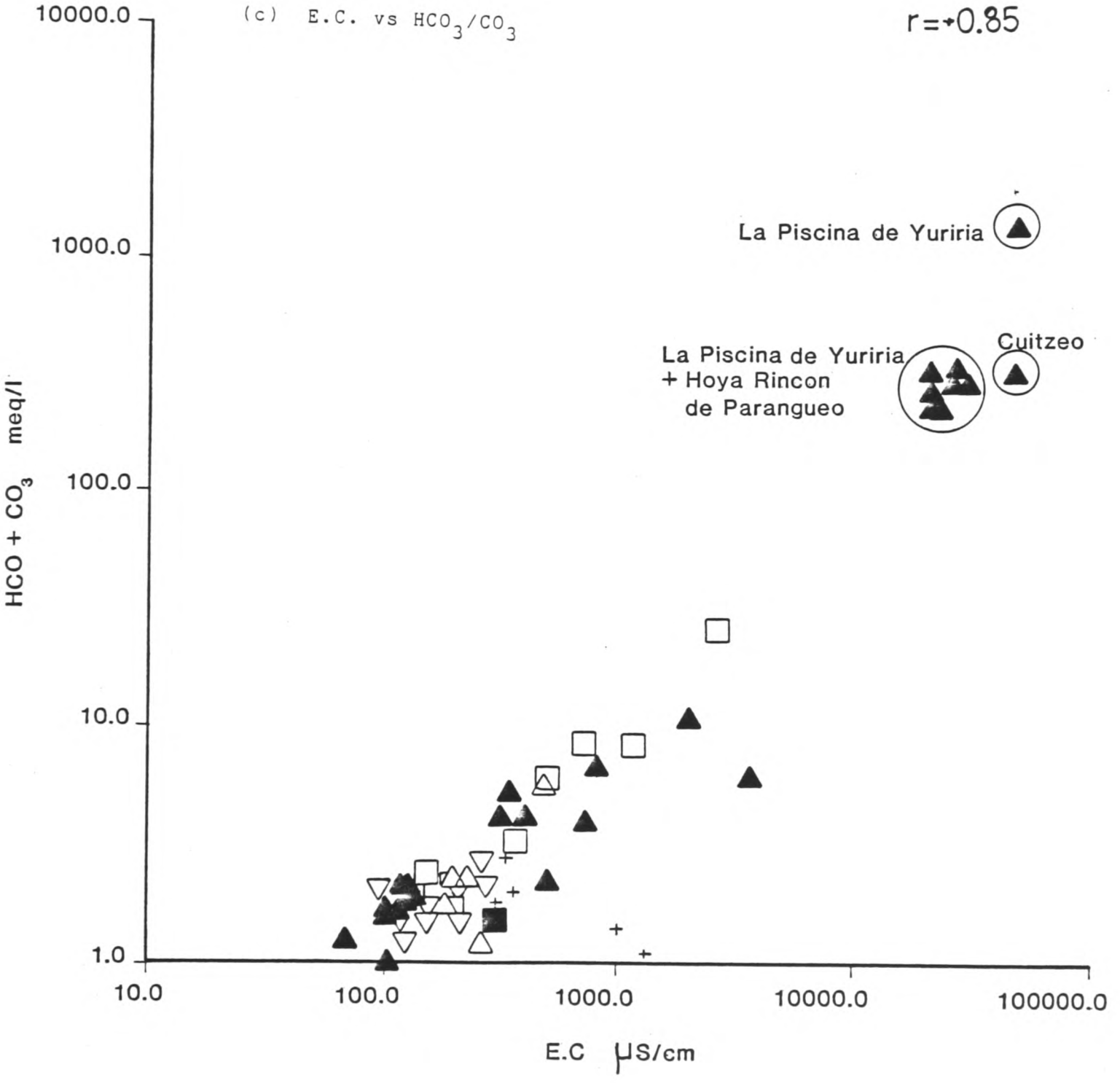
(b) Na vs HCO_3 / CO_3

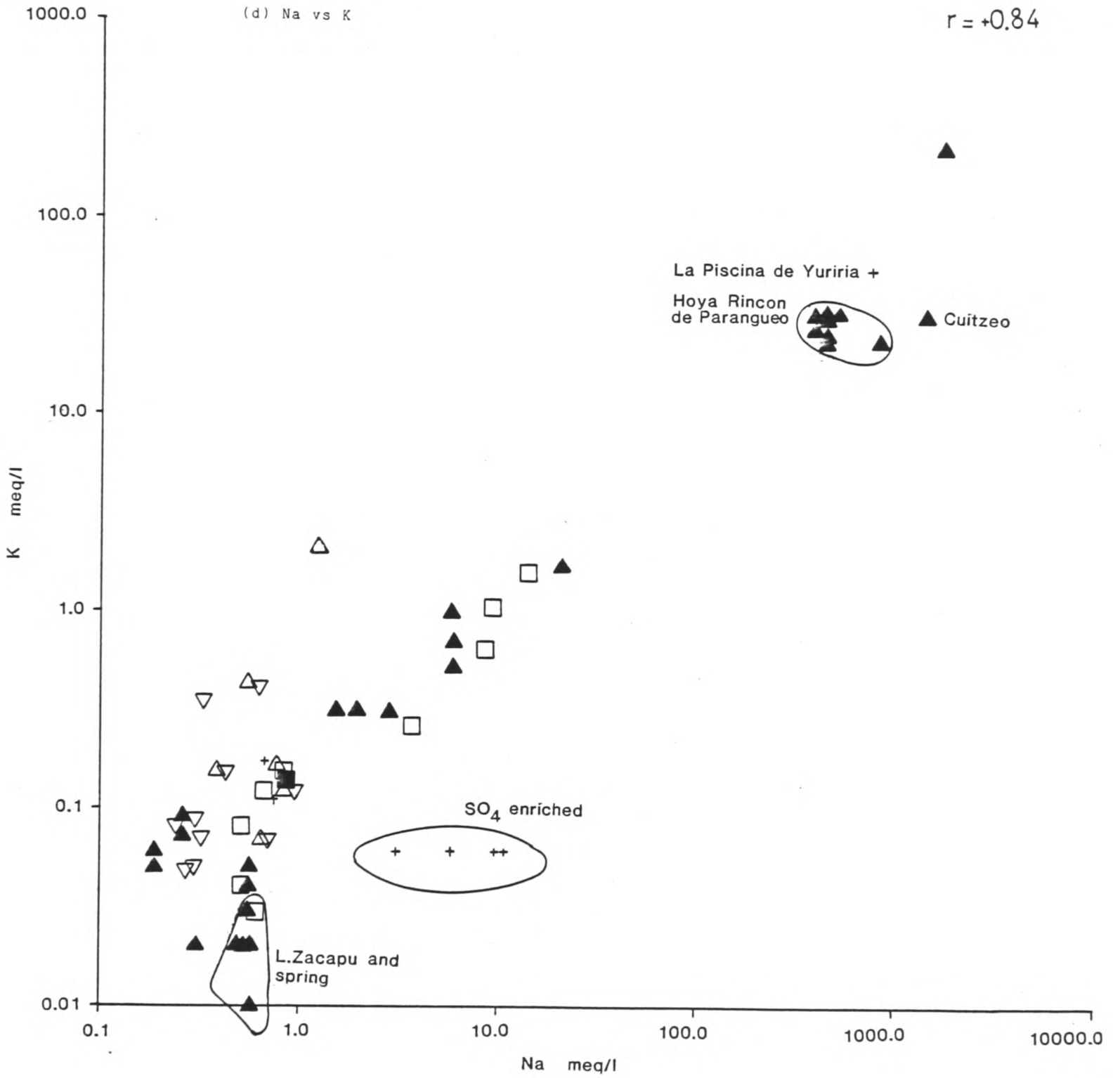
r = +0.90



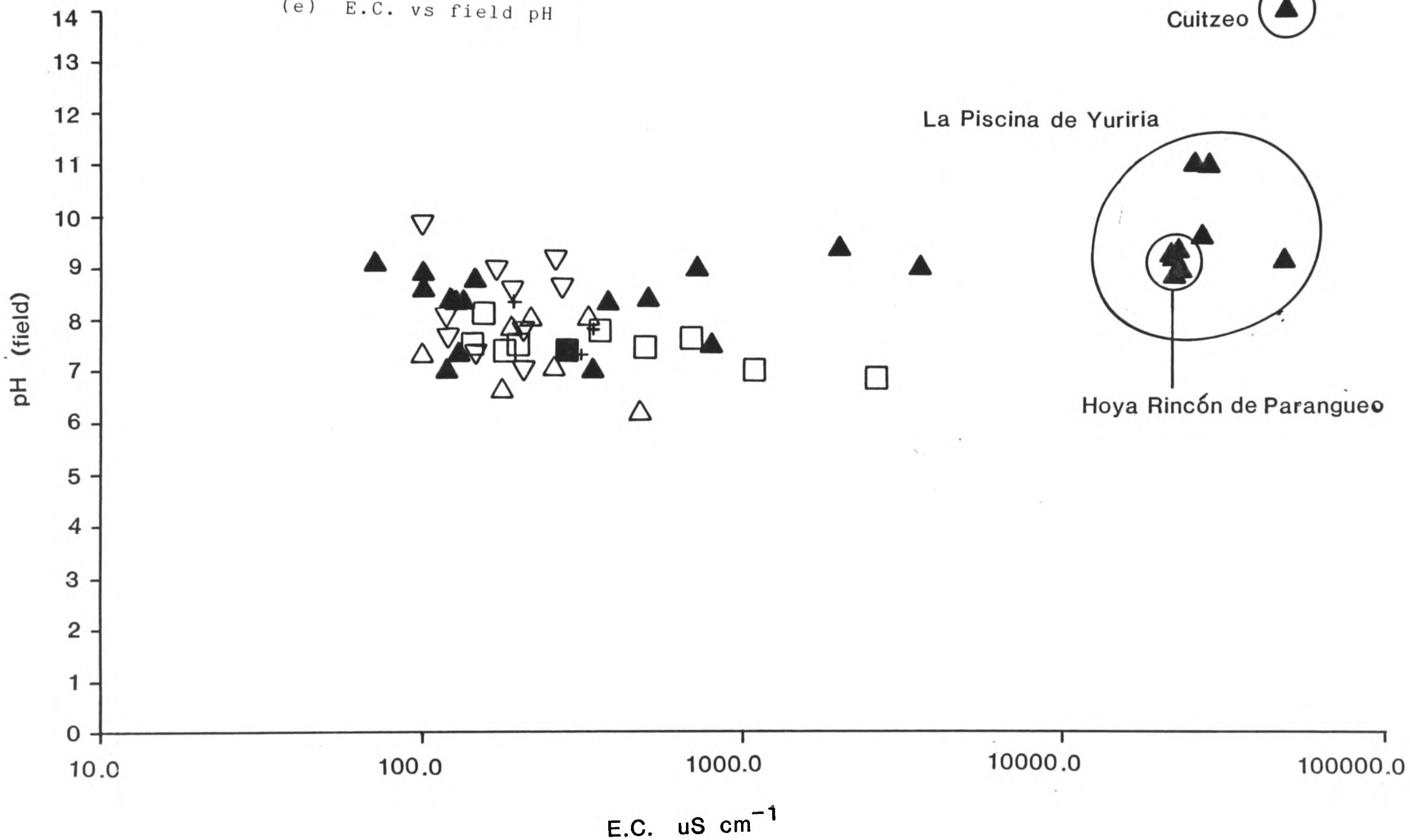
(c) E.C. vs HCO_3/CO_3

r=+0.85



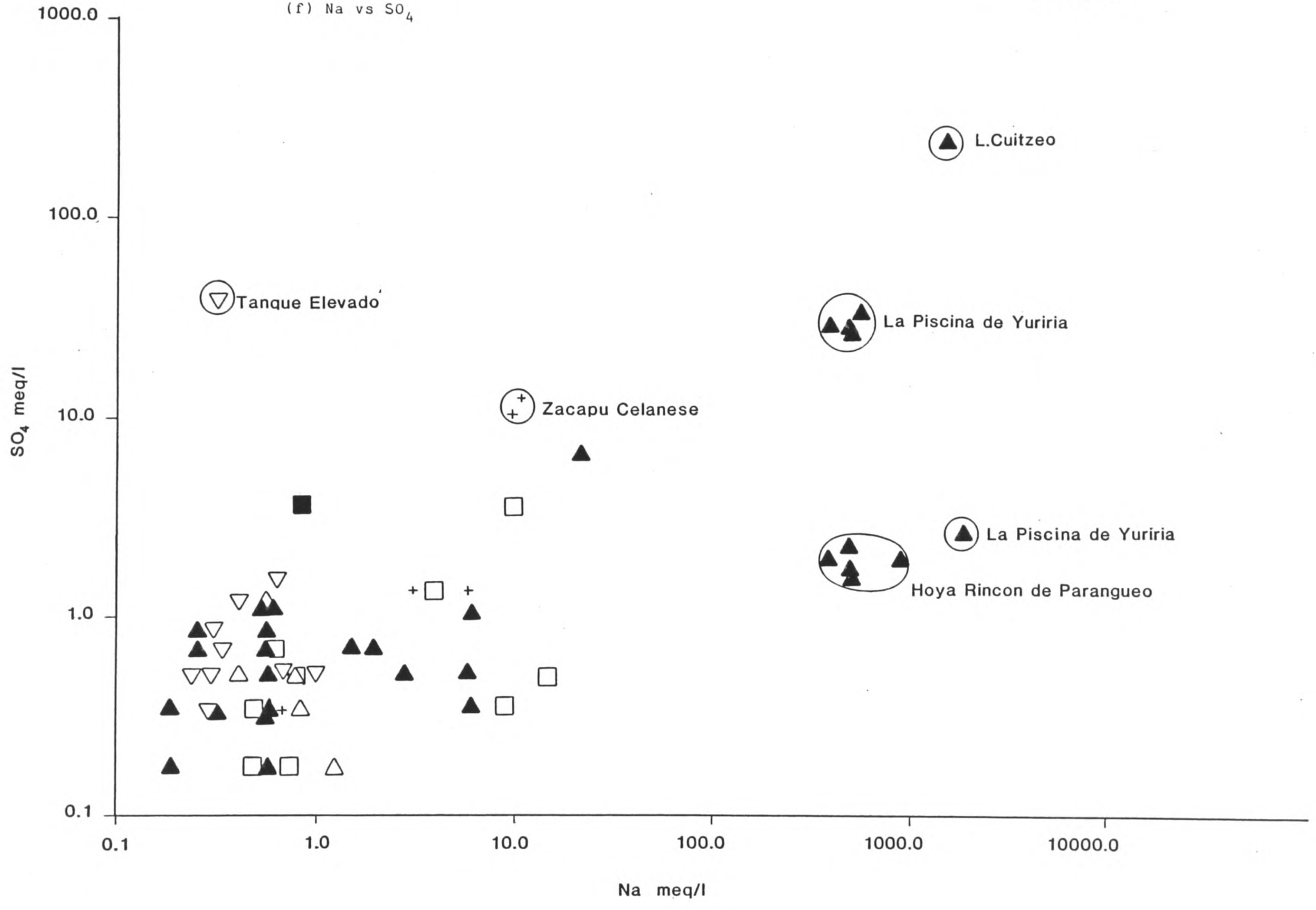

(d) Na vs K
r = +0.84
1000.0
100.0
10.0
1.0
0.1
0.01
K meq/l
La Piscina de Yuriria +
Hoya Rincon
de Parangueo
Cuitzeo
SO4 enriched
L.Zacapu and
spring
0.1
1.0
10.0
100.0
1000.0
10000.0
Na meq/l

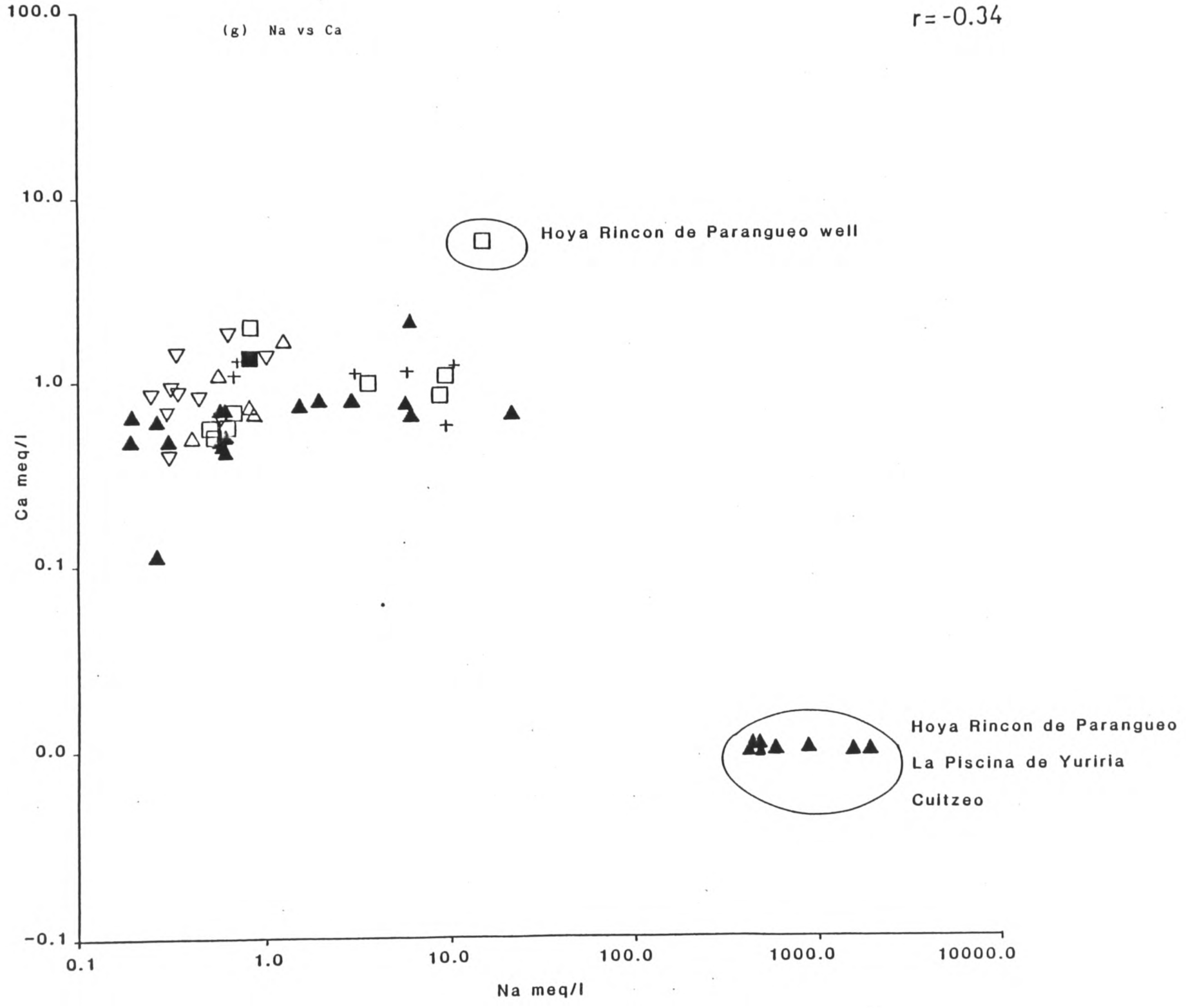
(e) E.C. vs field pH

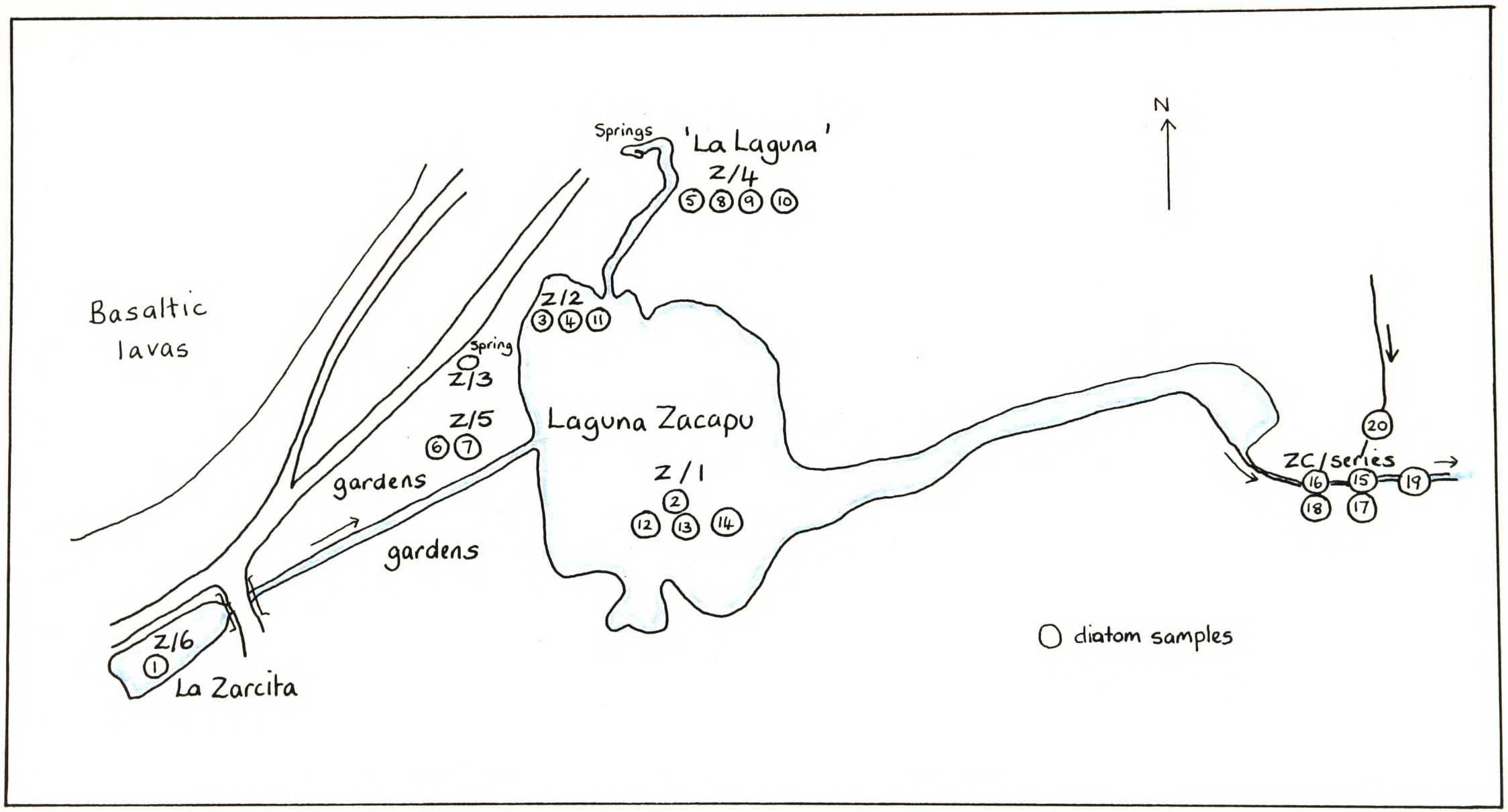


(f) Na vs SO_4

r =+0.62

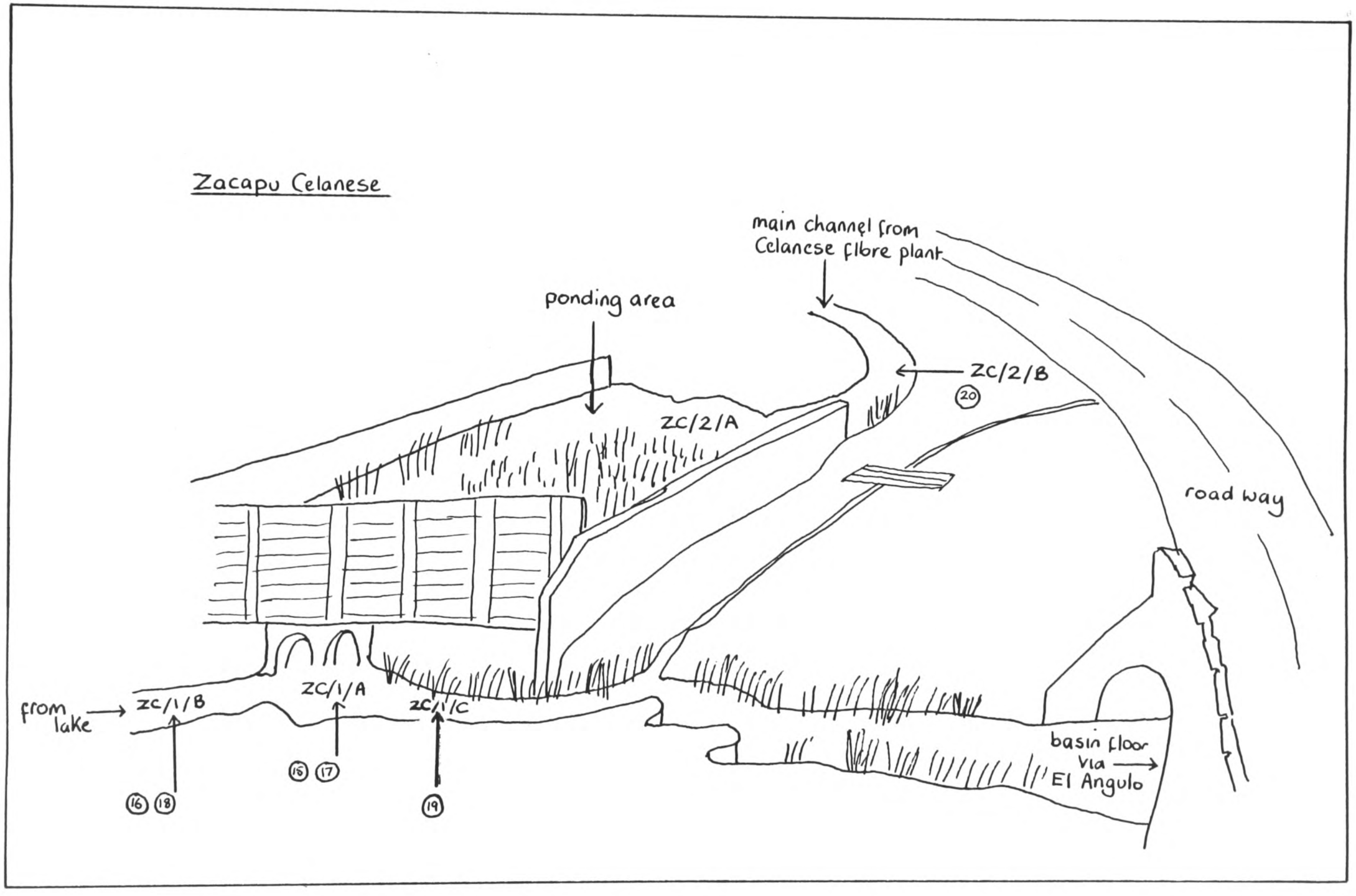



(g) Na vs Ca
r= -0.34
100.0
10.0
1.0
0.1
0.0
−0.1
Ca meq/l
0.1
1.0
10.0
100.0
1000.0
10000.0
Na meq/l
Hoya Rincon de Parangueo well
Hoya Rincon de Parangueo
La Piscina de Yuriria
Cuitzeo



Field sketch of sampling sites
around Laguna Zacapu

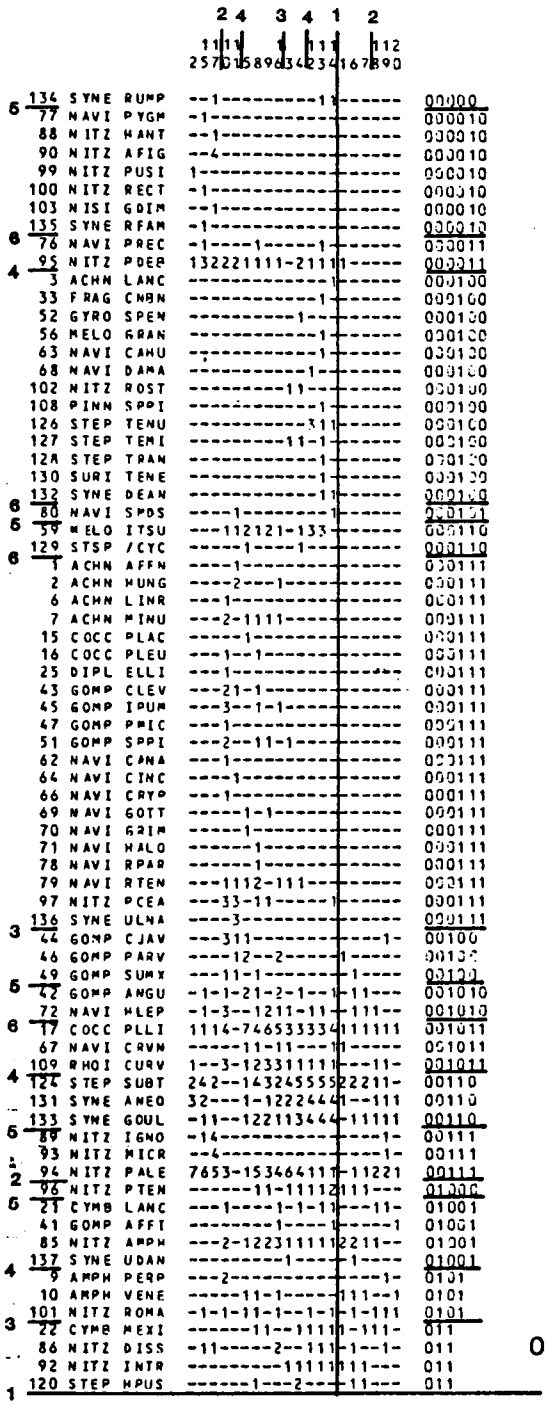
FIGURE 5.11

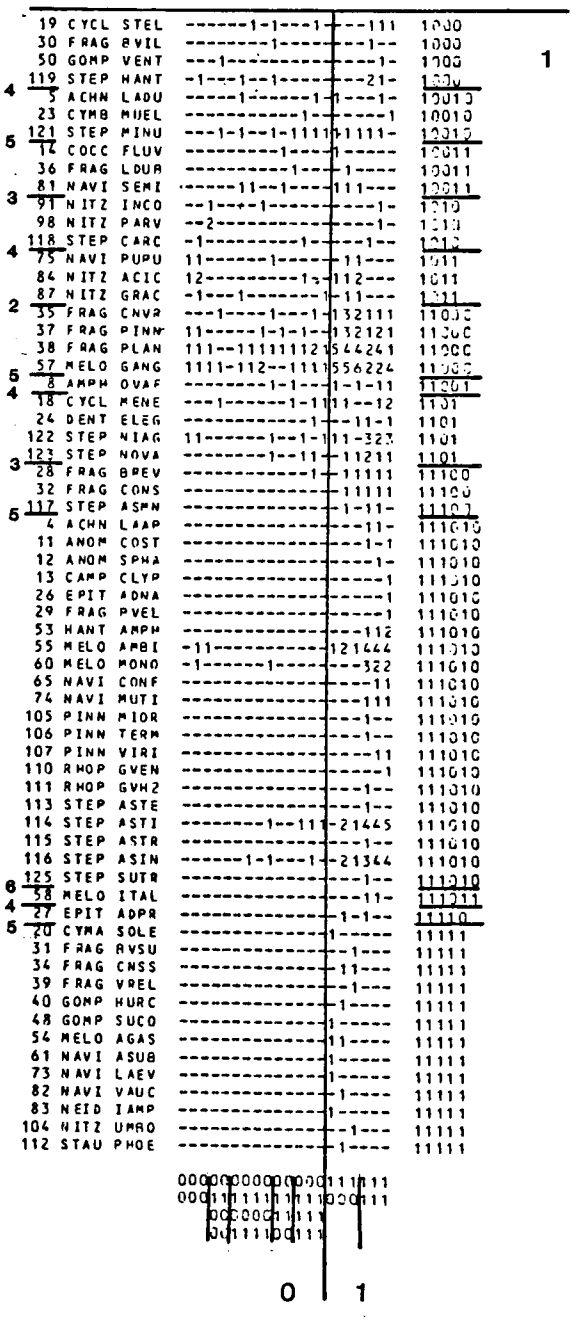


Field sketch of sampling sites
at Zacapu Celanese

FIGURE 5.12

FIGURE 5.13a



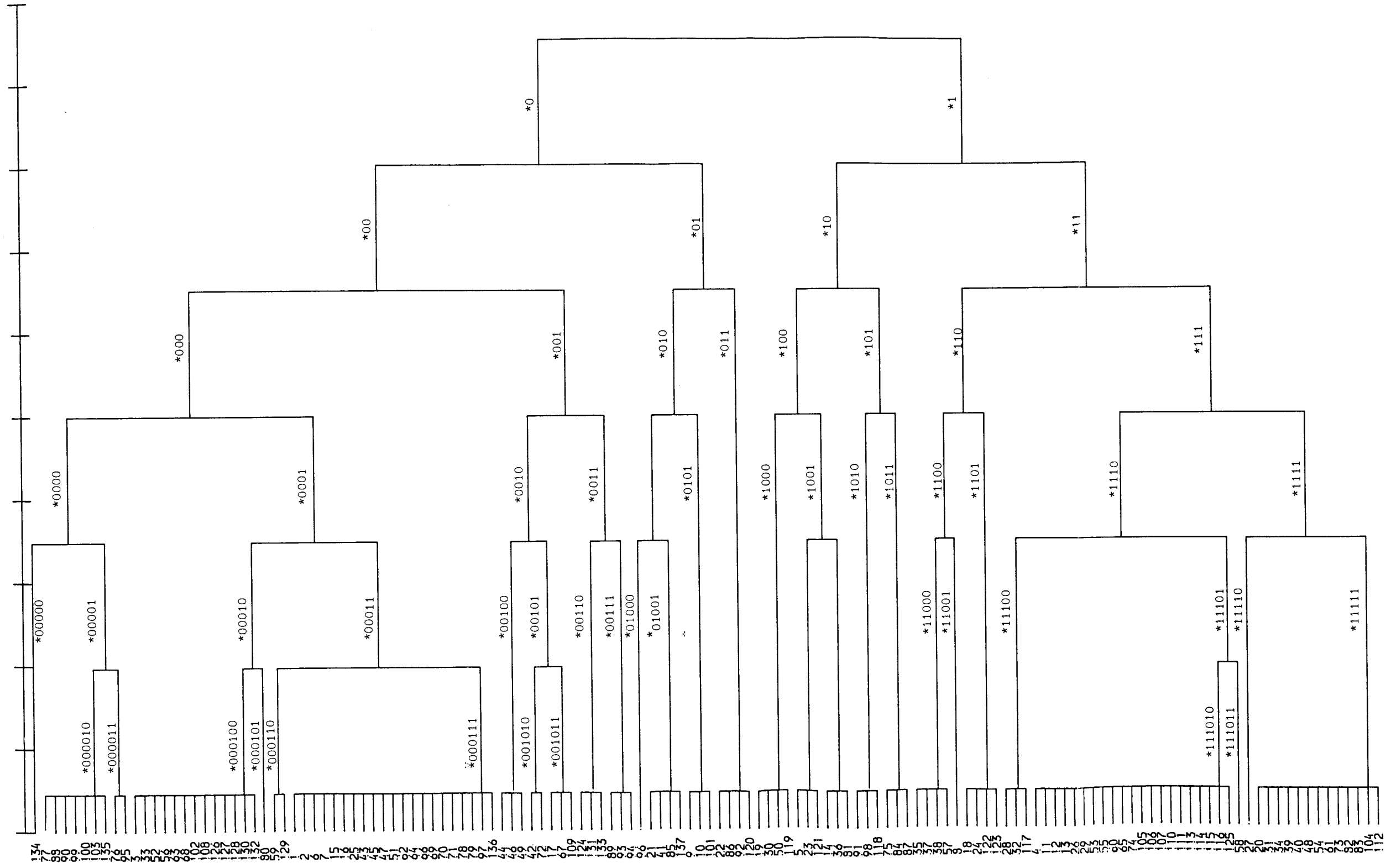


Ordered 2-way Table

Laguna Zacapu and Associated sites

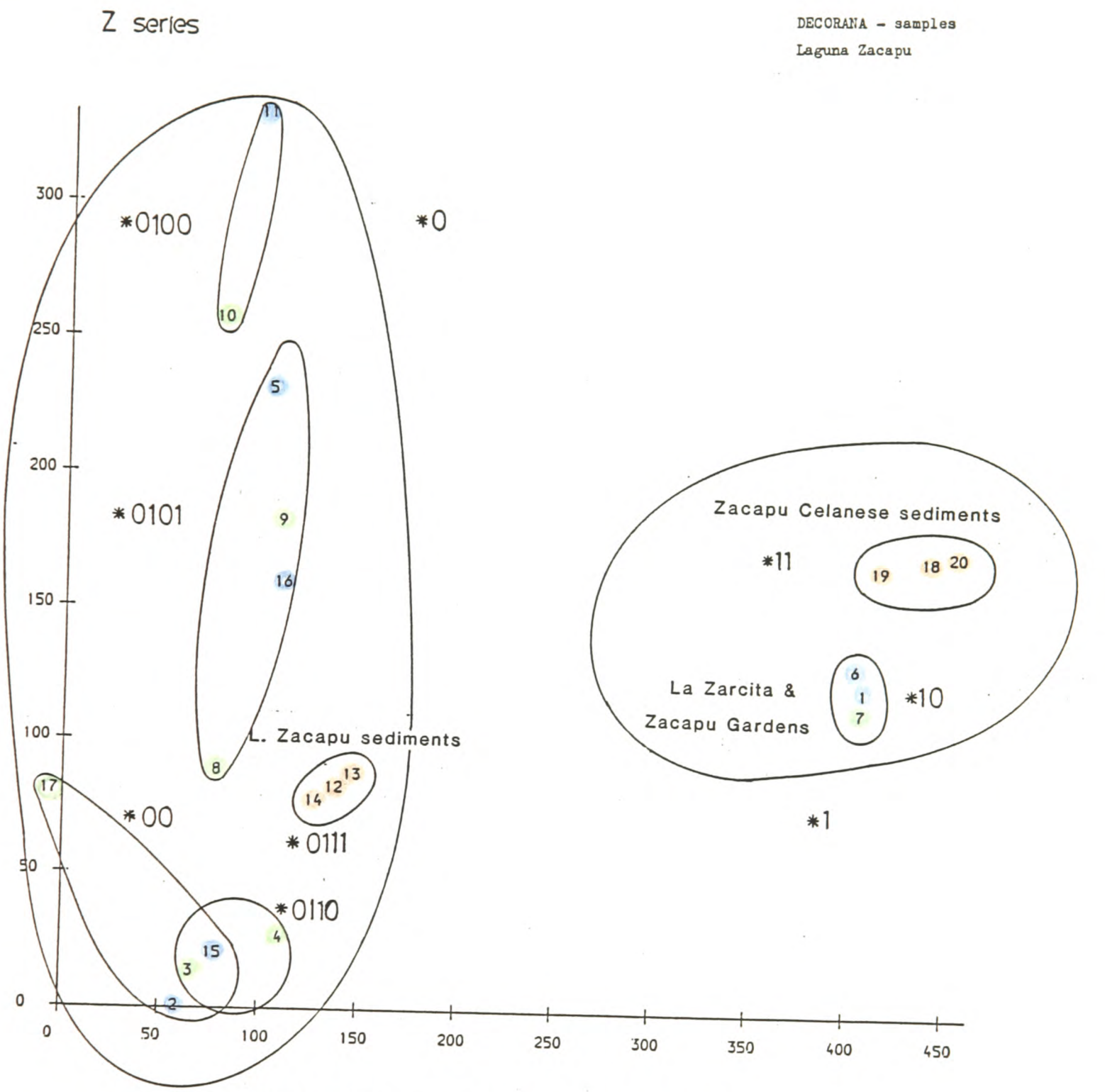
1-6 level at which division occurred

Dendrogram of species classification, Laguna Zacapu



LAGUNA ZACAPU AND ASSOCIATED SITES

FIGURE 5.13b



Laguna Zacapu, sample ordination axes 1 and 2

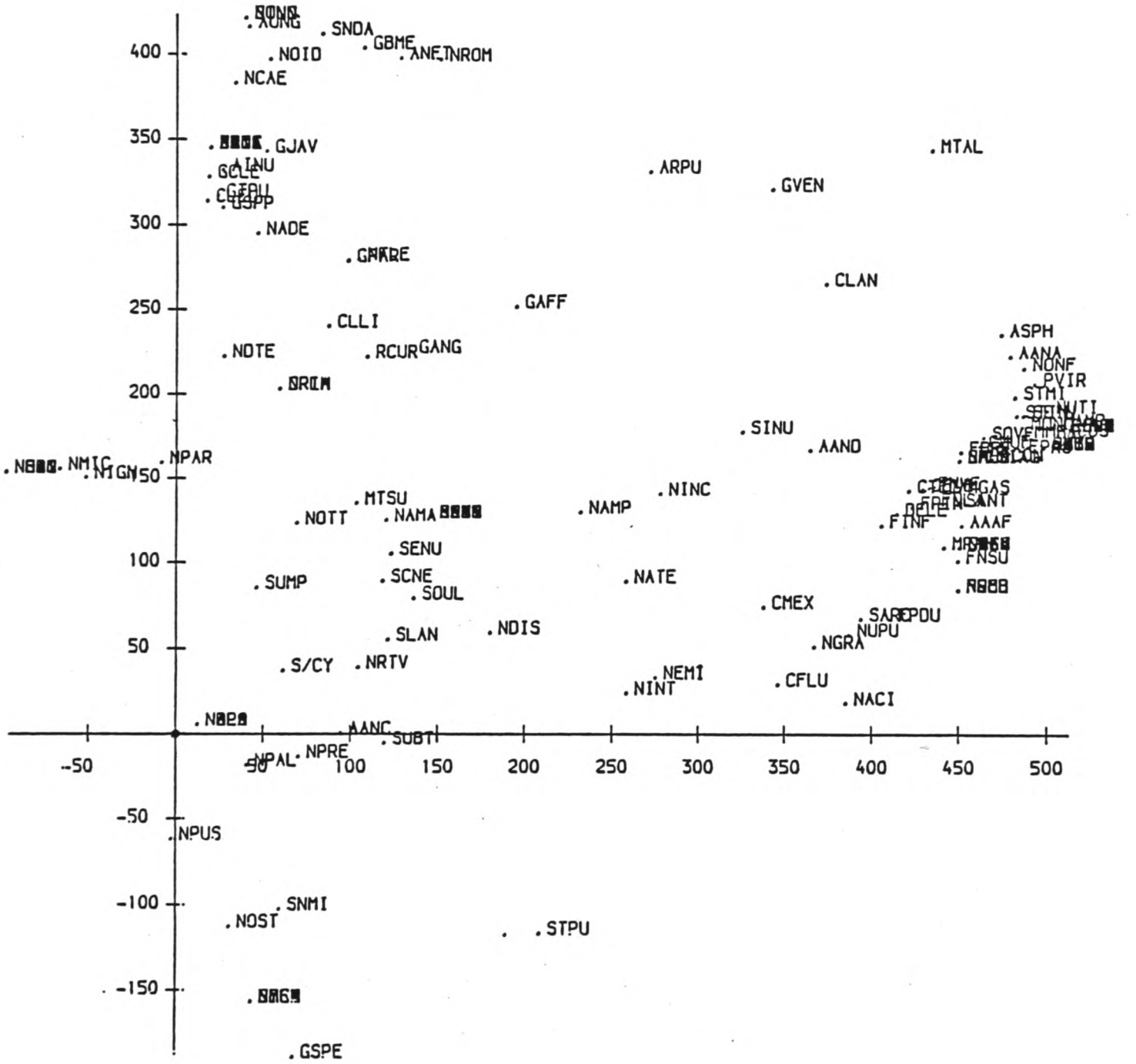
FIGURE 5.13c

water

vegetation

stone scraping

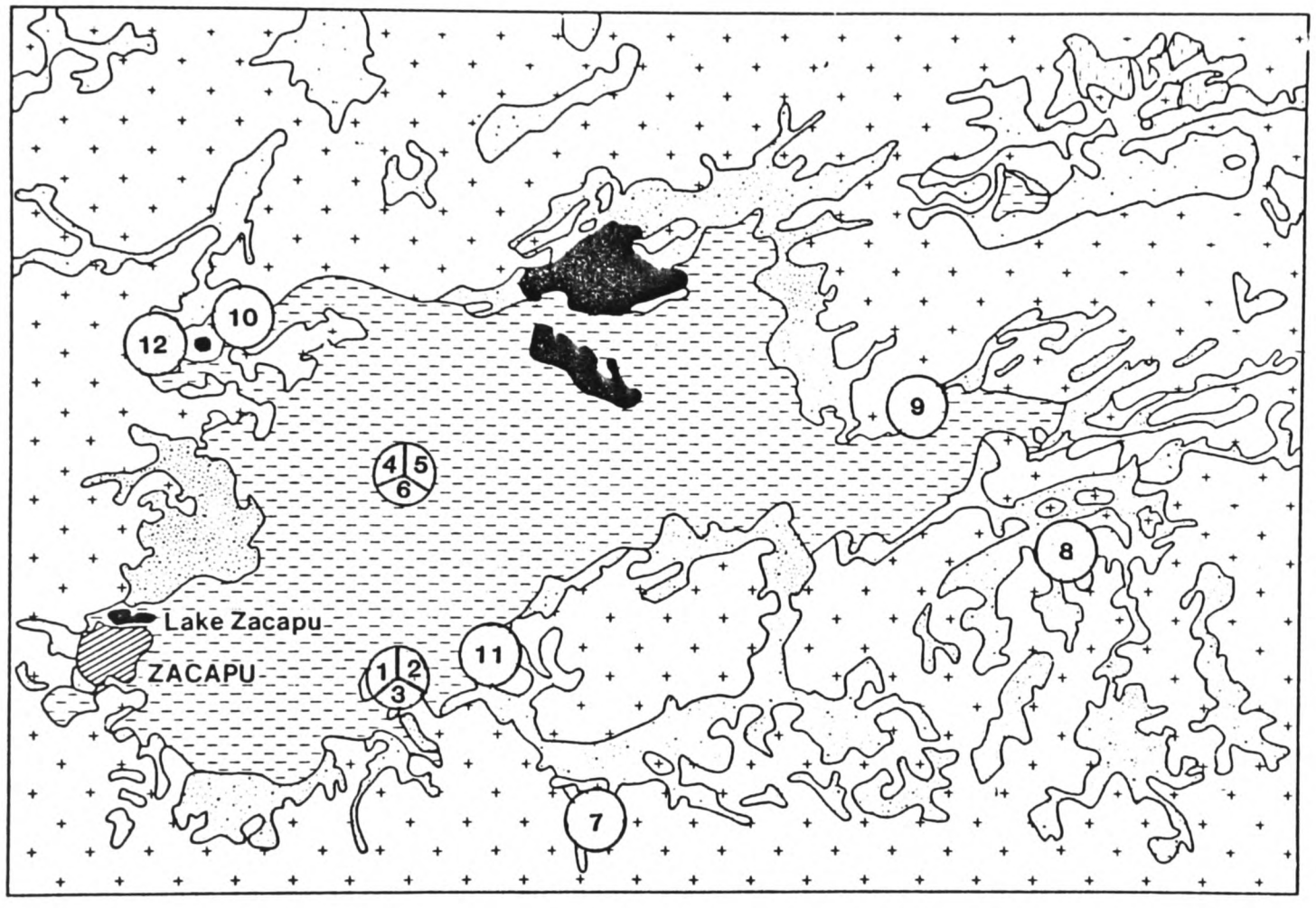
sediment



Laguna Zacapu, spp. ordination axes 1 and 2

FIGURE 5.13d

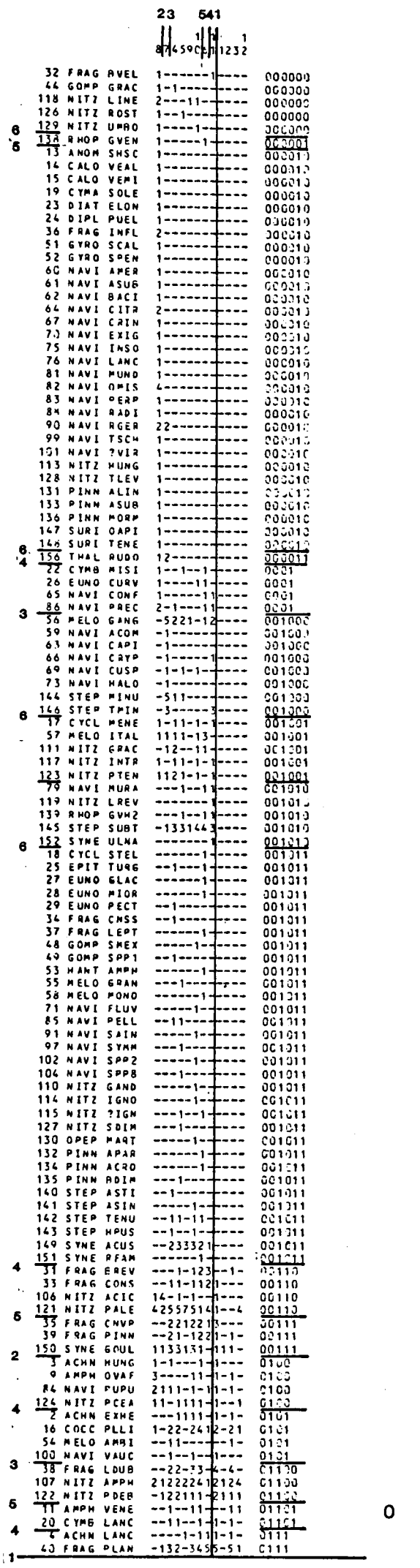
Diatom sampling sites, Zacapu Basin

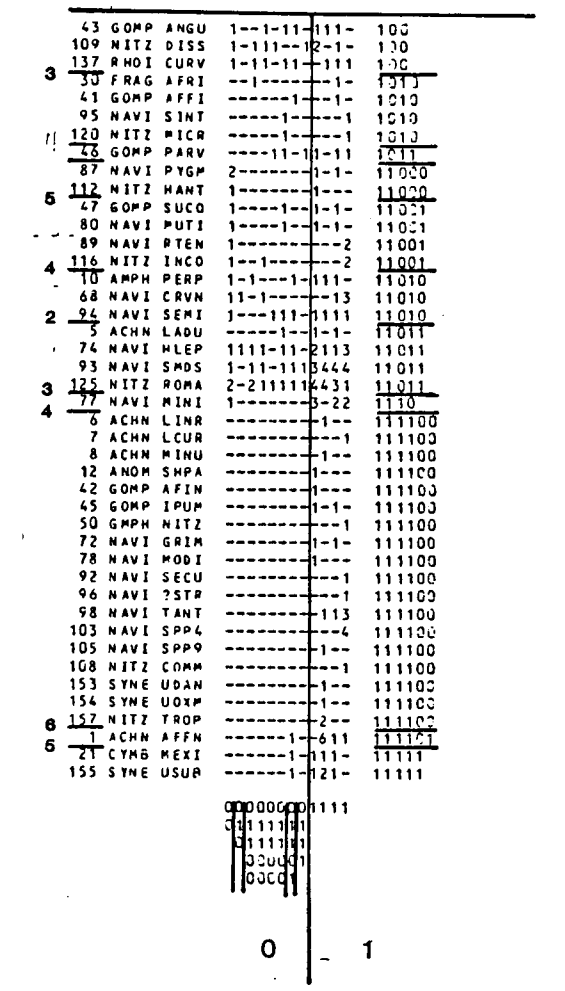


ZB series

1 2 3 Tarejero
4 5 6 El Angulo
7 B. la Laguna
8 Loma el Cementerio
9 Sta. Fe de la Labor
10 Villa Jimenez
11 Bellas Fuentes
12 Hoya la Alberca

FIGURE 5.14





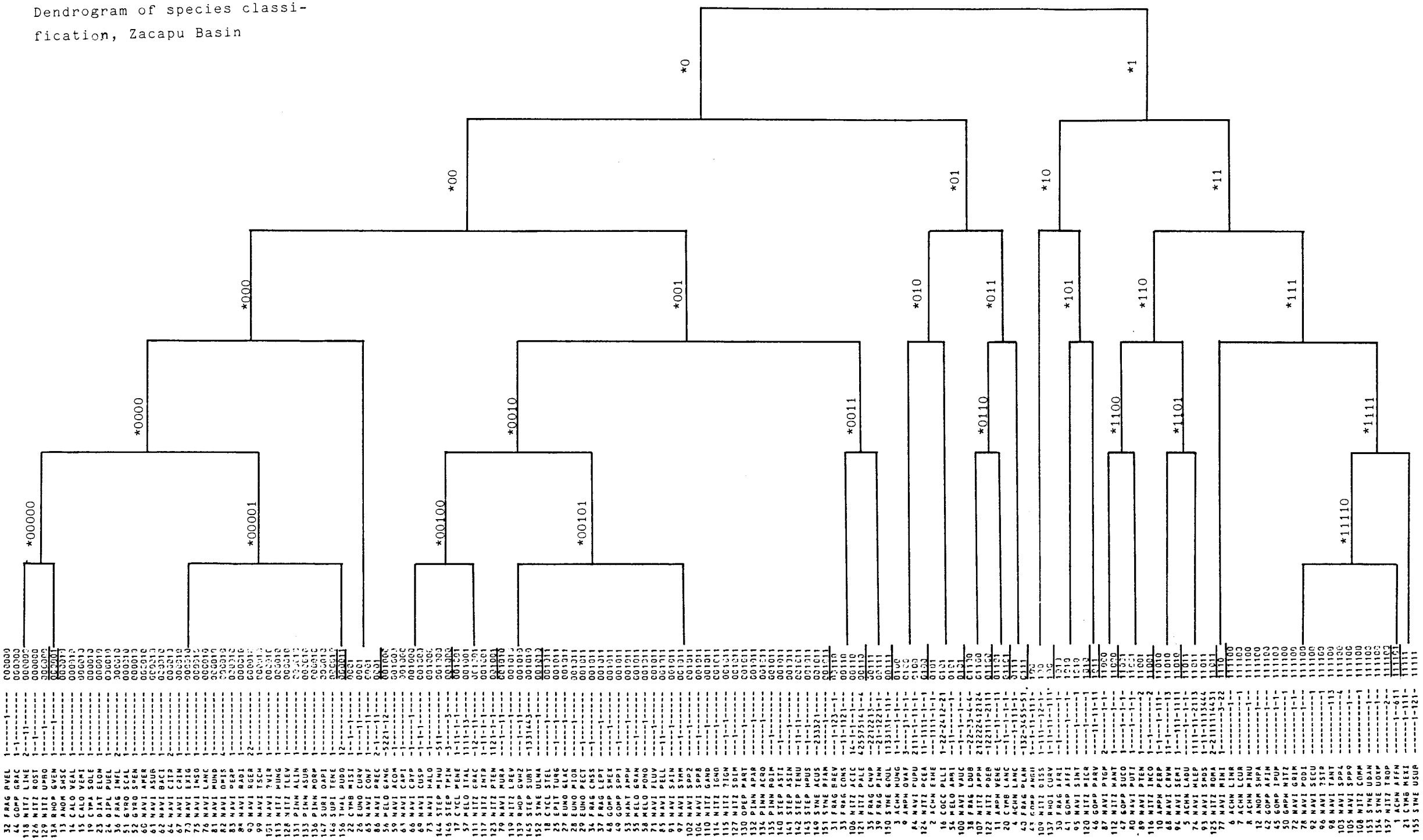
1

Ordered 2-way Table Zacapu Basin, other sites

1-6 level at which division occurred

FIGURE 5.15a

Dendrogram of species classification, Zacapu Basin

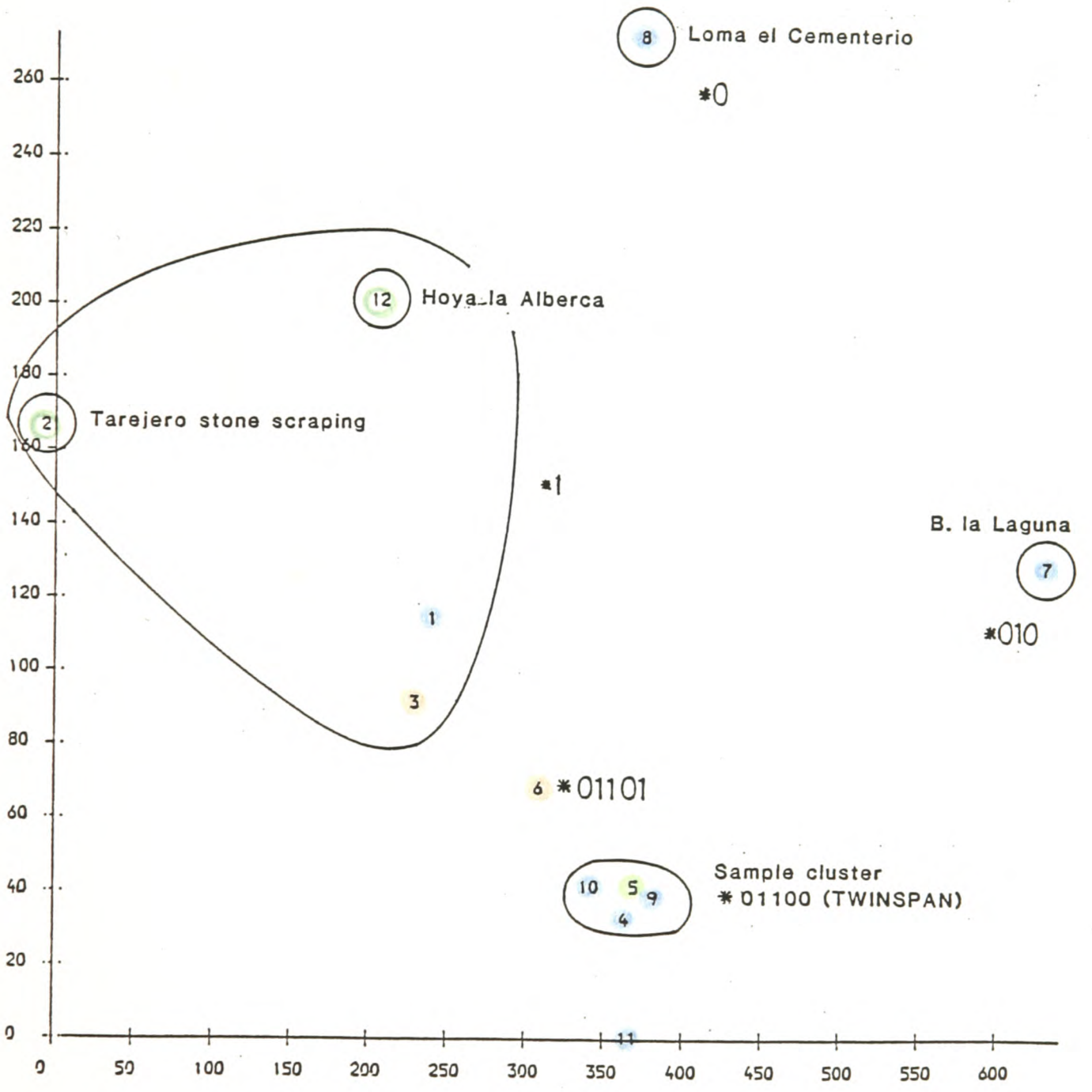


ZACAPU BASIN, OTHER SITES

FIGURE 5.15b

ZB series

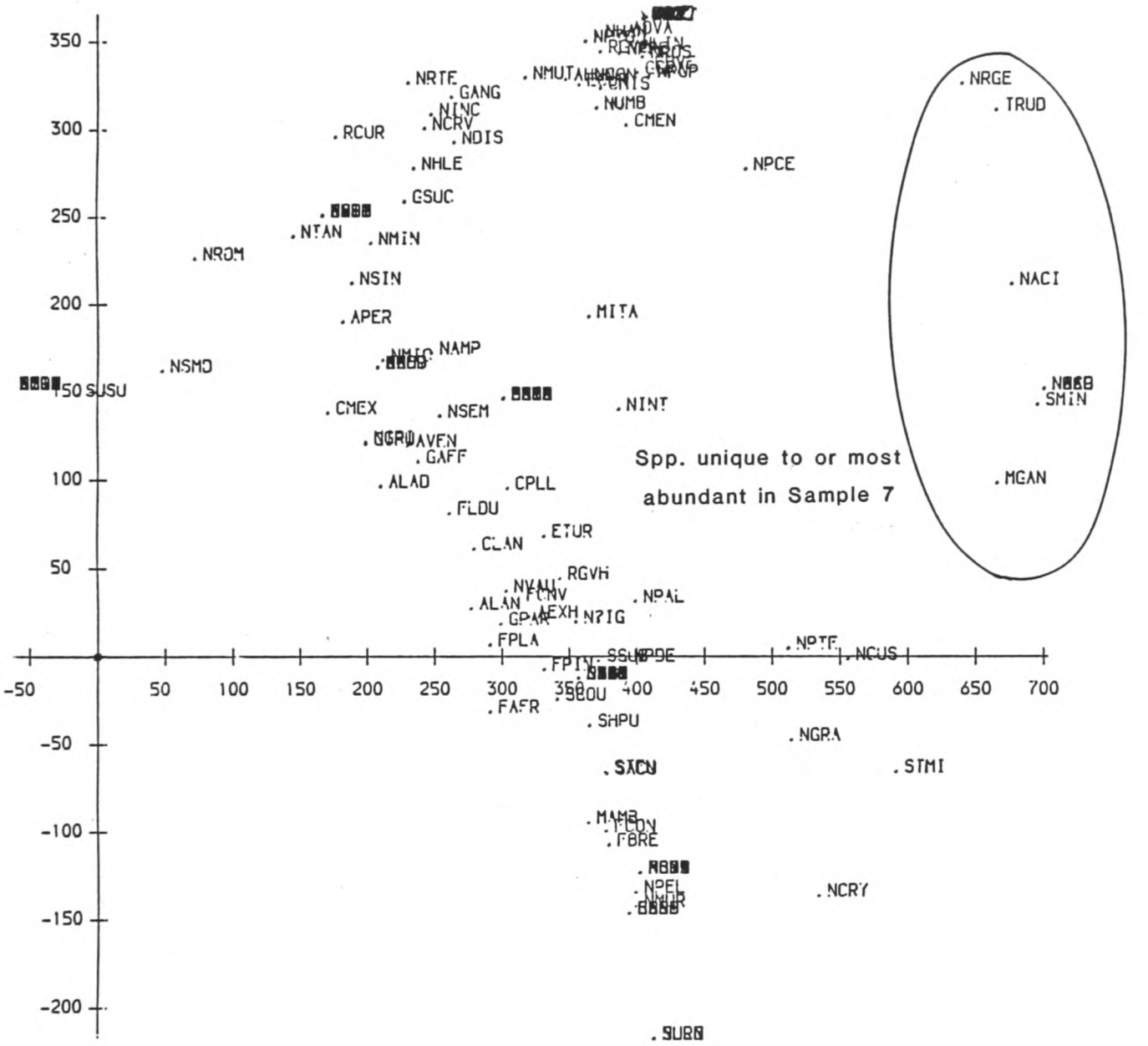
DECORANA - samples, Zacapu Basin



Zacapu Basin other sites, sample ordination axes 1 and 2

FIGURE 5.15c

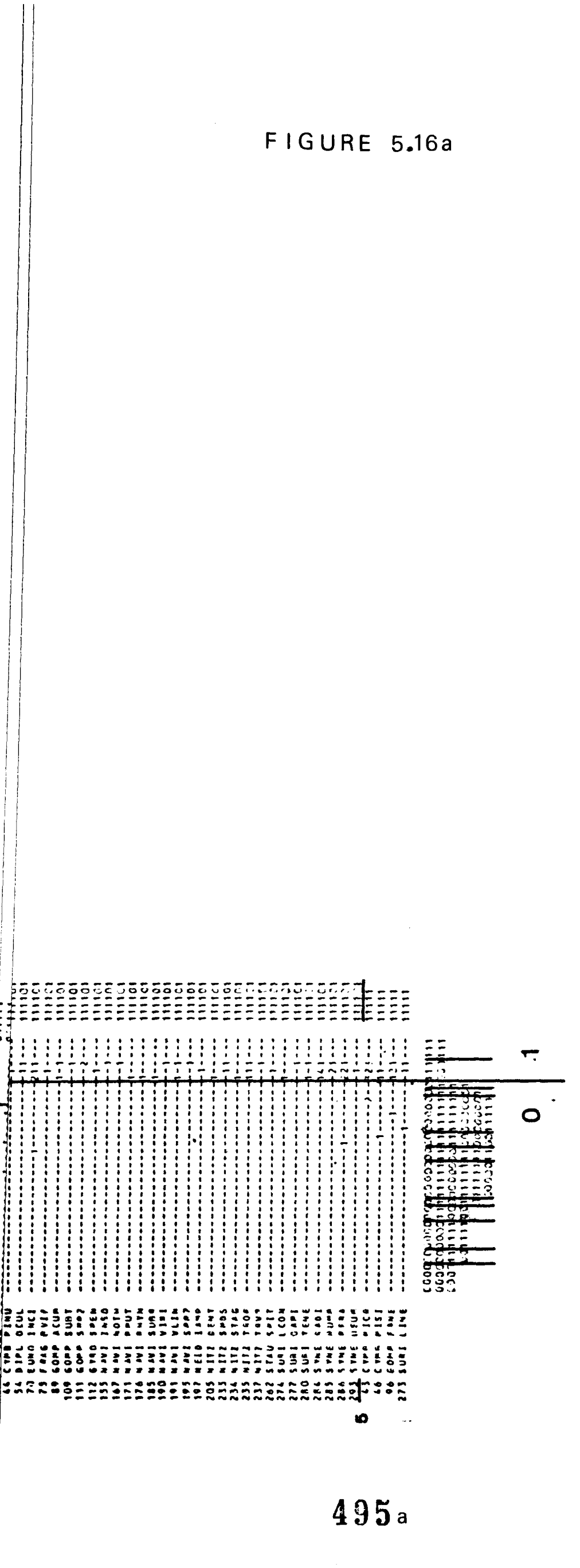
water
vegetation
stone scraping
sediment



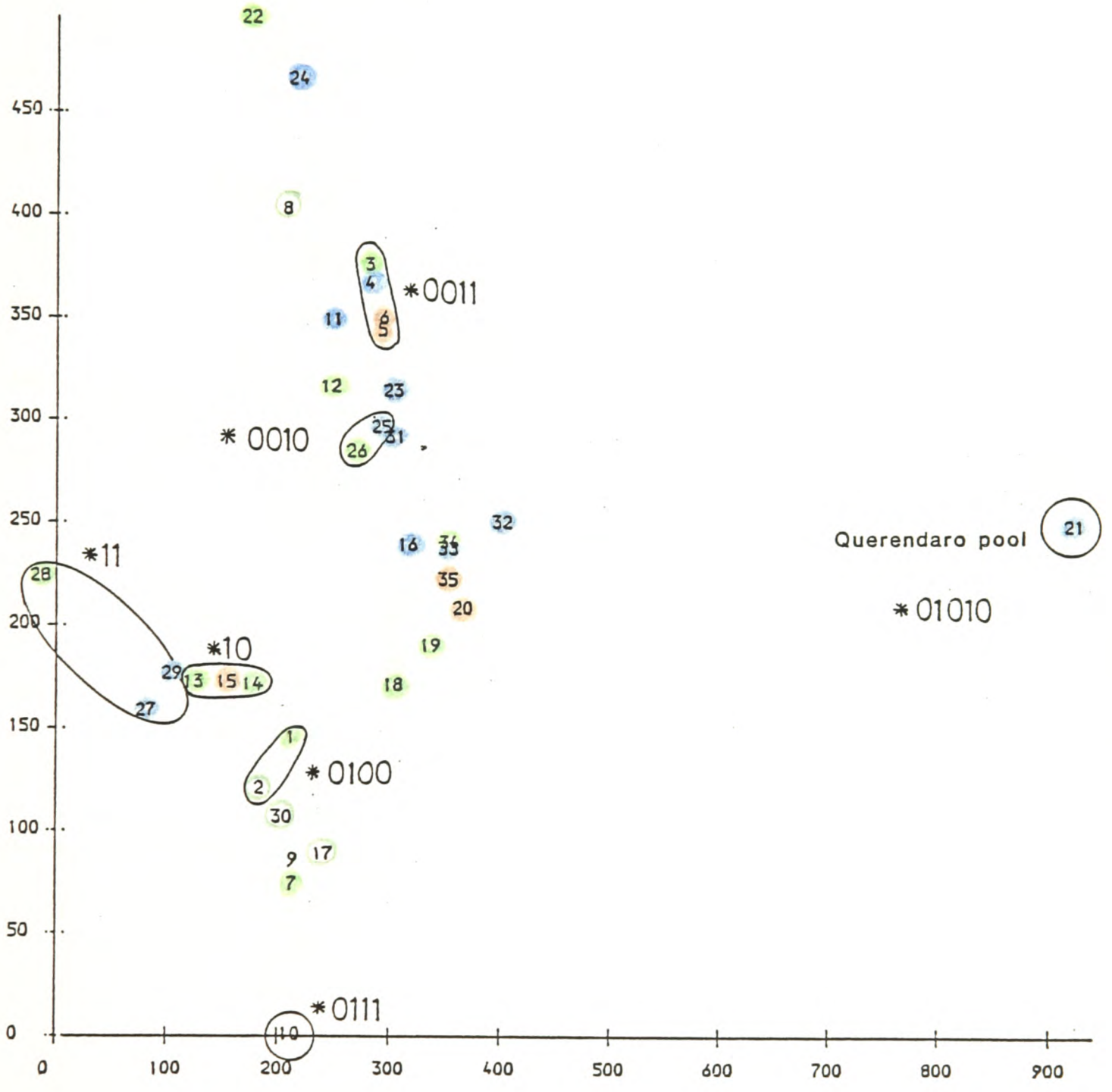
Zacapu other sites, spp. ordination axes 1 and 2

FIGURE 5.15 d

FIGURE 5.16a



DECORANA - samples, Other sites
Central Mexico



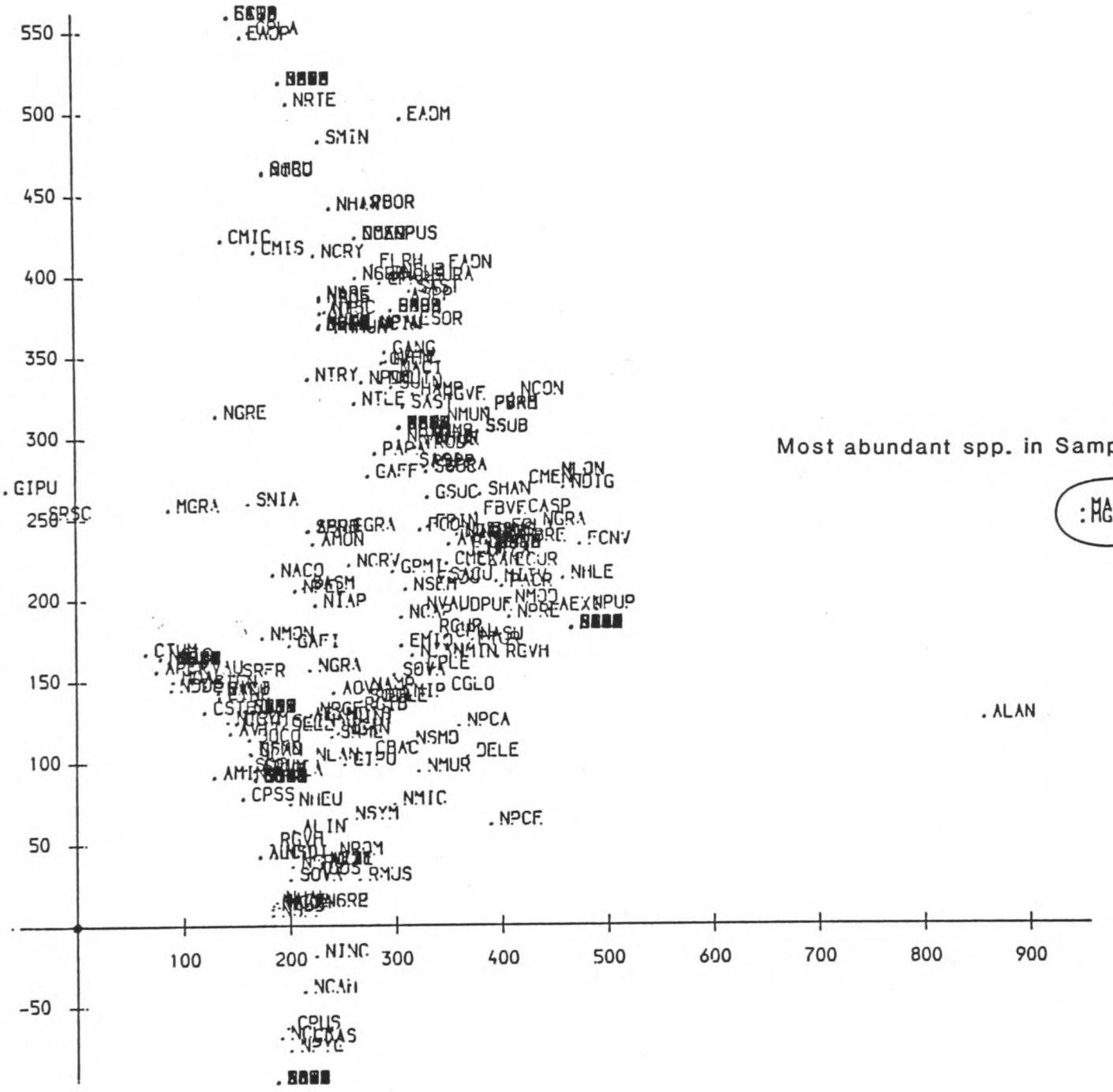
Querendaro pool 21

*01010

Other Sites central Mexico,sample ordination axes 1 and 2

FIGURE 5.16c

water
vegetation
stone scraping
sediment

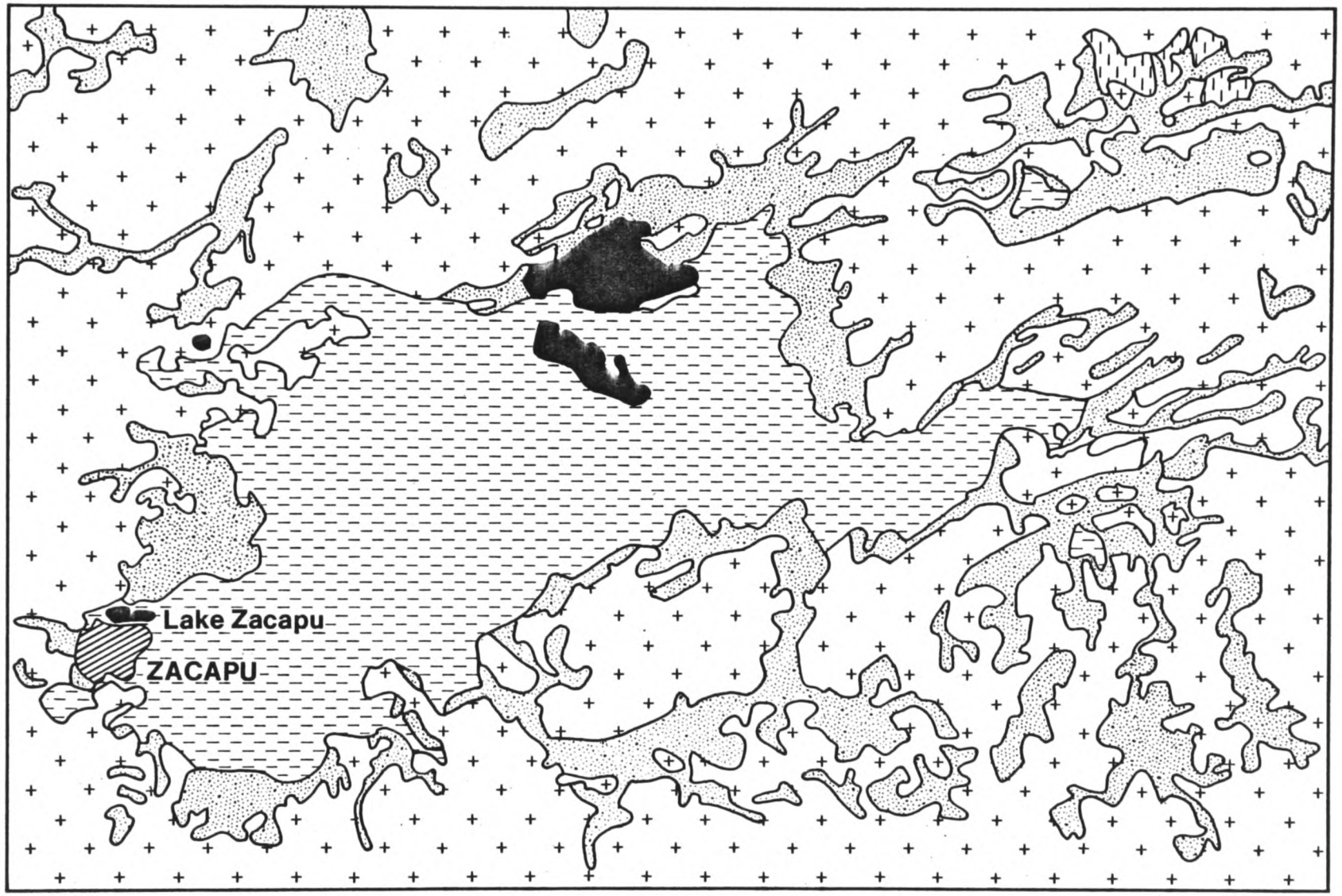


Other Sites central Mexico, spp. ordination axes 1 and 2

FIGURE 5.16d

498

Surface geology of the Zacapu basin



Igneous
Alluvium
Township
Sedimentary
Lacustrine
Lake or tank

FIGURE 6.1

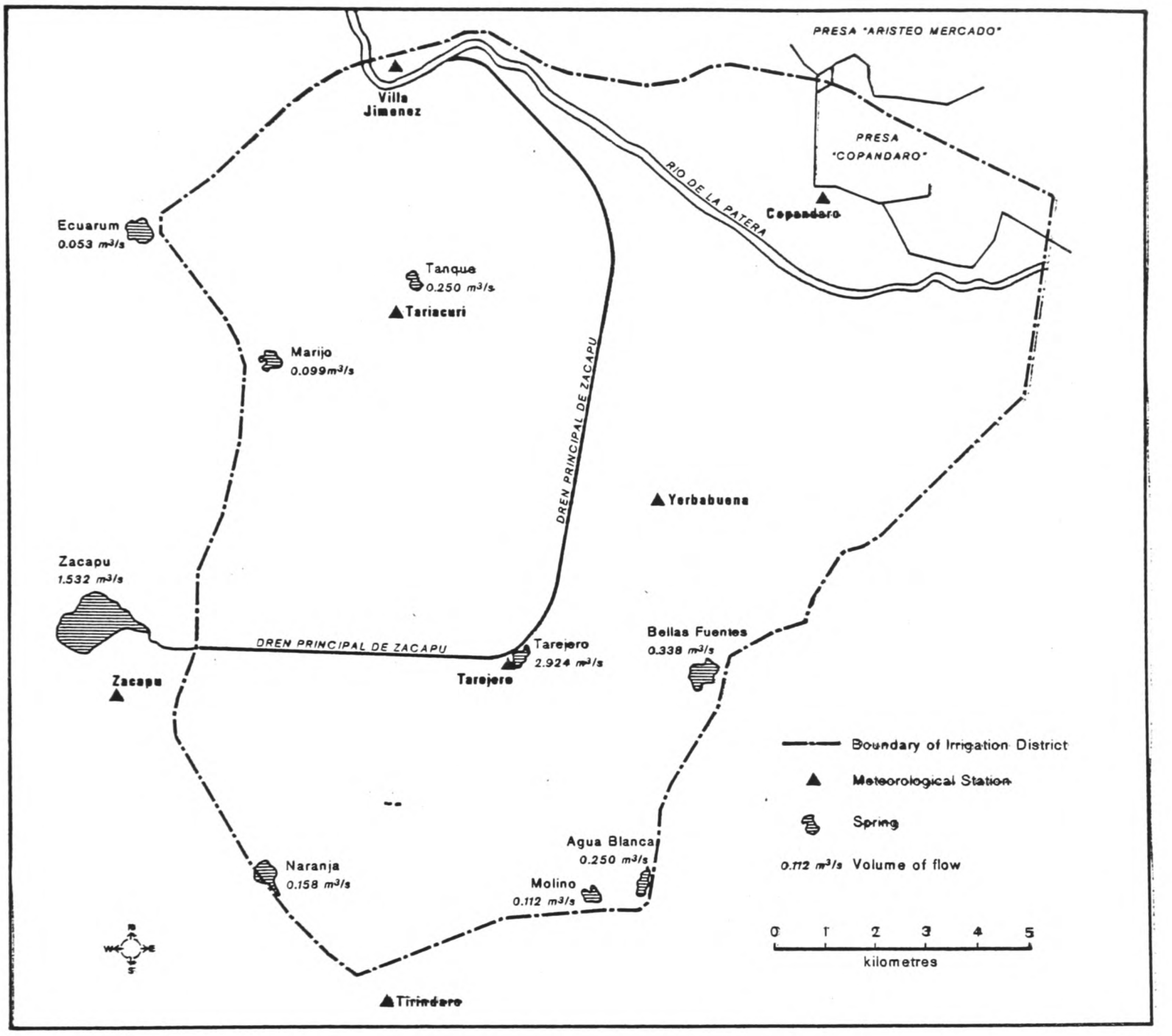


FIGURE 6.2

Location of S.A.R.H. meteorological stations and main feeder springs to the Zacapu Basin

Sites excavated by Caso in 1930

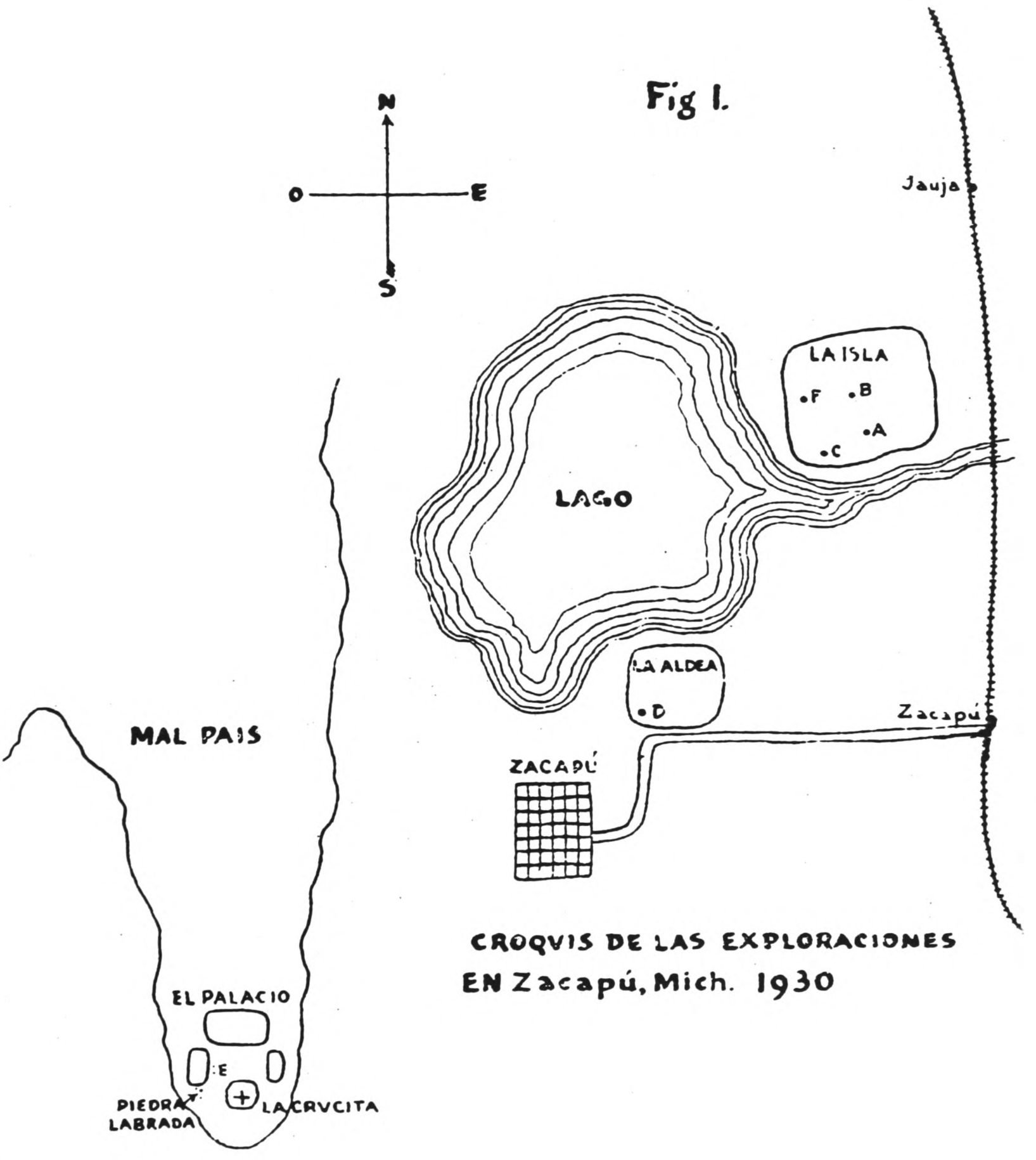


FIGURE 6.3

Sediment sampling location
map

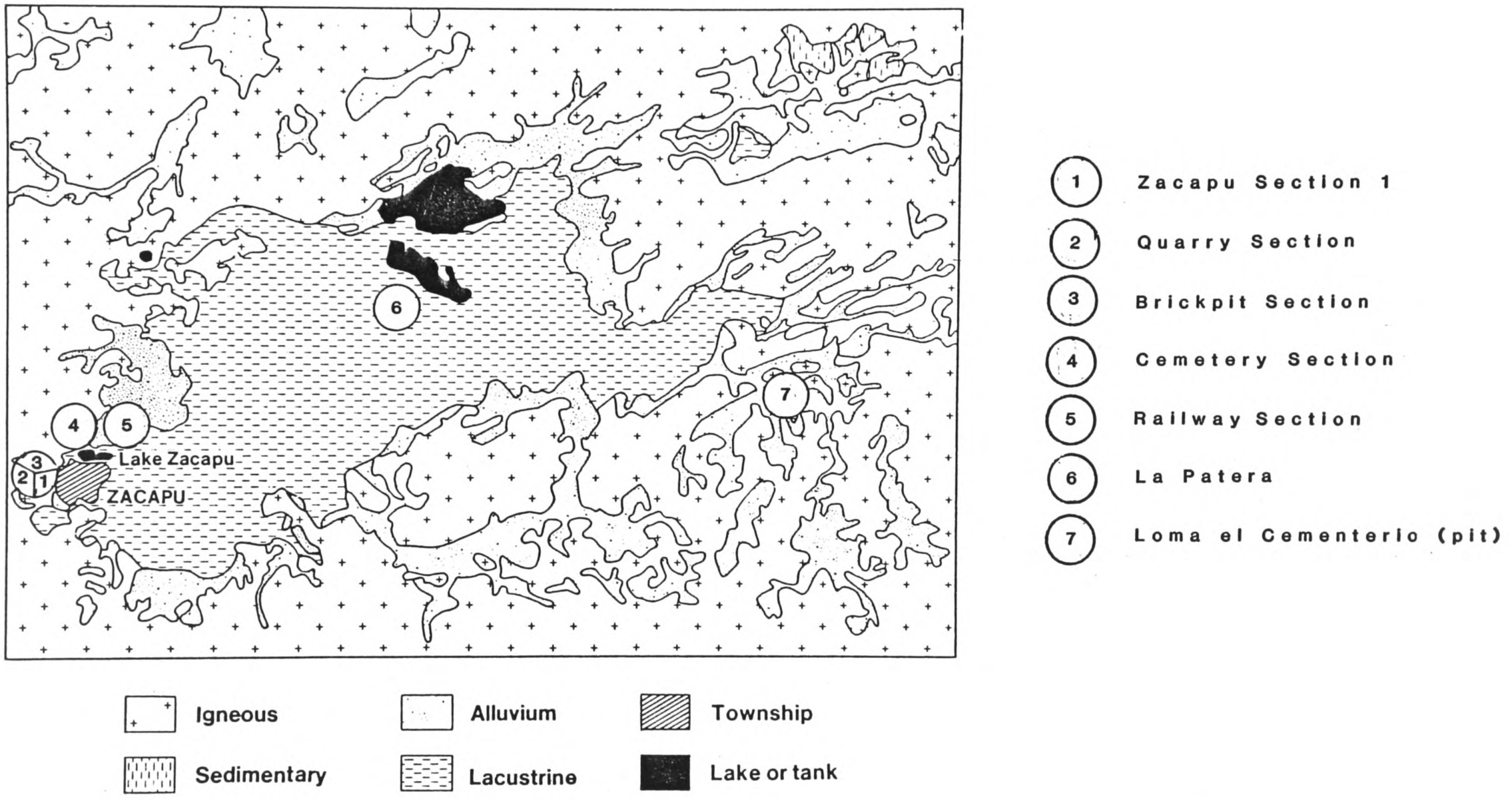


FIGURE 6.4

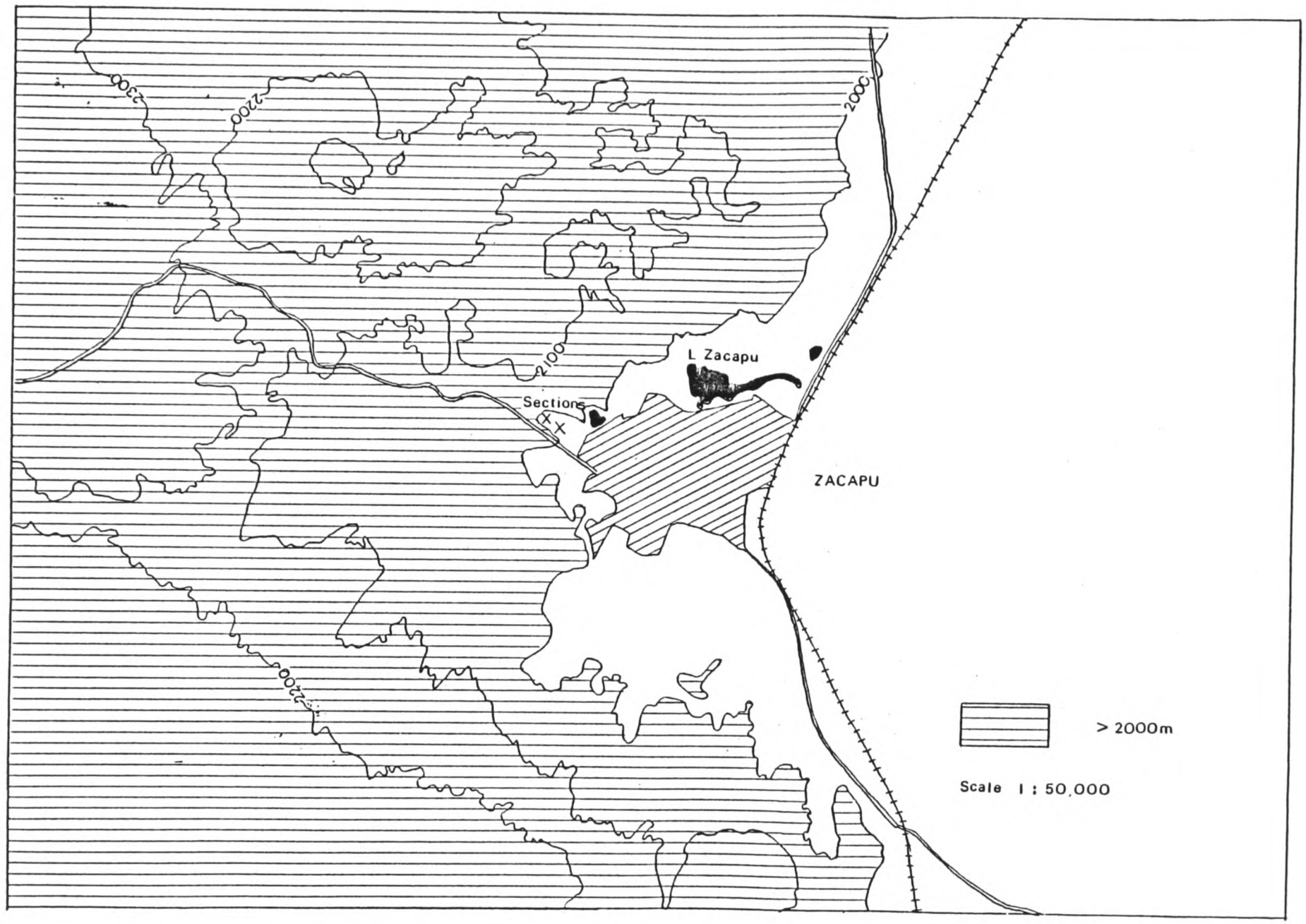


FIGURE 6.5

Section locations west of Zacapu

The Brickpit Section

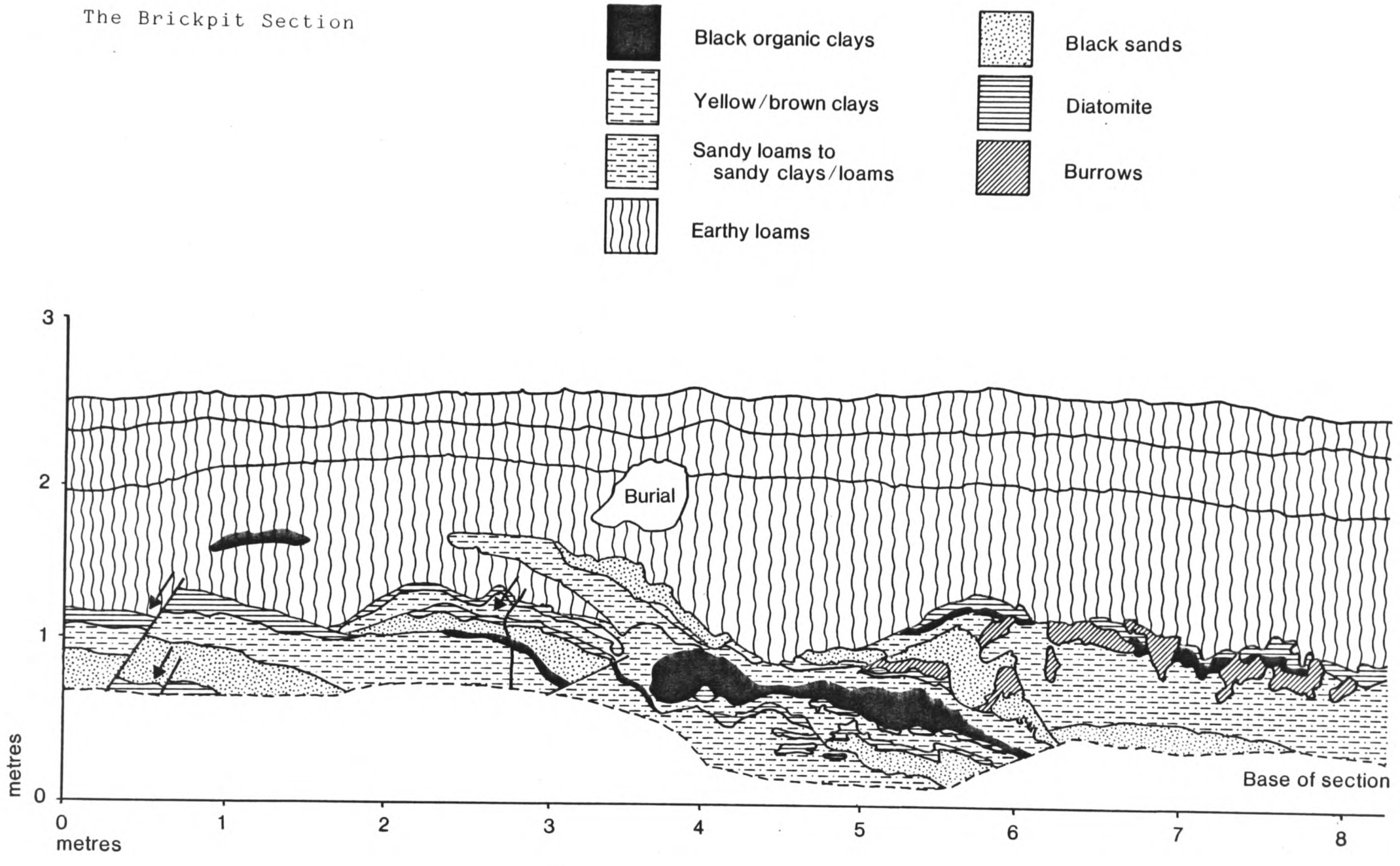


FIGURE 6.6

503

Stratigraphy of the Brickpit section

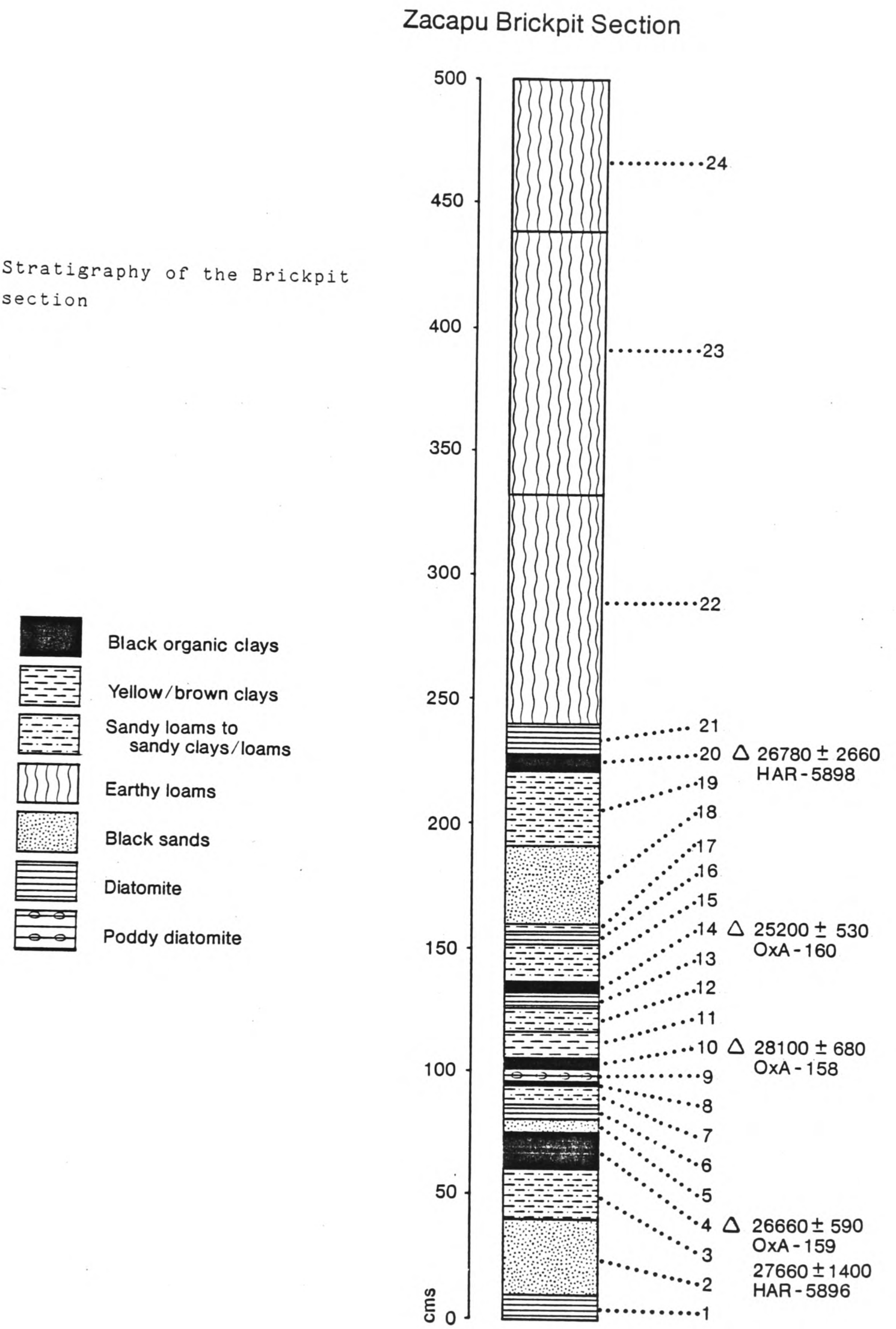
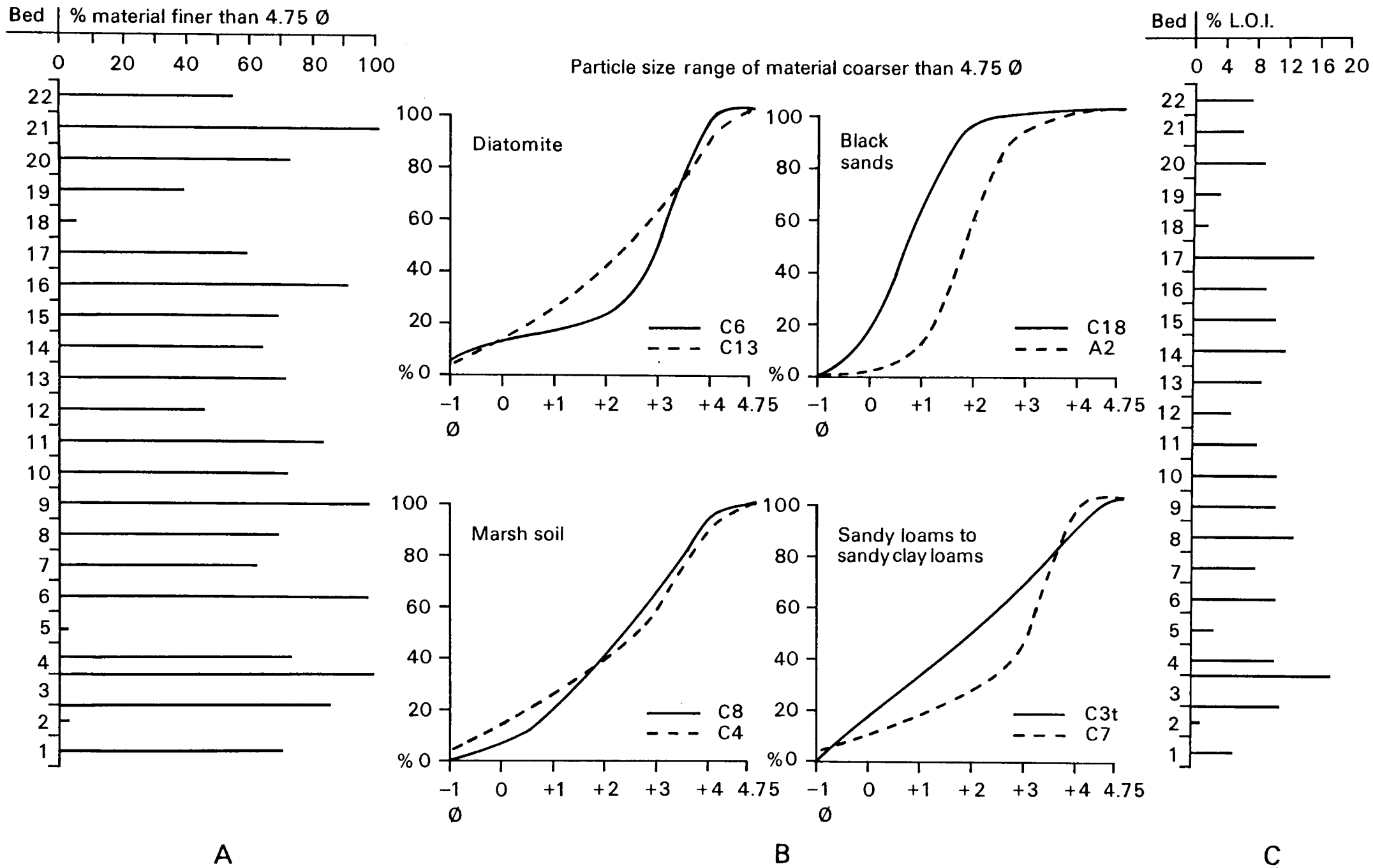


FIGURE 6.7



Grain size and sorting parameters, Brickpit Section

FIGURE 6.8

Sediment chemistry,
Brickpit section

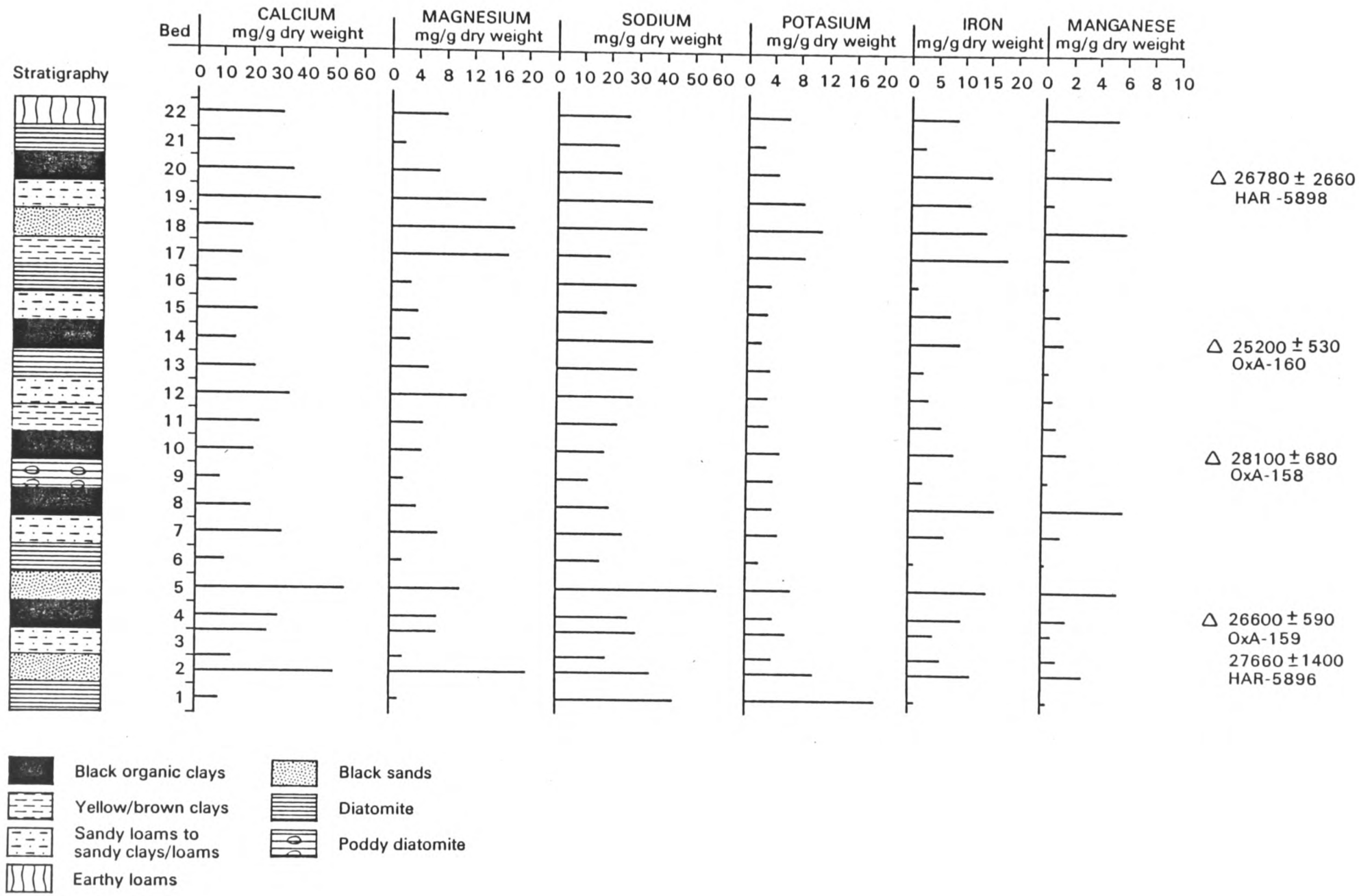


FIGURE 6.9

ZACAPU BRICKPIT SECTION

Stratigraphy

Bed

Melosira ambigua

Melosira granulata var angustissima

Fragilaria pinnata + F. pinnata var lancettula

Fragilaria leptostauron var dubia

Fragilaria construens var venter

Fragilaria construens var binodis

Melosira italica

Cocconeis placentula var lineata

Stephanodiscus astrea var intermedia

Stephanodiscus niagarae

Stephanodiscus asteroides var intermedia

Fragilaria brevistriata

Synedra ulna

Eunotia veneris

Eunotia lunaris

Eunotia pectinalis

Achnanthes hungarica

Neidium iridis

Navicula pupula

Navicula mutica

Pinnularia seminulum

Cymbella cuspidata

Cymbella mexicana

Gomphonema parvulum

Epithemia adnata

Epithemia turgida

Rhopalodia gibberula var Heurckii

Hantzschia amphioxys

Nitzschia palea

Nitzschia romana

Nitzschia amphibia

Others

Diatom zone

22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

V

IV

III

II

I

△ 26780 ± 2660
HAR-5898

△ 25200 ± 530
OxA -160

△ 28100 ± 680
OxA-158

△ 26600 ± 590
OxA-159

27660 ± 1400
HAR-5896

0 20 0 20 40 60
% %

Black organic clays

Yellow/brown clays

Sandy loams to sandy clays/loams

Earthy loams

Black sands

Diatomite

Poddy diatomite

FIGURE 6.10

Diatom diagram, Brickpit section

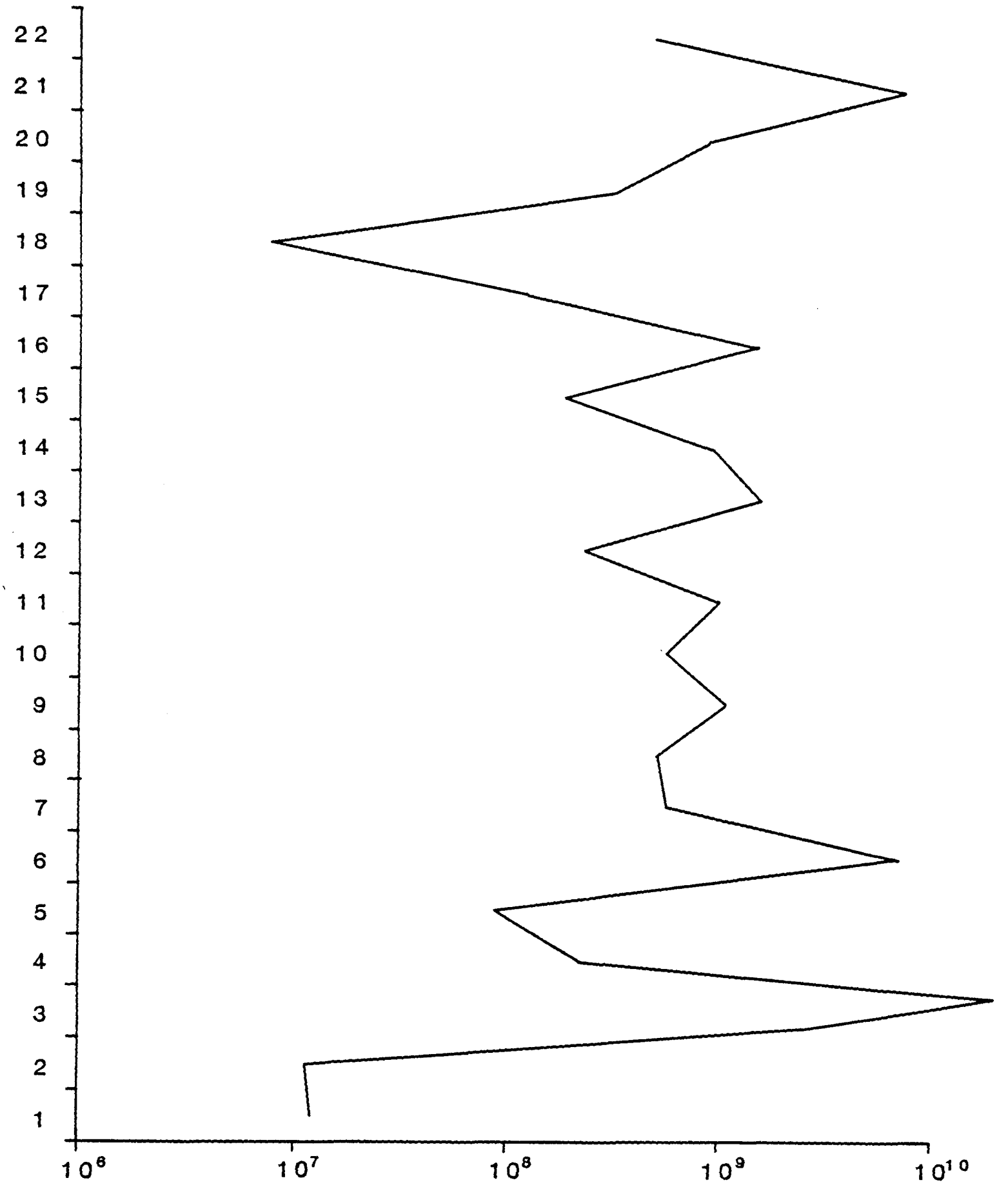

22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
10⁶
10⁷
10⁸
10⁹
10¹⁰
Valves / g dry sediment
Zacapu Brickpit Section

FIGURE 6.11

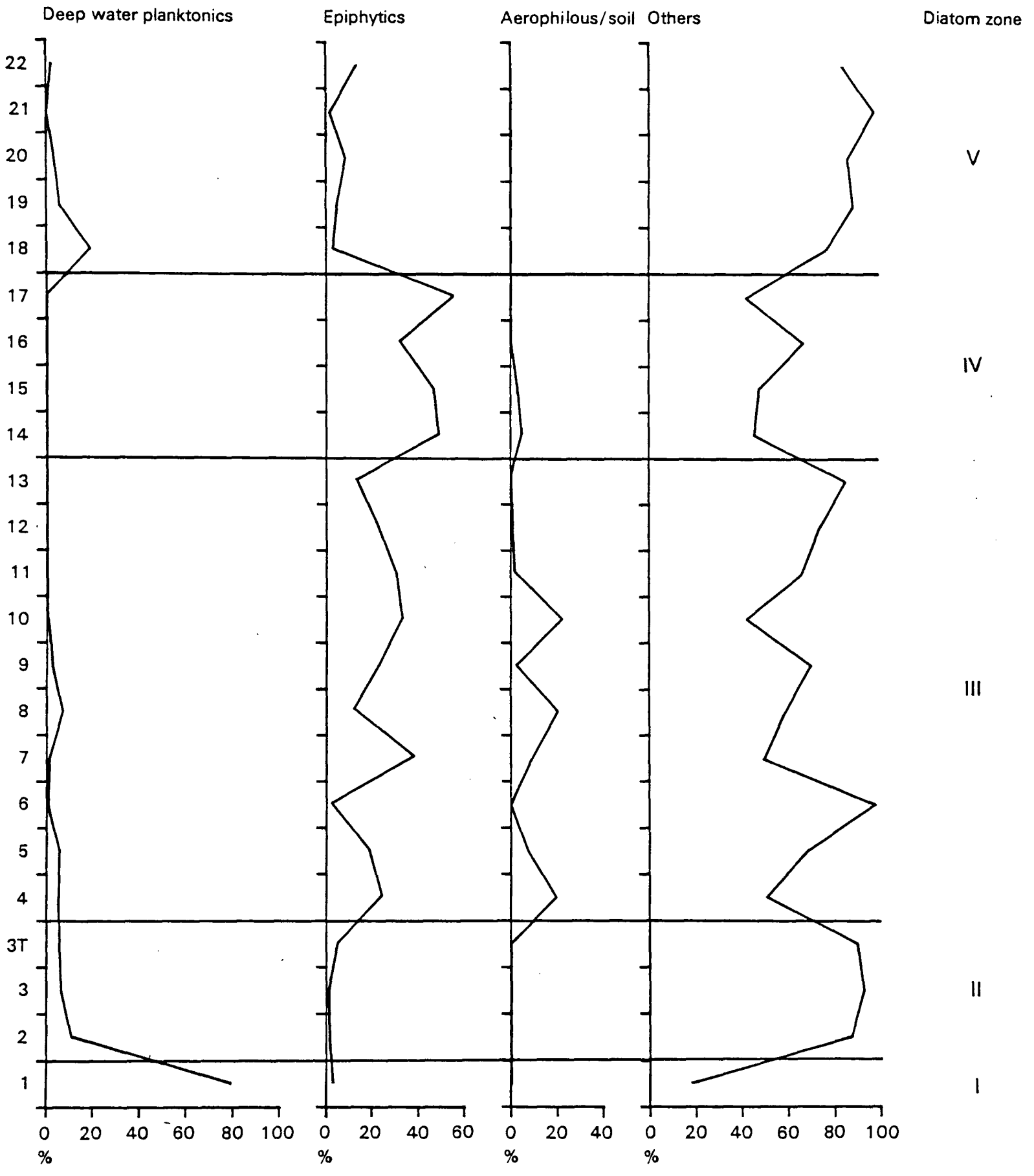
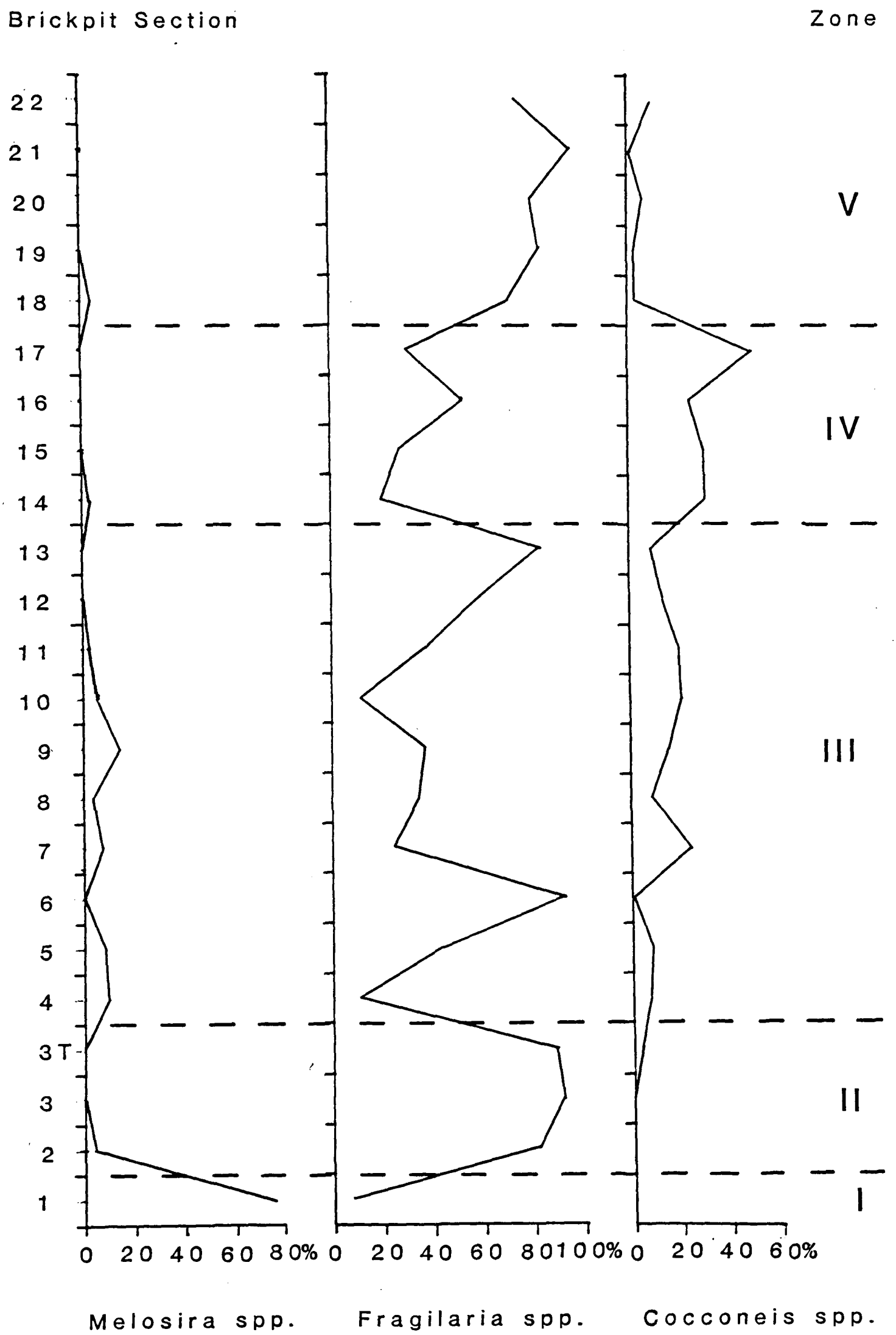


FIGURE 6.12

Variations in % of spp. by habitat preference Brickpit Section



Total % of Melosira, Fragilaria and Cocconeis spp.,

FIGURE 6.13

Stratigraphy, Zacapu Section 1

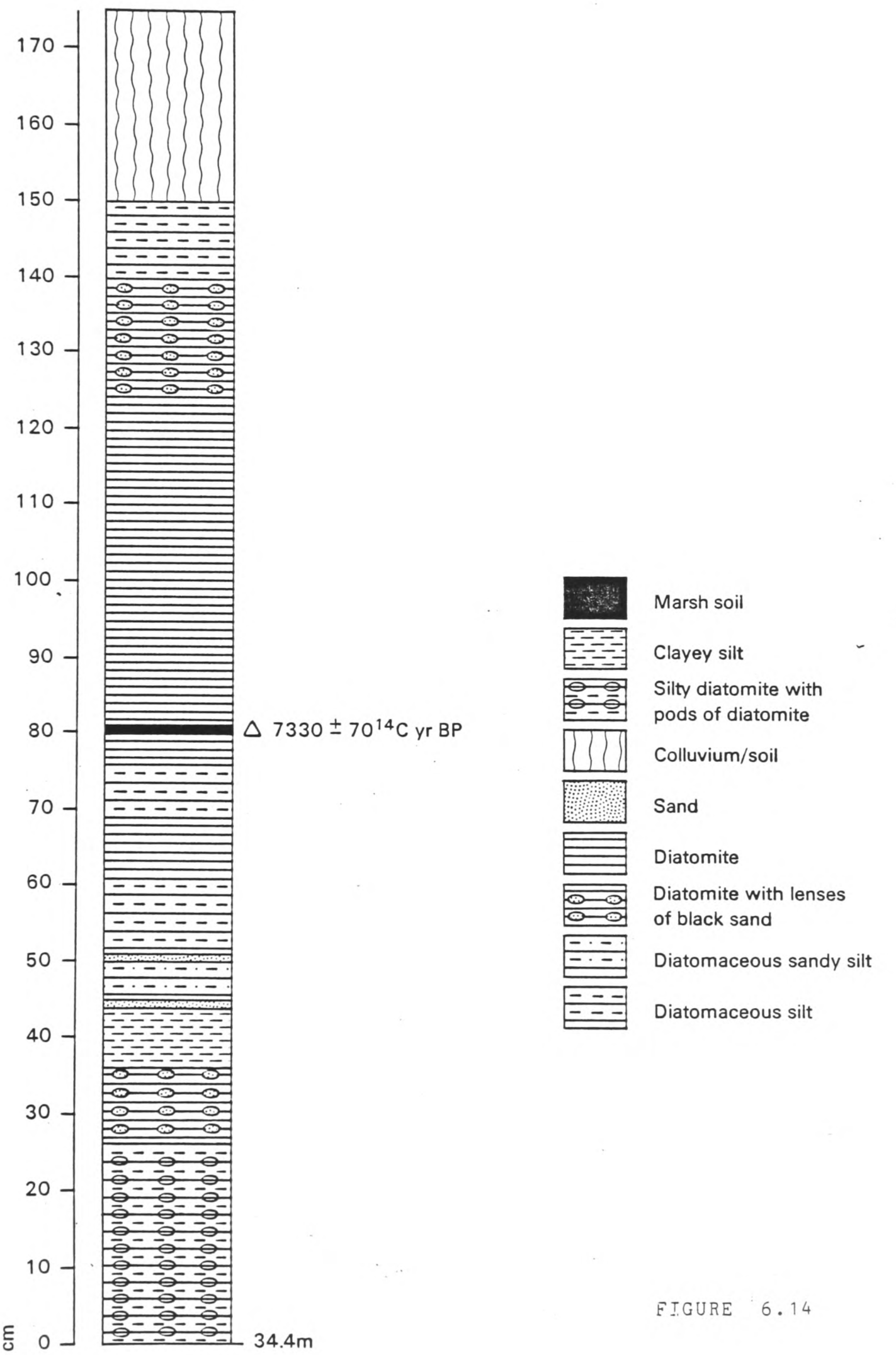
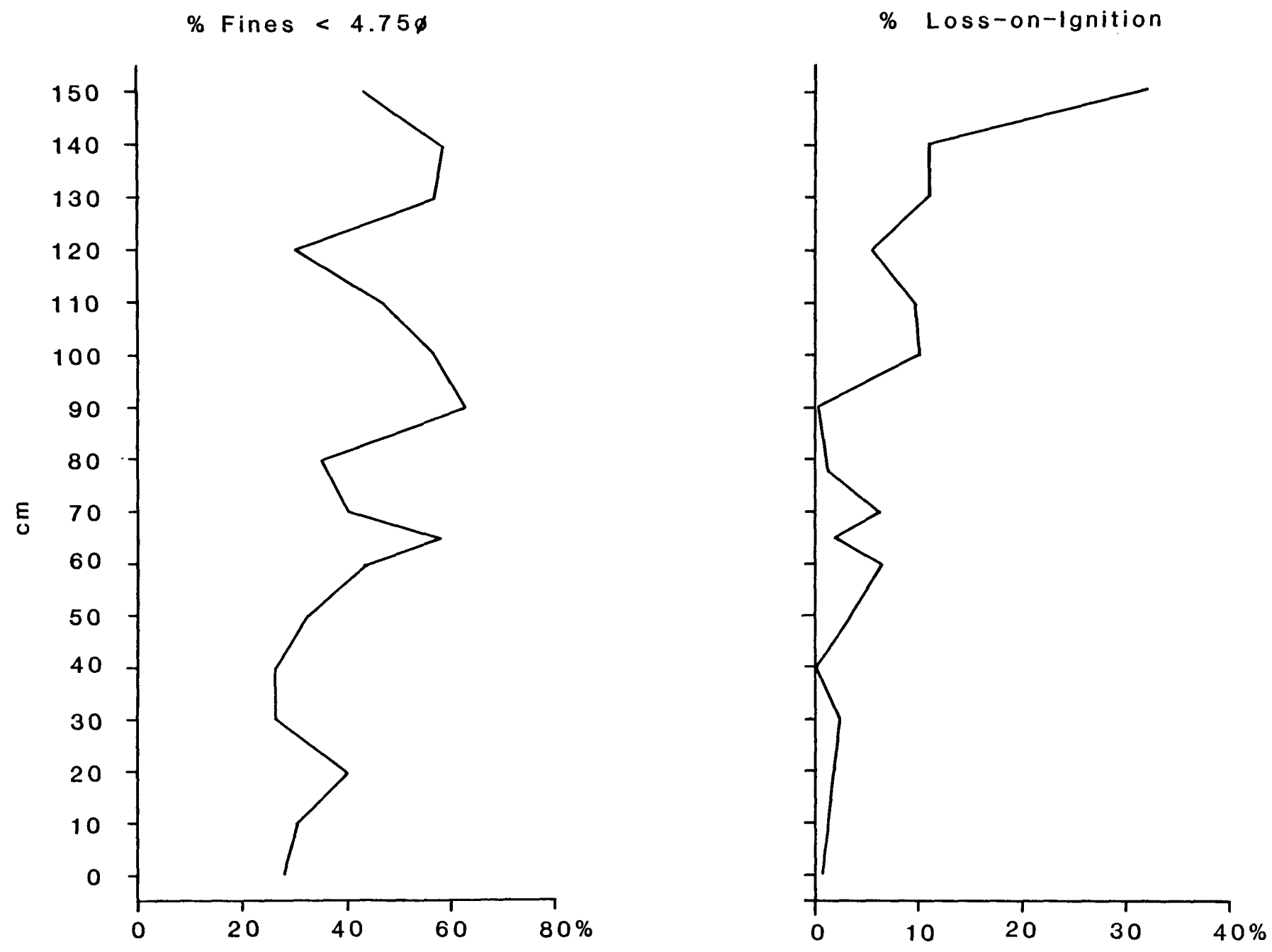


FIGURE 6.14

Zacapu Section 1



% fines and L.O.I., Zacapu Section 1

FIGURE 6.15

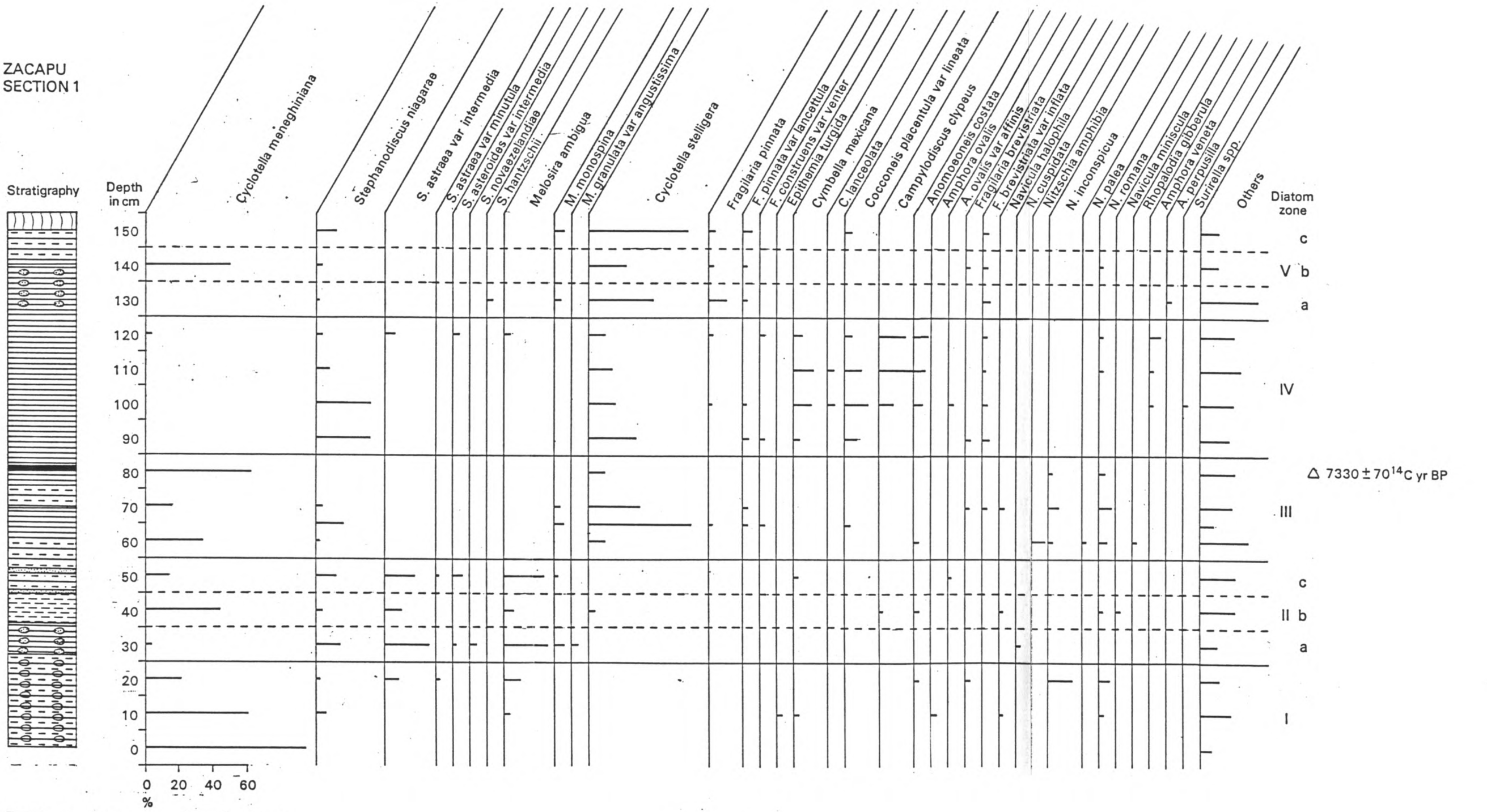
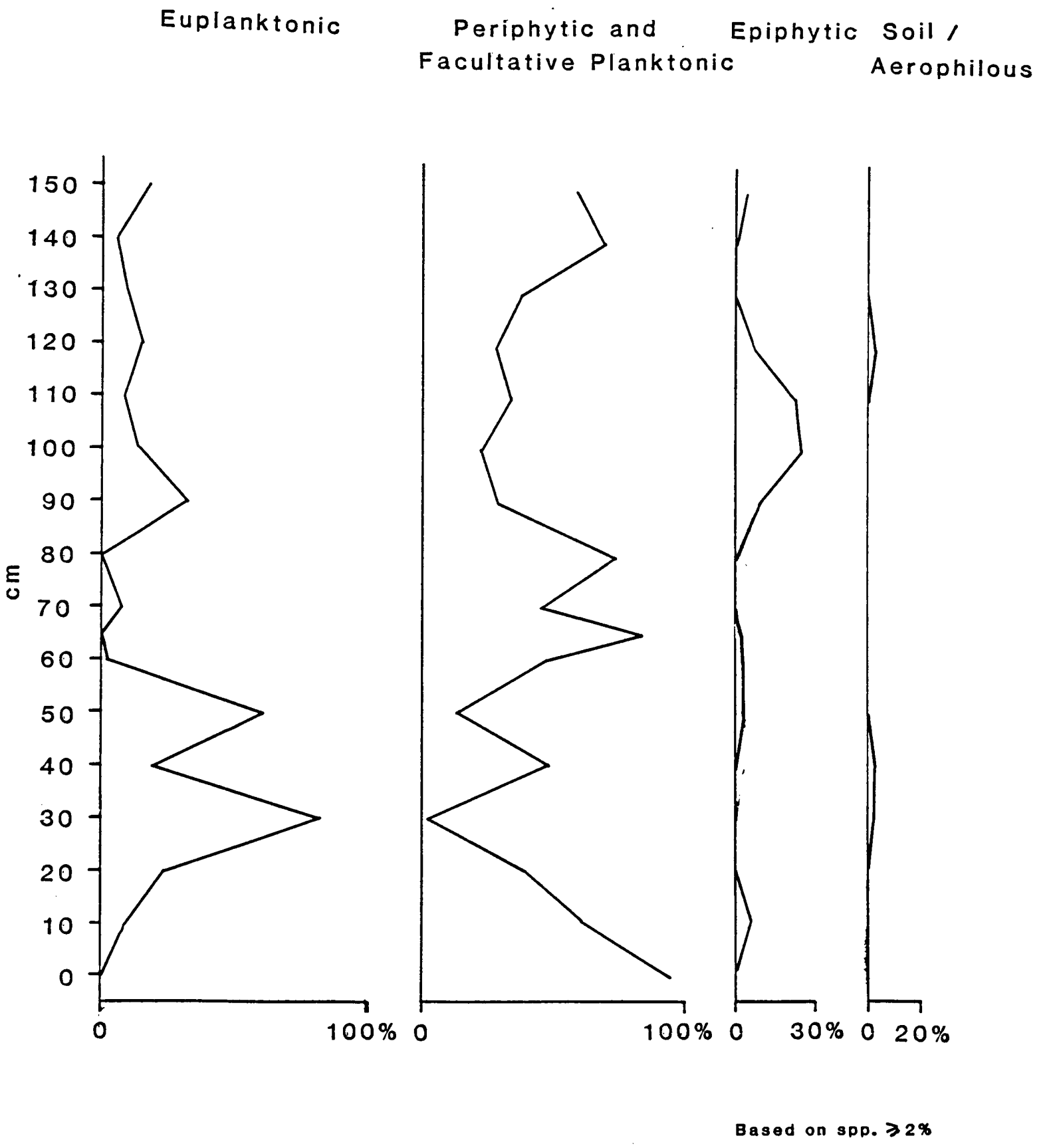


FIGURE 6.16

Diatom diagram, Zacapu Section 1

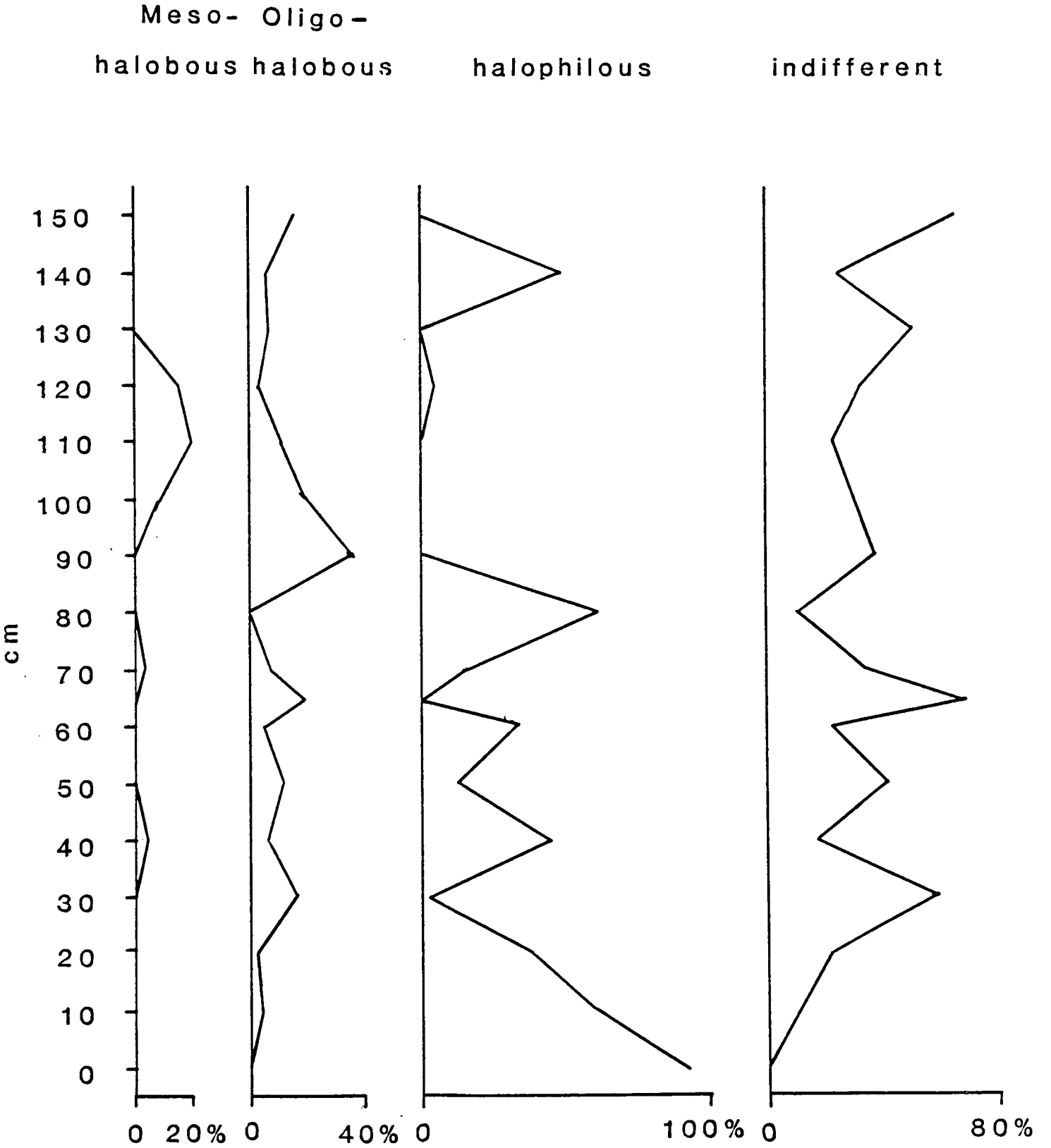
Variations in % of spp. by
habitat preference, Zacapu
Section 1



Zacapu Section 1

FIGURE 6.17

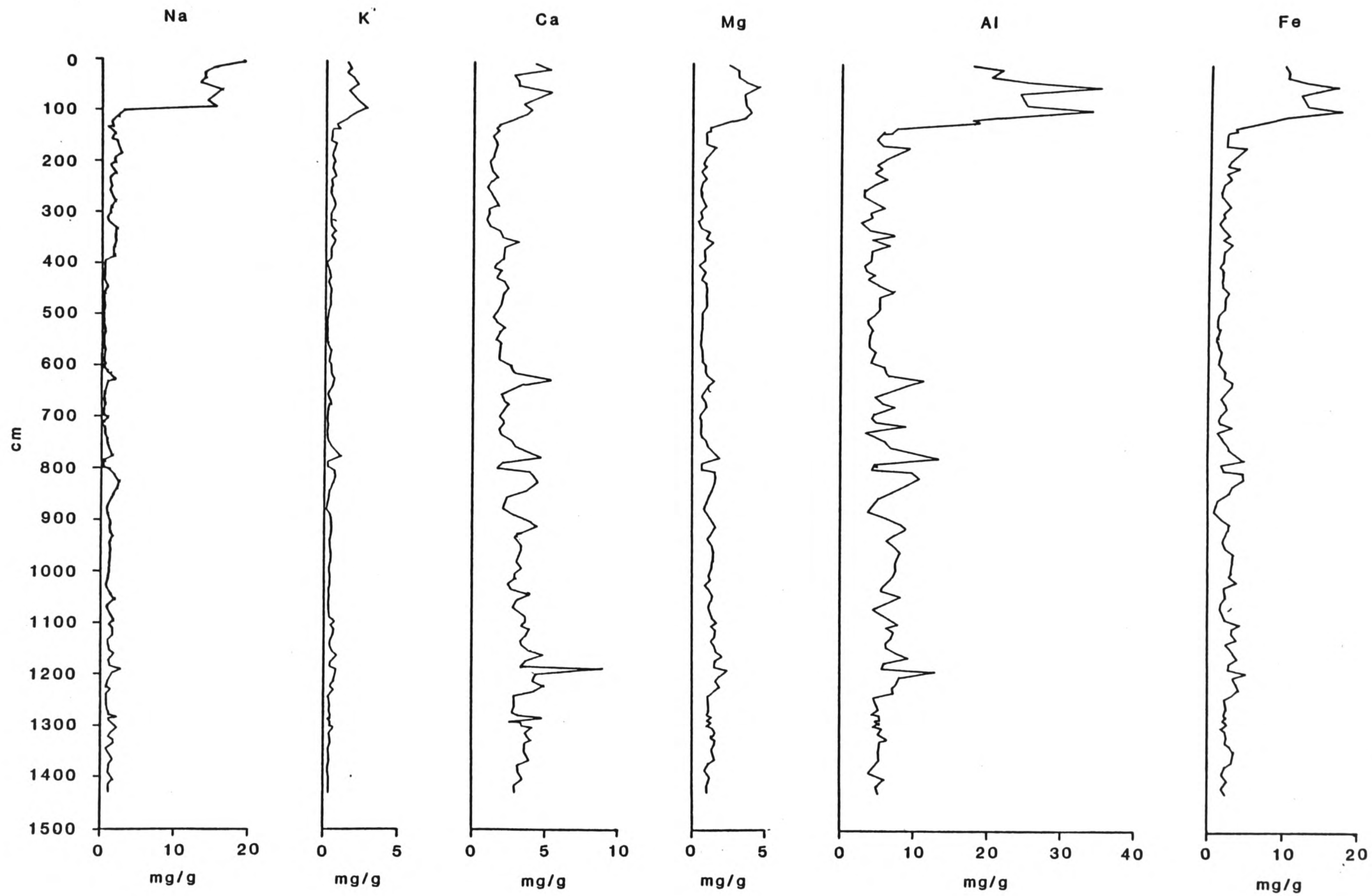
Variations in % of spp. by
salinity tolerance



Based on spp. ≥ 2%

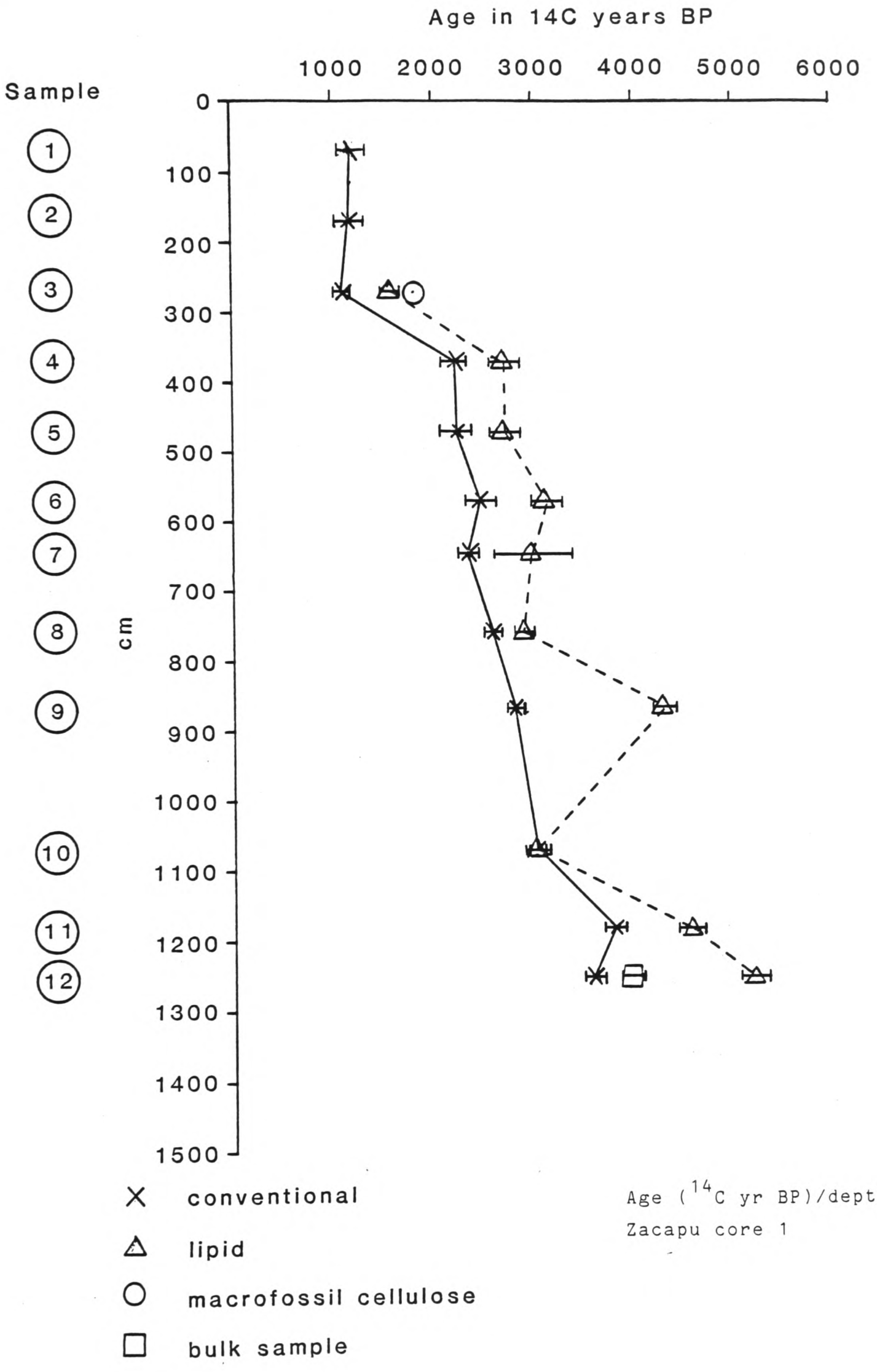
Zacapu Section 1

FIGURE 6.18



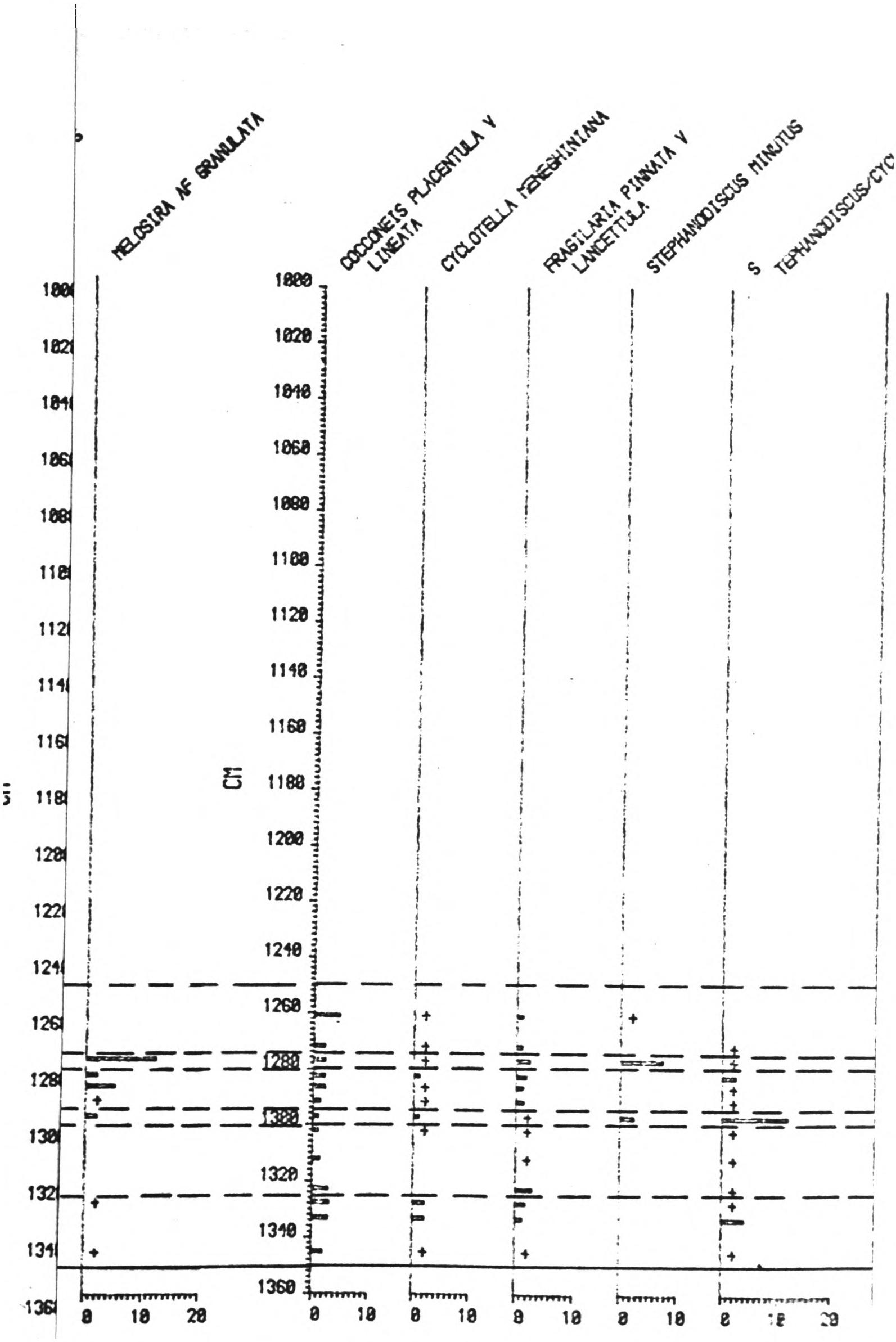
Sediment chemistry, Zacapu

FIGURE 6.19

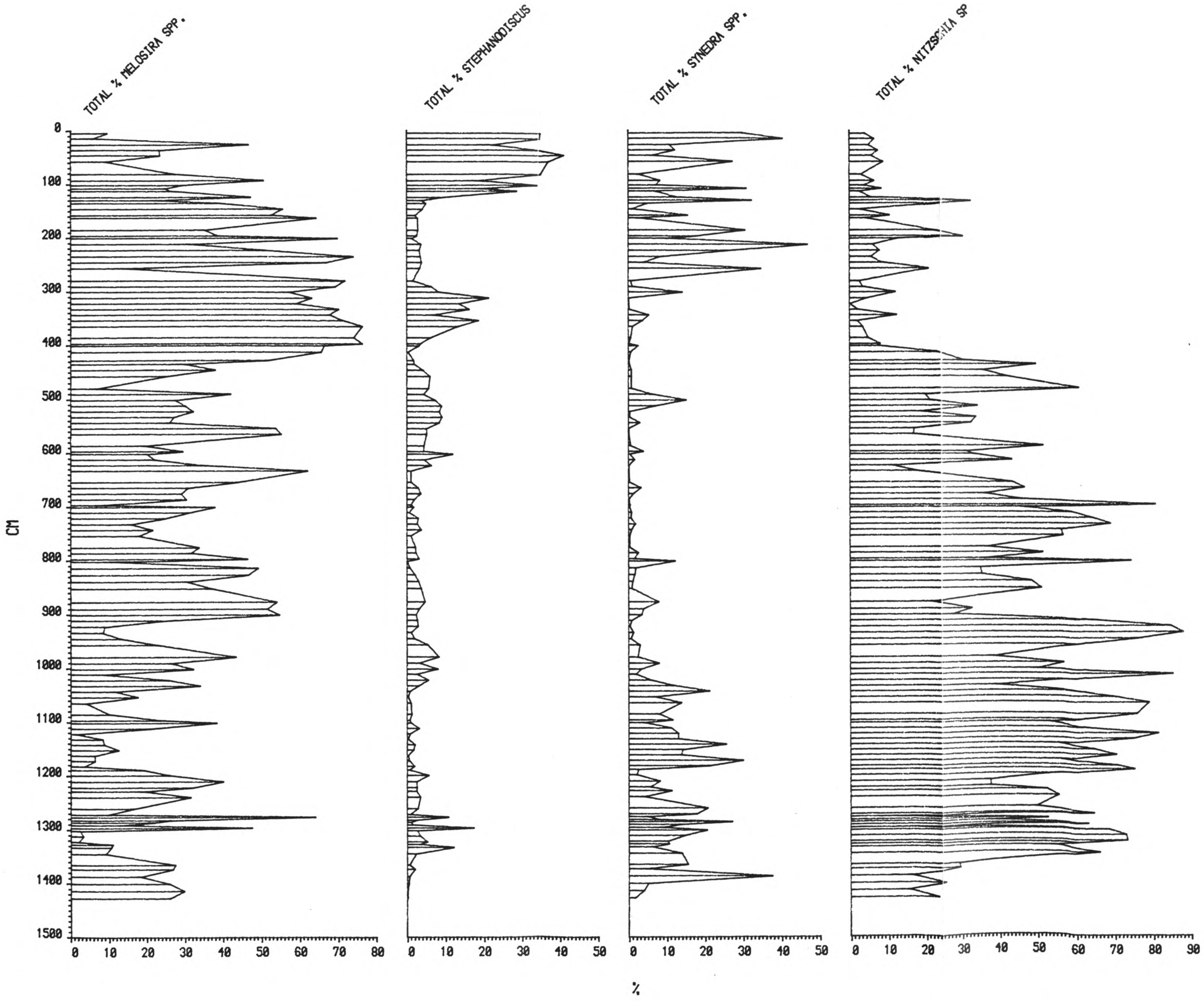


Age (^{14}C yr BP)/depth plot, Zacapu core 1

FIGURE 6.20

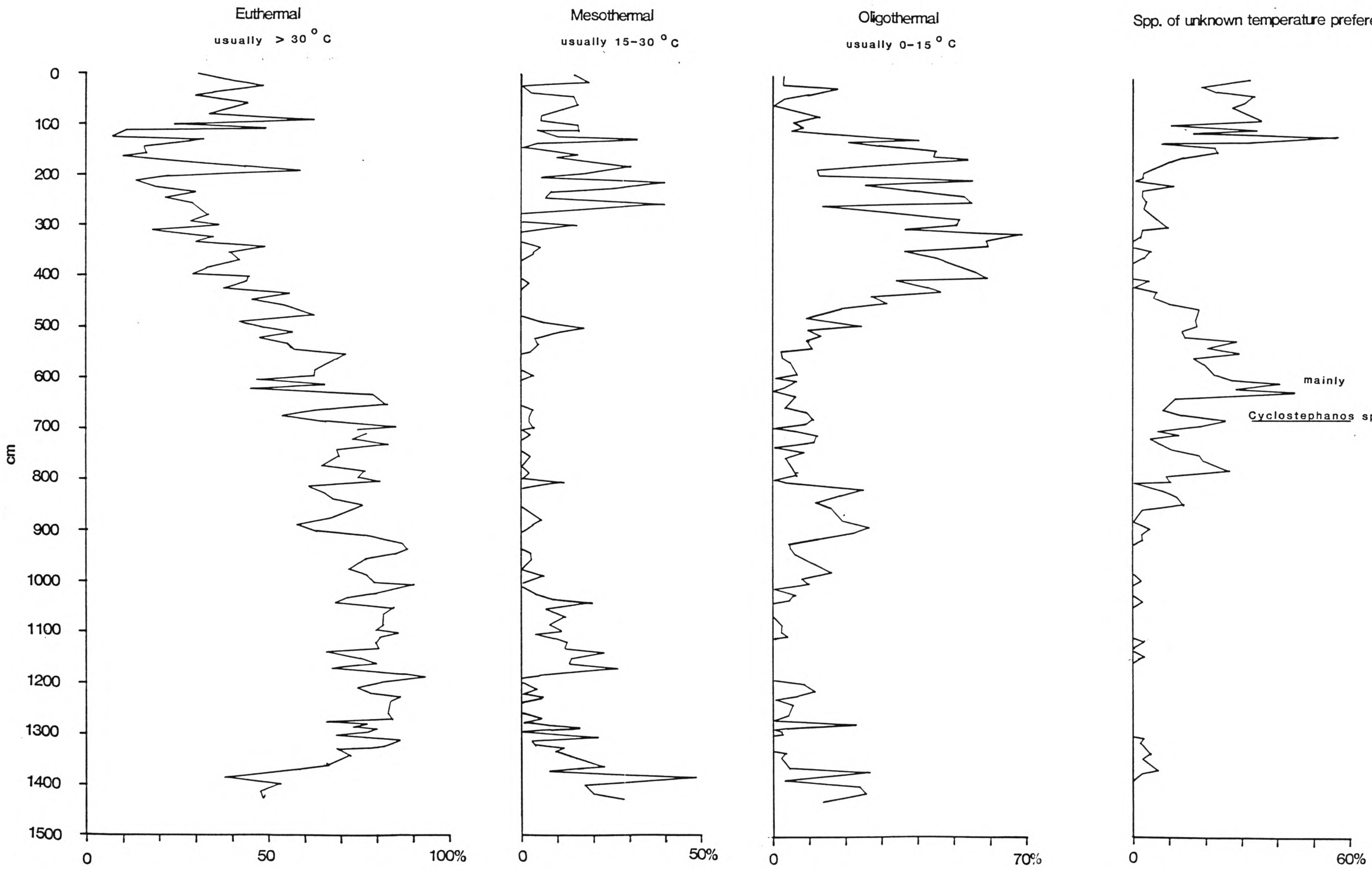


ZACAPU CORE 1, DETAIL 1250 TO 1350 C~



ZACAPU CORE 1, TOTAL % MELOSIRA, STEPHANODISCUS, SYNEDRA AND NITZSCHIA SPP.

FIGURE 6.24



Variations in % of spp. by temperature preference, Zacapu

FIGURE 6.25

The Upper Lerma Basin

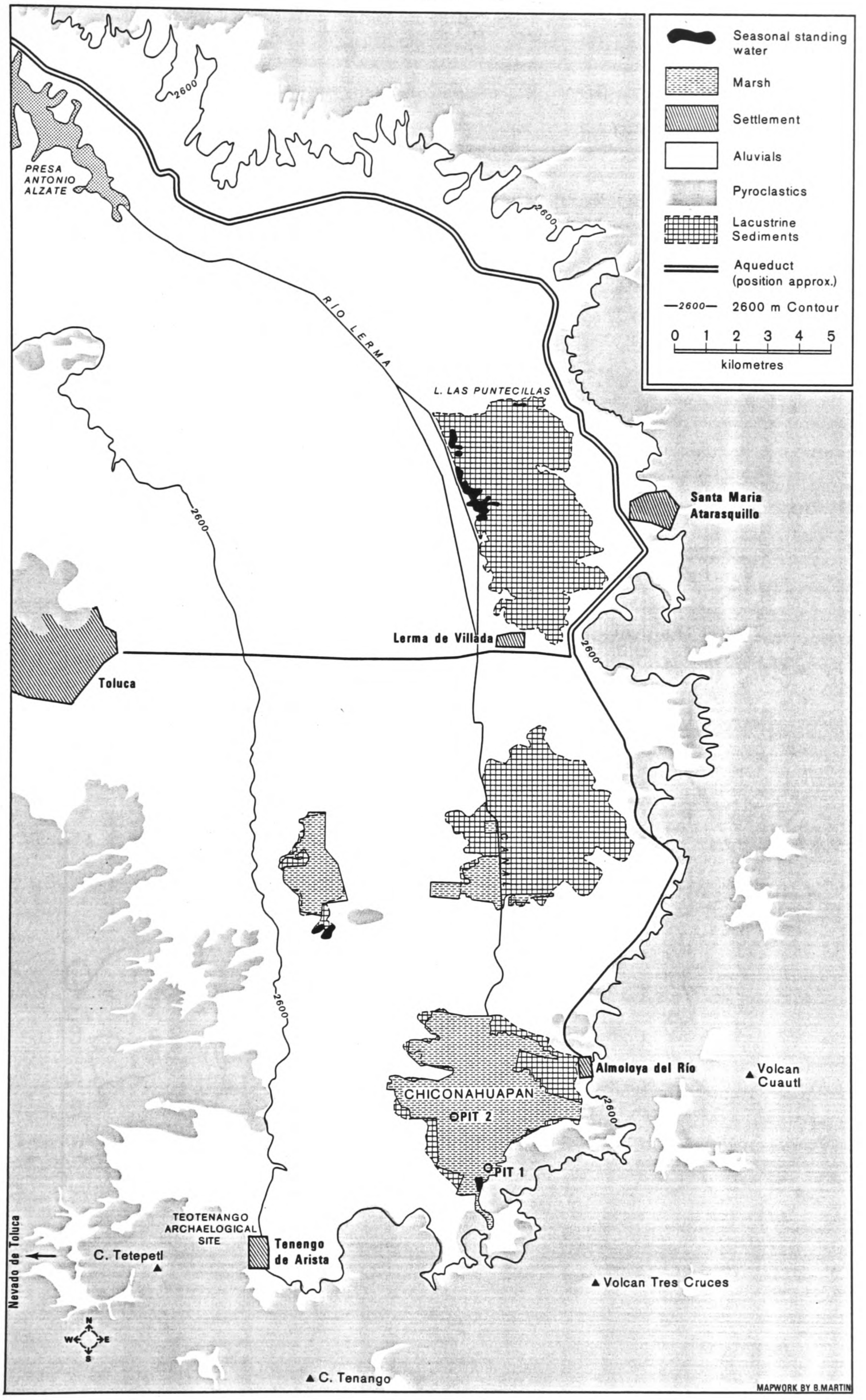


FIGURE 7.1

Location of Pits 1 and 2,
Upper Lerma

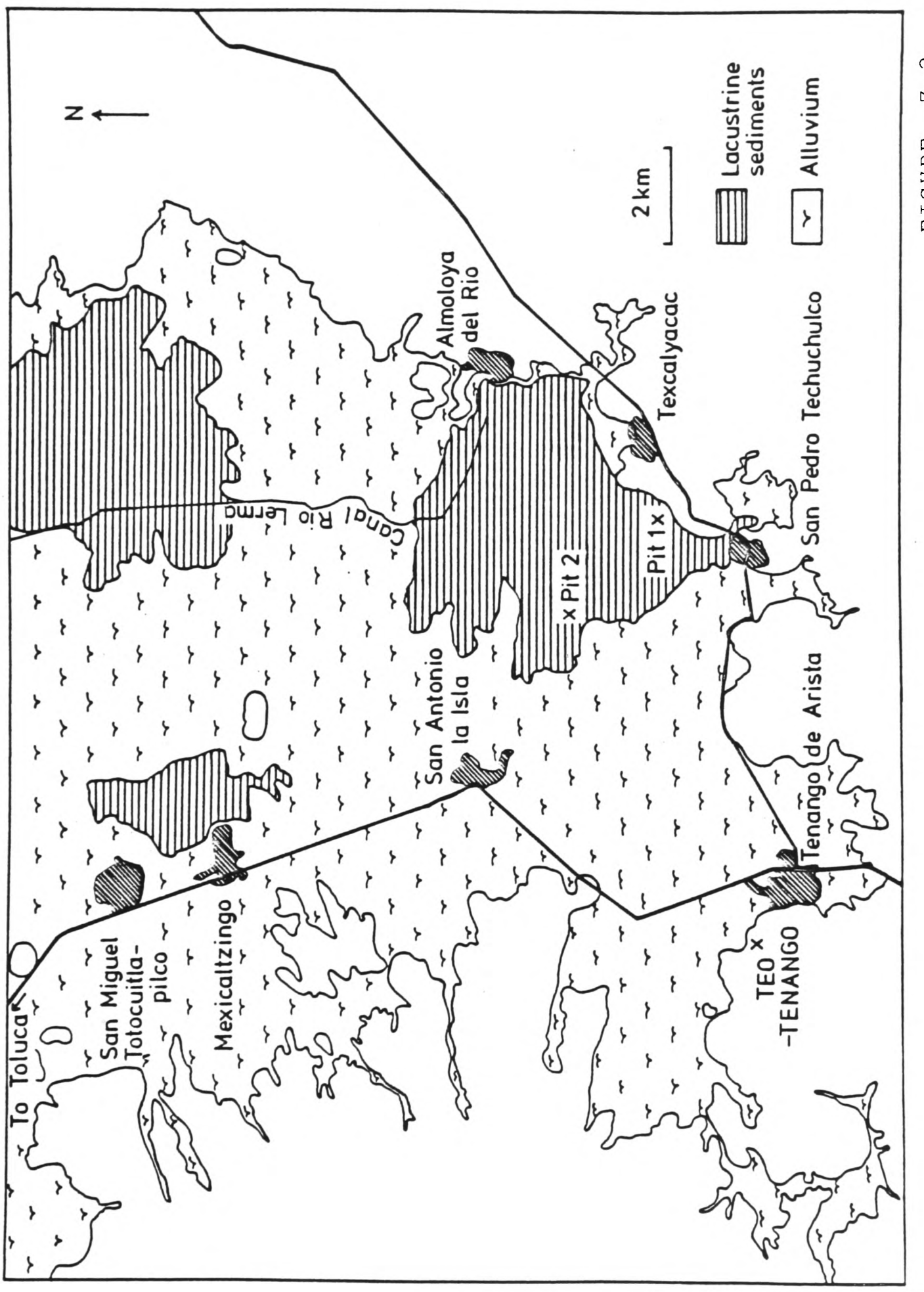


FIGURE 7.2

Stratigraphy, Upper Lerma
Pits 1 and 2

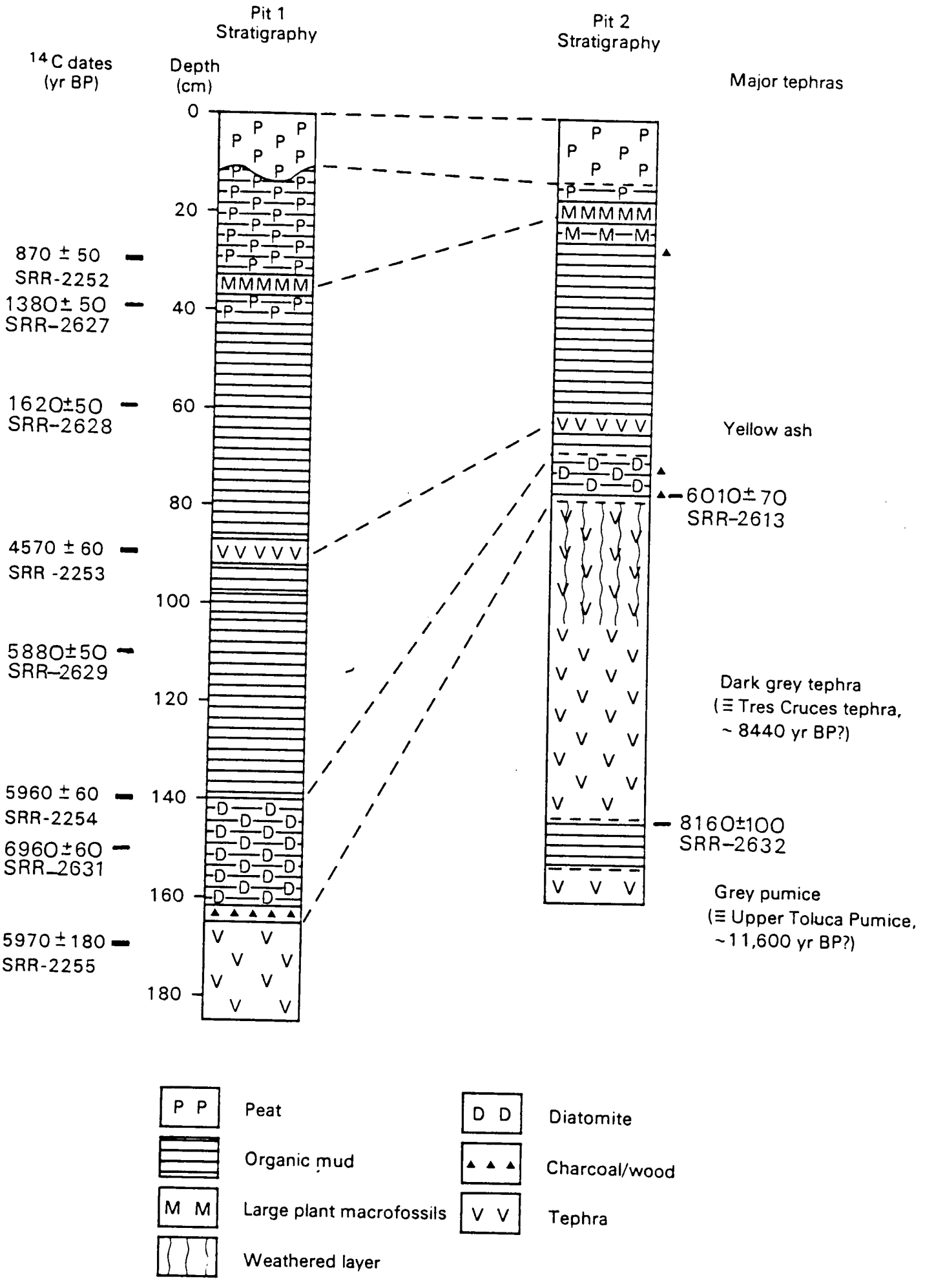
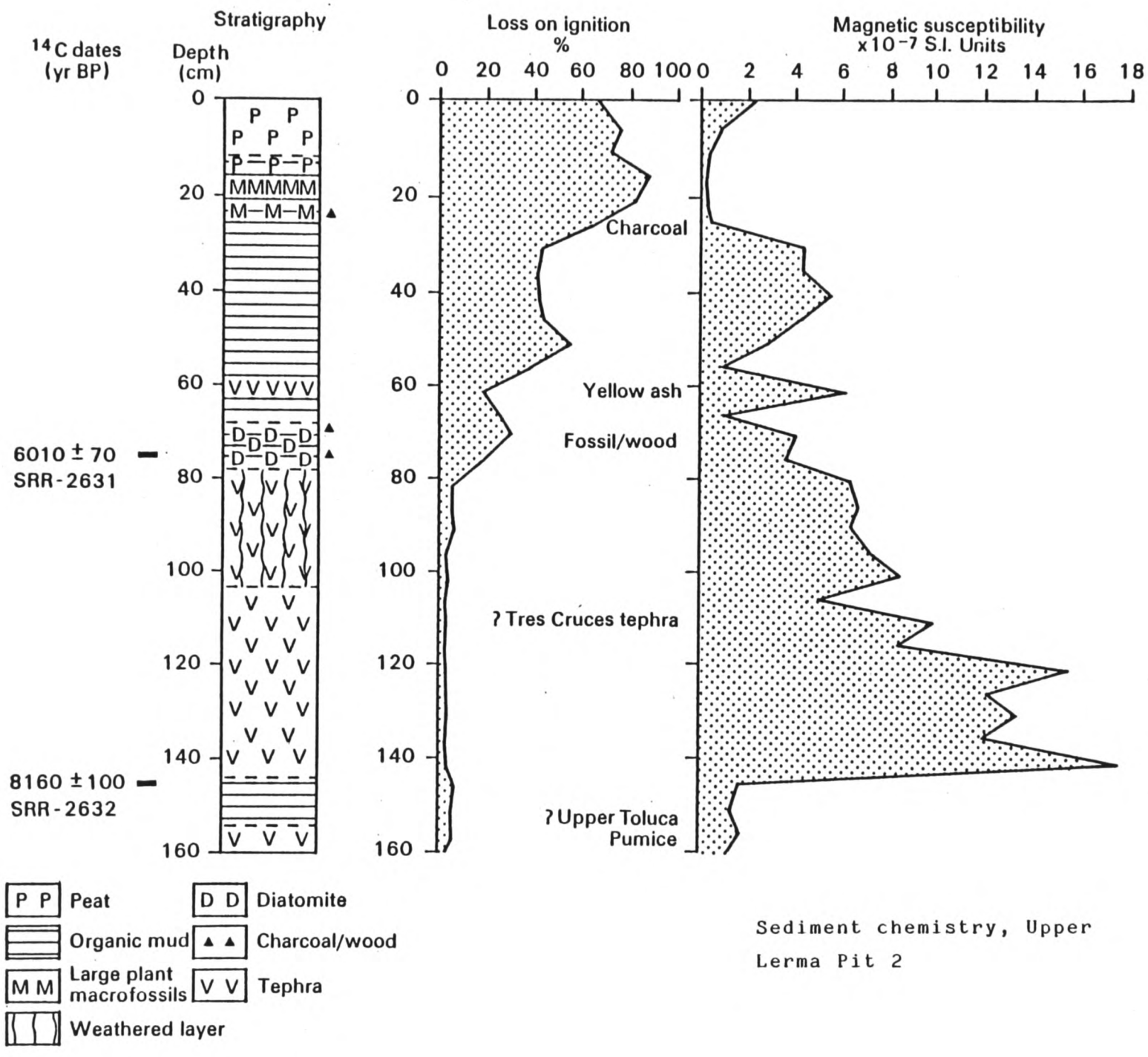


FIGURE 7.3



Sediment chemistry, Upper Lerma Pit 2

FIGURE 7.4

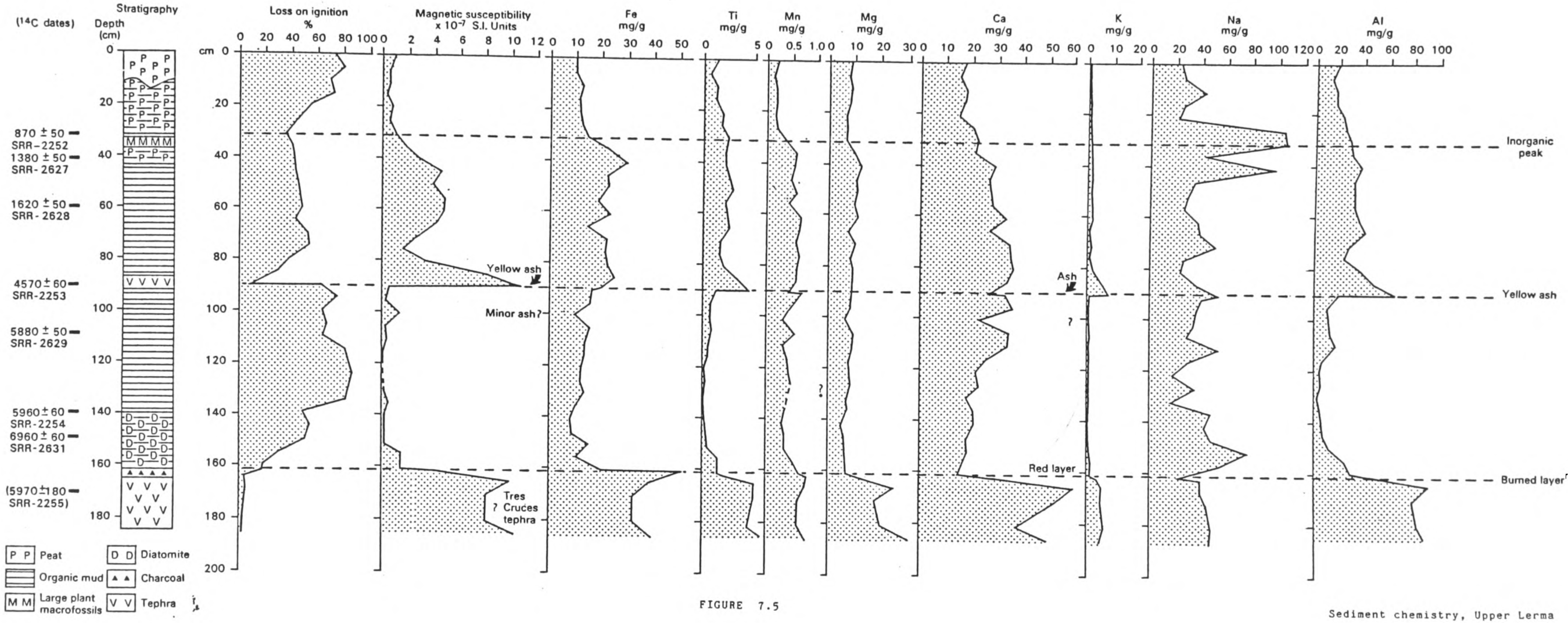
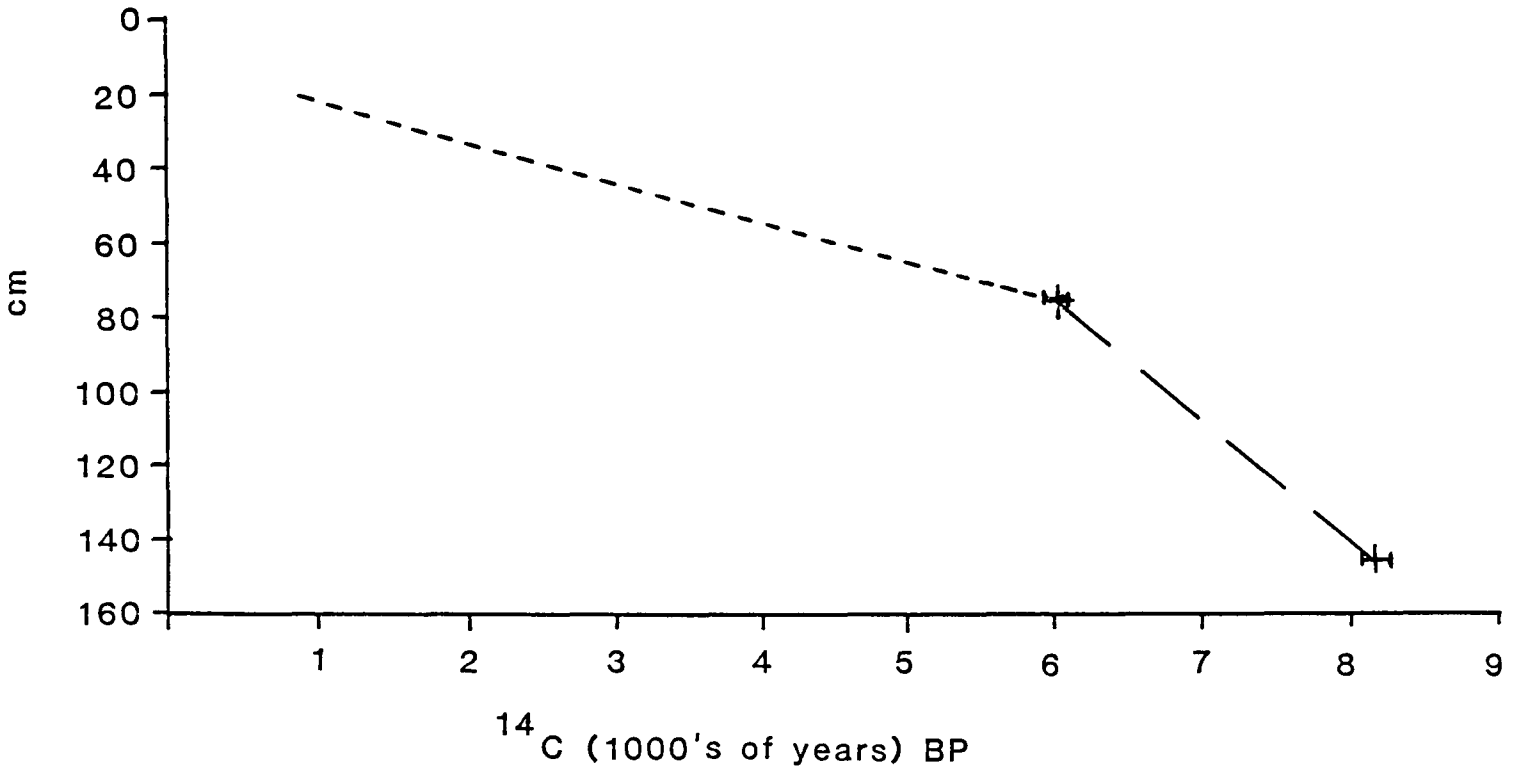


FIGURE 7.5

Sediment chemistry, Upper Lerma Pit 1

Age (^{14}C yr BP)/depth plot,
Upper Lerma Pits 1 and 2

Pit 2



Pit 1

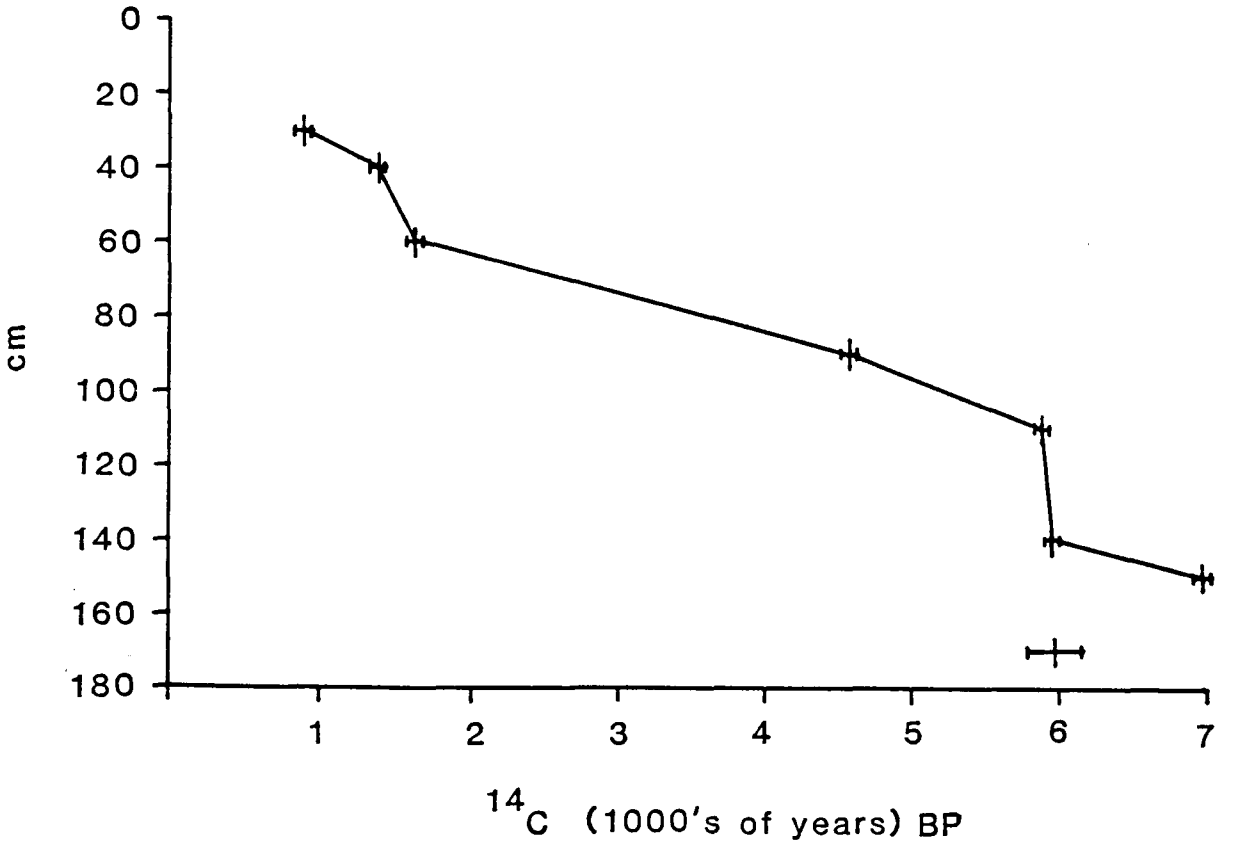


FIGURE 7.6

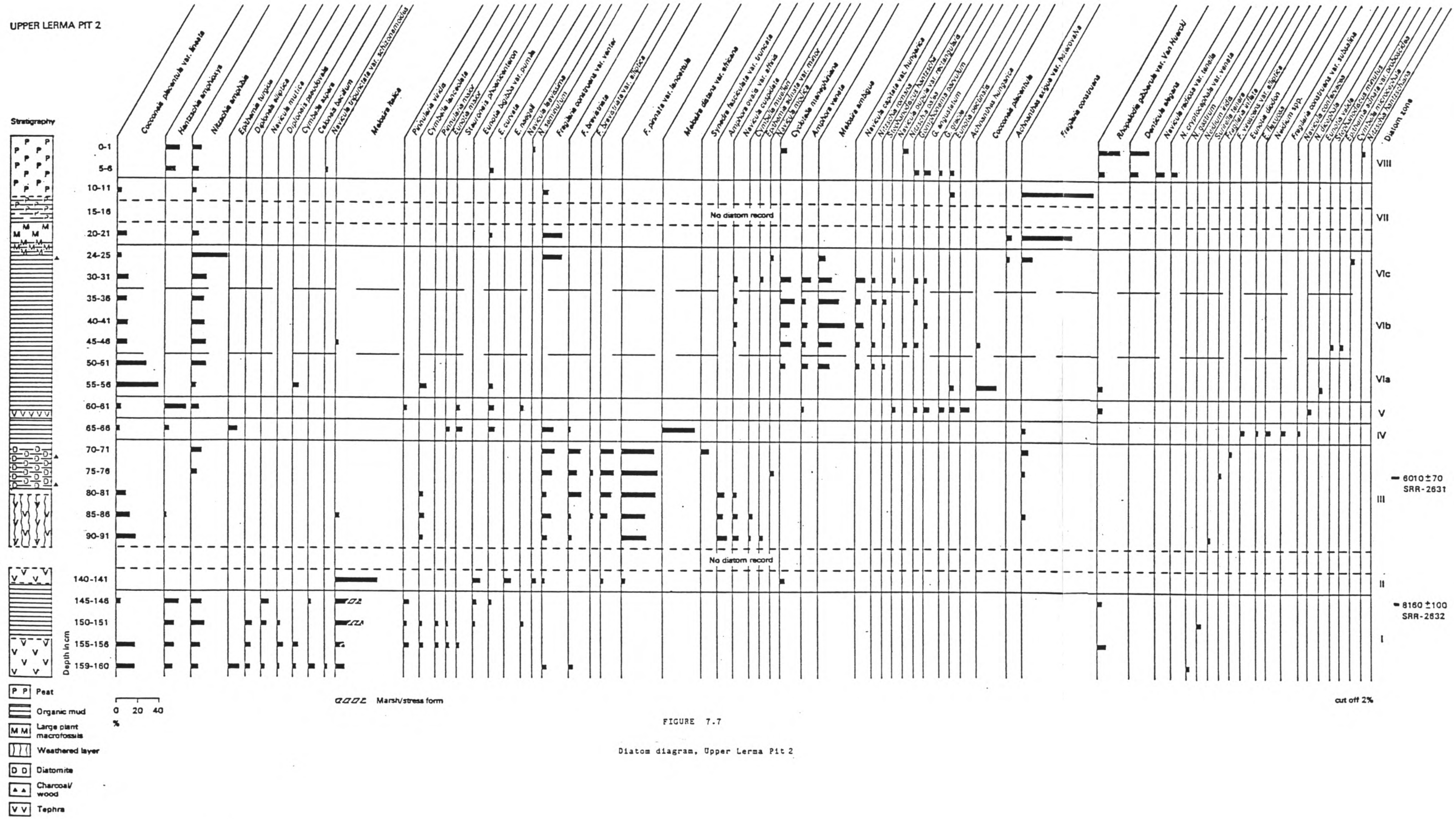


FIGURE 7.7

Diatom diagram, Upper Lerma Pit 2

UPPER LERMA PIT 1

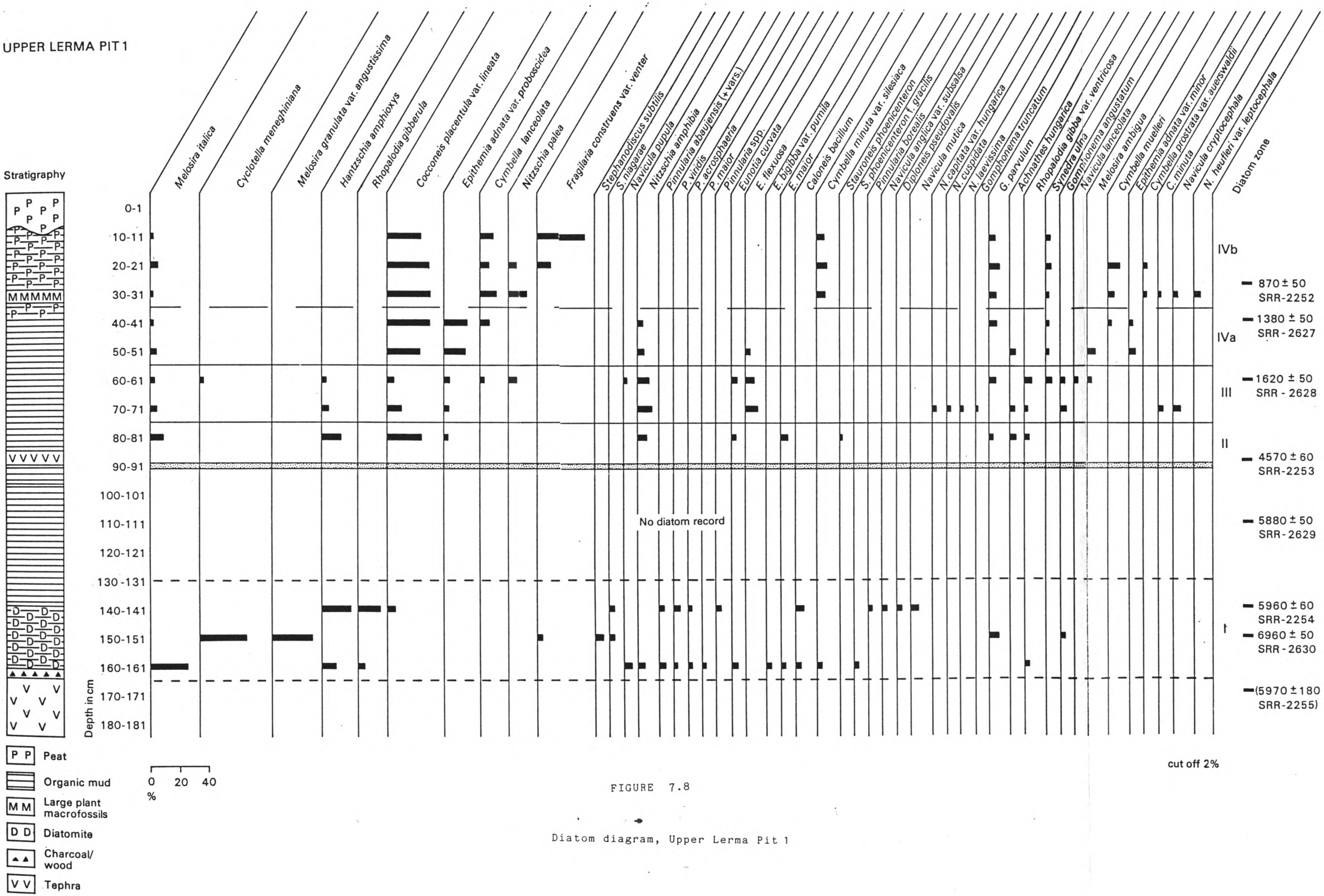


FIGURE 7.8

Diatom diagram, Upper Lerma Pit 1

Total % of *Eunotia* spp., *Pinnularia* spp., *Diploneis* spp., (excluding *D. pseudovalis*) and *Melosira distans* var, *africana*

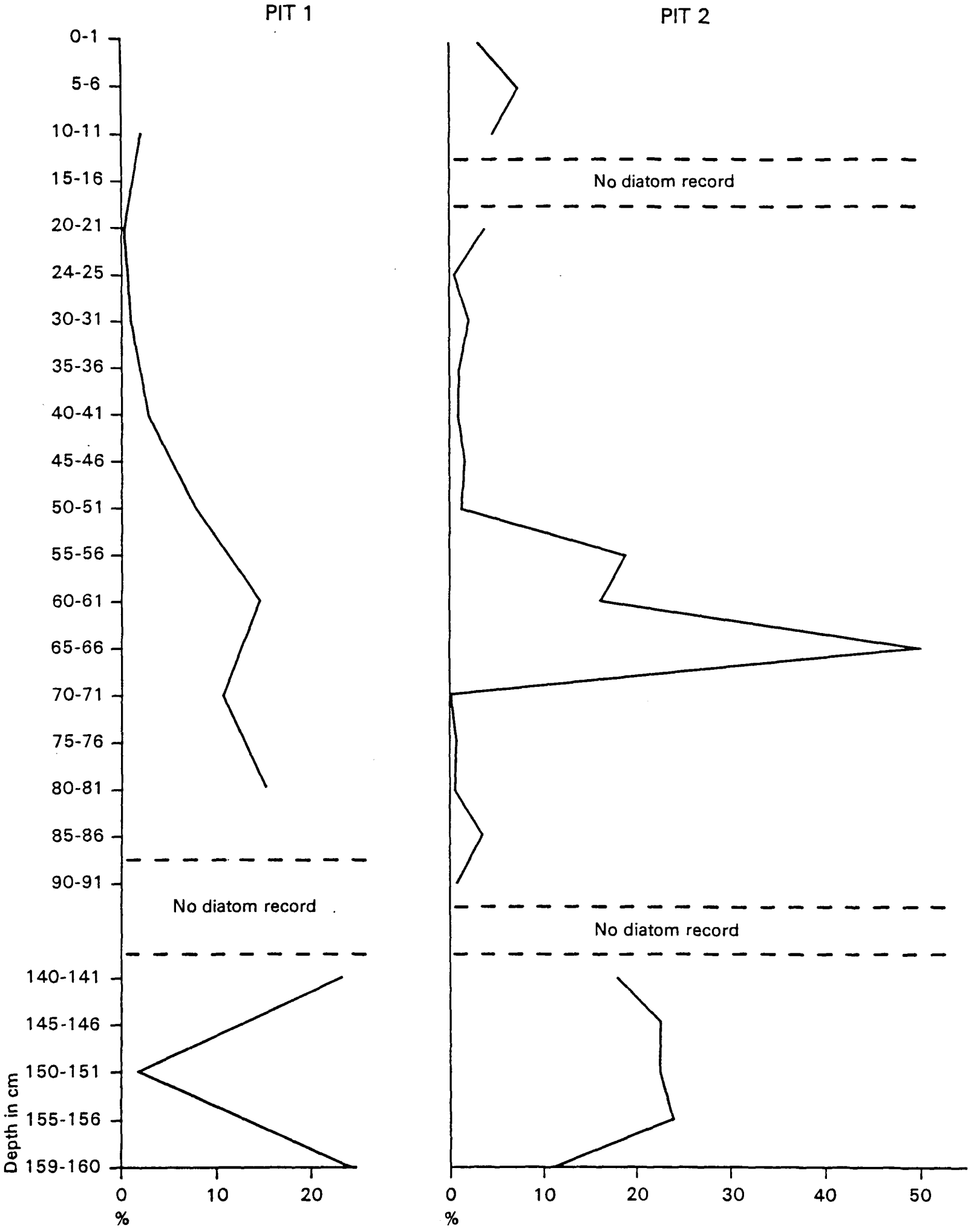
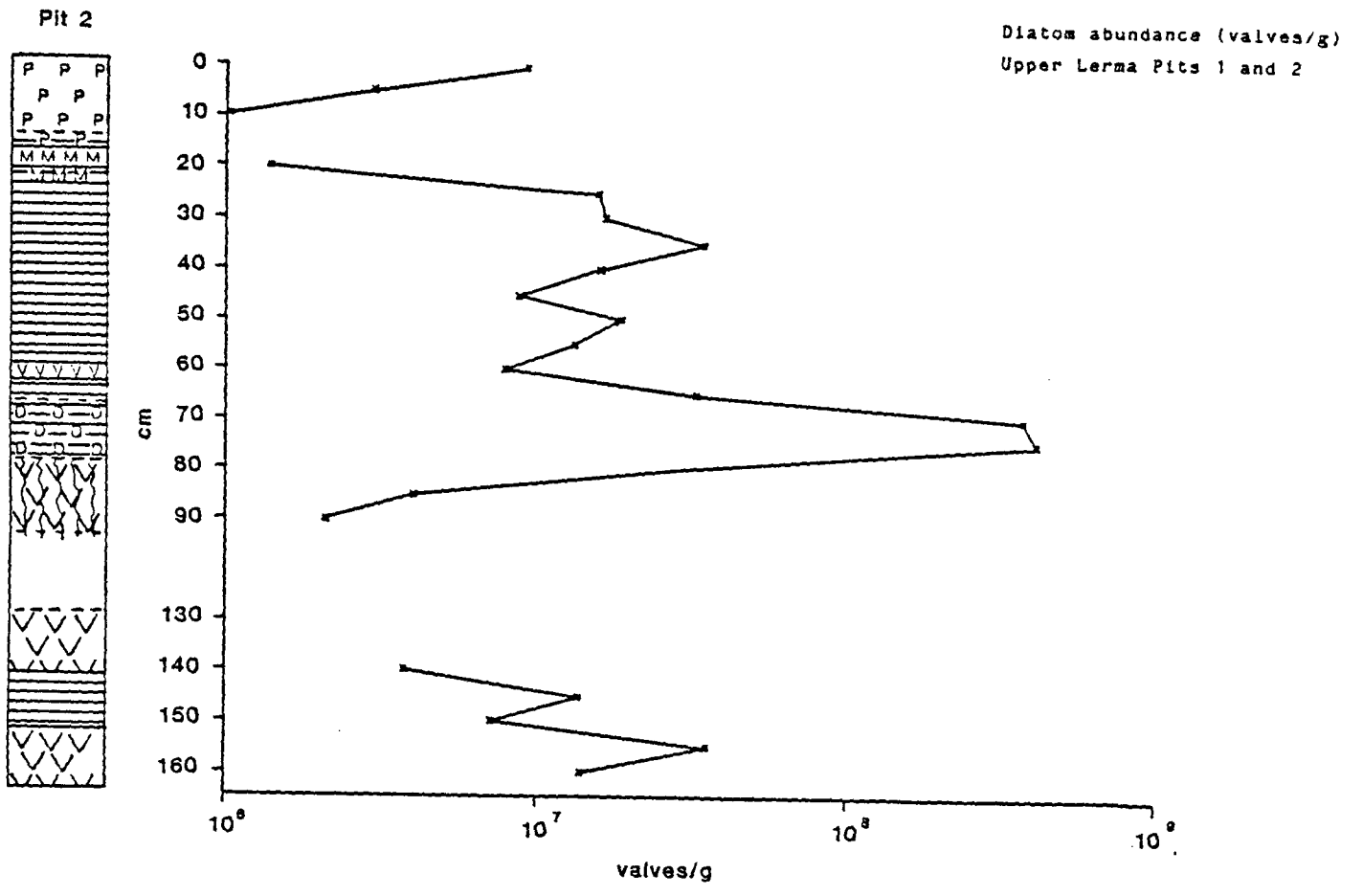


FIGURE 7.9


Pit 2
Diatom abundance (valves/g)
Upper Lerma Pits 1 and 2
cm
0
10
20
30
40
50
60
70
80
90
130
140
150
160
10^6
10^7
10^8
10^9
valves/g

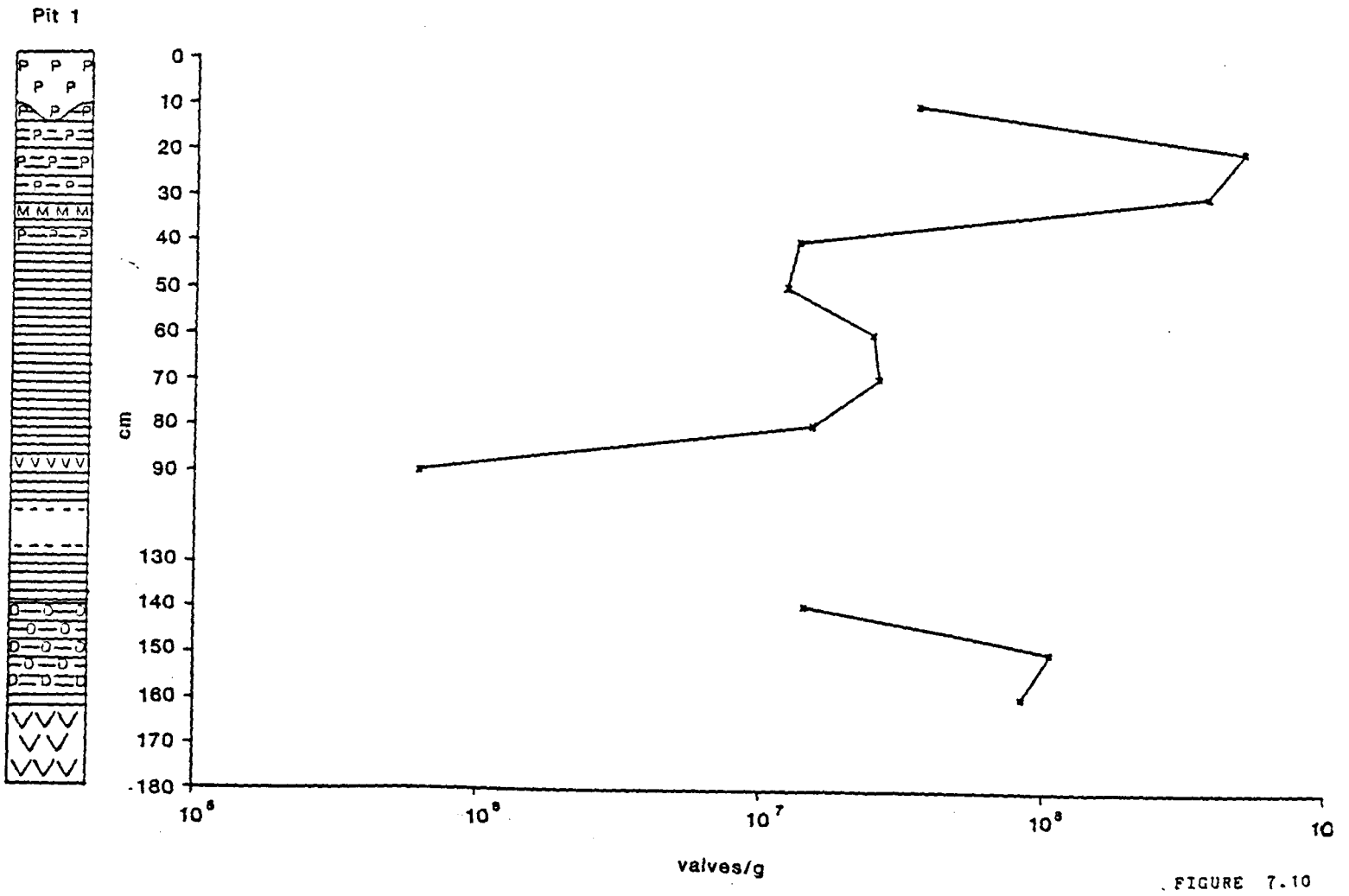

Pit 1
cm
0
10
20
30
40
50
60
70
80
90
130
140
150
160
170
180
10^6
10^7
10^8
valves/g

FIGURE 7.10

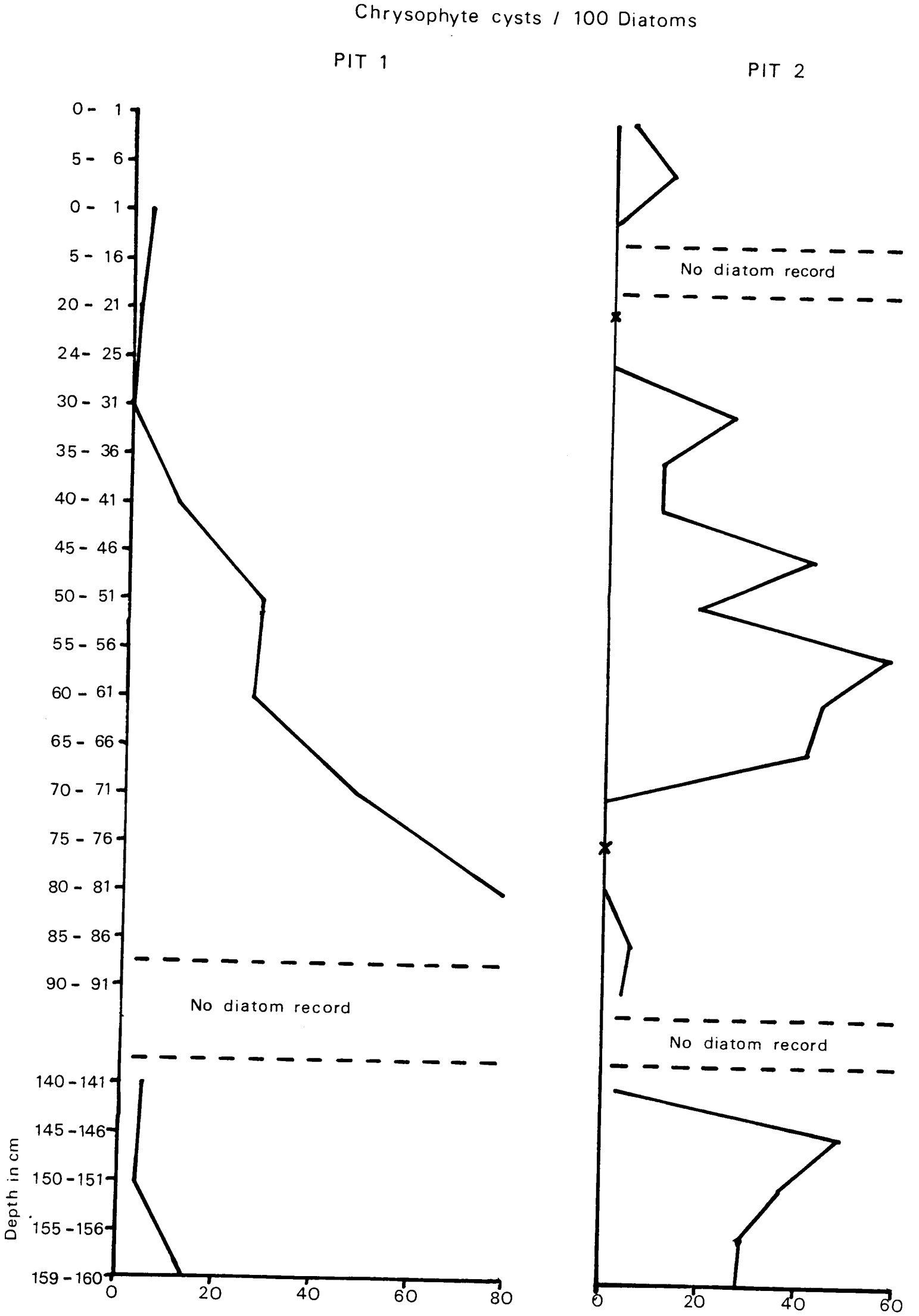

Chrysophyte cysts / 100 Diatoms
PIT 1
PIT 2
0 - 1
5 - 6
0 - 1
5 - 16
20 - 21
24 - 25
30 - 31
35 - 36
40 - 41
45 - 46
50 - 51
55 - 56
60 - 61
65 - 66
70 - 71
75 - 76
80 - 81
85 - 86
90 - 91
No diatom record
140 - 141
145 - 146
150 - 151
155 - 156
159 - 160
Depth in cm
0
20
40
60
80
No diatom record
No diatom record
0
20
40
60

FIGURE 7.11

Variations in % of spp. by
habitat preference

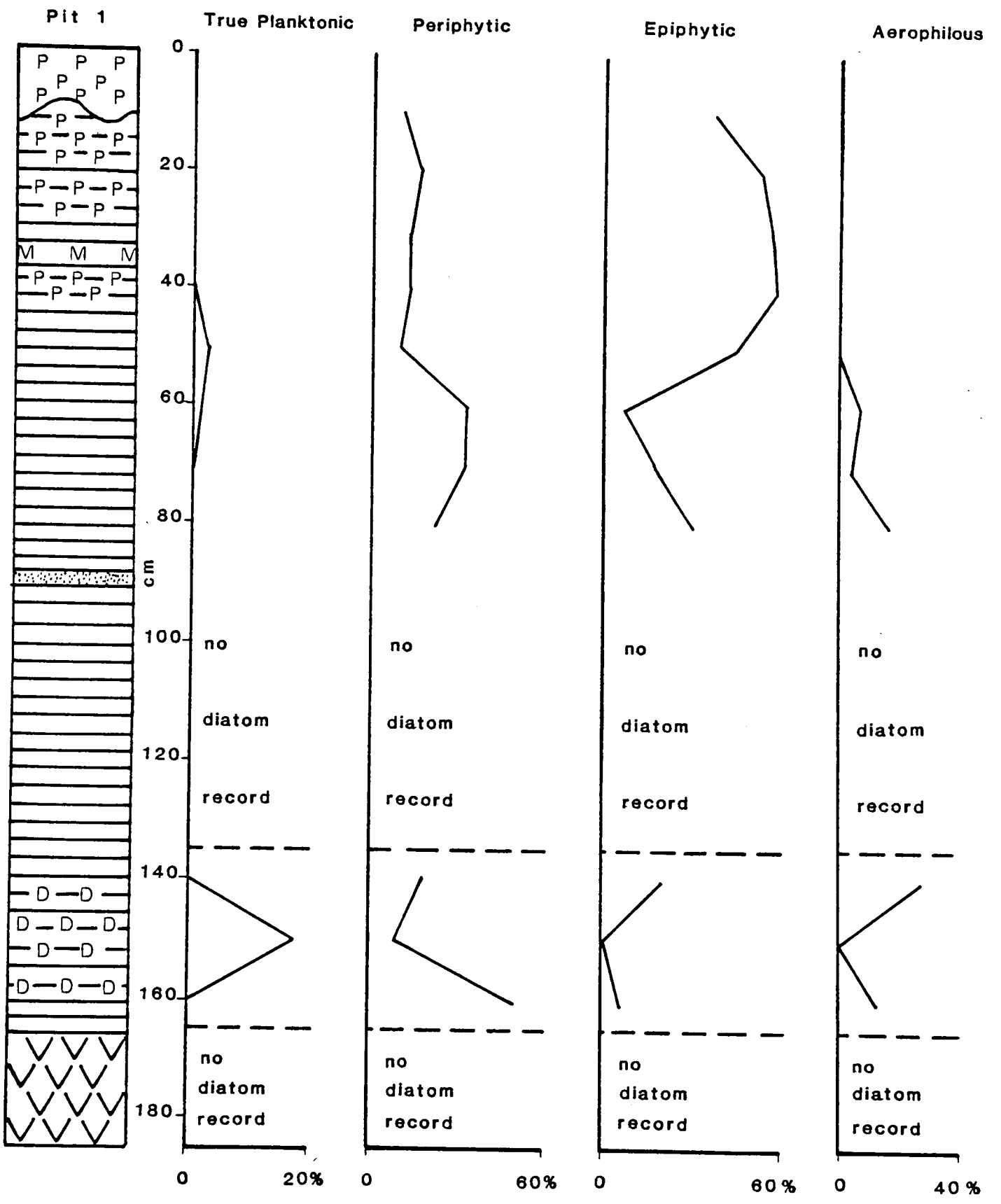


FIGURE 7.12a

Variations in percentage of
species by habitat preference

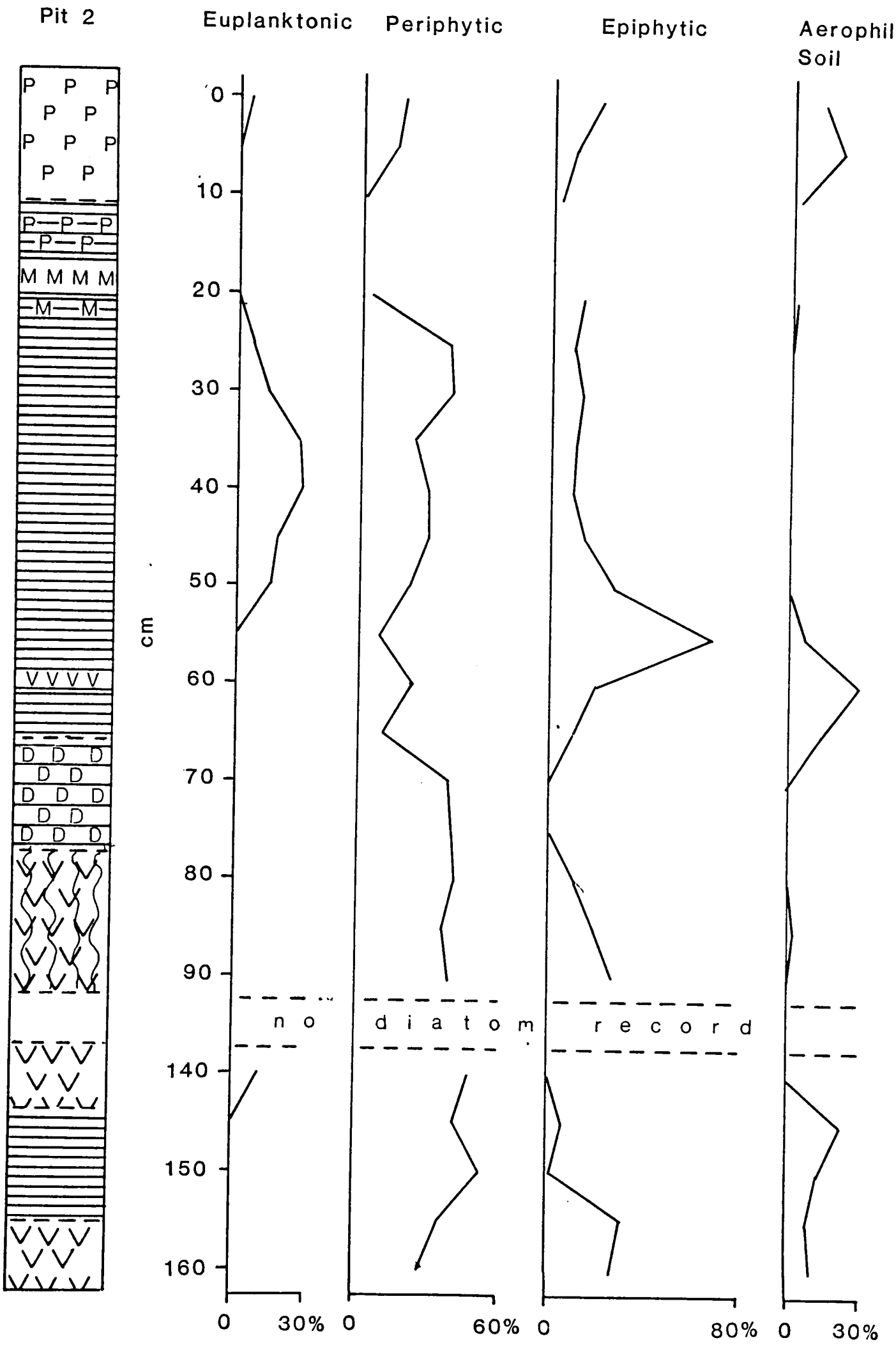


FIGURE 7.12b

Based on spp. ⩾ 2%

Variations in % of spp. by pH preference

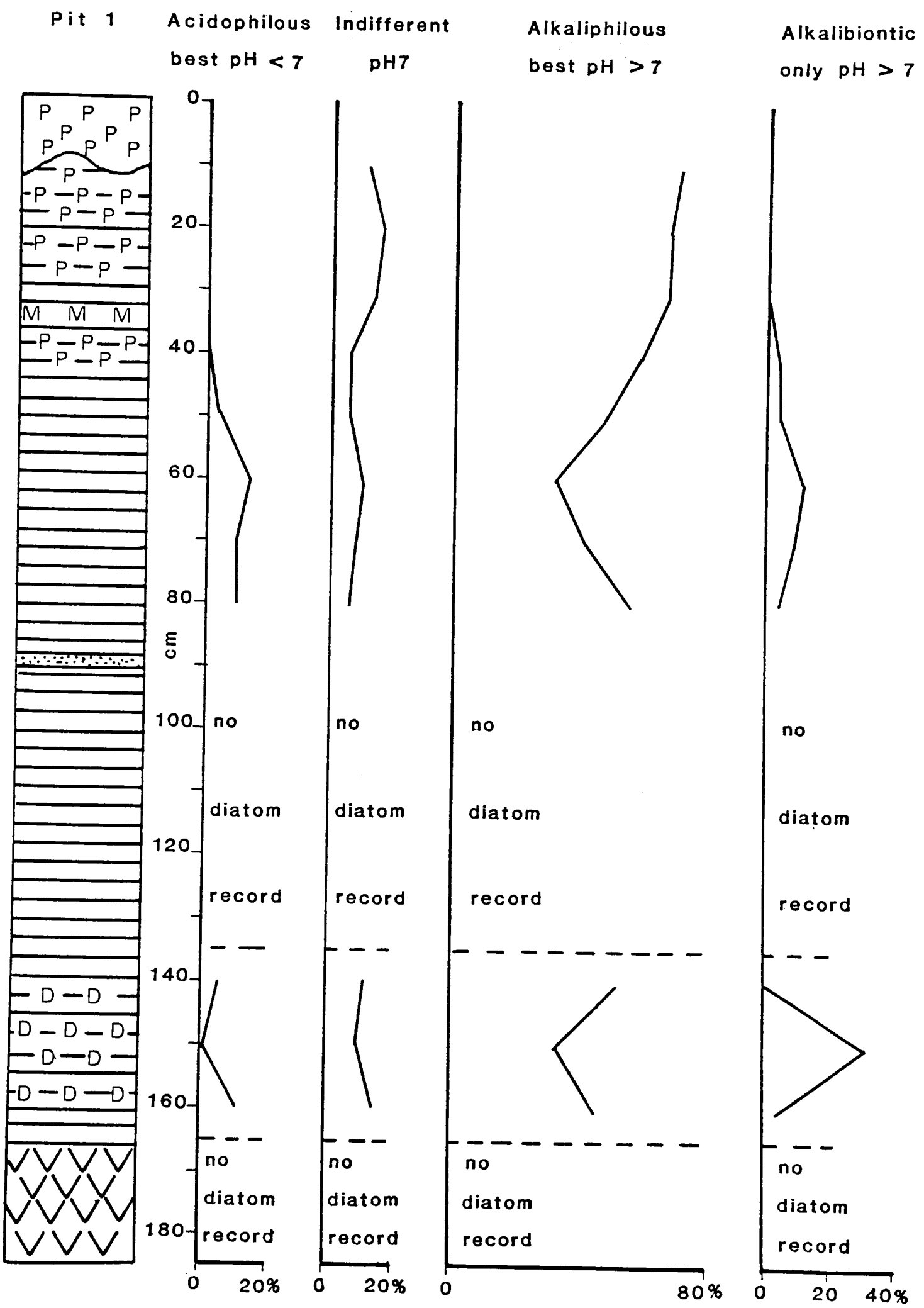


FIGURE 7.12c

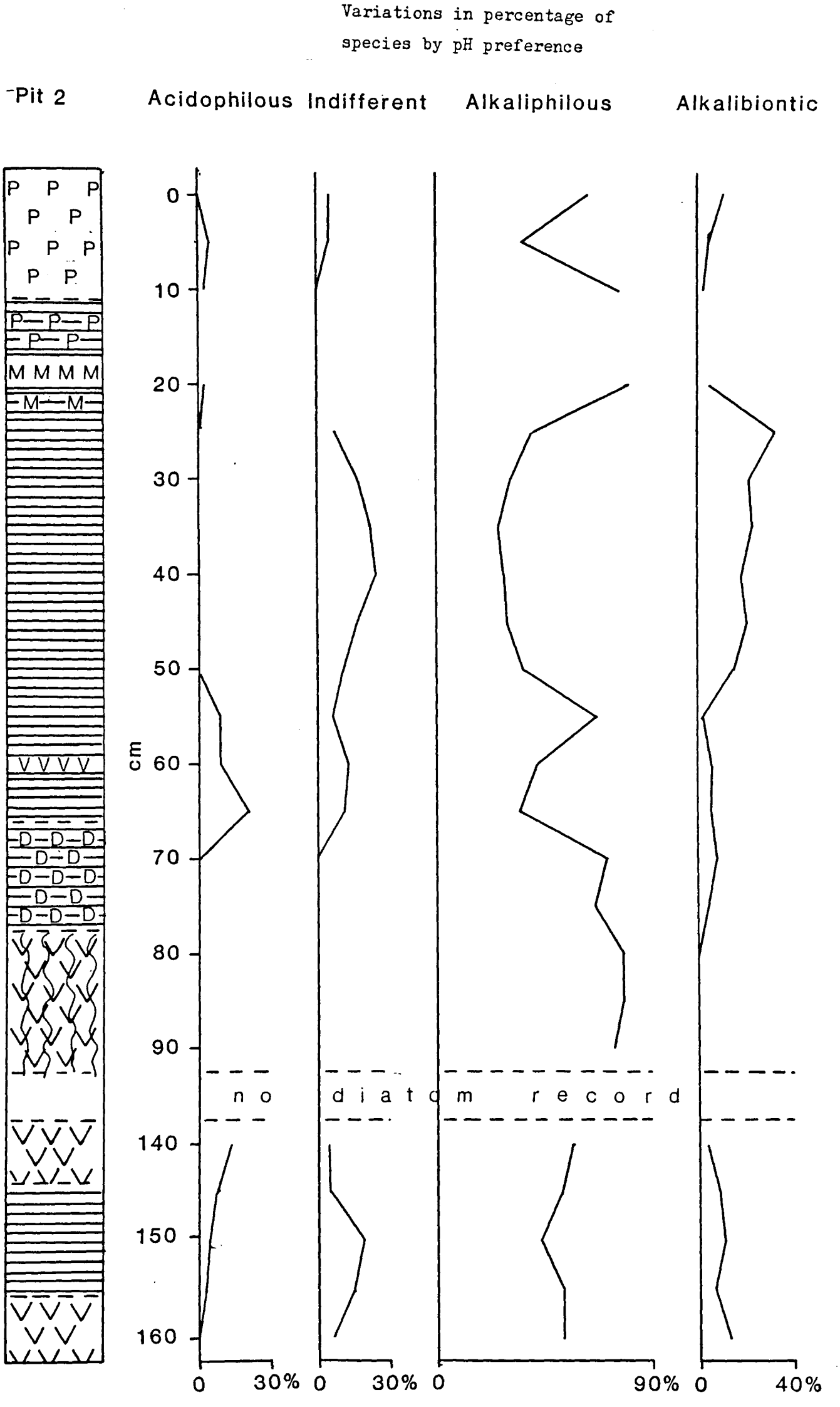

Variations in percentage of species by pH preference
Pit 2
Acidophilous
Indifferent
Alkaliphilous
Alkalibiontic
P P P
P P
P P P
P P
P—P—P
P—P
M M M M
M—M
V V V V
D—D—D
D—D
D—D—D
D—D
D—D—D
0
10
20
30
40
50
60
70
80
90
cm
no diatom record
140
150
160
0 30%
0 30%
0 90%
0 40%
Based on spp ≥ 2%

FIGURE 7.12d

Lake-level variations in
Central Mexico

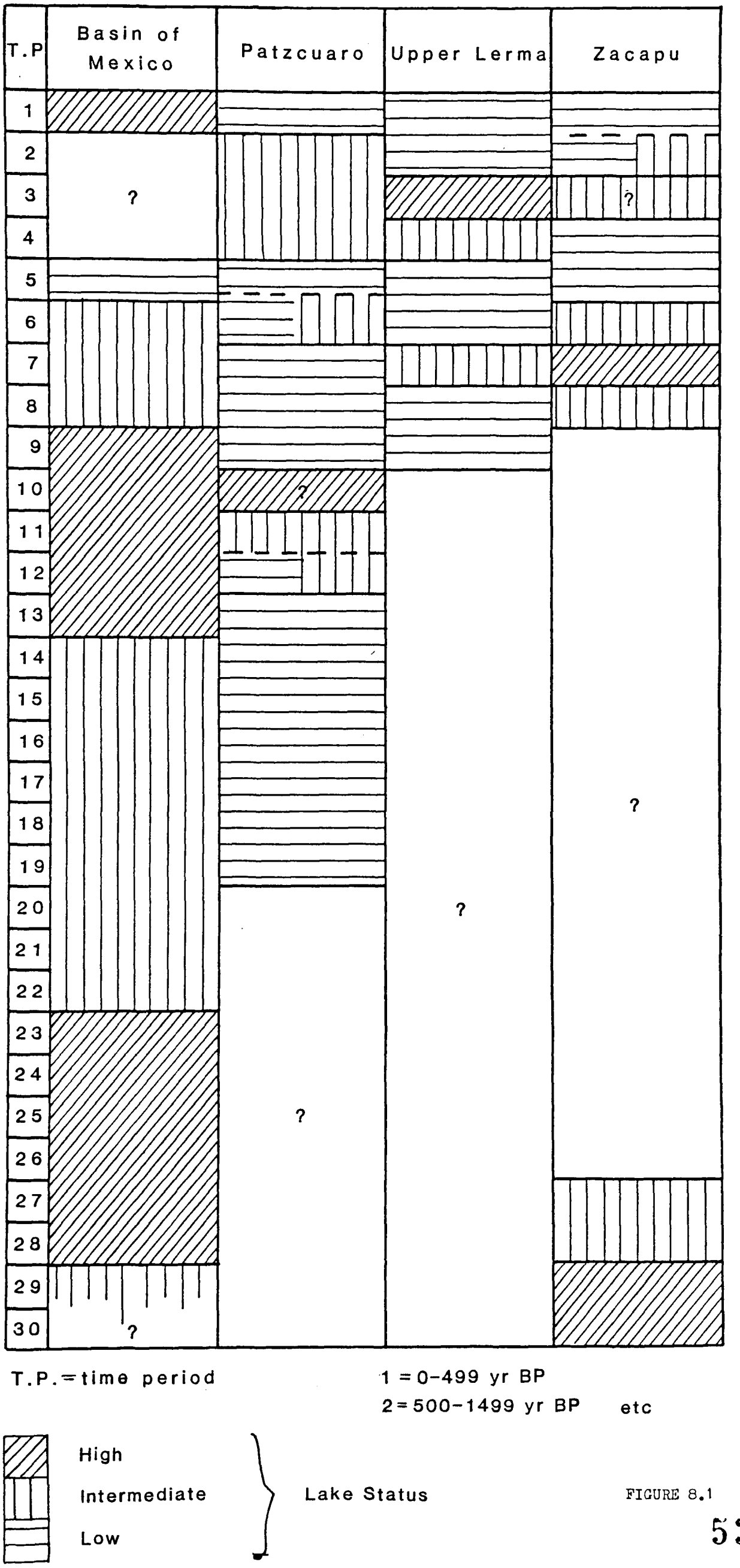


FIGURE 8.1

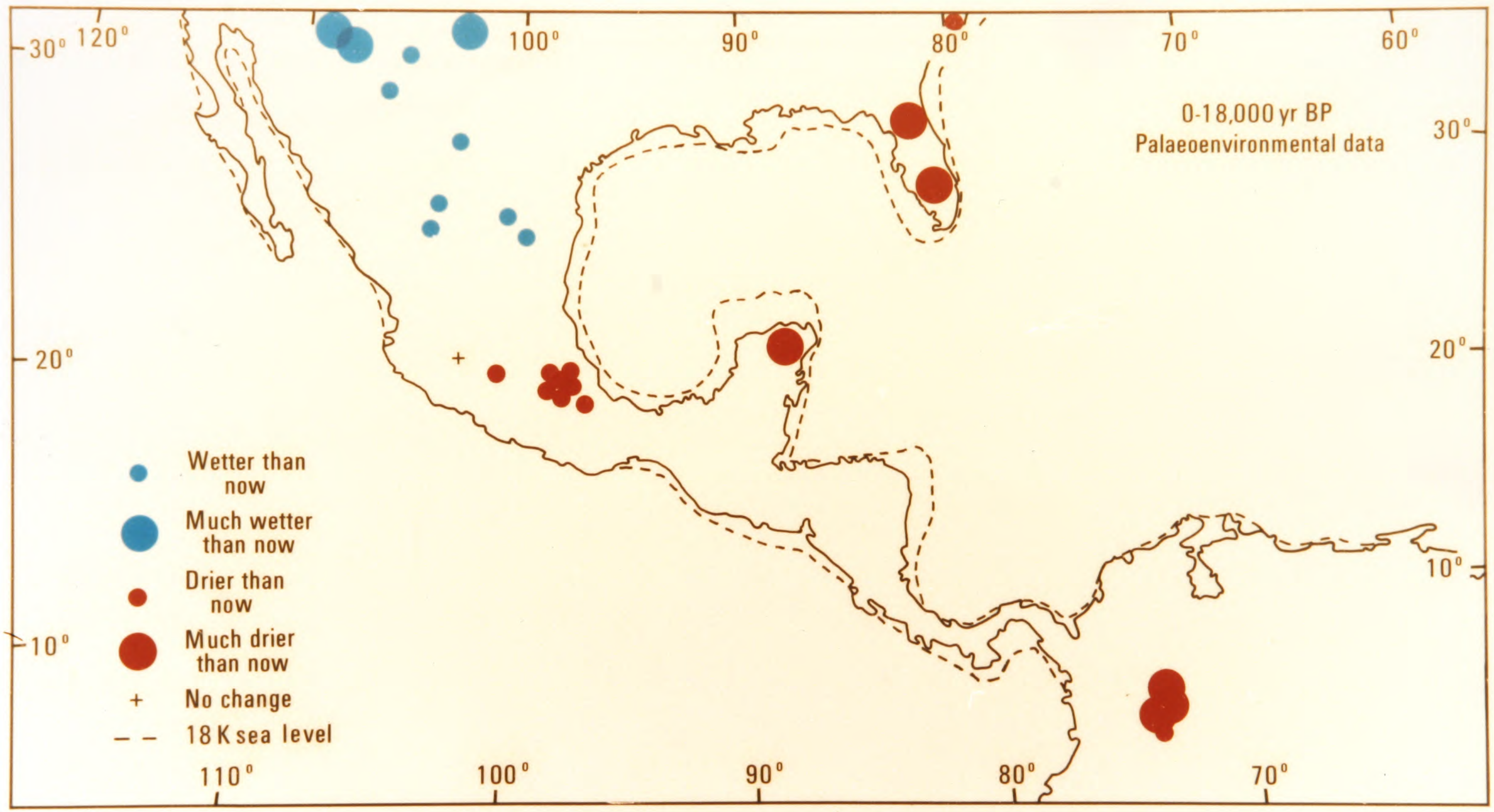

30° 120°
100°
90°
80°
70°
60°
0-18,000 yr BP
Palaeoenvironmental data
30°
20°
20°
10°
10°
Wetter than now
Much wetter than now
Drier than now
Much drier than now
+ No change
18 K sea level
110°
100°
90°
80°
70°

FIGURE 8.2

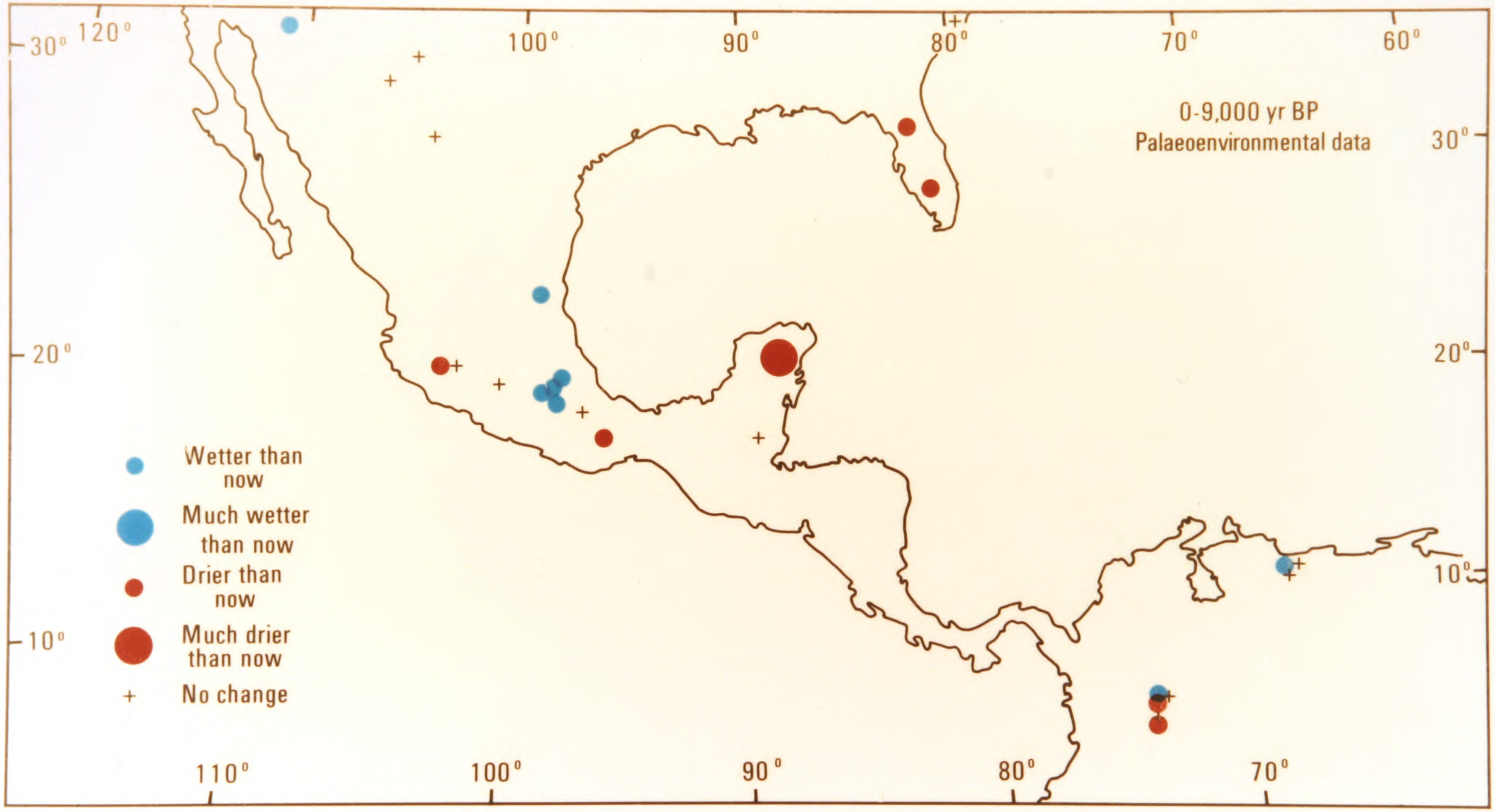

30° 120°
100°
90°
80°
70°
60°
0-9,000 yr BP
Palaeoenvironmental data
30°
20°
20°
Wetter than now
Much wetter than now
Drier than now
Much drier than now
No change
10°
10°
110°
100°
90°
80°
70°

FIGURE 8.3

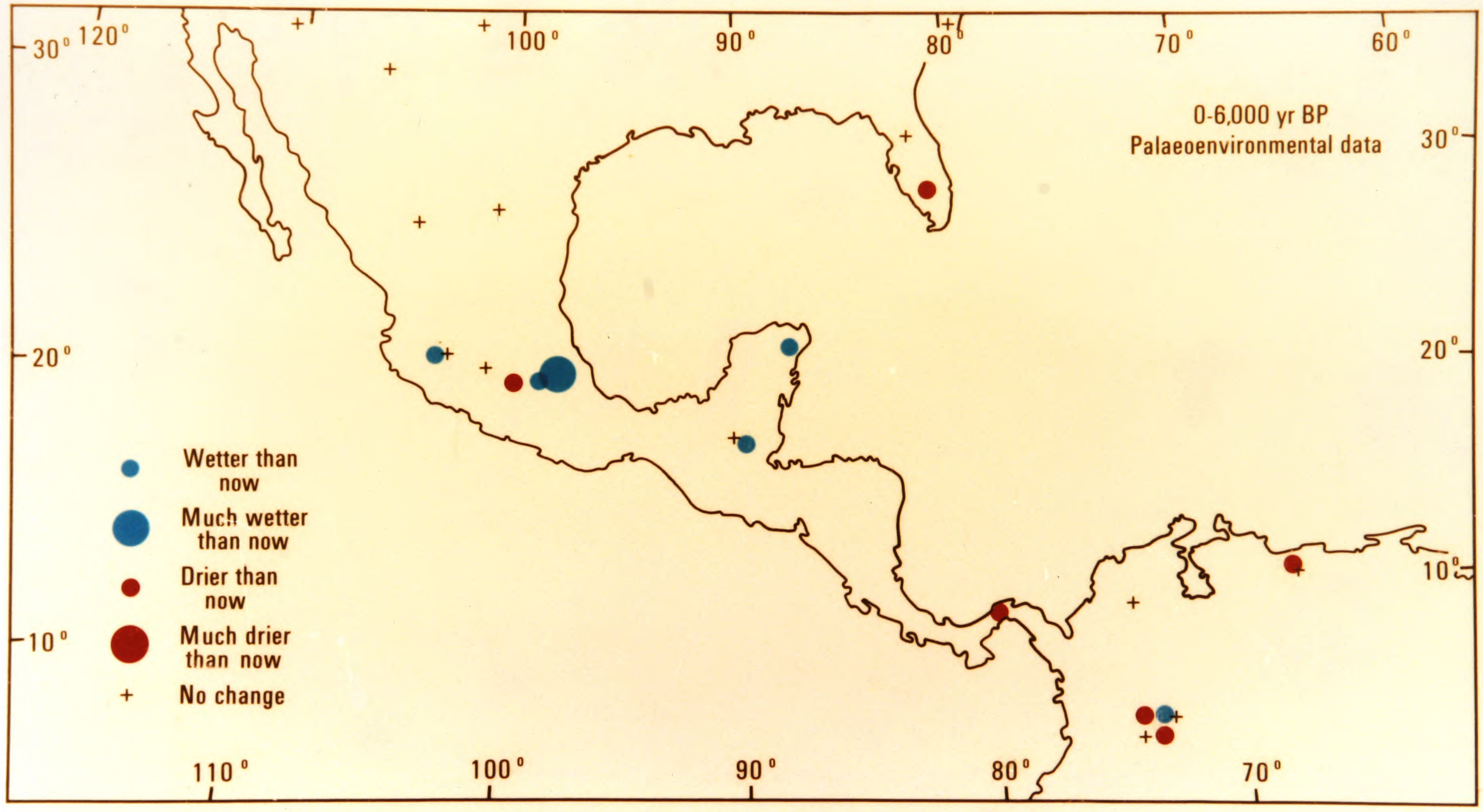

0-6,000 yr BP
Palaeoenvironmental data
Wetter than now
Much wetter than now
Drier than now
Much drier than now
No change
30° 120°
100°
90°
80°
70°
60°
30°
20°
10°
110°
100°
90°
80°
70°
10°

FIGURE 8.4

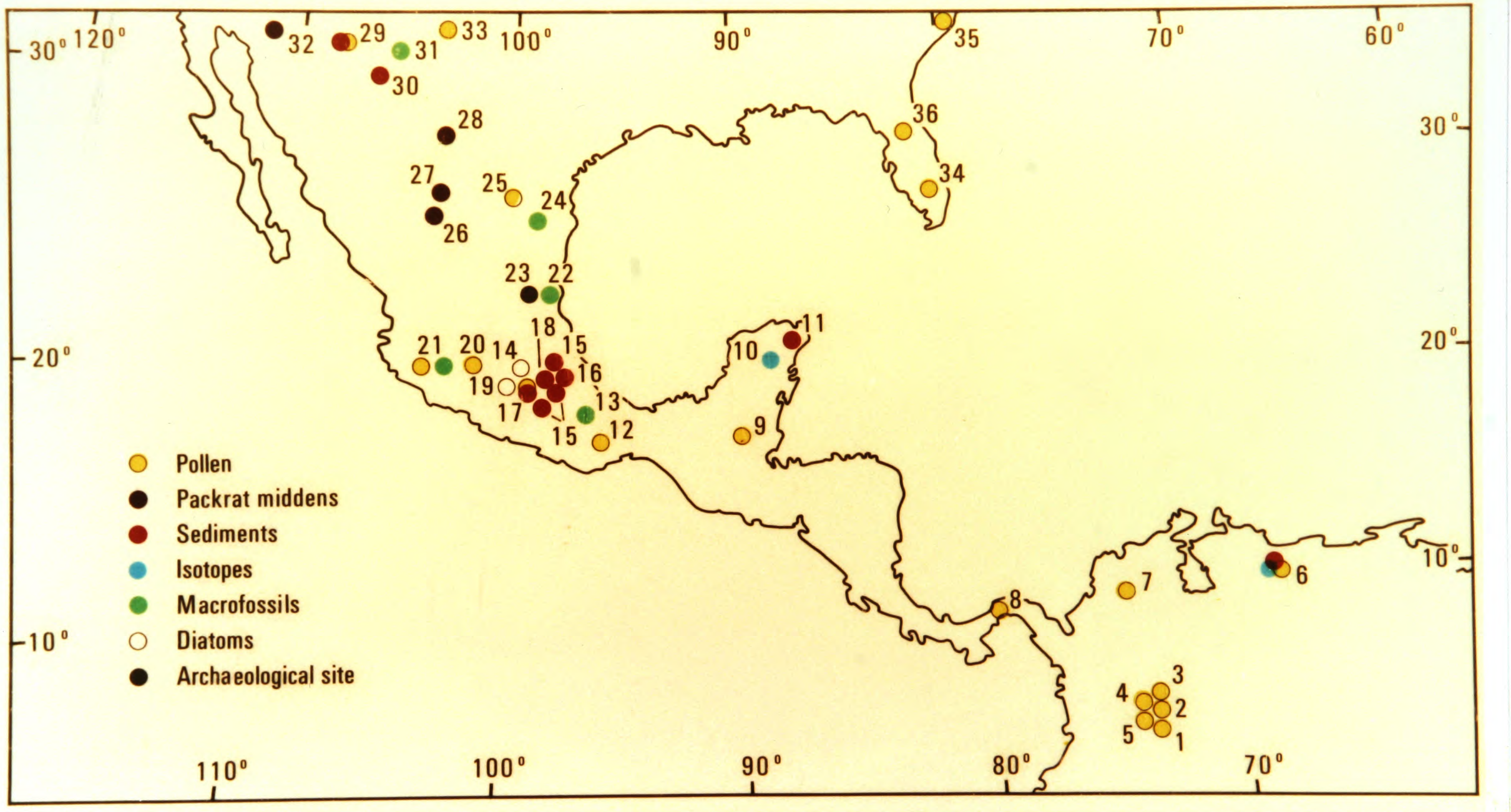

30°
120°
100°
90°
70°
60°
30°
20°
10°
110°
100°
90°
80°
70°
Pollen
Packrat middens
Sediments
Isotopes
Macrofossils
Diatoms
Archaeological site
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36

FIGURE 8.5

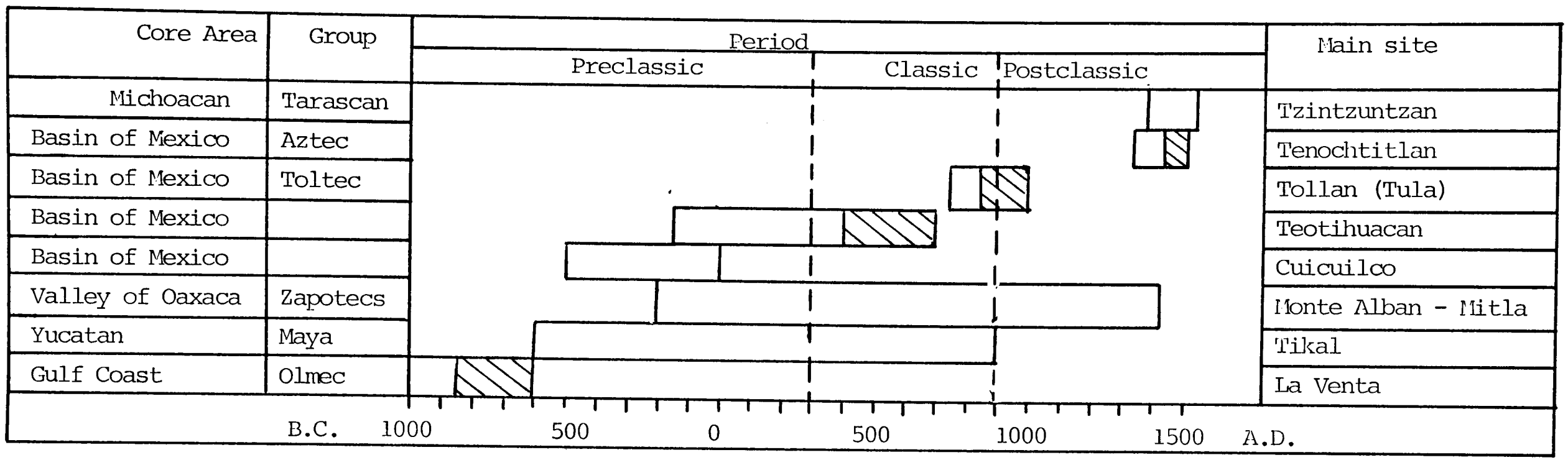

Core Area
Group
Period
Preclassic
Classic
Postclassic
Main site
Michoacan
Tarascan
Tzintzuntzan
Basin of Mexico
Aztec
Tenochtitlan
Basin of Mexico
Toltec
Tollan (Tula)
Basin of Mexico
Teotihuacan
Basin of Mexico
Cuicuilco
Valley of Oaxaca
Zapotecs
Monte Alban - Mitla
Yucatan
Maya
Tikal
Gulf Coast
Olmec
La Venta
B.C. 1000 500 0 500 1000 1500 A.D.
peak of cultural development

TABLE 3.1

Sampling sites and collections
made in Central Mexico

	WATER			BASAL SEDIMENTS			MODERN DIATOMS				
		Open water							Open water		
	Littoral	Shallow	Deep	Littoral	Shallow	Deep	Stones/plants	Littoral	Shallow	Deep	
Laguna del Rodeo	×		×	?			× ×	×	?		24/3/82
Lago de Pátzcuaro	×		×			× ×	× × × ×	×		×	28/3/82
La Alberca	×		×			× ×	× ×	×		×	29/3/82
L. Zacapu			×			× × ×	× ×	×		×	30/3/82
Zacapu Celanese		× × × ×			× × ×				× × × ×		19/4/82
La Piscina de Yuriria			×			× ×	× ×	×		×	8/4/82
Río Grand (Oaxaca)									×		2/5/82
Lago Valle de Bravo	×						×	×			10/5/82
Presa Tilostoc	×							×			10/5/82
Ixtlahuaca		×							×		19/5/82
Campo Hermoso (Lago el Fresno)	×							×			19/5/82
Lago de Yuriria	×						×	×			21/5/82
Hoya Rincón de Parangueo	×		×					×		×	22/5/82
La Piscina de Yuriria	× ×							× ×			22/5/82
Cuto de la Esperanza	×						×	×			23/5/82
L. Zacapu	×										23/4/82
Zacapu Gardens		×					×		×		23/5/82
La Zarcita		×							×		23/5/82
L. Salazar	×			×				×			18/6/82
Presa Villa Victoria	×						×	×			18/6/82
Presa del Bosque	×						×	×			18/6/82
Presa Cointzio		×			×		×	× ×	×		19/6/82

TABLE 5.1

	WATER			BASAL SEDIMENTS			MODERN DIATOMS				
		Open water							Open water		
	Littoral	Shallow	Deep	Littoral	Shallow	Deep	Stones/plants	Littoral	Shallow	Deep	
Querendaro (pool)		×			×		×		×		19/6/82
L. Zirahuen	×		×			×	× ×	×		×	20/6/82
Tarejero (pool)		×			×		×		×		21/6/82
El Angulo		×			×		×		×		21/6/82
Presa Ansleo Mercado	×			×				×		×	21/6/82
Tanque Elevado	×			×			×	×			21/6/82
Bellas Fuentes		×							×		21/6/82
B. la Laguna	×			×				×			22/6/82
Tunguitiro		×			×				×		22/6/82
Loma *el Cementerio*		×					×		×		22/6/82
Santa Fe de la Labor		×							×		22/6/82
Hoya la Alberca			×				×			×	23/6/82
Villa Jimenez	×						×	×			23/6/82
Loma el Cementerio							×				24/6/82
Comanja	×			×				×			24/6/82
Lago de Cuitzeo	×										25/6/82
Río Lerma	×							×			26/6/82
Baño el Azutre	×?							×			6/6/82
Río Pichucalco	×?			×?				×?			7/6/82
Lag. Zacapu							× × ×				17/4/82
Río Papaloapan							×	×			31/7/82
L. Alchichica				×				×?			1/8/82

	WATER			BASAL SEDIMENTS			MODERN DIATOMS				
		Open water							Open water		
	Littoral	Shallow	Deep	Littoral	Shallow	Deep	Stones/plants	Littoral	Shallow	Deep	
Xochimilco		×			×		×	×			4/8/82
Chalco	×							×			4/8/82
Mixquic	×			×			×	×			4/8/82
La Piscina de Yuriria											10/8/82
L. Zacapu								×			12/8/82
L. Zacapu (spring)		×					×				15/4/82
La Piscina de Yuriria (spring)		× ×							× ×		8/4/82
Hoya Rincon de Parangueo (well)			×							×	22/5/82
La Piscina de Yuriria (spring)			×?							×?	22/5/82
L. Zacapu (spring)	×							×			23/8/82
Querendaro (spring)		×							×		19/6/82
Tarejero (spring)		×					×		×		21/6/82
					Sampled 1981						
L. Alchichica	×			×							4/4/81
Alchichica (spring)	×										
L. Tololcingo	×			×							5/4/81
La Piscina de Yuriria			×			×				×	
L. Cuitzeo	×	×		×	×				× ×		10/4/81
Cuitzeo (spring)	×										
L. Zacapu	×										18/4/81
Río Grande de Morelia	×										18/4/81
Lerma Basin nr. Almoloya	×								×		19/4/81

Water sampling sites in Central Mexico

No.	Name	Code	Collector
East of Basin of Mexico			
1	Laguna de Totolcingo	Lake	JPB
2	Laguna de Totolcingo	"	JPB
3	Laguna San Bernadino (chica)	"	JPB
4	Laguna San Bernadino (grande)	"	JPB
5	Tlaxco	Marsh	JPB
6	Laguna la Laguna	Lake	JPB
7	Laguna Jalmene	"	JPB
8	Santiago Ovando	Marsh	JPB
9	Laguna de Atocha	Lake	JPB
10	Laguna de Alchichica	"	JPB
11	Laguna Quechulac	"	JPB
12	Laguna San Miguel Tecuitlapa	"	JPB
13	Laguna Aljojuca	"	JPB
14	Laguna Preciosa	"	JPB
15	Laguna Chignahuapan	Pool	JPB
Basin of Mexico			
16	Laguna Texcoco	Lake	JPB
17	Texcoco Marsh	Marsh	JPB
18	Lago de Zumpango	Lake	JPB
19	Xochimilco	Drainage/irrigation channel	JPB
Basin of Zacapu			
20	Laguna Zacapu	Lake	SEM
21	Laguna Zacapu	"	SEM
22	Zacapu (spring)	Spring	SEM
23	Laguna Zacapu	Lake	SEM
24	Laguna Zacapu	"	SEM
25	Laguna Zacapu	"	SEM
26	Laguna Zacapu	"	SEM
27	Laguna Zacapu	"	SEM
28	Laguna Zacapu	"	SEM
29	Laguna Zacapu	"	SEM
30	Zacapu Celanese	Drainage/irrigation channel	SEM
31	Zacapu Celanese	"	SEM
32	La Zarcita	Lake	SEM
33	Zacapu (spring)	Spring	SEM
34	Zacapu lakeside gardens	Drainage/irrigation channel	SEM
35	Laguna Zacapu	Lake	SEM
36	Laguna Zacapu	"	JPB

TABLE 5.2

37	Tarejero (spring)	Spring	SEM
38	Tarejero (pool)	Pool	SEM
39	El Angulo	Drainage/irrigation channel	SEM
40	Presa Aristeo Mercado	Reservoir/tank	SEM
41	Tanque Elevado (Copándaro)	"	SEM
42	Bellas Fuentes	Pool	SEM
43	B. la Laguna	Reservoir/tank	SEM
44	Tunguitiro	"	SEM
45	Loma el Cementerio	Drainage/irrigation channel	SEM
46	Sta. Fe de la Labor	Spring	SEM
47	Villa Jimenez	Drainage/irrigation channel	SEM
48	Comanja	Pool	SEM
49	Hoya la Alberca	Lake	SEM

West-central Mexico, other sites

50	Lago de Pátzcuaro	Lake	SEM
51	Lago de Pátzcuaro	"	SEM
52	Lago de Pátzcuaro	"	JPB
53	Lago de Pátzcuaro	"	DVY
54	Cucuchuchu (marsh)	Marsh	JPB
55	Laguna del Rodeo	Lake	SEM
56	Laguna del Rodeo	"	SEM
57	Laguna del Rodeo	"	JPB
58	Laguna Tequesquitengo	"	JPB
59	Valle de Bravo	Reservoir/tank	SEM
60	Presa Tilostoc	"	SEM
61	Ixtlahuaca	Pool	SEM
62	Campo Hermoso	Reservoir/tank	SEM
63	Lago de Yuriria	Lake	SEM
64	Cuto de la Esperanza	Pool	SEM
65	Presa Villa Victoria	Reservoir/tank	SEM
66	Presa del Bosque	"	SEM
67	Presa Cointzio	"	SEM
68	L. Salazar	Lake	SEM
69	Querendaro (spring)	Spring	SEM
70	Querendaro (pool)	Pool	SEM
71	Laguna Zirahuén	Lake	SEM
72	Laguna Zirahuén	"	SEM
73	Laguna Zirahuén	"	JPB
74	Laguna Cuitzeo	"	SEM
75	Laguna Cuitzeo	"	JPB
76	Laguna Cuitzeo	"	JPB
77	Río Lerma	River	SEM
78	Río Lerma (headwaters)	Marsh	JPB
79	Pasteje (marsh)	"	JPB

80	Laguna San Pedro	Lake	JPB
81	Magdalena (marsh)	Marsh	JPB
82	Magdalena Berm (marsh)	"	JPB
83	Laguna Atotnilco	Lake	JPB
84	Zocoalco	"	JPB
85	Laguna Atoyac	"	JPB
86	Laguna Zapotlan	"	JPB
87	Salitre Marsh	Marsh	JPB
88	Lago de Chapala	Lake	JPB
89	Lago de Chapala	"	DVY
90	Lago de Zempoala	"	JPB
91	La Alberca	"	SEM
92	La Alberca	"	SEM
93	La Piscina de Yuriria	"	SEM
94	La Piscina de Yuriria	"	SEM
95	La Piscina de Yuriria	"	SEM
96	La Piscina de Yuriria (spring)	Spring	SEM
97	La Piscina de Yuriria (spring)	"	SEM
98	La Piscina de Yuriria	Lake	SEM
99	La Piscina de Yuriria	"	SEM
100	La Piscina de Yuriria (spring)	Spring	SEM
101	Hoya Rincón de Parangueo	Lake	SEM
102	Hoya Rincón de Parangueo	"	SEM
103	Hoya Rincón de Parangueo	"	SEM
104	Hoya Rincón de Parangueo	"	SEM
105	Hoya Rincón de Parangueo	"	SEM
106	Hoya Rincón de Parangueo (well)	Spring	SEM
107	Valle de Santiago (Hoya la Alberca)	Lake	JPB

JPB J. Platt Bradbury 1973
DVY E.S. Deevey 1957
SEM S.E. Metcalfe 1982

TABLE 5.4

Analysis of lava from Holocene Volcano Capaxtiro, 2 km west of Zacapu (from Demant, 1981)	
SiO_2	61.79
TiO_2	0.75
Al_2O_3	16.92
Fe_2O_3	1.12
FeO	4.27
MnO	0.09
MgO	3.18
CaO	5.60
Na_2O	3.97
K_2O	2.03
P_2O_5	0.27
H_2O^+	0.23
H_2O^-	0.11

Comparison of % cations from lava, spring and lake waters, Zacapu			
	Ca^{2+}	Mg^{2+}	Na+K
Lava	47.09	13.68	39.22
Spring	31.94	35.08	38.82
Spring	29.48	36.99	33.53
Lake (edge)	27.06	37.65	35.29
Lake (mid)	34.33	34.33	31.34
Lake (50 cm)	25.73	39.18	35.09
Lake (100 cm)	28.65	38.20	33.15
Lake (150 cm)	28.41	35.79	35.79
Lake (200 cm)	28.32	38.73	32.95
Lake (250 cm)	27.22	39.64	33.14
Lake (300 cm)	28.4	34.91	36.69

Comparison of the chemical composition of basaltic lava (from Demant, 1981) with water chemistry, Zacapu.

Lake	Altitude in m	Maximum depth in m	Surface area km^2	Surface Temperature ^oC	Conductivity $\mu S\ cm^{-1}$	pH	Total alkalinity meq/l	Dominant ions
L. Ziway	1636	8.9	442.0	21.5-27.0	370	7.9- 8.7	3.7	$Na>Mg.Ca:HCO_3$
L. Langano	1582	47.9	241.0	22.5-26.2	1900	9.1	14.6	$Na:HCO_3>Cl$
L. Abiyata	1578	14.2	176.0	23.0-26.7	8646-30000	9.3- 9.5	102.3	$Na:HCO_3>Cl$
L. Shala	1558	266.0	329.0	21.0-27.0	16700-29500	9.7-10.1	162.2	$Na:HCO_3>Cl$
L. Chiltu	1500	20.0	-	25.5	30000	10.5	-	$Na:HCO_3>Cl$
L. Awasa	1680	21.6	92.0	21.0-26.0	790- 1050	8.7	8.4	$Na:HCO_3$
L. Abaya	1285	13.1	1070.0	22.0-28.0	670- 900	8.0	9.2	$Na:HCO_3$
L. Chamo	1233	12.7	350.0	25.0-28.0	927	8.6	10.0	$Na:HCO_3$
Chew Bahir	520	Ephemeral	-	-	-	9.2	51.6	$Na:Cl>HCO_3$

From: Gasse et al, 1980

Water analyses from East Africa

TABLE 5.5

TABLE 5.6

Site	Diatom sample no: Z-	Type of Sample	Water Sample
La Zarcita .	1	Water	32
Laguna Zacapu	2, 12, 13, 14	Water, bottom sediments (x 3) (middle of lake)	20, 21, 23 - 29, 36
Laguna Zacapu	3, 4, 11	Vegetation (x2), water (lake margin)	35
La Laguna (Site 4)	5, 8, 9, 10	Water, vegetation (x3) (spring-fed pool)	
Zacapu Gardens	6, 7	Water, vegetation	34
Zacapu Celanese	15, 16, 17, 18 19, 20	Water (x2), stone - scraping, sediment (x3)	30, 31

Diatom sampling sites and their type, Laguna Zacapu

SAMPLES Z series

TABLE 5.7

*0				*1	
2, 3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17				1, 6, 7, 18, 19, 20	
*00	* 01			* 10	* 11
2, 15, 17	3, 4, 5, 8, 9, 10, 11, 12, 13, 14, 16			1, 6, 7,	18, 19, 20
	* 010	* 011			
	5, 8, 9, 10 11, 16	3, 4, 12, 13, 14			
	* 0100	* 0101	* 0110	* 0111	
	10, (11)	5, 8, 9, 16	3, 4,	12, 13, 14	

11 = misclassified

L. Zacapu

Summary of TWINSPAN sample classification, Laguna Zacapu

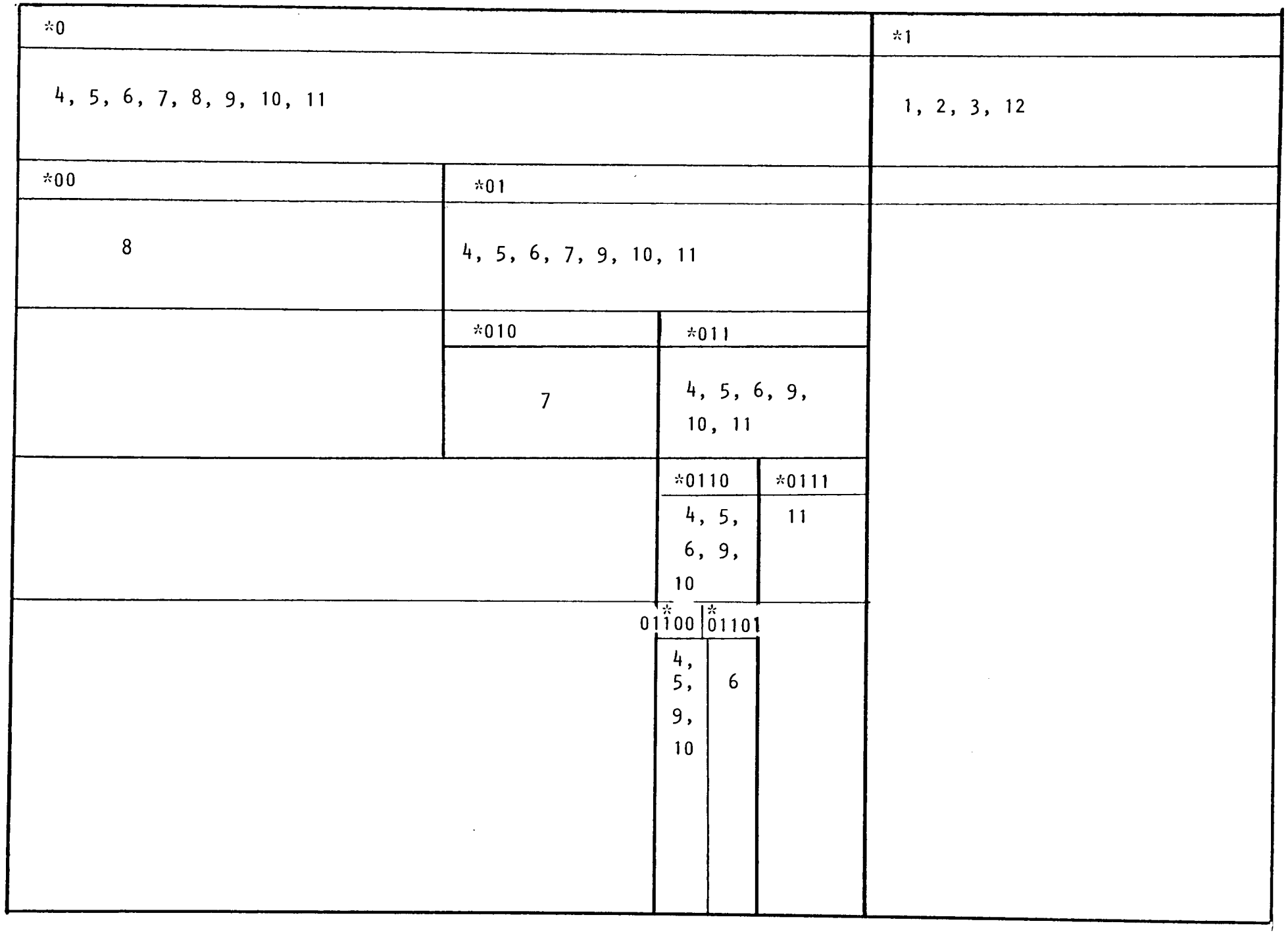
TABLE 5.8

Site		Nature	Diatom sample no. ZB -	Type of sample	Water sample
D	Tarejero	Spring and pool	1, 2, 3	Water, stone scraping, sediment	38, 37
M	El Angulo	Main irrigation channel	4, 5, 6	Water, vegetation, sediment	39
G	B. la laguna	Artificial tank	7	Water	43
I	Loma el Cementerio	Minor irrigation channel	8	Water	45
J	Sta Fe de la labor	Spring fed pool	9	Water	46
N	Villa Jimenez	Outlet from basin	10	Water	47
E	Bellas Fuentes	Spring pool	11	Water	42
O	Hoya la Alberca	Crater lake	12	Rock scraping/ vegetation	49
F	Comanja	Pool		Water, sediment	48
H	Tunguitiro	Artificial tank		Water, sediment	44
K	P. Aristeo Mercado	Reservoir		Water (x 2), sediment	40
L	Tanque Elevado (Copándaro)	Artificial tank		Water, vegetation, sediment	41

Location of diatom sampling sites and their type, Zacapu Basin.

SAMPLES **ZR series**

TABLE 5.9



Zacapu other sites

Summary of TWINSPAN sample classification, Zacapu Basin.

TABLE 5.10

Site	Nature	Diatom OS: sample no.	Type of sample	Water sample
L. del Rodeo	Lake	1, 2	Vegetation, stones	55
La Alberca	Crater lake	3, 4, 5, 6	Vegetation + water (edge), 2x sediments	92, 91
La Piscina de Yuriria	Crater lake	7, 8, 9	Vegetation + stone scraping (edge), sediment	93 - 95, 98
L. Alchichica	Crater lake	10		10$
Lago de Yuriria	Lake	11, 12	Water, vegetation	63
L. Zirahuén	Lake	13, 14, 15	Vegetation (deep), vegetation (shallow) sediment (deep)	71, 72
L. Pátzcuaro	Lake	16, 17, 18	Water, stones, vegetation (edge)	50
L Pátzcuaro	Lake	19, 20	Vegetation, sediment (mid)	51
Querendaro	Pool	21	Water	70
Valle de Bravo	Reservoir	22	Vegetation	59
Ixtlahuaca	Pool	23	Water	61
Campo Hermoso	Reservoir/tank	24	Water	62
Cuto de la Esperanza	Pool	25, 26	Water, vegetation	64
Villa Victoria	Reservoir	27, 28	Water, vegetation	65
Presa del Bosque	Reservoir	29, 30	Water, stone scraping	66
Río Lerma	River	31	Water	77
Xochimilco	Irrigation ditch	32	Water	19$
Mixquic	Irrigation ditch	33, 34, 35	Water, vegetation, sediment	-

$water sample 10 not from the same site as the diatom sample

$water sample 19 not from the same site as the diatom sample

Diatom sampling sites and associated water analysis numbers, Other sites, Central Mexico.

TABLE 5.11

(2) borderline
(3) misclassified

* 0	* 1
1, (2), 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, (30), 31, 32, 33, 34, 35	13, 14, 15, 27, 28, 29

* 00	* 01	* 10	* 11
3, 4, 5, 6, 7, 8, 9, 11, 25, 26	1, 2, 10, 12, 16, 17, 18, 19, 20, 21, 22, 23, 24, 30, 31, 32, 33, 34, 35	13, 14, 15	27, 28, 29

(24) misclassified

* 000	* 001	* 010	* 011
7, 8, 9, 11	3, 4, 5, 6, 25, 26	1, 2, 20, 21, 23, 31 32, 33, 34, 35	10, 12, 16, 17, 18, 19, 22, (24), 30

	* 0010	* 0011	* 0100	* 0101	* 0110	* 0111
	25, 26	3, 4, 5, 6	1, 2,	20, 21, 23, 31 32, 33 34, 35	12, 16, 17, 18 19, 22 24, 30	10

				*01010	*01011	*01100	*01101
				21	20 23 31 32 33 34 35	12 16 17 18 19 22 24	30

					20 32 33 34 35	23 31	12 24	16 17 18 19 22

Other Sites Central Mexico

Summary of TWINSPAN sample classification, Other sites, Central Mexico

Meteorological Data, Zacapu Basin 1982				
Zacapu Station				
Month	Av. temperature °C	Av. daily precipitation (mm)	Total precipitation (mm)	No. of frosty days
January	5.0	0.0	0.0	6
February	6.43	0.5	14.6	4
March	10.2	0.3	8.1	0
April	14.05	0.55	16.5	0
May	16.3	2.3	70.5	0
June	18.8	1.2	36.5	0
July	15.27	5.4	167.4	0
Villa Jimenez				
January	4.59	0.0	0.0	26
February	7.13	0.2	6.0	13
March	9.14	0.09	3.0	5
April	12.57	0.22	6.5	0
May	14.84	4.5	139.7	0
June	17.03	1.6	48.7	0
July	14.8	5.25	163.0	0
Copándaro				
January	2.5	0.0	0.0	19
February	4.2	0.14	4.0	6
March	7.95	0.2	6.5	2
April	11.83	0.35	10.5	0
May	14.05	2.2	67.5	0
June	15.2	1.1	34.0	0
July	13.85	9.3	288.8	0

TABLE 6.1

Meteorological data from selected stations in the Zacapu Basin.

Zacapu Brickpit Section			
Bed	Dominant spp. 33%	Common spp. 5 - 33%	Zone
22	F. leptostauron v. dubia	F. pinnata (30.6%), C. placentula v. lineata, F. construens v. venter	V
21	F. leptostauron v. dubia	F. pinnata, F. construens v. venter	
20	F. leptostauron v. dubia	F. pinnata, F. construens v. venter, C. placentula v. lineata	
19	F. pinnata	F. construens v. venter (32.5%)	
18	F. pinnata	F. construens v. venter, S. astraea v. intermedia	
17	C. placentula v. lineata	F. pinnata, F. leptostauron v. dubia	IV
16		C. placentula v. lineata, F. pinnata, F. leptostauron v. dubia, F. construens v. venter	
15		C. placentula v. lineata, F. pinnata, F. leptostauron v. dubia	
14		C. placentula v. lineata, F. pinnata, F. leptostauron v. dubia	
13	F. leptostauron v. dubia	F. pinnata, F. construens v. venter, C. placentula v. lineata	III
12		F. pinnata, F. leptostauron v. dubia, C. placentula v. lineata, F. construens v. venter	
11		C. placentula v. lineata, F. pinnata, F. leptostauron v. dubia, F. construens v. venter	
10		C. placentula v. lineata, N. mutica, F. pinnata, N. seminulum, H. amphioxys, M. italica	
9		F. construens v. venter, C. placentula v. lineata, M. italica, F. pinnata	
8		F. construens v. venter, N. mutica, C. placentula v. lineata, H. amphioxys, F. pinnata, F. leptostauron v. dubia	
7		C. placentula v. lineata, F. pinnata, F. leptostauron v. dubia, M. italica	
6	F. leptostauron v. dubia	F. construens v. venter, F pinnata	
5		F. pinnata, F. leptostauron v. dubia, M. italica, C. placentula v. lineata	
4		F. pinnata, M. italica, C. placentula v. lineata, H. amphioxys, A. hungarica, N. mutica	
3T	F. pinnata		II
3	F. pinnata		
2	F. pinnata		
1	M. ambigua	M. granulata v. angustissima, F. pinnata	I

TABLE 6.2 Diatom zones, Brickpit section

Zacapu Section 1			
Level in cm	Dominant spp. 33%	Common spp. 5 - 33%	Zone
150	C. stelligera (58.56%)	S. niagarae, M. monospina	V c
140	C. meneghiniana (49.3%)	C. stelligera	V b
130	C. stelligera (37.5%)	F. pinnata	V a
120		C. clypeus, C. stelligera, A. veneta	IV
110		C. clypeus, C. stelligera, C. mexicana, C. placentula v. lineata, S. niagarae, A. costata	
100		C. stelligera, S. niagarae, C. placentula v. lineata, C. mexicana,	
90		C. clypeus, A. costata S. niagarae (31.9%), C. stelligera, C. placentula v. lineata	
80	C. meneghiniana (62%)	C. stelligera	III
70		C. stelligera, C. meneghiniana, N. romana, N. inconspicua	
65	C. stelligera (60.3%)	S. niagarae, M. monospina	
60	C. meneghiniana	C. stelligera, N. amphibia, N. romana	
50		M. ambigua , S. astraea v. intermedia C. meneghiniana, S. niagarae	II c
40	C. meneghiniana (44.9%)	S. astraea v. intermedia, M. ambigua	II b
30		M. ambigua, S. astraea v. intermedia S. niagarae, M. monospina	II a
20	C. meneghiniana (39.5%)	N. inconspicua, M. ambigua, S. astraea v. intermedia, N. romana S. niagarae	I
10	C. meneghiniana (60.25%)		
0	C. meneghiniana (92.6%)		

TABLE 6.3

Diatom zones, Zacapu Section 1

Zacapu Core 1 OxA no. ( )

Dating Sample

	Sample	Conventional (central 1cm)	Lipid (bulk remaining)	Macrofossil cellulose
1	64.6- 74.6	1190 + 150 (222)	1230 + 150 (223)	
2	166.6- 176.6	1180 + 150 (224)		
3	266.0- 276.0	1100 + 90 (226)	1560 + 80 (227)	1840 + 80 (228)
4	368.0- 378.0	2230 + 150 (229)	2720 + 150 (230)	
5	466.0- 476.0	2240 + 150 (231)	2720 + 150 (232)	
6	568.4- 578.4	2460 + 150 (233)	3140 + 160 (234)	
7	642.0- 652.0	2350 + 100 (235)	3000 + 400 (236)	
8	757.0- 767.0	2590 + 80 (237)	2900 + 100 (238)	
9	862.0- 872.0	2820 + 80 (272)	4320 + 100 (279)	
10	1068.0-1078.0	3040 + 100 (273)	3020 + 100 (280)	
11	1177.0-1187.0	3800 + 100 (274)	4580 + 150 (281)	
12	1247.8-1257.8	3590 + 100 (275)	5200 + 160 (282)	

A conventional preparation was also made from the bulk sample of sample 12 and gave an age of 3970 + 120 yr.

TABLE 6.4

^{14}C age determinations,
Zacapu core 1

Summary of changes indicated
by Zacapu core 1

DEPTH (in cms)	DIATOM ZONATION		14 C DATES (conventional preparations)	MOST DISTINCTIVE DIATOMS	ENVIRONMENTAL INTERPRETATION	LAKE LEVEL
0	XIV			S. subtilis	Cultural eutrophication inferred, probable input of clastic sediments from basin slopes	
			▮ 1190 ± 150			
100	XIII			M. granulata var. angustissima	Shallowing Na^+ enriched	Fairly low
	XII			M.italica subsp.subarctica Cyclostephanos sp.	Sharp increase in levels of chemical concentration in sediments increase in sedimentation rate	
			▮ 1180 ± 150			
200	XI	b		M. italica subsp. subarctica	Freshening in subzone XIa then more alkaline. Rapid increase in diatom abundance	
	XI	a				
	X			S. acus var. neogena		
			▮ 1100 ± 90			
300	IX	b		M. italica subsp. subarctica (+ S minutus)	Generally less alkaline, possibly cooler and deeper? greater spring input. Marked change at top of zone to shallow more alkaline-reed macrofossils present	low
			▮ 2230 ± 150			high?
400	IX	a		(+ M. granulata + vars.)		
	VIII		▮ 2240 ± 150	N. palea var. tenuirostris		
500	VII			M. granulata/N. paleacea		
			▮ 2460 ± 150			
600	VI	b		Cyclostephanos sp.	Fluctuating conditions	
			▮2350 ± 100			
700	VI	a		N. paleacea + Cyclostephanos sp. + M. granulata	Alkaline, chemically concentrated, reflected in sediments. Low spp. diversity	low ? lowest
			▮2590 ± 80			
800	V			N. paleacea	Fluctuating conditions	
			▮2829 ± 80			
900	IV			Melosira spp.	Less alkaline, probably deeper, less chemically concentrated	
1000	III	k		N. paleacea (+ N. gracilis)		low
	III	j	▮3040 ± 100	(+ S. acus var. neogena)	Generally alkaline	
1100	III	i			and warm.	
	III	h		N. paleacea		
			▮3800 ± 100			
1200	III	g		(+ M. granulata & vars.)	Shallow.	
	III	f	▮3590 ± 100			low
	III	e	▮3970 ± 120		Possibly not	
	III	d				
1300	III	c		(+ M. granulata in certain levels)	very turbid, except when Melosira	
	III	b			spp. abundant.	
	III	a				low ?
	II			S. acus var. neogena	SiO_2 rich ?	
1400	I			C. stelligera and C. glomerata	Moderate - low alkalinity. Mg rich ?	

TABLE 6.5

Calculated rates of sedimentation

Pit 1

Interval in years	cm of sediment	rate of sedimentation in mm/yr
870 - 0(?)	30	0.34
1380 - 870	10	0.2
1620 - 1380	20	0.08
4570 - 1620	30	0.01
5880 - 4570	20	0.15
5960 - 5880	30	0.37
6960 - 5960	10	0.01

Pit 2

Interval in years	cm of sediment	rate of sedimentation in mm/yr
(870)- (0)	(20)	(0.23)
(4570)- (870)	(40)	(0.1)
6010 -(4570)	35	0.2
8160 - 6010	69	0.3

(Dates in parentheses taken by correlation with Pit 1)

TABLE 7.1

Upper Lerma Pit 2			
Depth in cm	Dominant spp. 33%	Common spp. 5 - 33%	Zone
0- 1 5- 6		(N. heufleri v. leptocephala), R. gibberula, D. elegans, H. amphioxys, N. radiosa v. tenella, (N. cryptocephala v. veneta), (G. angustatum), (F. pinnata v. lancettula), (N. amphibia), (C. meneghiniana)	VIII
10- 11	F. construens	F. construens v. venter, (C. placentula v. lineata),	VII
15- 16	(n o	d i a t o m r e c o r d)	
20- 21	F. construens	(N. amphibia), (A. exigua v. heterovalva)	
24- 25 30- 31	(N. amphibia)	N. amphibia, M. ambigua, (C. placentula v. lineata), (C. meneghiniana), (N. capitata v. hungarica), (A. veneta), (F. construens), (F. construens v. venter)	VI c
35- 36 40- 41 45- 46		M. ambigua, N. amphibia, C. placentula v. lineata, C. meneghiniana, (N. capitata v. hungarica), (A. veneta)	VI b
50- 51 55- 56	(C. placentula v. lineata)	C. placentula v. lineata, (C. placentula), (P. viridis), (R. gibberula), (N. amphibia), (M. ambigua), (A. veneta)	VI a
60- 61		H. amphioxys, A. hungarica, N. amphibia, E. curvata	V
65- 66		M. distans v. africana, F. construens v. venter	IV
70- 71 75- 76 80- 81 85- 86 90- 91	(F. pinnata v. lancettula)	F. pinnata v. lancettula, F. pinnata, F. construens v. venter, F. brevistriata, (N. amphibia), C. placentula v. lineata, A. ovalis v. affinis, (N. cuspidata), (S. fasciculata v. tabulata), (F. construens)	III
	n o	d i a t o m r e c o r d (tephra)	
140-141	M. italica	E. bigibba v. pumila, E. naegeli	II
145-146 150-151		M. italica, H. amphioxys, N. amphibia, (N. mutica), (P. viridis), (D. elliptica)	I b
155-156 159-160		C. placentula v. lineata, M. italica, (E. turgida), H. amphioxys, N. amphibia, (C. bacillum), (R. gibberula) (D. psuedovalis), (P. viridis)	I a

Spp. in ( ), found in only one sample in the zone or subzone

TABLE 7.2

Diatom zones, Upper Lerma Pit 2.

Upper Lerma Pit 1			
Depth in cm	Dominant spp. ⩾33%	Common spp. 5 - <33%	Zone
0- 1	n o	d i a t o m r e c o r d	
10- 11	F. construens v. venter	C. placentula v. lineata, Cymbella lanceolata, Gomphonema parvulum, C. minuta v. silesiaca, (F. construens v. venter), (C. muelleri), (M. italica), Nitzschia palea	IV b
20- 21			
30- 31			
40- 41		C. placentula v. lineata, Epithemia adnata v. proboscidea, Cymbella lanceolata, G. parvulum, (M. ambigua)	IV a
50- 51			
60- 61		Nitzschia amphibia, Eunotia flexuosa, (C. placentula v. lineata), (G. parvulum), (N. palea), (R. gibba)	III
70- 71			
80- 81		C. placentula v. lineata, H. amphioxys, M. italica	II
90- 91			
100-101			
110-111	n o	d i a t o m r e c o r d	
120-121			
130-131			
140-141		Hantzschia amphioxys, (M. italica), (R. gibberula v. V.H.), (N. mutica), (C. placentula v. lineata), (C. bacillum), (C. meneghiniana), (M. granulata v. angustissima), (G. parvulum)	I
150-151			
160-161			
170-171	n o	d i a t o m r e c o r d	
180-181			

TABLE 7.3 Diatom zones, Upper Lerma Pit 1.

Summary of lake level changes in the Basin of Mexico over the Late Pleistocene and Holocene

TLAPACOYA		ZOHAPILCO		CHALCO		TEXCOCO	
years B.P.		years B.P.		years B.P.		years B.P.	
4250	peat ash					4300	v. shallow
4880				4880	shallow, fresh-water marsh		shallowing
		6200				6000-10000	change to drier conditions
7040	start of peat	7050	beach transgression				
9920	ash						
			pumice	(10000)	flooded by Texcoco, saline water diatoms		
14300							
				14450	shallow, spring input		
14770	marsh	14770	peat				
21700	soil upslope						
22200	beach/regression major trans-gression regression minor trans-gression						
24040 24200 25940 27260	beach/marsh phase			23000 - 27000	saline water diatoms from Texcoco	27200	brackish
Limbrey, 1976		Niederberger, 1979		Watts and Bradbury, 1982		Bradbury, 1971	

TABLE 8.1

PLATE 1

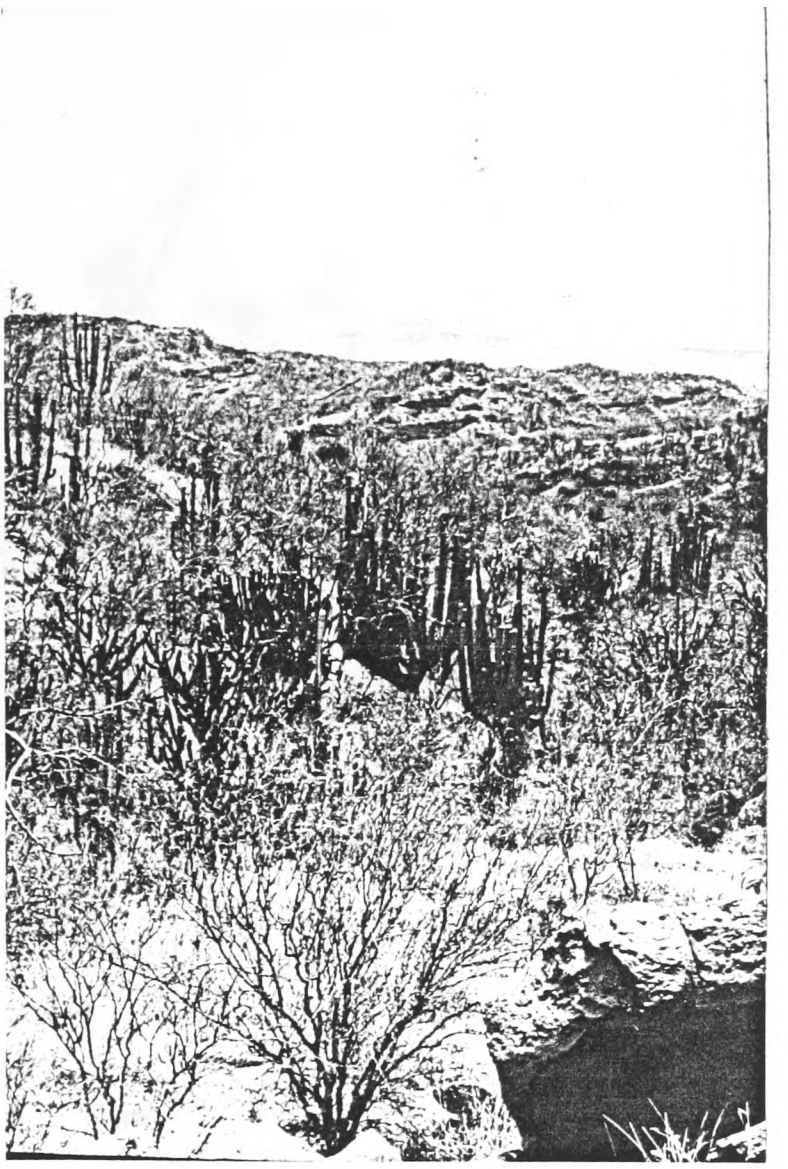


PLATE 2

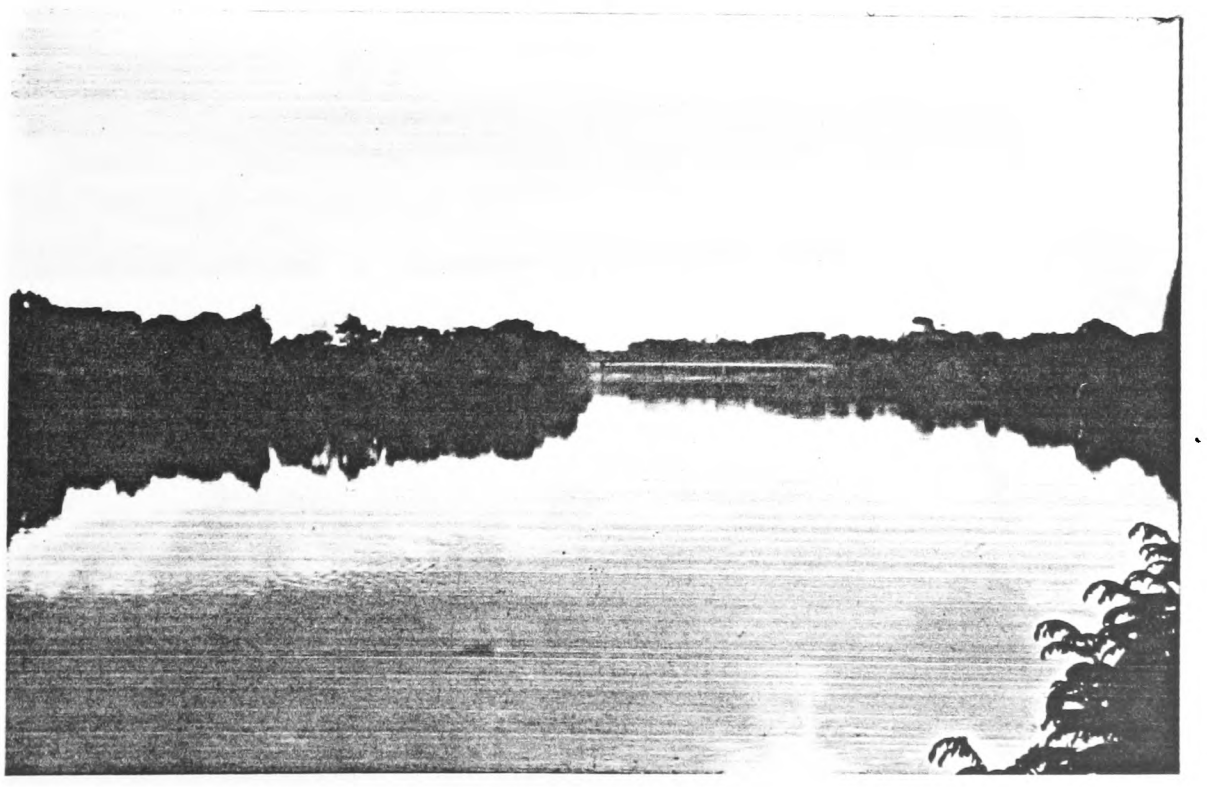


PLATE 3



PLATE 4

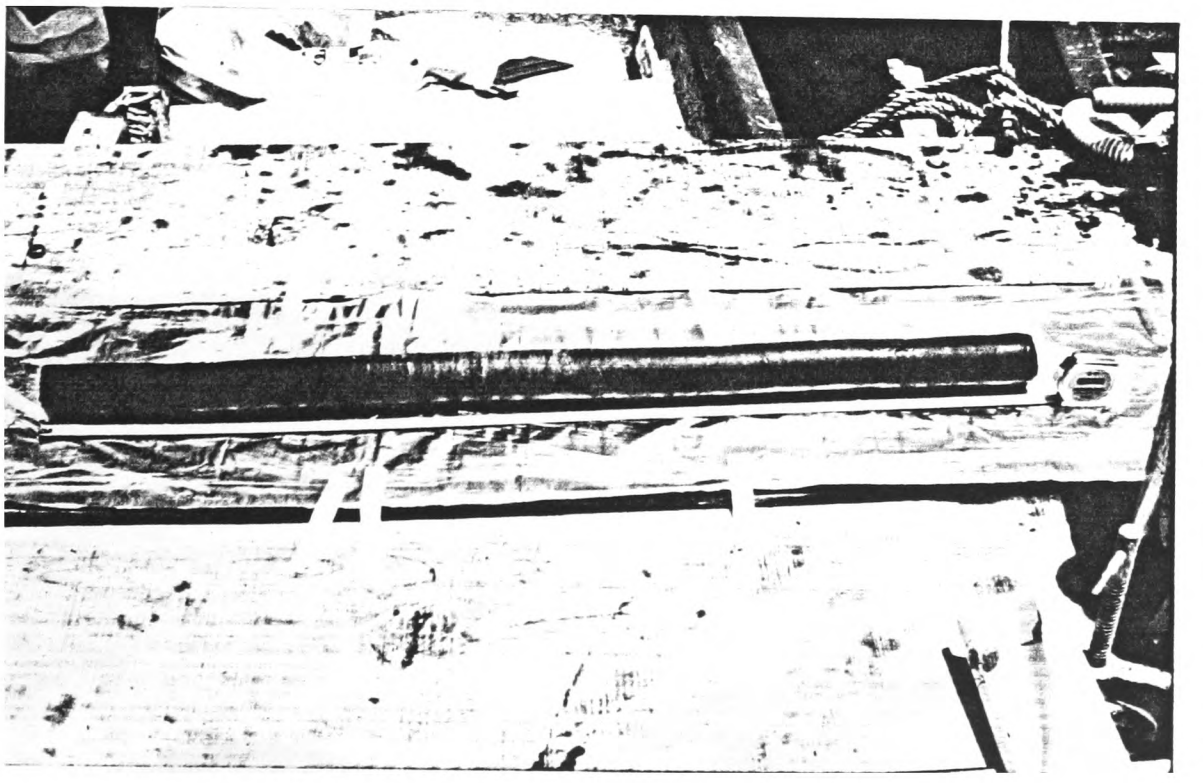


PLATE 5



PLATE 6



PLATE 7

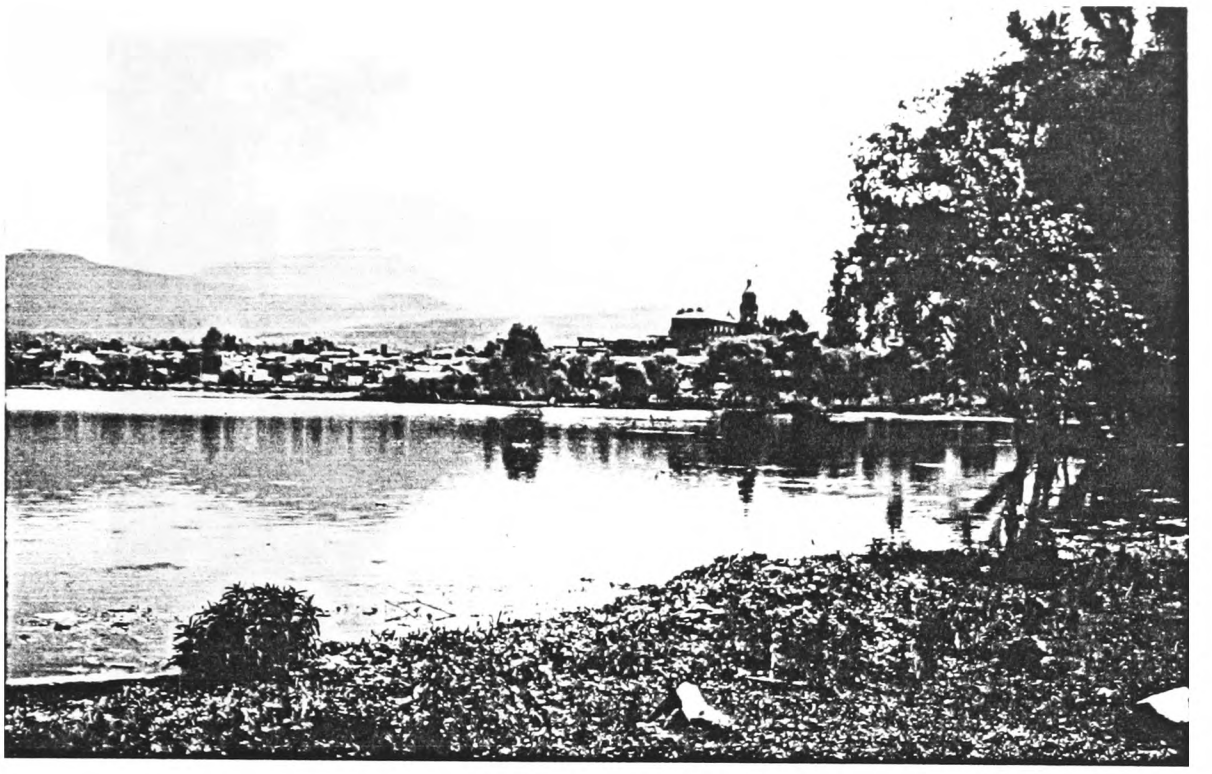


PLATE 8

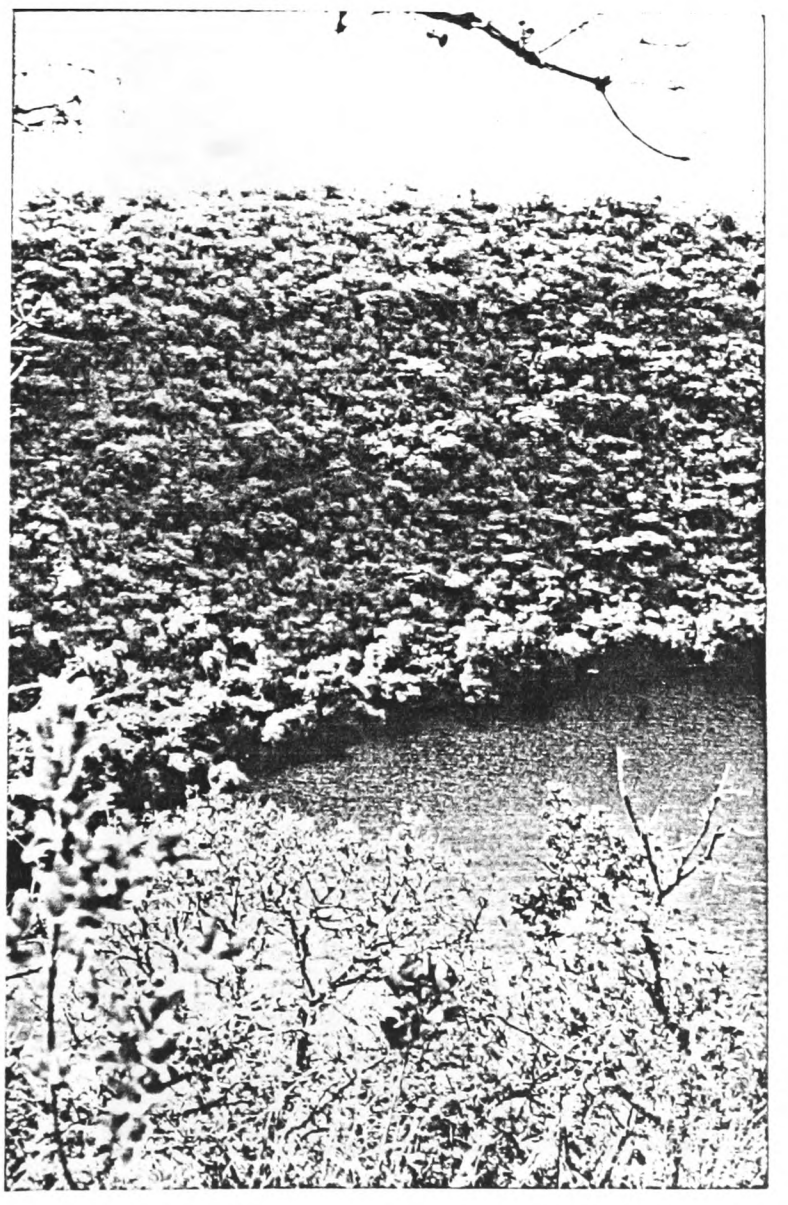
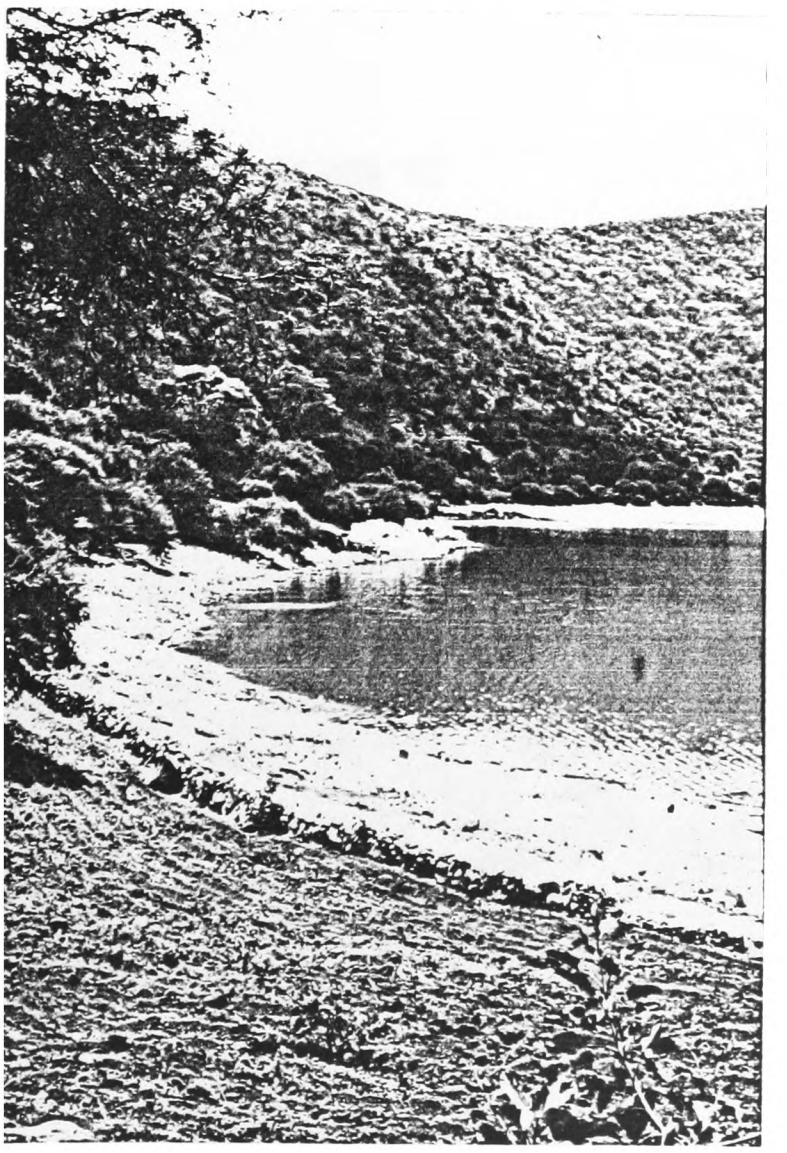


PLATE 9



PLATE 10



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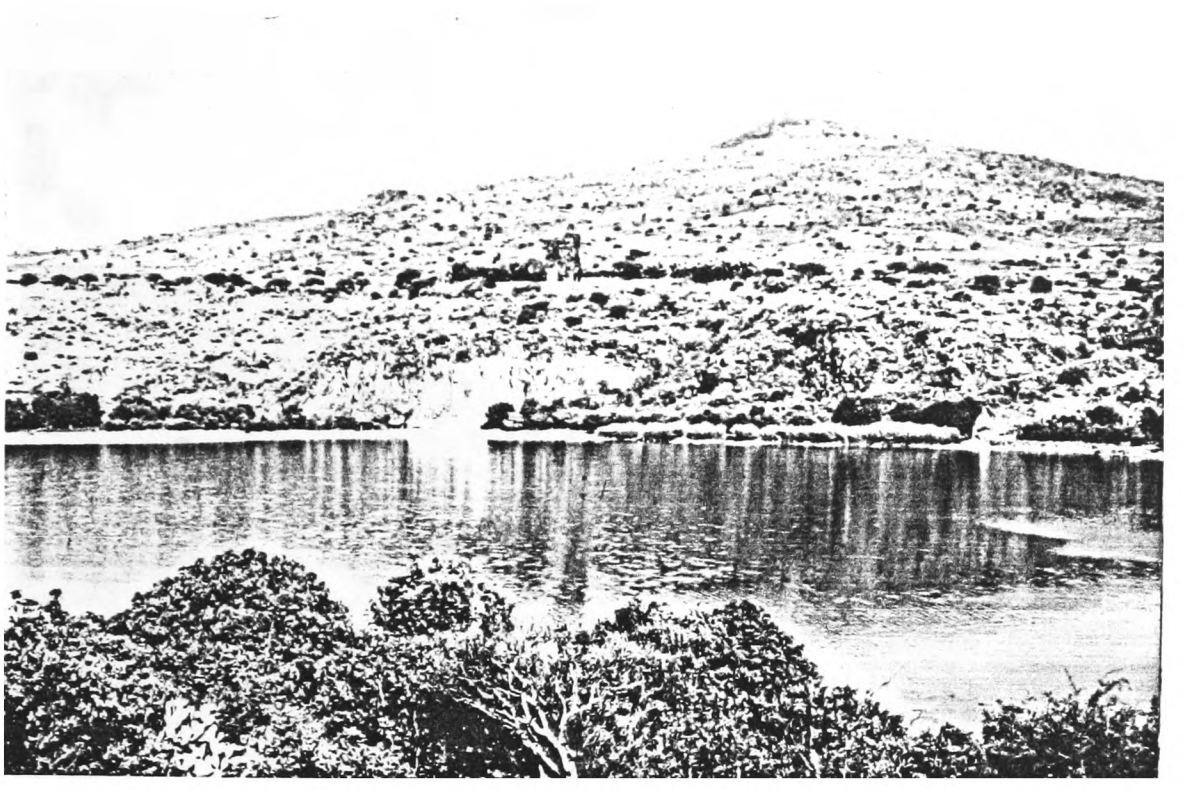

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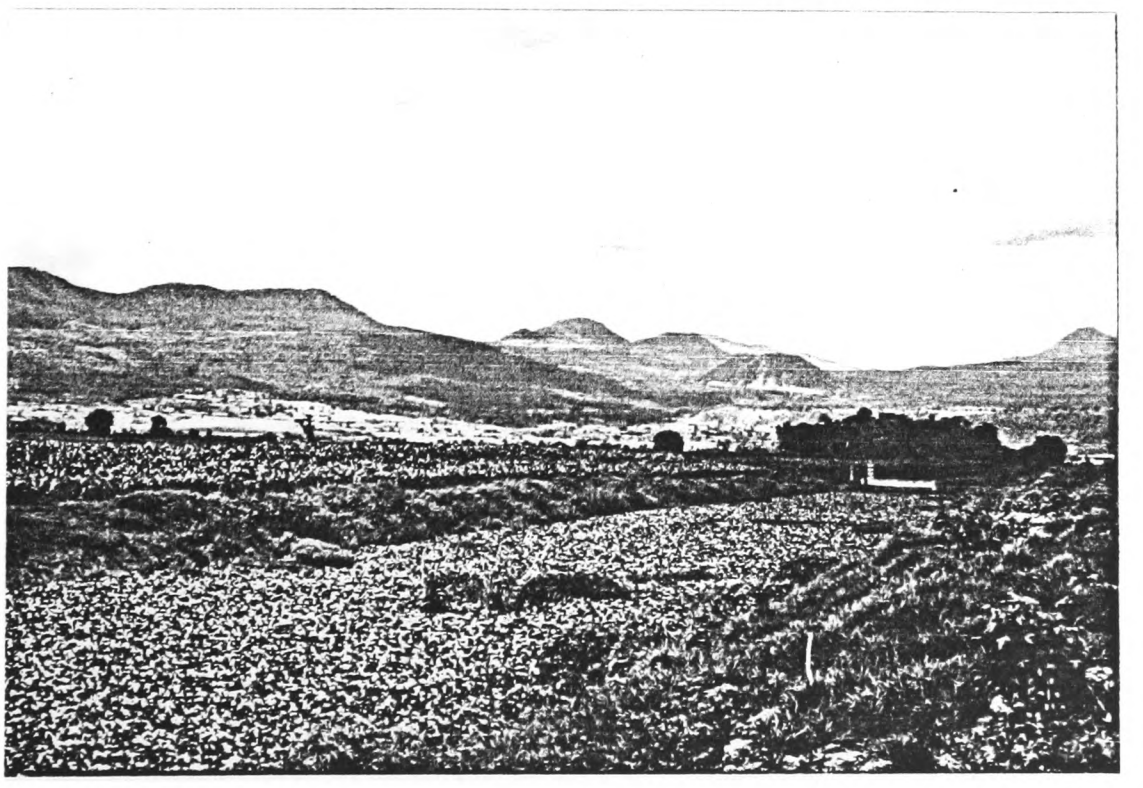


PLATE 13



PLATE 14



PLATE 15

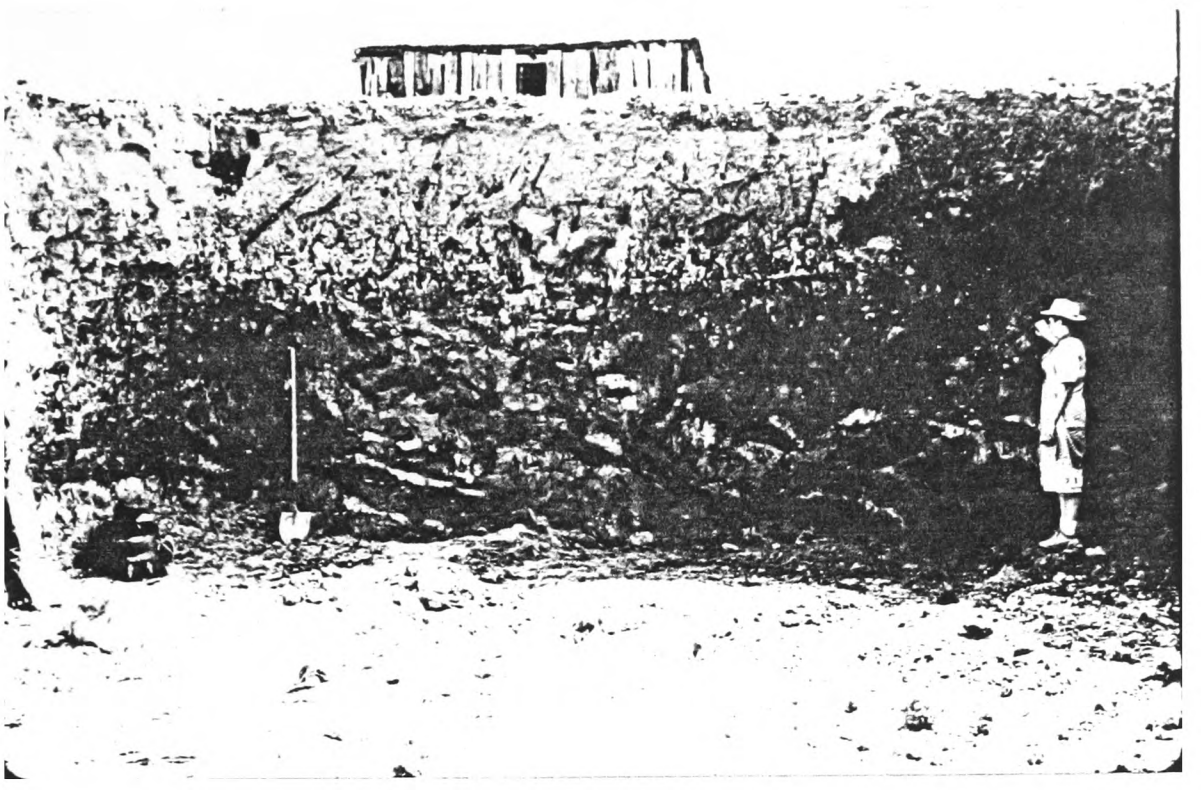


PLATE 16



PLATE 17

1 *Melosira granulata* (Ehr.) Ralfs

2 *Melosira granulata* var. *angustissima* Müller

3 *Melosira granulata* var. *angustissima* Müller

4 *Melosira* af. *granulata*

5 *Melosira* af. *granulata*

6 *Melosira monospina* Gasse

7 *Melosira monospina* Gasse

8 *Melosira islandica* Müller (status B)

9 *Melosira ambigua* (Grun.) O. Müller

10 *Melosira ambigua* (Grun.) O. Mu"ller

11 *Melosira italica* (Ehr.) Kützing

12 *Melosira italica* (Ehr.) Kützing

13 *Melosira italica*, stress form ?

14 *Melosira italica*, stress form ?

15 *Melosira italica* subsp. *subarctica* Müller

16 *Melosira italica* subsp. *subarctica* Müller

17 *Melosira italica* subsp. *subarctica* Müller

18 *Melosira distans* var. *africana* Müller

19 *Melosira distans* var. *africana* Müller (valve view)

20 *Melosira* sp.

SCALES – scale bars on all L.M. plates represent 10 µm

PLATE 17

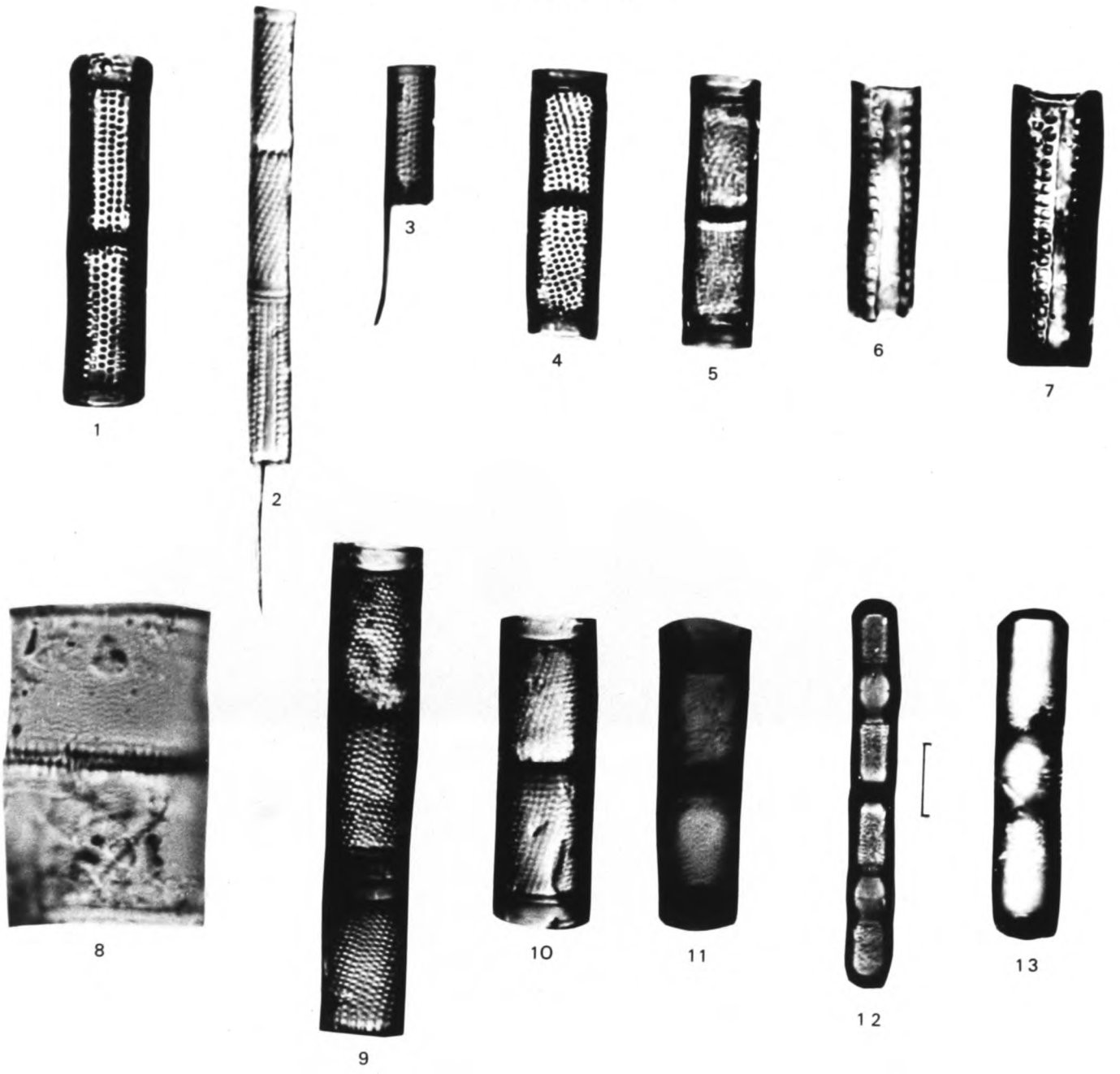
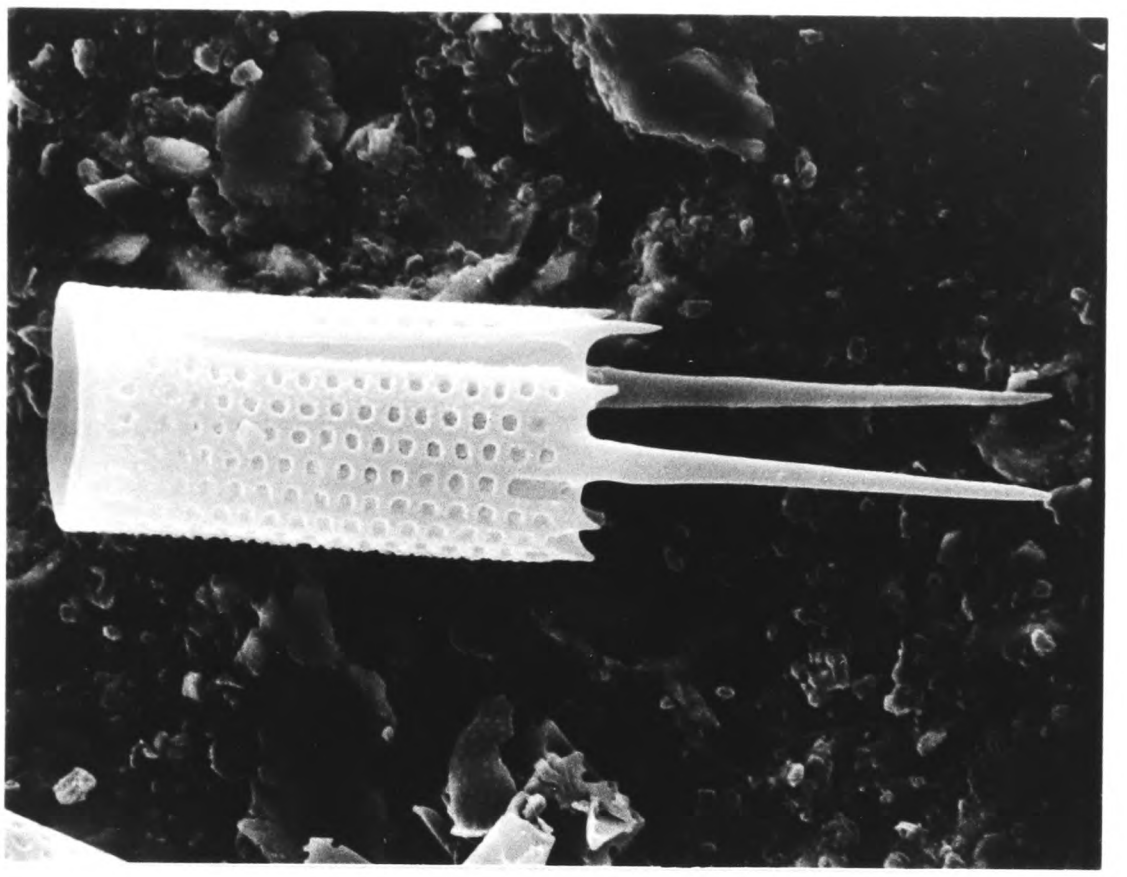


PLATE 18

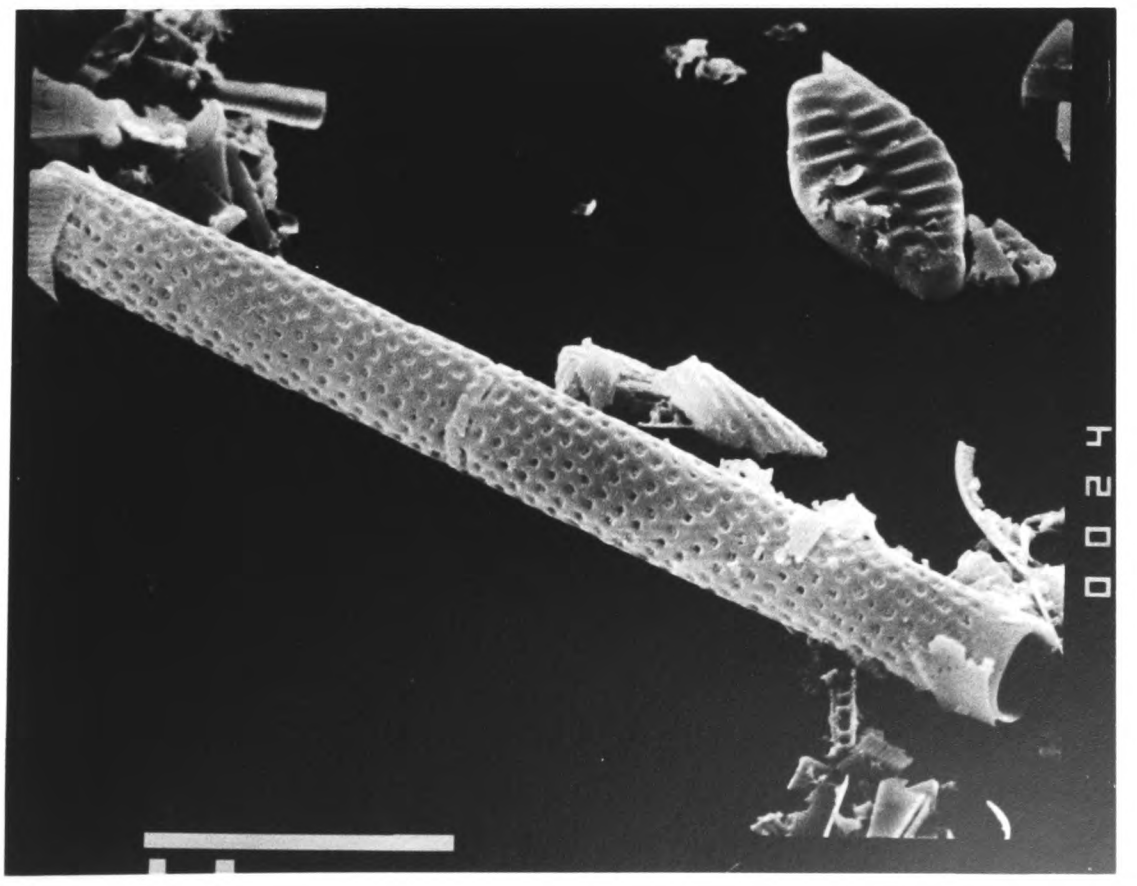
1 *Melosira granulata* (x 3000)

2 *Melosira granulata* var. *angustissima*

PLATE 18



1. x 3000



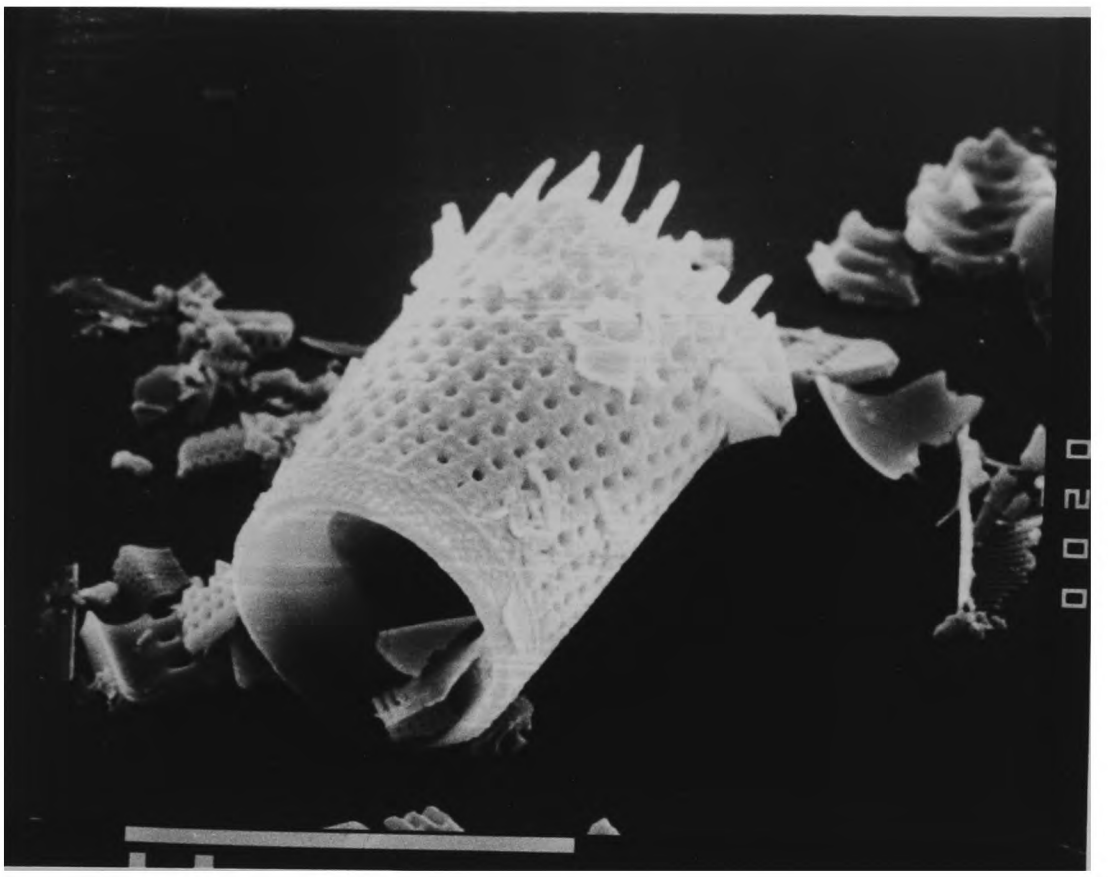
2.

PLATE 19

1 *Melosira italica* subsp. *subarctica*

2 *Melosira italica* subsp. *subarctica*

PLATE 19



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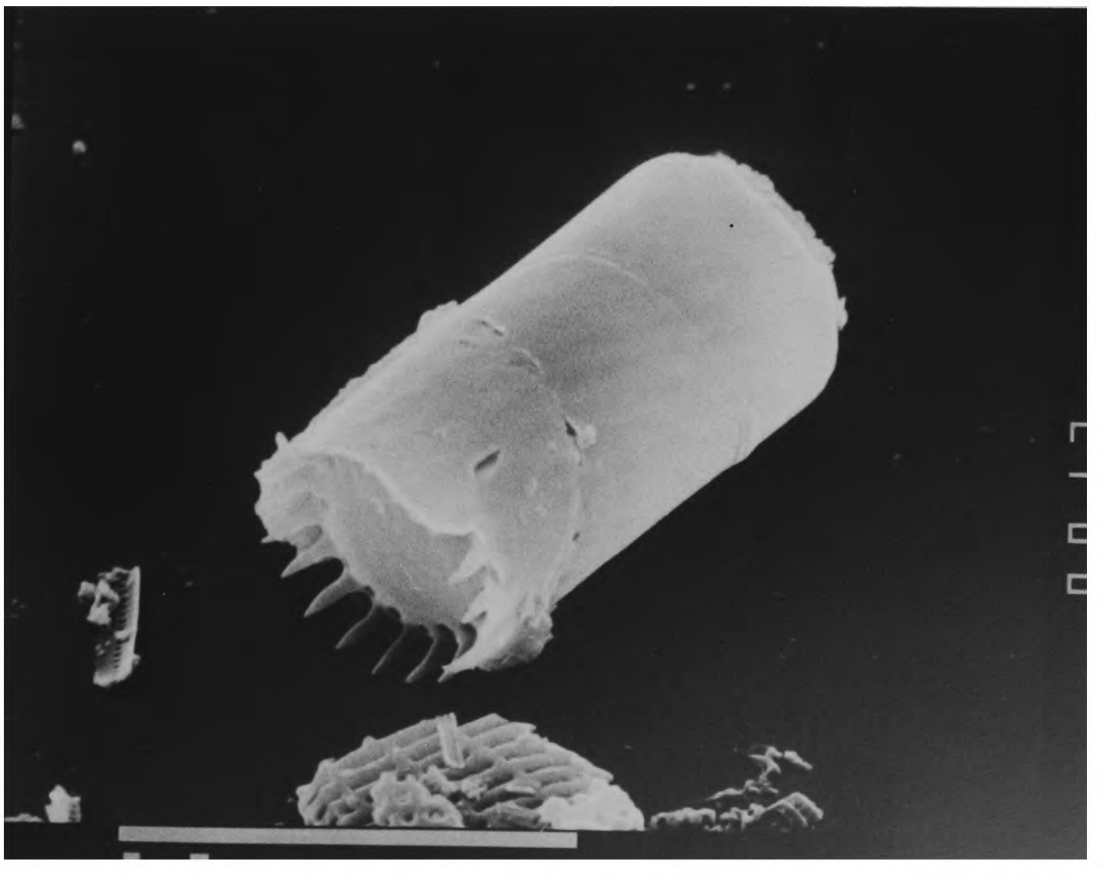


2.

PLATE 20

1 *Cyclotella stelligera* Cleve und Grunow

2 *Cyclotella stelligera* Cleve und Grunow

3 *Cyclotella pseudostelligera* Hustedt

4 *Cyclotella ocellata* Pantocsek

5 *Cyclotella meneghiniana* Kützing

6 *Cyclotella meneghiniana* Kützing

7 *Cyclotella quillensis* Bailey

8 *Cyclotella quillensis* Bailey (girdle view)

9 *Cyclotella quillensis* Bailey

10 *Cyclotella caspia* Grunow

11 *Cyclotella glomerata* Bachmann

12 *Cyclotella catenata* Brunthaler ?

13 *Cyclotella* sp.

14 *Cyclostephanos* sp.

15 *Cyclostephanos* sp.

16 *Cyclostephanos* sp.

PLATE 20



1



2



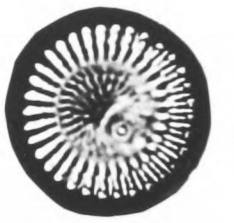
3



4



5



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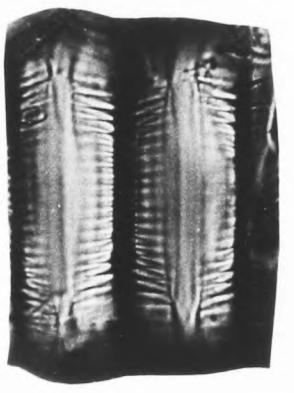

8



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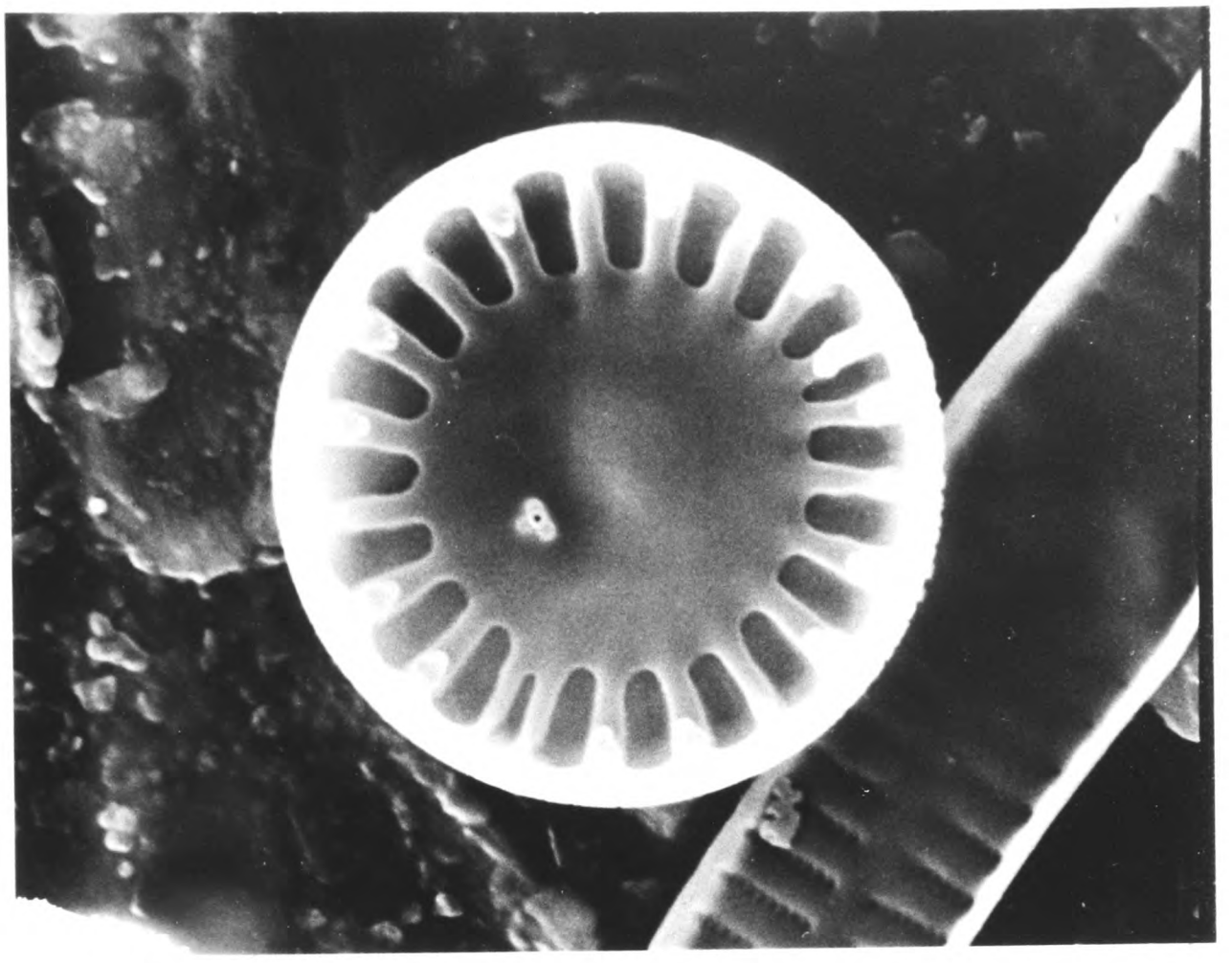
PLATE 21

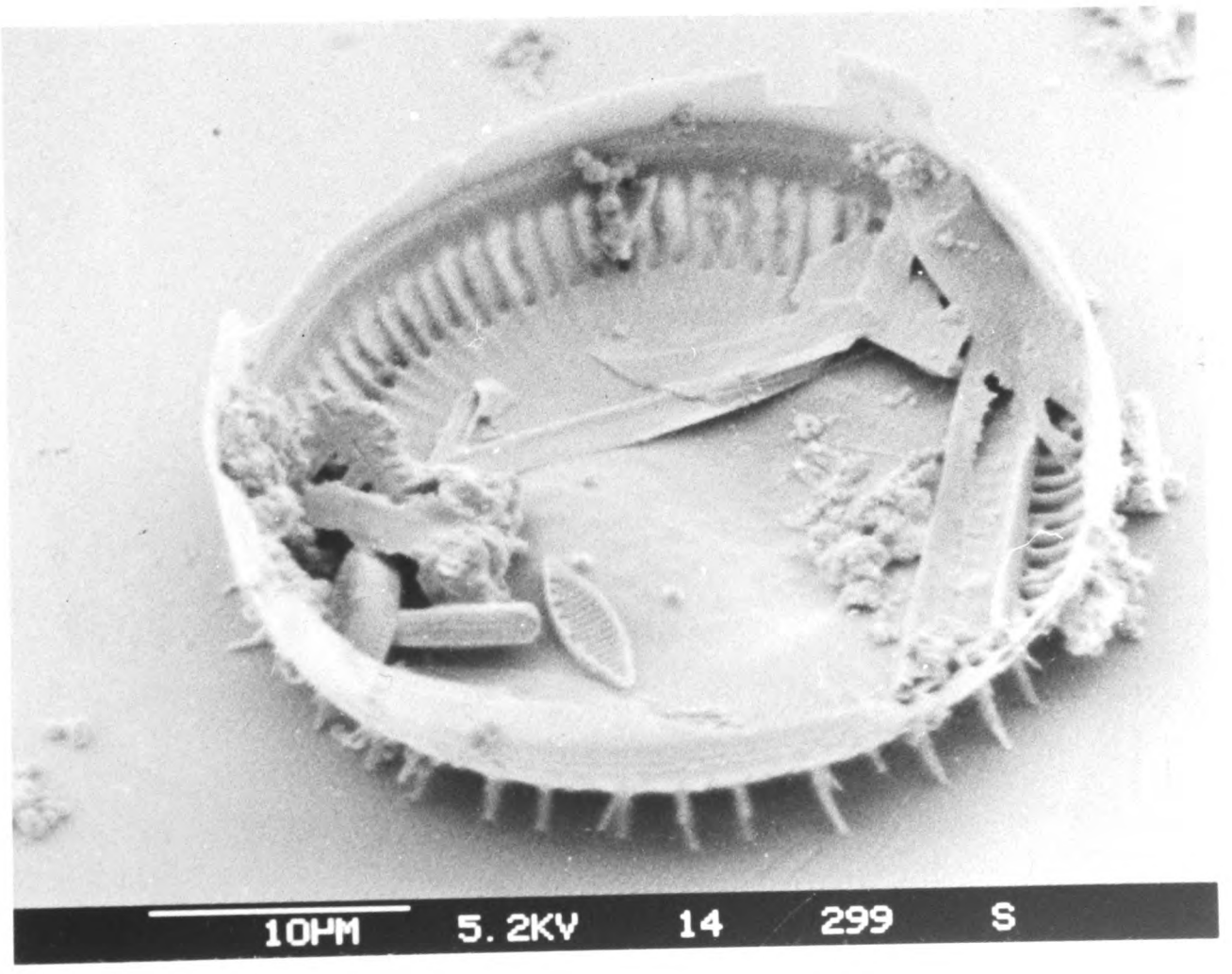
1 *Cyclotella meneghiniana* (x 6000)

2 *Cyclotella quillensis*

PLATE 21



1. x 6000



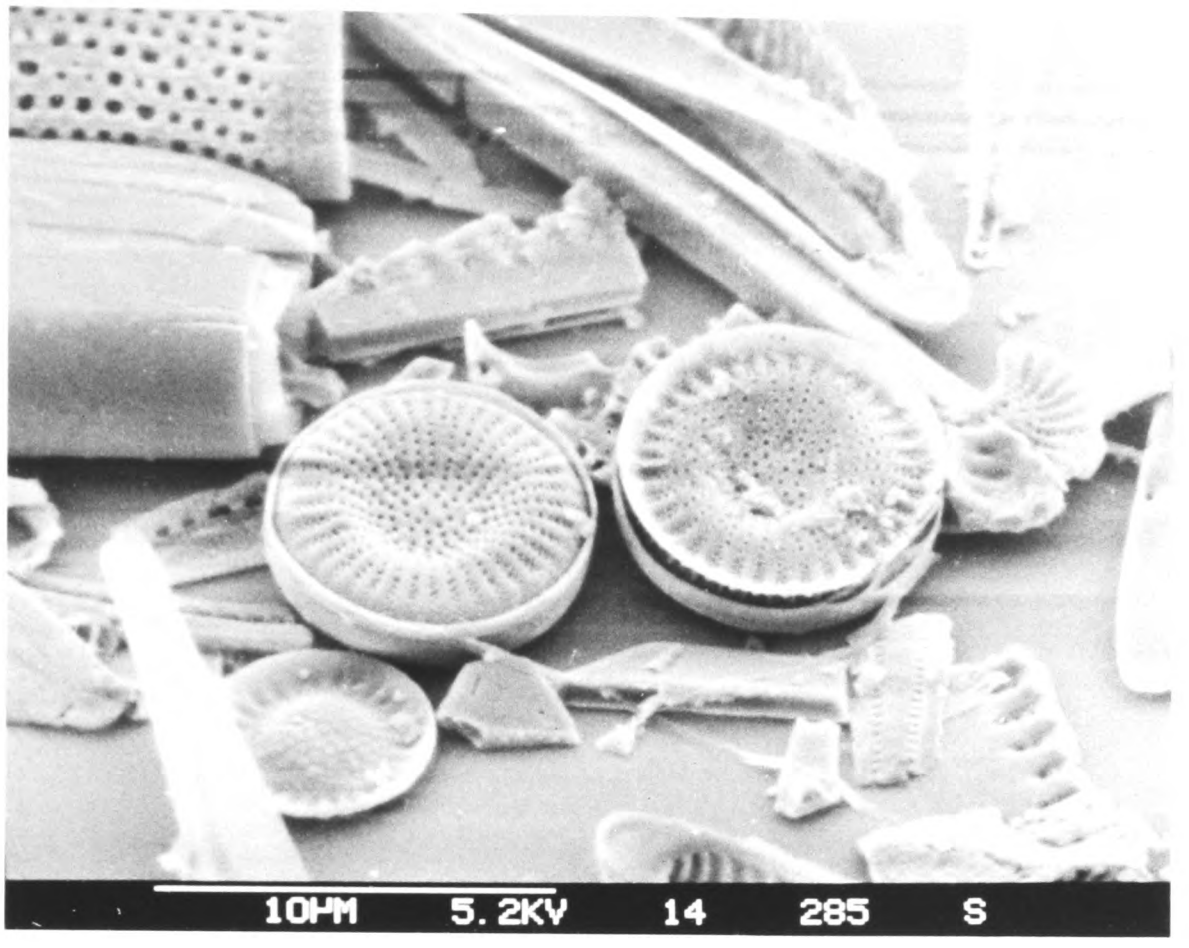
2.

PLATE 22

1 *Cyclostephanos* sp. Zacapu core 1

2 *Cyclostephanos* sp. Zacapu core 1

PLATE 22



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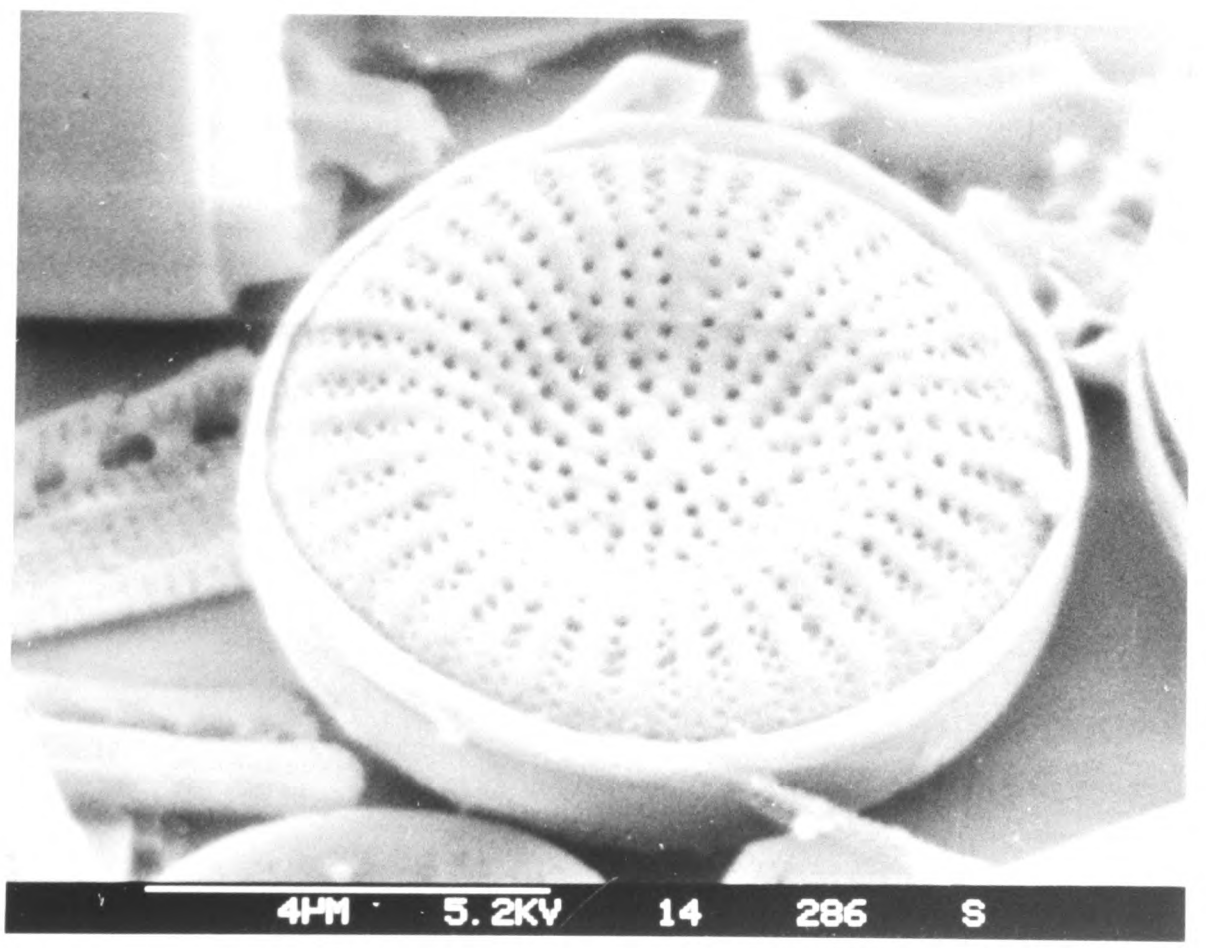


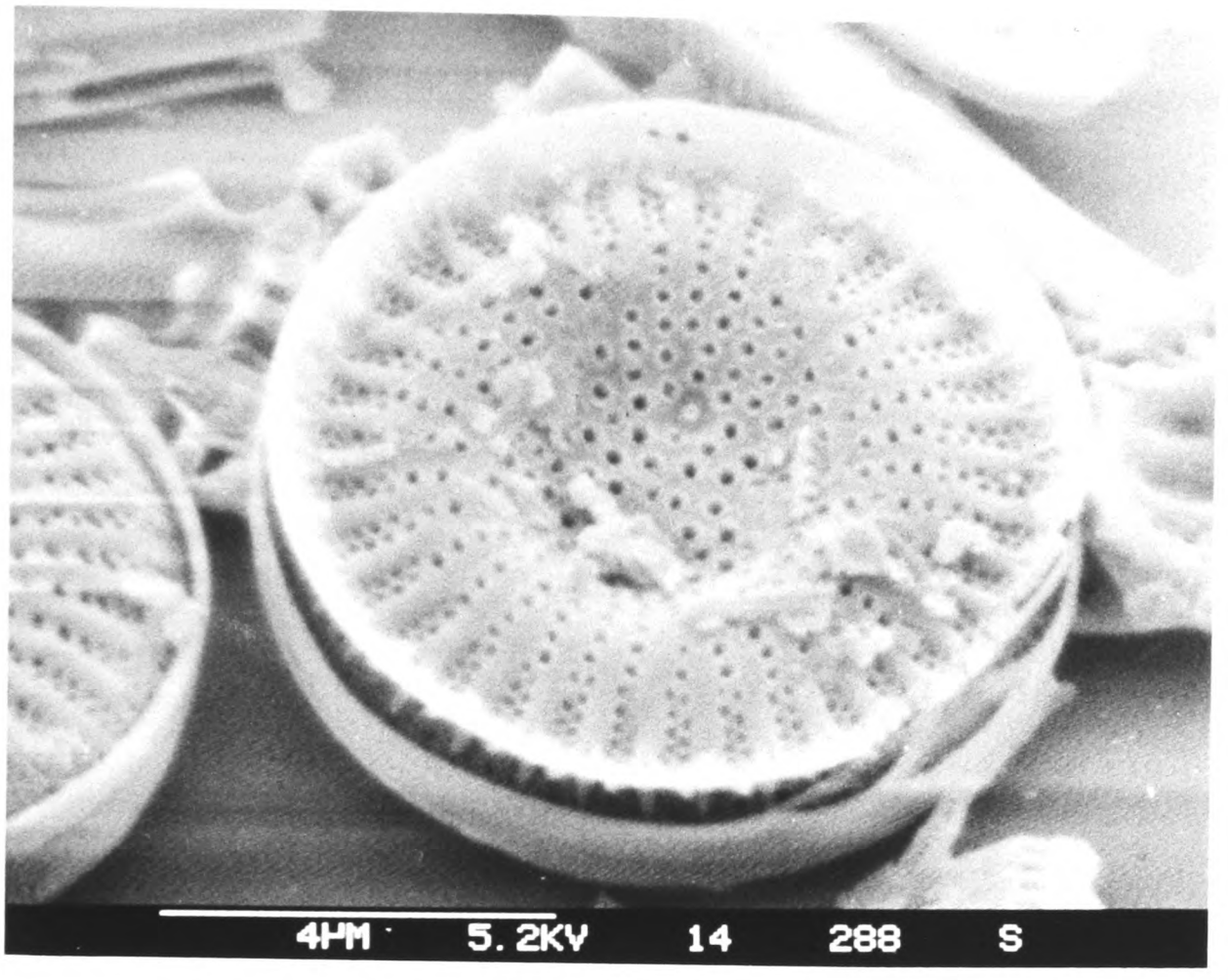
2.

PLATE 23

1 *Cyclostephanos* sp. Zacapu core 1

2 *Cyclostephanos* sp. Zacapu core 1

PLATE 23



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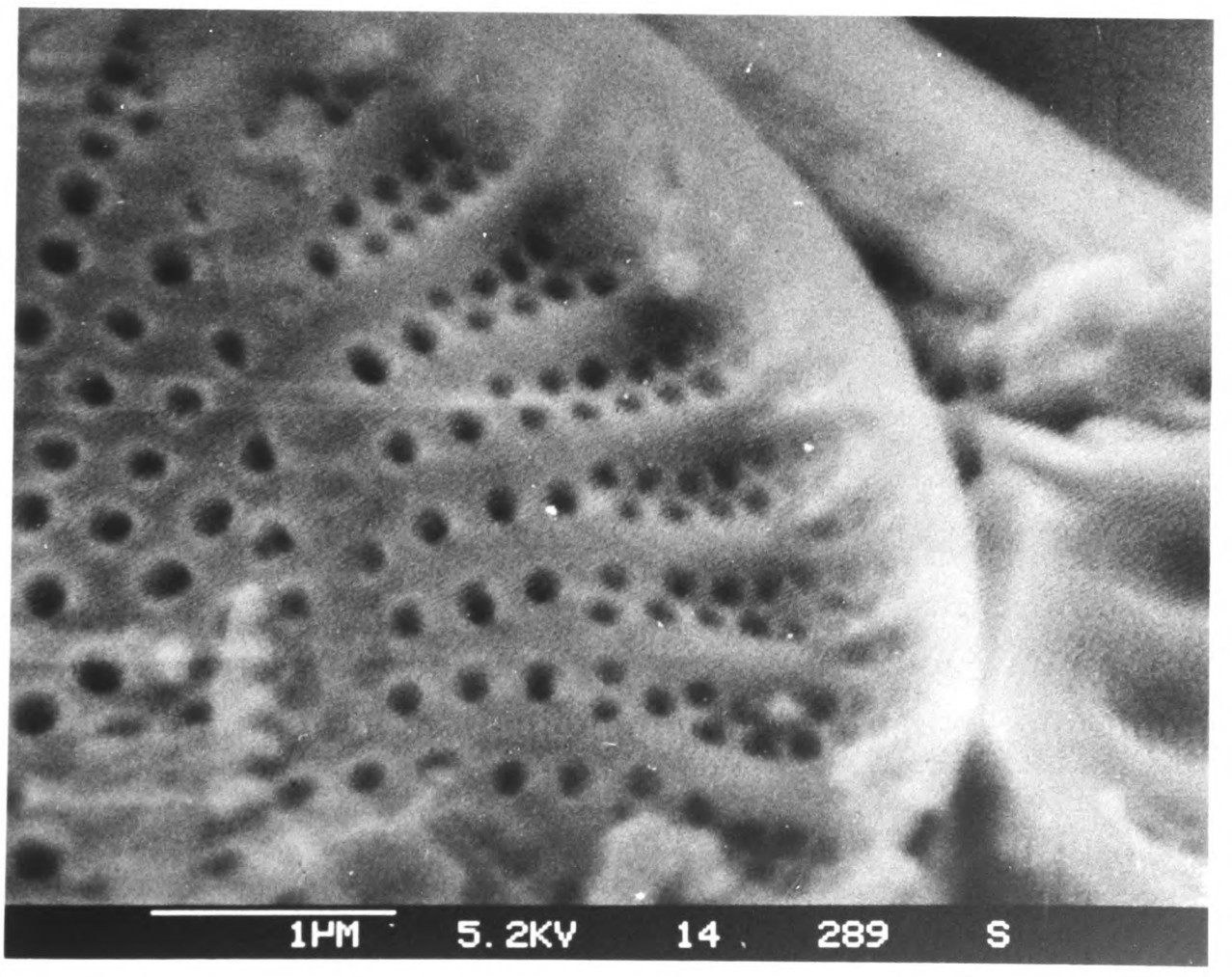
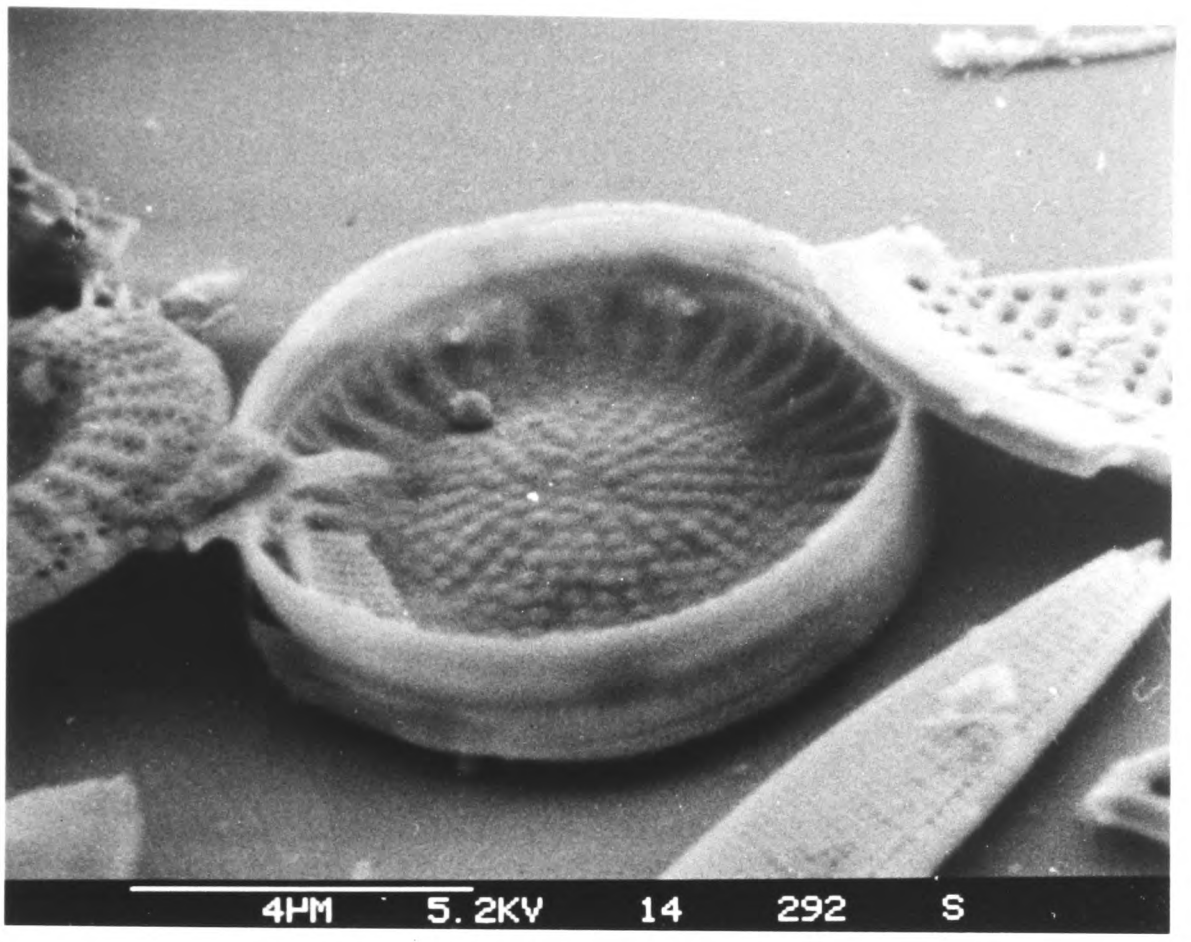


PLATE 24

1 *Cyclostephanos* sp. Zacapu core 1

2 *Stephanodiscus minutus*/*Cyclostephanos* sp.?

PLATE 24



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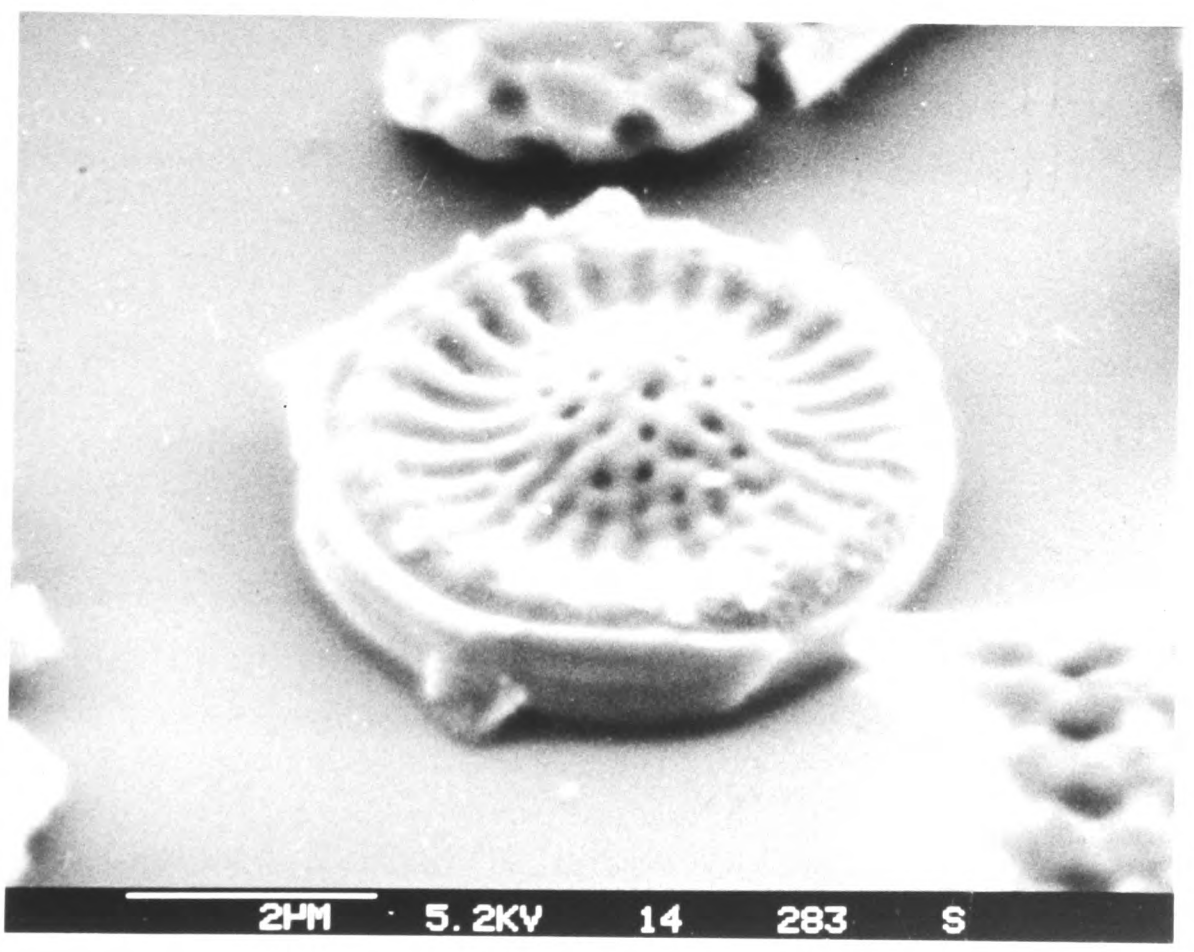


2.

PLATE 25

1 *Stephanodiscus hantzschii* var. *pusilla* Grunow

2 *Stephanodiscus subtilis* Van Goor

3 *Stephanodiscus tenuis* Hustedt

4 *Stephanodiscus tenuis* Hustedt

5 *Stephanodiscus minutus* (Ehr.) Grunow

6 *Stephanodiscus minutus* (Ehr.) Grunow

7 *Stephanodiscus astraea* var. *minutula* (Kützing) Grunow

8 *Stephanodiscus astraea* var. *intermedia* Fricke

9 *Stephanodiscus niagarae* Ehrenberg

10 *Stephanodiscus niagarae* Ehrenberg

11 *Stephanodiscus subtransylvanicus* Gasse

12 *Stephanodiscus novaezelandiae* (Cl.) Hustedt (= *Cyclostephanos novaezelandiae*)

13 *Stephanodiscus asteroides* Gasse

14 *Stephanodiscus asteroides* var. *intermedia* Gasse

15 *Stephanodiscus carconensis* Grunow

16 'eccentric' *Stephanodiscus* sp./ *Cyclostephanos* sp.1

17 *Stephanodiscus*/*Cyclostephanos* sp. 1

PLATE 25



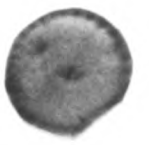
1



2



3



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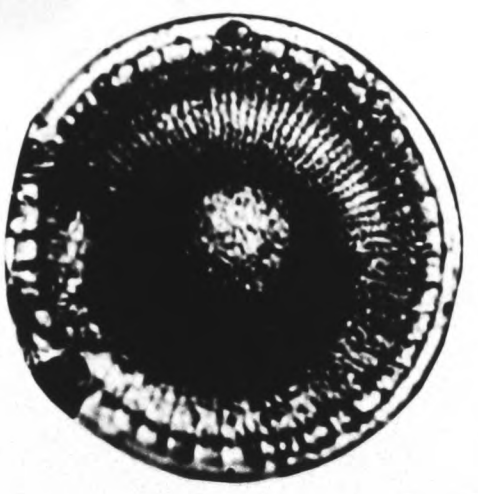

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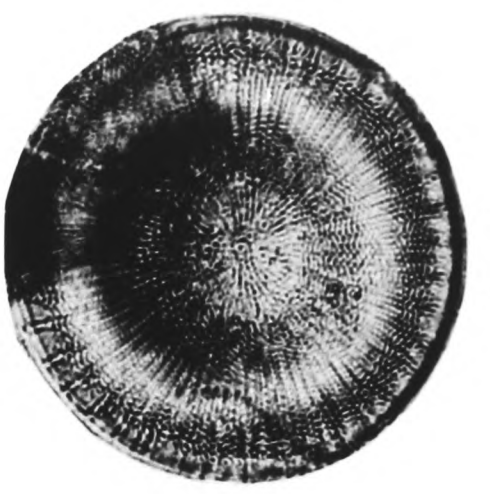

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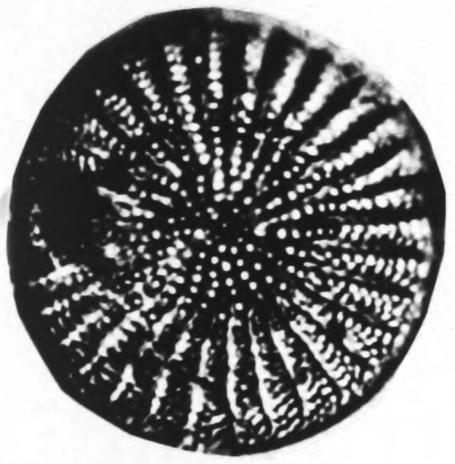

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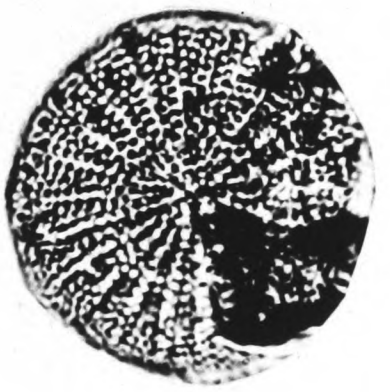

12



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16

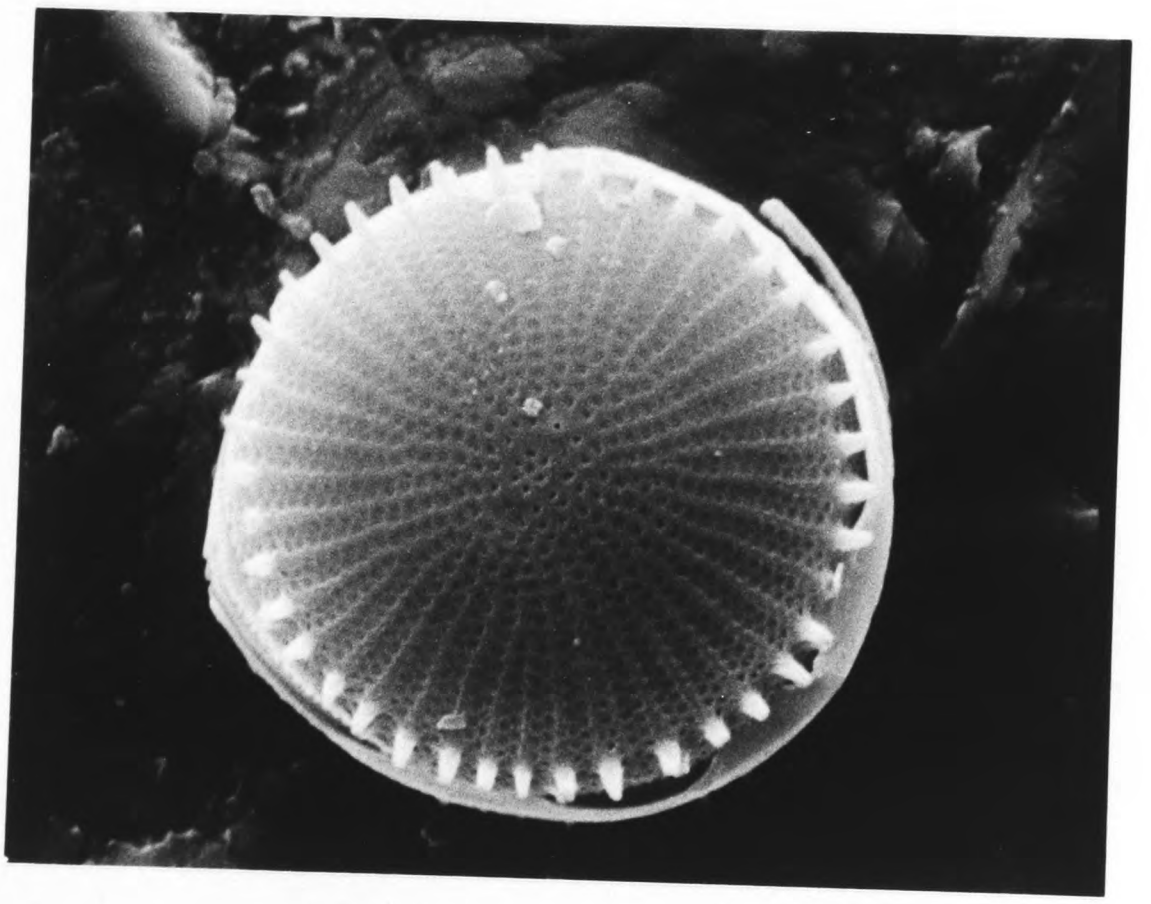


17

PLATE 26

1 Stephanodiscus subtilis (x 6000)

PLATE 26



1. x 6000

PLATE 27

1 *Fragilaria crotonensis* Kitton

2 *Fragilaria crotonensis* var. *oregona* Sov.

3 *Fragilaria leptostauron* var. *dubia* (Grun.) Hustedt

4 *Fragilaria leptostauron* var. *dubia* (Grun.) Hustedt

5 *Fragilaria leptostauron* var. *dubia* (Grun.) Hustedt

6 *Fragilaria leptostauron* var. *dubia* (Grun.) Hustedt

7 *Fragilaria inflata* (Heid.) Hustedt

8 *Fragilaria inflata* (Heid.) Hustedt

9 *Fragilaria inflata* (Heid.) Hustedt

10 *Fragilaria construens* var. *triundulata* Reichelt

11 *Fragilaria construens* var. *binodis* (Ehr.) Grunow

12 *Fragilaria construens* var. *venter* (Ehr.) Grunow

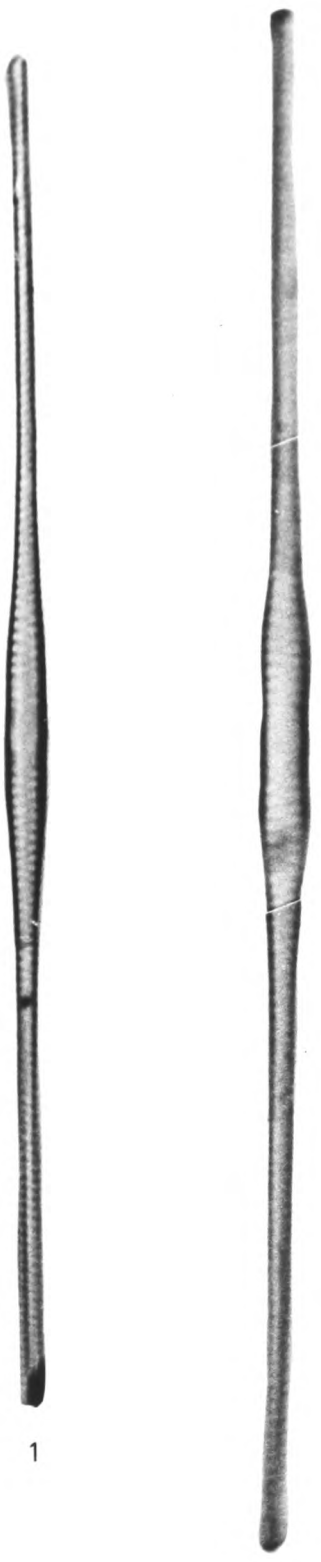
13 *Fragilaria construens* var. *venter* (Ehr.) Grunow

14 *Fragilaria pinnata* var. *lancettula* (Schum.) Hustedt

15 *Fragilaria pinnata* var. *lancettula* (Schum.) Hustedt

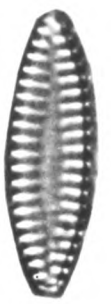
16 *Fragilaria brevistriata* Grunow

PLATE 27



1

2



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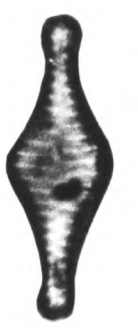
6



7



8



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14



15



16

PLATE 28

1 *Synedra acus* var. *neogena* comb. nov.

2 *Synedra acus* var. *neogena* comb. nov.

3 *Synedra fasciculata* var. *truncata* (Grev.) Patrick comb. nov.

4 *Synedra rumpens* var. *familiaris* (Kützt.) Hustedt

5 *Synedra ulna* (Nitz.) Ehrenberg

6 *Synedra ulna* var. *danica* (Kützt.) Van Heurck

7 detail of above

8 *Synedra goulardi* Brébisson

9 *Synedra goulardi* Brébisson

10 *Synedra goulardi* Brébisson

PLATE 28



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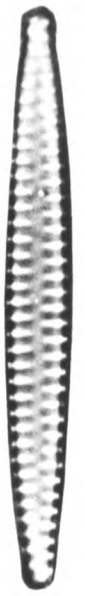

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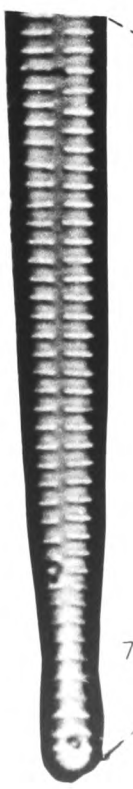

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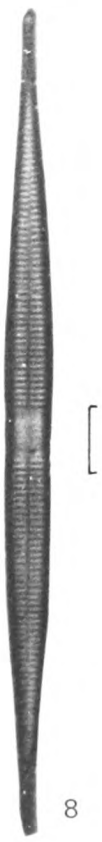

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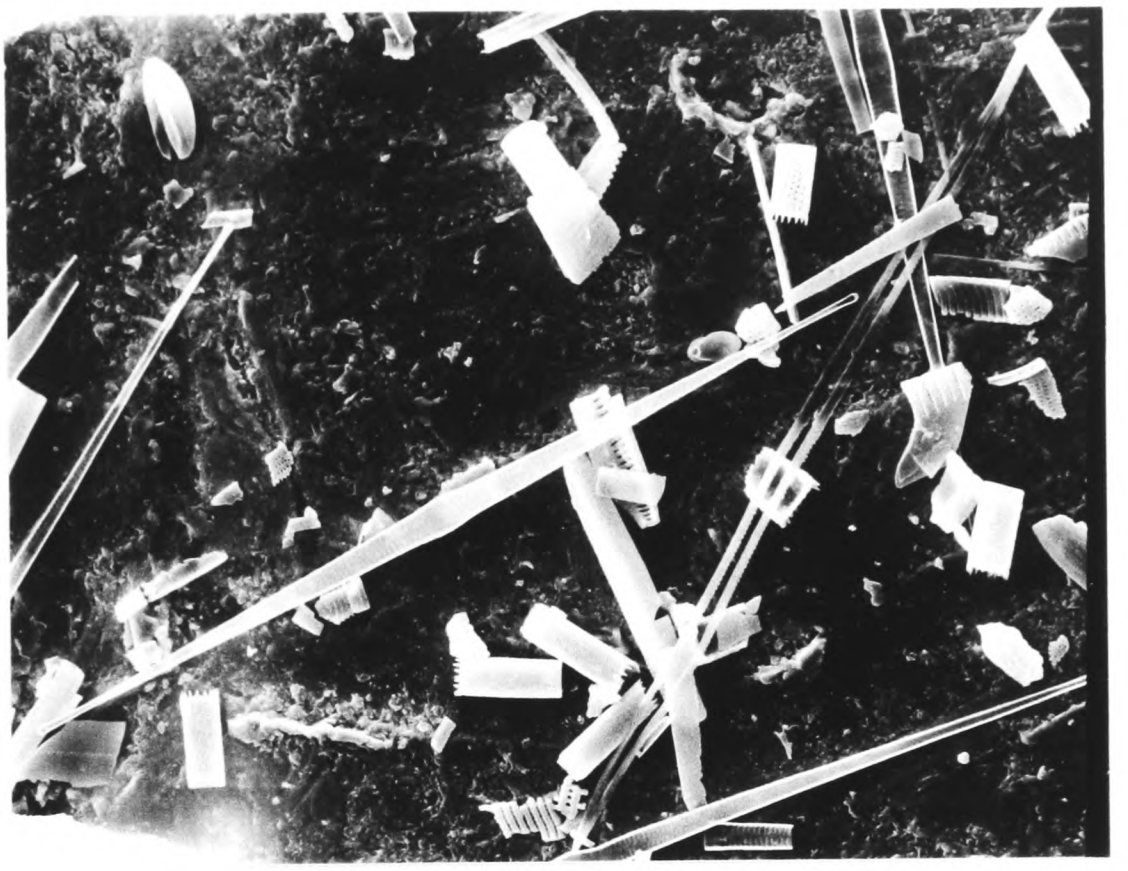
PLATE 29

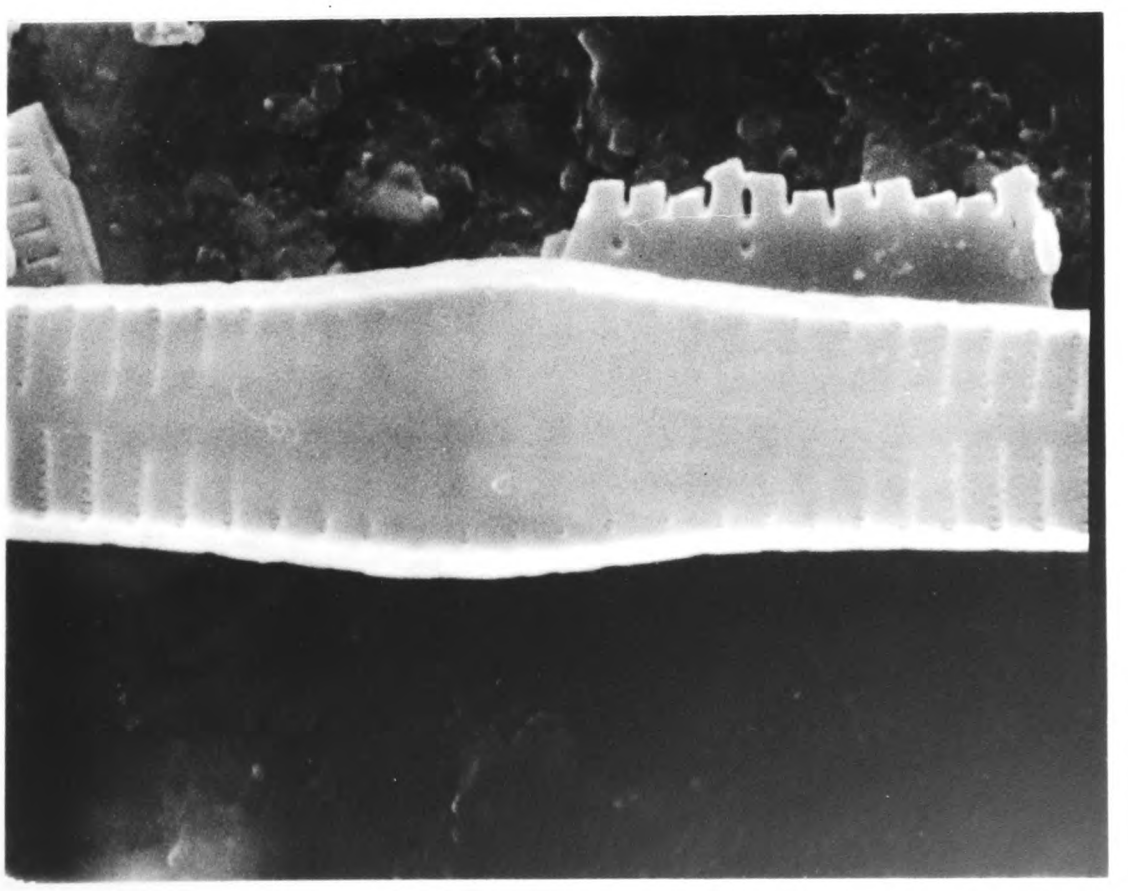
1 Synedra acus var. neogena comb. nov. (x 720)

2 Synedra acus var. neogena comb. nov. (x 6000)

PLATE 29



1. x 720



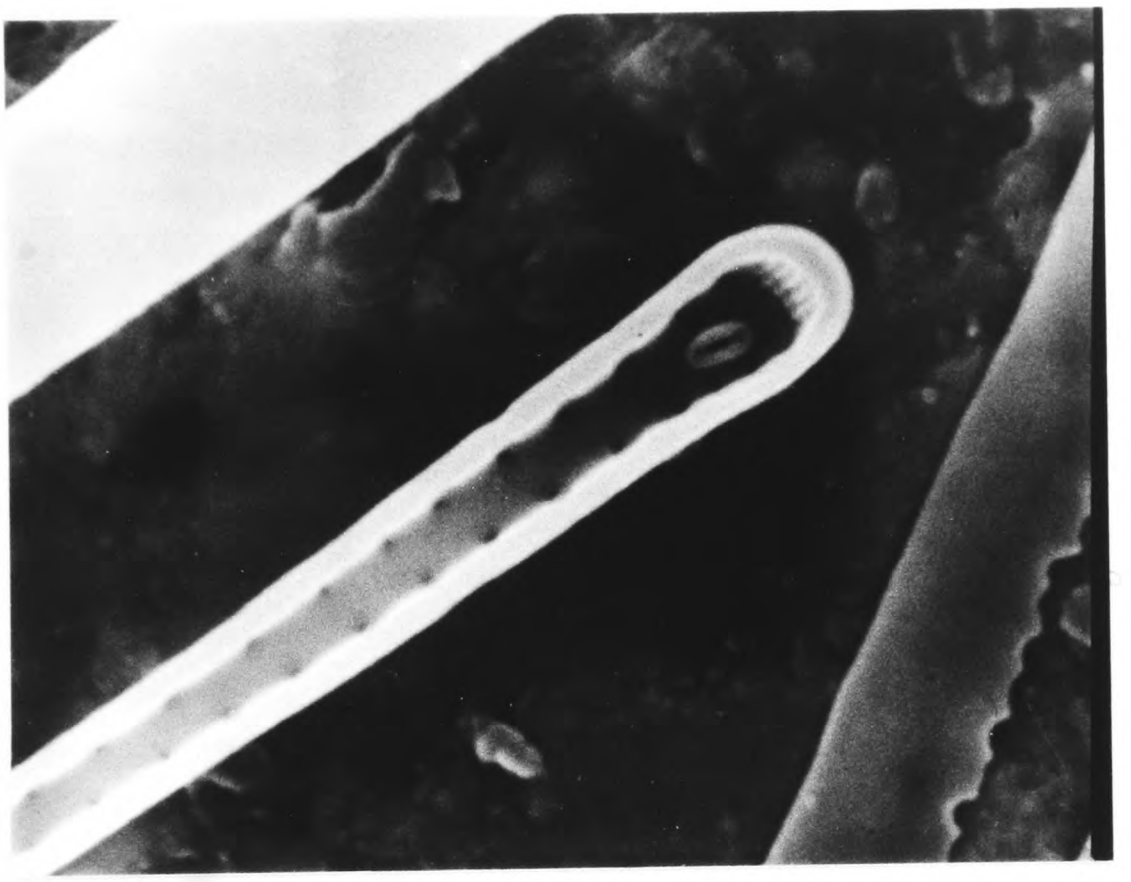
2. x 6000

PLATE 30

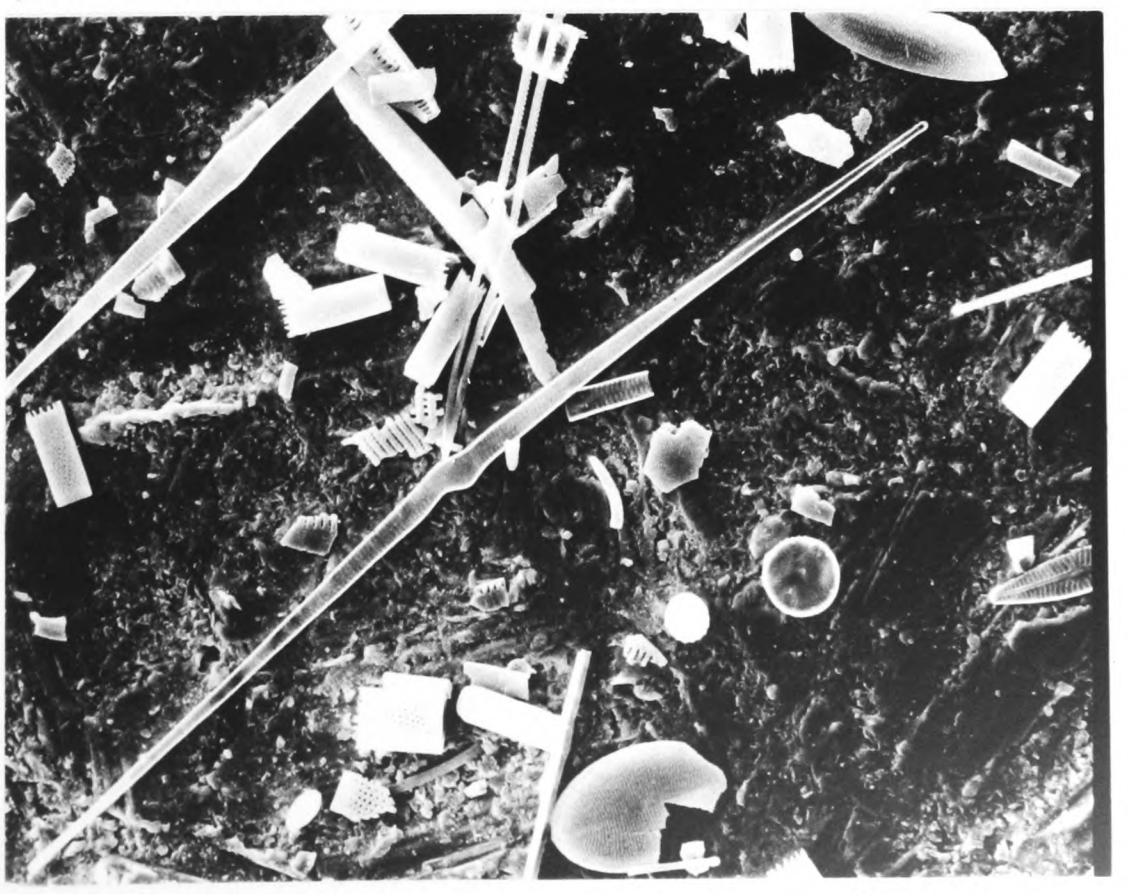
1 *Synedra acus* var. *neogena* comb. nov. (x 12,000)

2 *Synedra acus* var. *neogena* comb. nov. (x 720)

PLATE 30



1. x 12,000



2. x 720

PLATE 31

1 Synedra goulardi

PLATE 31

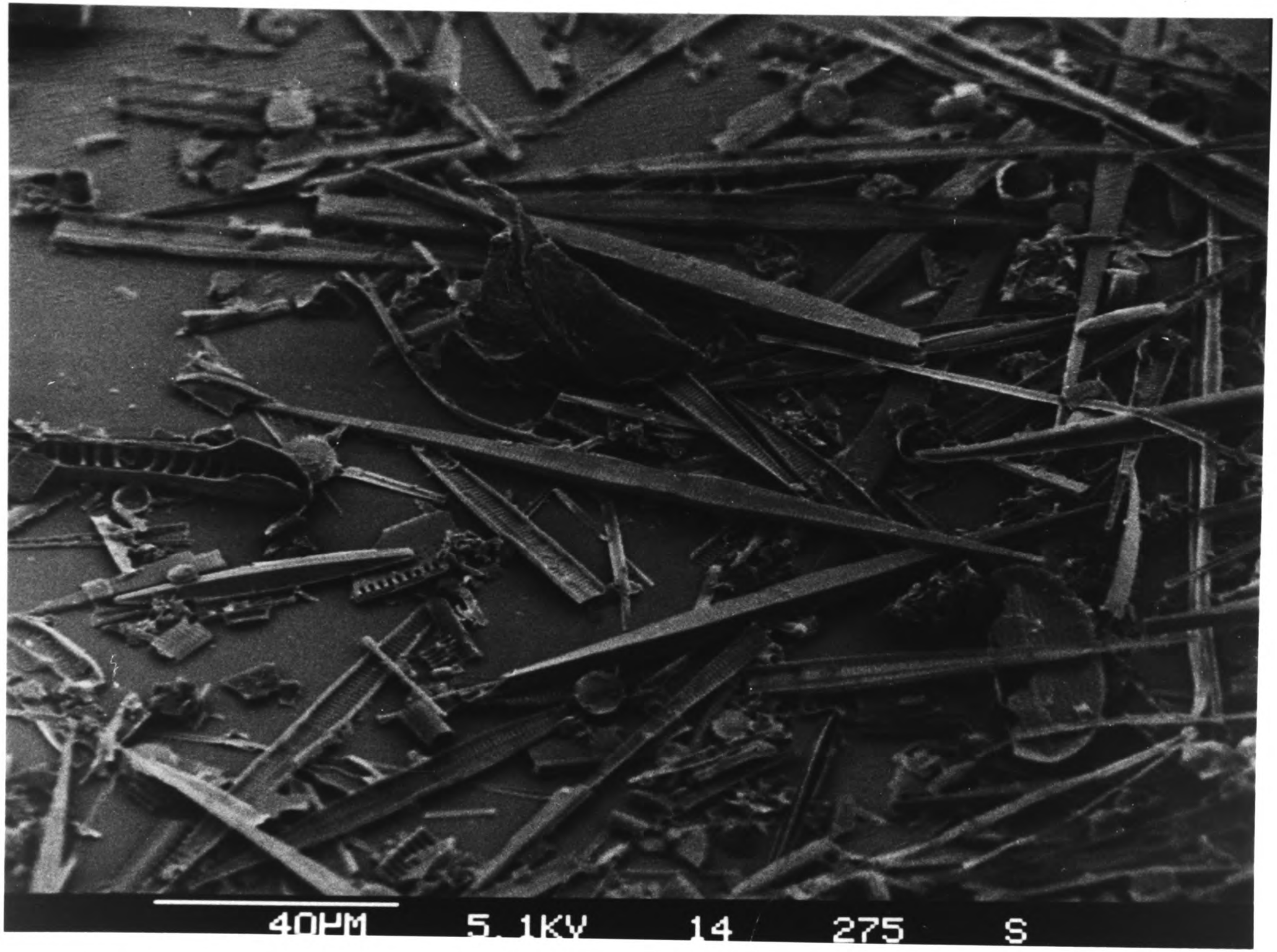
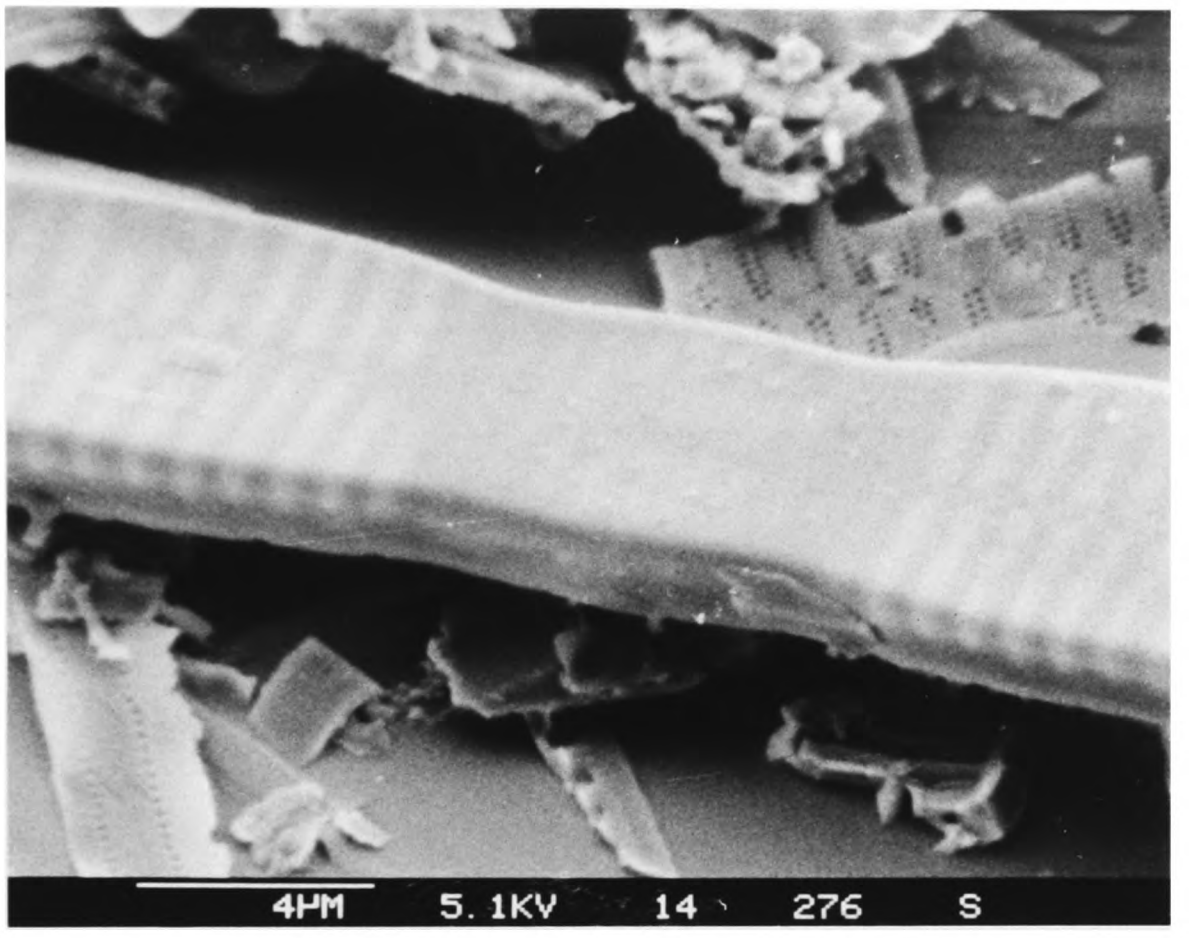


PLATE 32

1 *Synedra goulardi*

2 *Synedra goulardi*

PLATE 32



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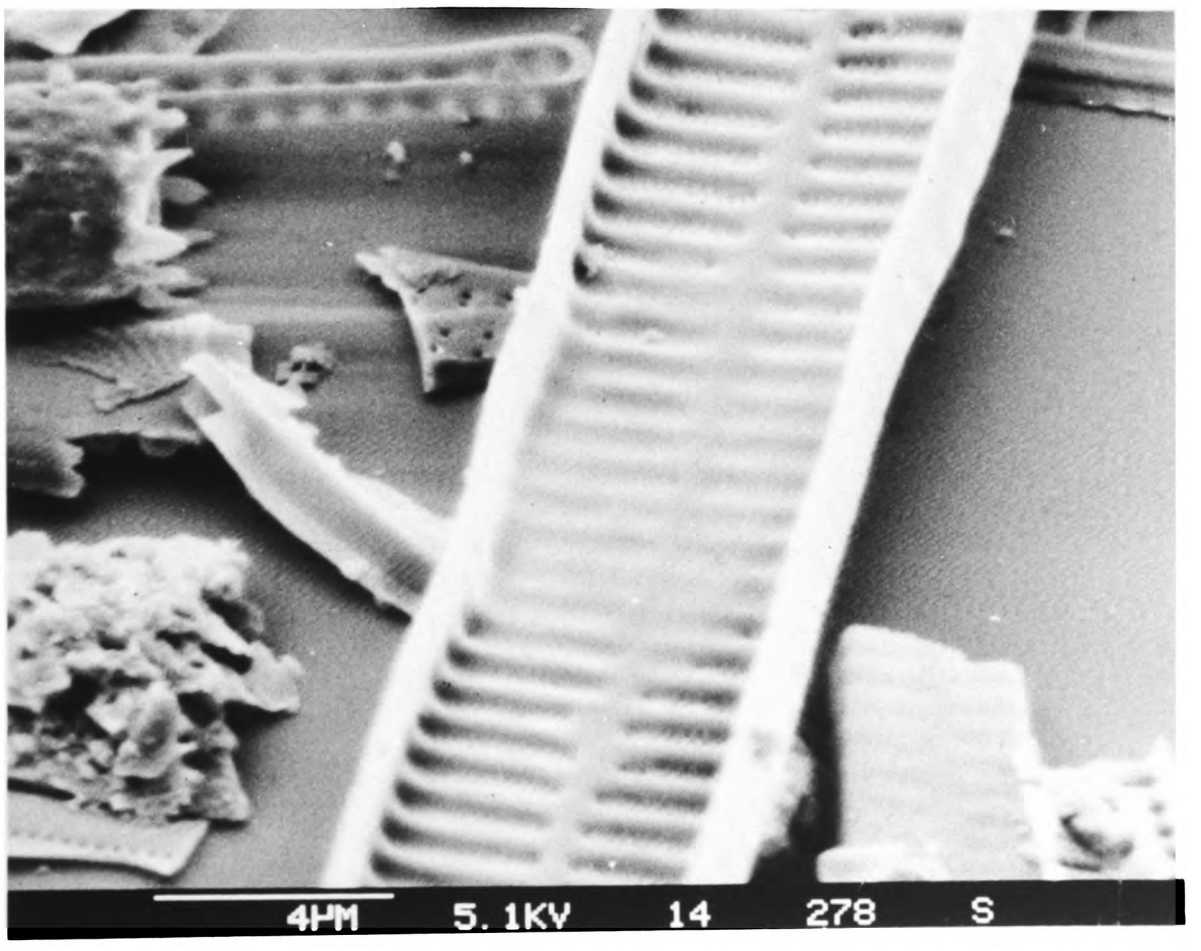

2.

PLATE 33

1 *Synedra goulardi* Brébisson

2 *Synedra goulardi* Brébisson

3 *Eunotia bigibba* var. *pumila* Grunow

4 *Eunotia pectinalis* (O.F.Müll.?) Rabenhorst

5 *Eunotia pectinalis* var. *undulata* (Ralfs) Rabenhorst

6 *Eunotia curvata* Kutz. Lagerst ?

7 *Eunotia maior* (W. Sm.) Rabenhorst

8 *Eunotia formica* Ehrenberg

9 *Eunotia sibirica* Cleve

10 *Eunotia sibirica* Cleve

11 *Eunotia naegelii* Migula

12 *Eunotia flexuosa* Bréb. ex Kützing

13 *Eunotia flexuosa* Bréb. ex Kützing

PLATE 33



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PLATE 34

1 Cocconeis placentula var. lineata (Ehr.) Van Heurck

2 Cocconeis placentula var. lineata (Ehr.) Van Heurck

3 Cocconeis diminuta Pantocesk

4 Achnanthes minutissima Kützing

5 Achnanthes minutissima Kützing

6 Achnanthes minutissima Kützing

7 Achnanthes minutissima Kützing

8 Achnanthes linearis (W. Smith) Grunow

9 Achnanthes linearis fo. curta H.L.Sm.

10 Achnanthes hungarica Grunow

11 Achnanthes hungarica Grunow

12 Achnanthes exigua var. heterovalva Krasske

13 Achnanthes conspicua A. Mayer

14 Achnanthes lanceolata var. lanceolatoides (Sov.) Reimer comb. nov.

15 Rhoicosphenia curvata (Kütz.) Grunow ex Rabenhorst (girdle view)

16 Rhoicosphenia curvata (Kütz.) Grunow ex Rabenhorst

17 Frustulia vulgaris (Thwaites) De Toni

PLATE 34



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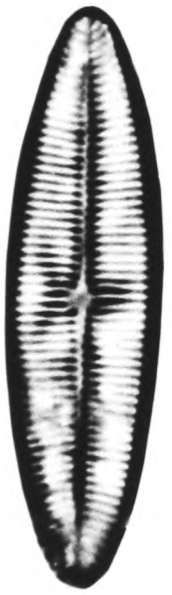

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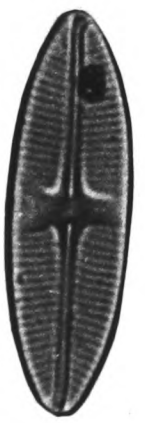

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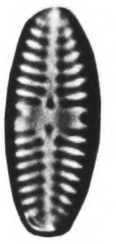

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PLATE 35

1 *Gyrosigma spencerii* (Quek.) Griff & Henrf.?

2 *Gyrosigma spencerii* (Quek.) Griff & Henrf.?

3 *Gyrosigma scalproides* (Rabh.) Cleve

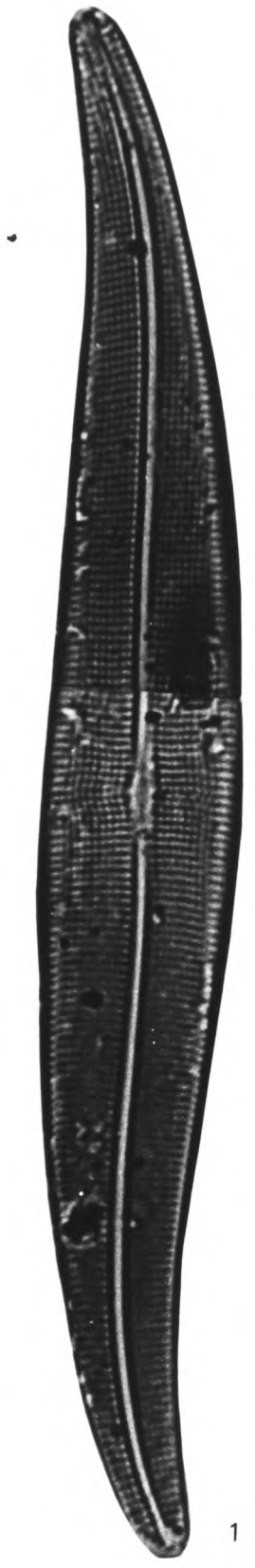
4 *Stauroneis phoenicenteron* (Nitz.) Ehrenberg

5 *Stauroneis anceps* fo. *gracilis* Rabenhorst

6 *Stauroneis kriegeri* Patrick

7 *Stauroneis lundii* Hustedt

PLATE 35



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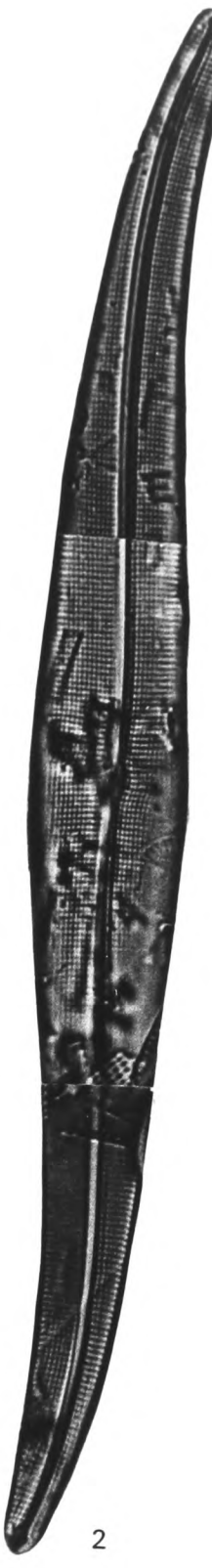

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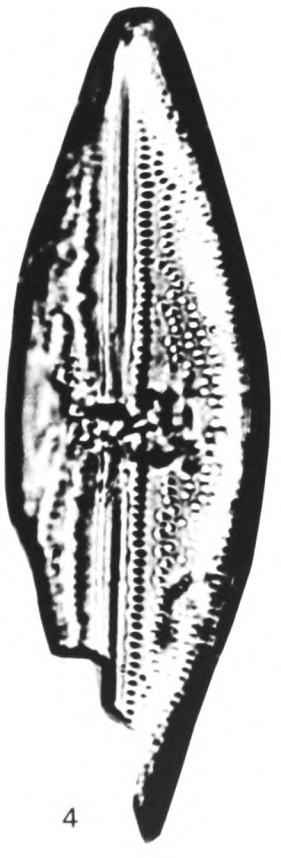

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PLATE 36

1 *Anomoeoneis sphaerophora* (Ehr.) Pfitz.

2 *Anomoeoneis sphaerophora* var. *sculpta* O. Müller

3 *Anomoeoneis costata* (Kütz.) Hustedt

4 *Anomoeoneis costata* (Kütz.) Hustedt

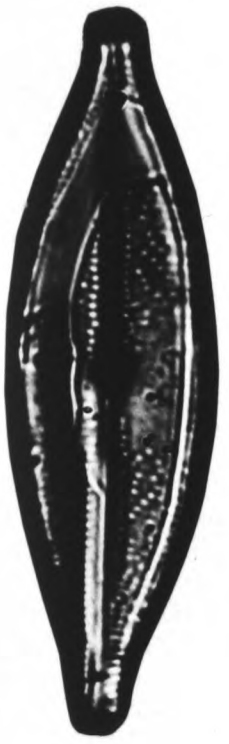
5 *Neidium iridis* (Ehr.) Cleve

6 *Neidium iridis* var. *amphigomphus* (Ehr.) A. Mayer

7 *Diploneis puella* (Schum.) Cleve

8 *Diploneis elliptica* (Kütz.) Cleve

PLATE 36



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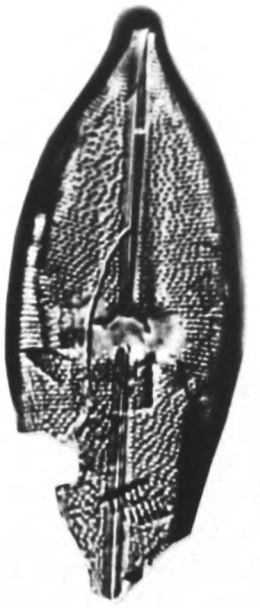

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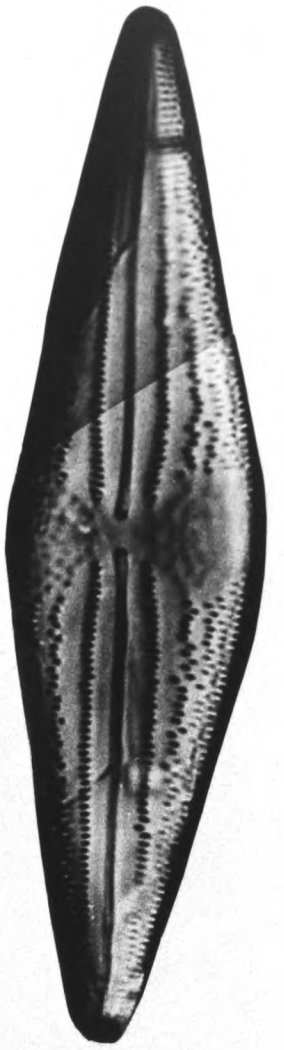

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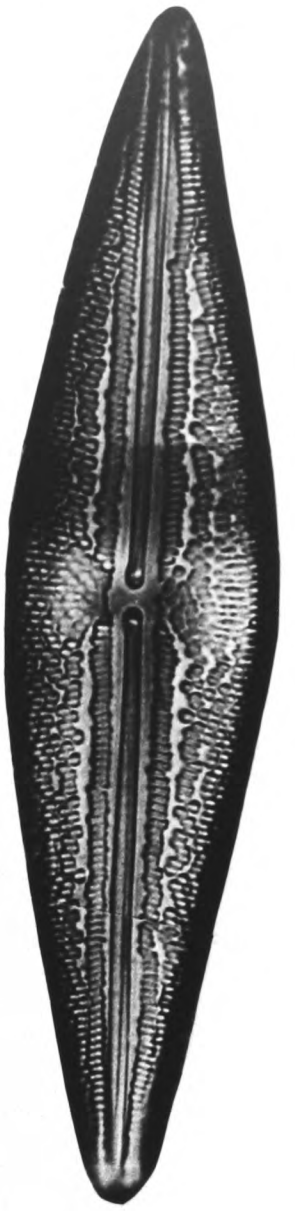

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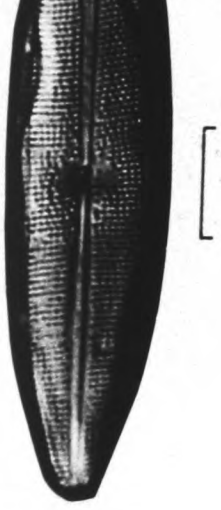

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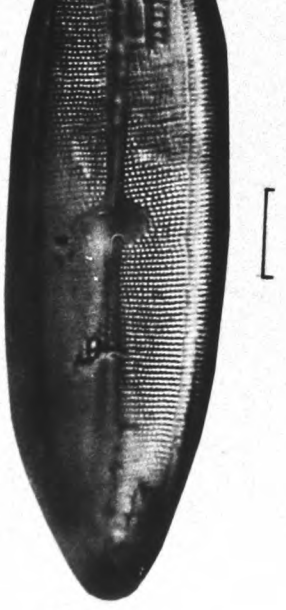

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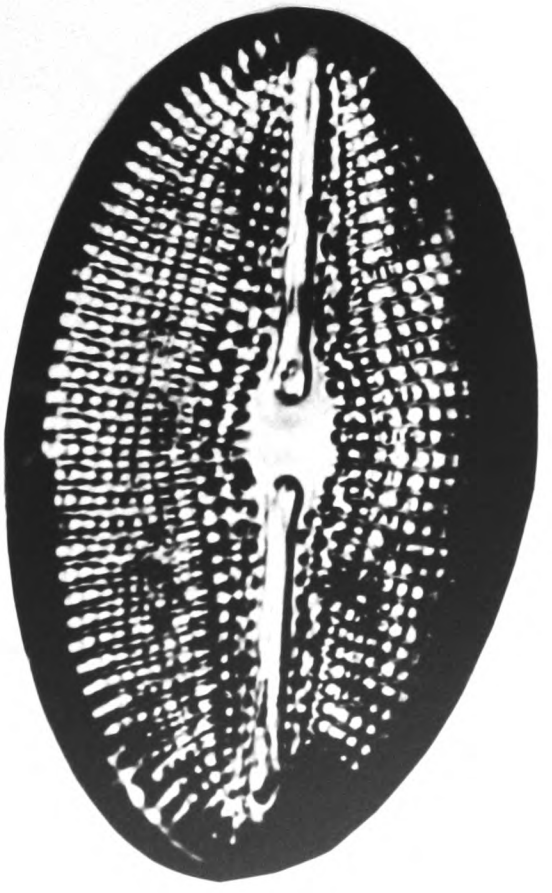

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PLATE 37

1 *Navicula circumtexta* Meist. ex Hustedt

2 *Navicula pygmaea* Kützing

3 *Navicula grimmei* Krasske

4 *Navicula grimmei* Krasske

5 *Navicula cocconeiformis* Greg. ex Grev.

6 *Navicula mutica* Kützing

7 *Navicula mutica* Kützing

8 *Navicula mutica* var. *undulata* (Hilse) Grunow

9 *Navicula secreta* var. *apiculata* Patrick

10 *Navicula cuspidata* (Kütz.) Kützing

11 *Navicula cuspidata* (Kütz.) Kützing

12 *Navicula cuspidata* (Kütz.) Kützing (craticule)

13 *Navicula adamantiformis* Archibald

14 *Navicula adamantiformis* Archibald

15 *Navicula halophila* (Grun.) Cleve

16 *Navicula pseudohalophila* Cholnoky

17 *Navicula pseudohalophila* Cholnoky

18 *Navicula pseudohalophila* Cholnoky ?

19 *Navicula pseudohalophila* Cholnoky

20 *Navicula gregaria* Donkin

21 *Navicula accomoda* Hustedt

22 *Navicula elkab* O. Müller

23 *Navicula modica* Hustedt

PLATE 37



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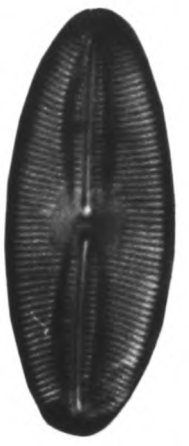

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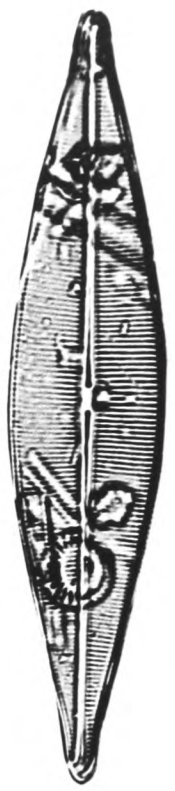

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PLATE 38

1 *Navicula omissa* Hustedt

2 *Navicula insociabilis* Krasske

3 *Navicula confervacea* (Kütz.) Grunow

4 *Navicula confervacea* (Kütz.) Grunow

5 *Navicula vitabunda* Hustedt

6 *Navicula menisculus* Schumann

7 *Navicula* cf. *minusculoides* Hustedt

8 *Navicula seminulum* Grunow

9 *Navicula seminulum* var. *radiosa* Hustedt

10 *Navicula seminuloides* Hustedt

11 *Navicula fluens* Hustedt

12 *Navicula subminuscula* Manguin

13 *Navicula americana* Ehrenberg

14 *Navicula bacillum* Ehrenberg

15 *Navicula bacillum* Ehrenberg

16 *Navicula pupula* var. *elliptica* Hustedt

17 *Navicula pupula* var. *rectangularis* (Greg.) Grunow

18 *Navicula laevissima* Kützing

19 *Navicula salinarum* var. *intermedia* (Grun.) Cleve

20 *Navicula cryptocephala* Kützing

21 *Navicula rhyncocephala* var. *germainii* (Wallace) Patrick comb. nov.

22 *Navicula viridula* (Kütz.) Ehrenberg

PLATE 38



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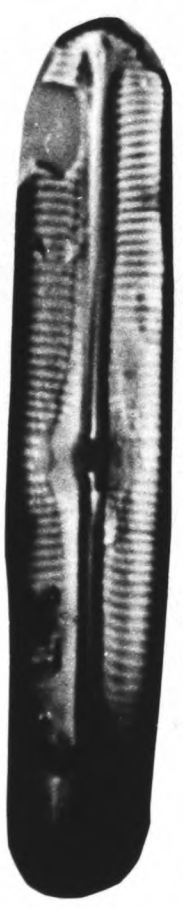

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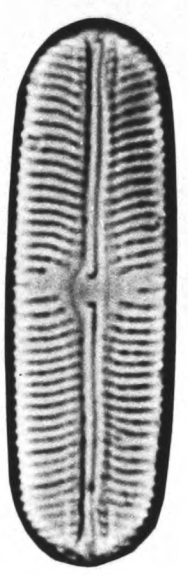

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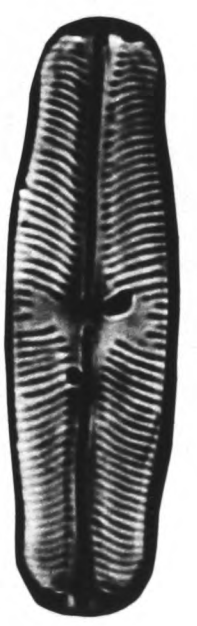

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PLATE 39

1 Navicula viridula var. rostellata (Kütz.?) Cleve

2 Navicula radiosa Kützing

3 Navicula radiosa Kützing

4 Navicula radiosa var. tenella (Bréb. ex Kütz.) Grunow

5 Navicula radiosa var. tenella (Bréb. ex Kütz.) Grunow

6 Navicula radiosa var. tenella (Bréb. ex Kütz.) Grunow

7 Navicula lanceolata (Agardh) Ehrenberg

8 Navicula trivialis Lange-Bertalot

9 Navicula trivialis Lange-Bertalot

10 Navicula cymbula Donkin

11 Navicula tripunctata var. schizonemoides (V.H.) Patrick

12 Navicula heufleri var. leptocephala (Bréb. ex Grun.) Patrick comb. nov.

13 Navicula heufleri var. leptocephala (Bréb. ex Grun.) Patrick comb. nov.

14 Navicula heufleri var. leptocephala (Bréb. ex Grun.) Patrick comb. nov.

15 Navicula reinhardtii (Grun.) Grunow

16 Navicula gastrum (Ehr.) Kützing

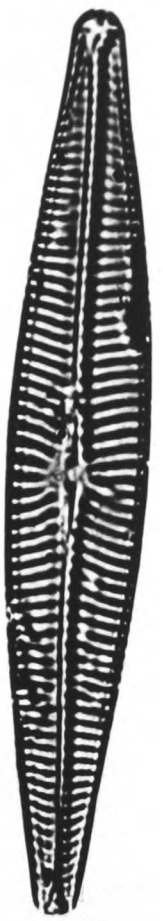
17 Navicula citrus Krasske

18 Navicula anglica var. subsalsa (Grun.) Cleve

PLATE 39



1



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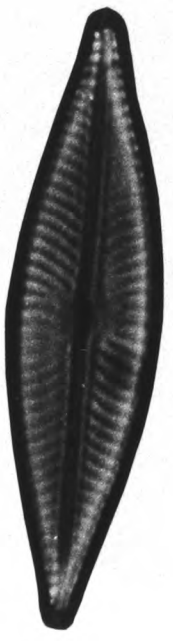

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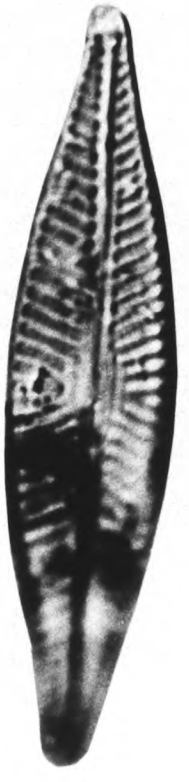

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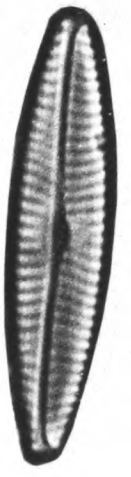

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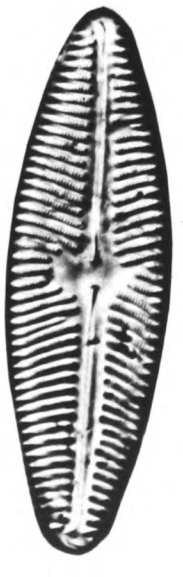

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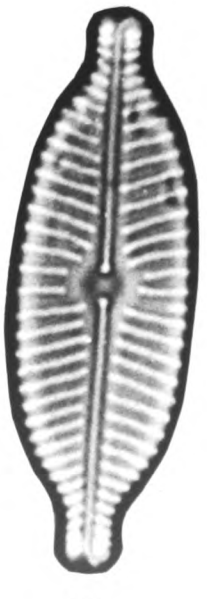

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PLATE 40

1 *Navicula dicephala* (Ehr.) W. Smith (*sensu* Germain)

2 *Navicula dicephala* var. *undulata* Ostrup

3 *Navicula capitata* Ehrenberg

4 *Navicula capitata* Ehrenberg

5 *Navicula capitata* var. *hungarica* (Grun.) Ross

6 *Caloneis patagonica* Cleve

7 *Caloneis ventricosa* var. *alpina* (Cl.) Patrick comb. nov.

8 *Caloneis bacillum* (Grun.) Cleve

9 *Pinnularia appendiculata* (Agardh) Cleve

10 *Pinnularia microstauron*

11 *Pinnularia acoricola* Hustedt

12 *Pinnularia braunii* var. *amphicephala* (A. Meyer) Hustedt

13 *Pinnularia brebissonii* (Kütz.) Rabenhorst

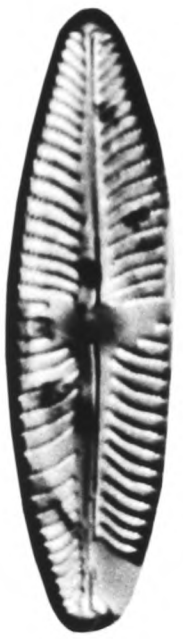
14 *Pinnularia brebissonii* var. *diminuta* (Grun.) Cleve

15 *Pinnularia subcapitata* var. *paucistriata* (Grun.) Cleve

16 *Pinnularia biceps* fo. *petersenii* Ross

17 *Pinnularia abaujensis* var. *linearis* (Hust.) Patrick comb. nov.

PLATE 40



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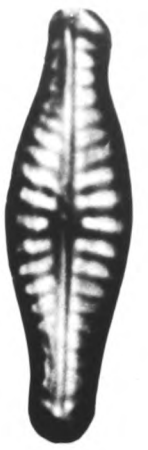

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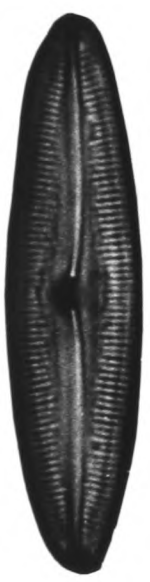

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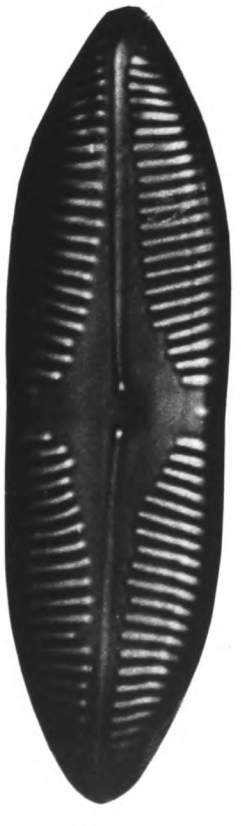

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PLATE 41

1 *Navicula* sp. 1

2 *Navicula* sp. 2

3 *Navicula* sp. 3

4 *Navicula* sp. 5

5 *Navicula* sp. 6

6 *Navicula* sp. 7

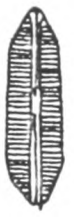
7 *Navicula* sp. 8

8 *Navicula* sp. 9

9 *Navicula* sp. 10

10 *Navicula* sp. 11

PLATE 41



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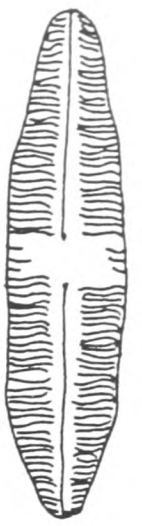

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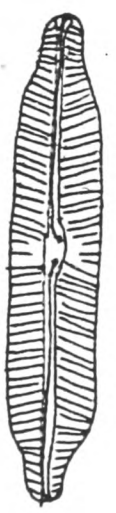

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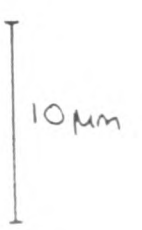

PLATE 42

1 *Pinnularia abaujensis* var. *linearis* (Hust.) Patrick comb. nov.

2 *Pinnularia abaujensis* var. *subundulata* (A. Mayer ex Hust.) Patrick

3 *Pinnularia abaujensis* var. *subundulata* (A. Mayer ex Hust.) Patrick

4 *Pinnularia abaujensis* var. *parva* comb. nov.

5 *Pinnularia abaujensis* var. *parva* comb. nov.

6 *Pinnularia subtrostrata* var. *similis* Krasske

7 *Pinnularia borealis* Ehrenberg

8 *Pinnularia acuminata* W. Smith

9 *Pinnularia acuminata* W. Smith

10 *Pinnularia viridis* (Nitz.) Ehrenberg

11 *Pinnularia viridis* (Nitz.) Ehrenberg

12 *Pinnularia subviridis* Cleve-Euler

13 *Pinnularia gentilis* (Donk.) Cleve

14 *Entomoneis alata* (Ehr.) Ehrenberg

PLATE 42



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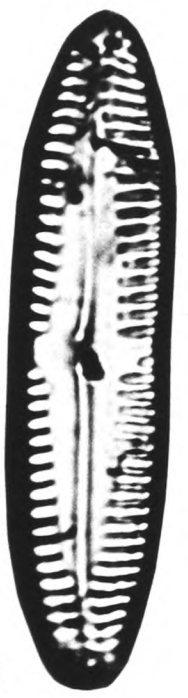

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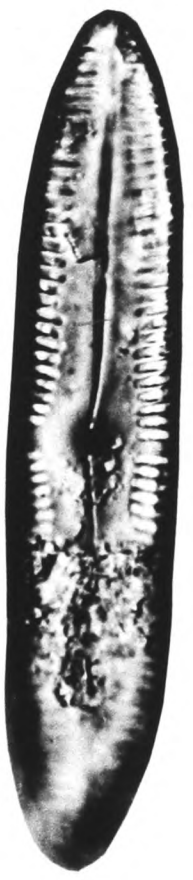

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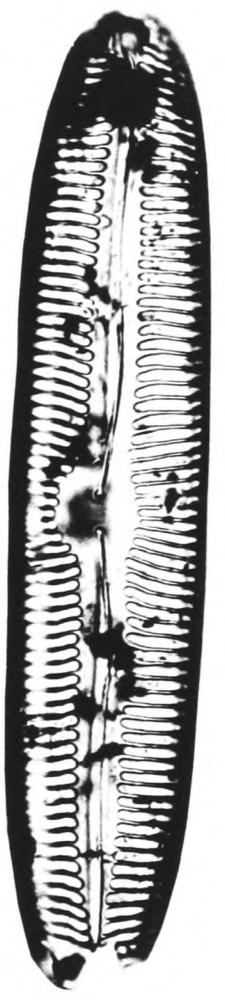

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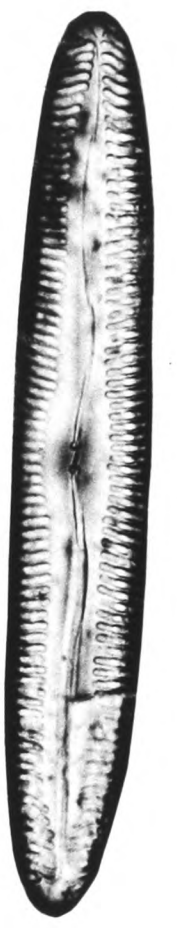

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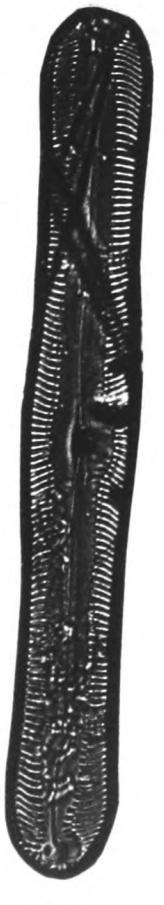

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PLATE 43

1 *Cymbella pusilla* Grunow

2 *Cymbella microcephala* Grunow

3 *Cymbella prostrata* var. *auerswaldii* (Rabh.) Reimer comb. nov.

4 *Cymbella muelleri* Hustedt

5 *Cymbella muelleri* Hustedt

6 *Cymbella minuta* var. *pseudogracilis* (Choln.) Reimer comb. nov.

7 *Cymbella minuta* var. *pseudogracilis* (Choln.) Reimer comb. nov.

8 *Cymbella lanceolata* (Ag.) Agardh

9 *Cymbella aspera* (Ehr.) H. Peragallo

10 *Cymbella aspera* (Ehr.) H. Peragallo

11 detail of above

12 *Cymbella mexicana* (Ehr.) Cleve

13 *Cymbella mexicana* (Ehr.) Cleve

PLATE 43



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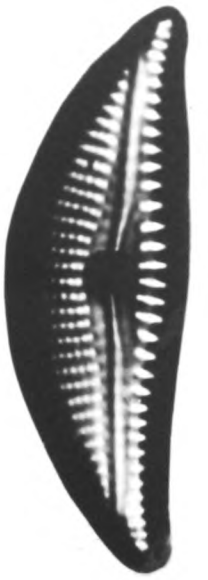

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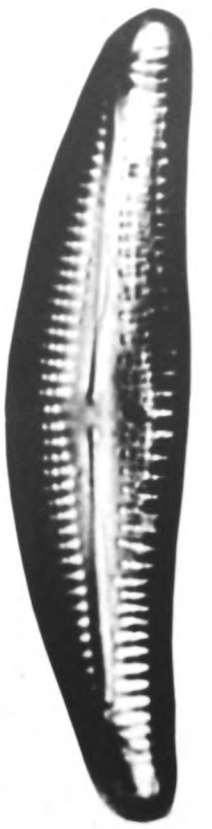

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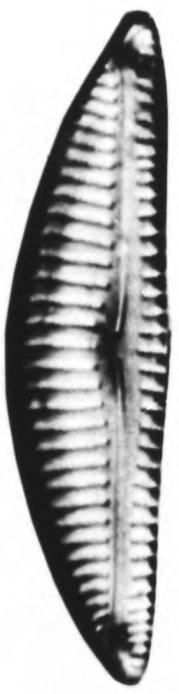

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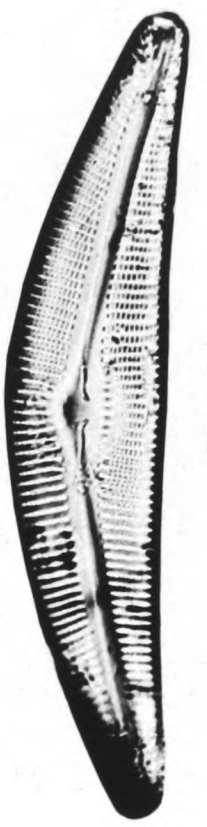

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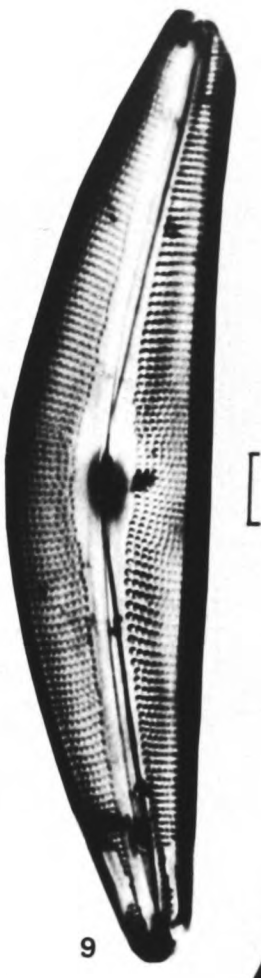

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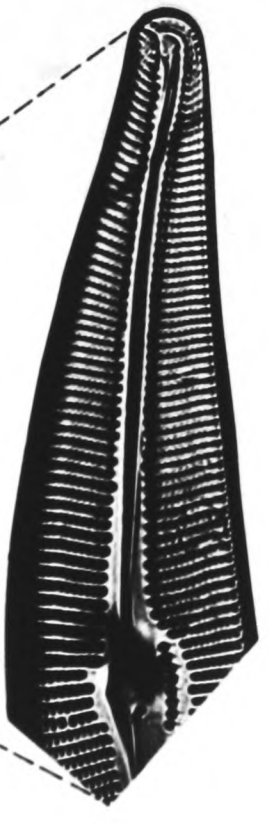

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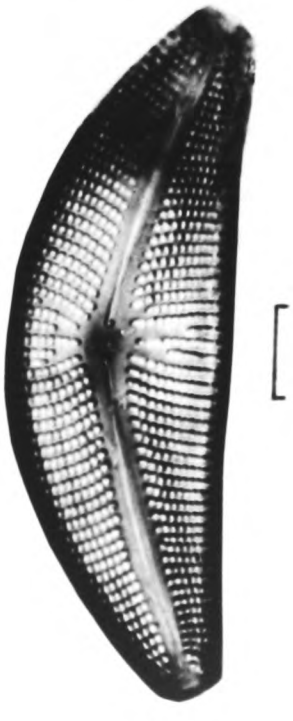

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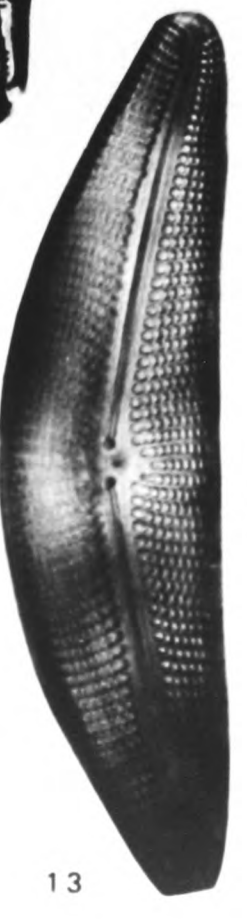

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PLATE 44

1 Amphora ovalis var. affinis (Kützt.) V.H. ex De Toni

2 Amphora perpusilla (Grun.) Grunow

3 Amphora veneta Kützing

4 Amphora montana Krasske

5 Gomphonema acuminatum Ehrenberg

6 Gomphonema acuminatum Ehrenberg

7 Gomphonema acuminatum var. clavus (Bréb.) Grunow

8 Gomphonema acuminatum var. clavus (Bréb.) Grunow

9 Gomphonema subtile var. sagittum Schum

10 Gomphonema truncatum var. ?

11 Gomphonema parvulum (Kützt.) Grunow

12 Gomphonema parvulum (Kützt.) Grunow

13 Gomphonema parvulum var. subelliptica Cleve

14 Gomphonema parvulum var. micropus (Kützt.) Cleve

15 Gomphonema parvulum var. micropus (Kützt.) Cleve

16 Gomphonema parvulum var. lagenula (Kützt.?

17 Gomphonema cumrhis Hohn & Hellerman

18 Gomphonema angustaum/G. parvulum

19 Gomphonema angustatum (Kützt.) Rabenhorst

20 Gomphonema subclavatum var. ?

21 Gomphonema subclavatum var. commutatum (Grun.) A. Mayer

22 Gomphonema subclavatum var. mexicanum (Grun.) Patrick

PLATE 44

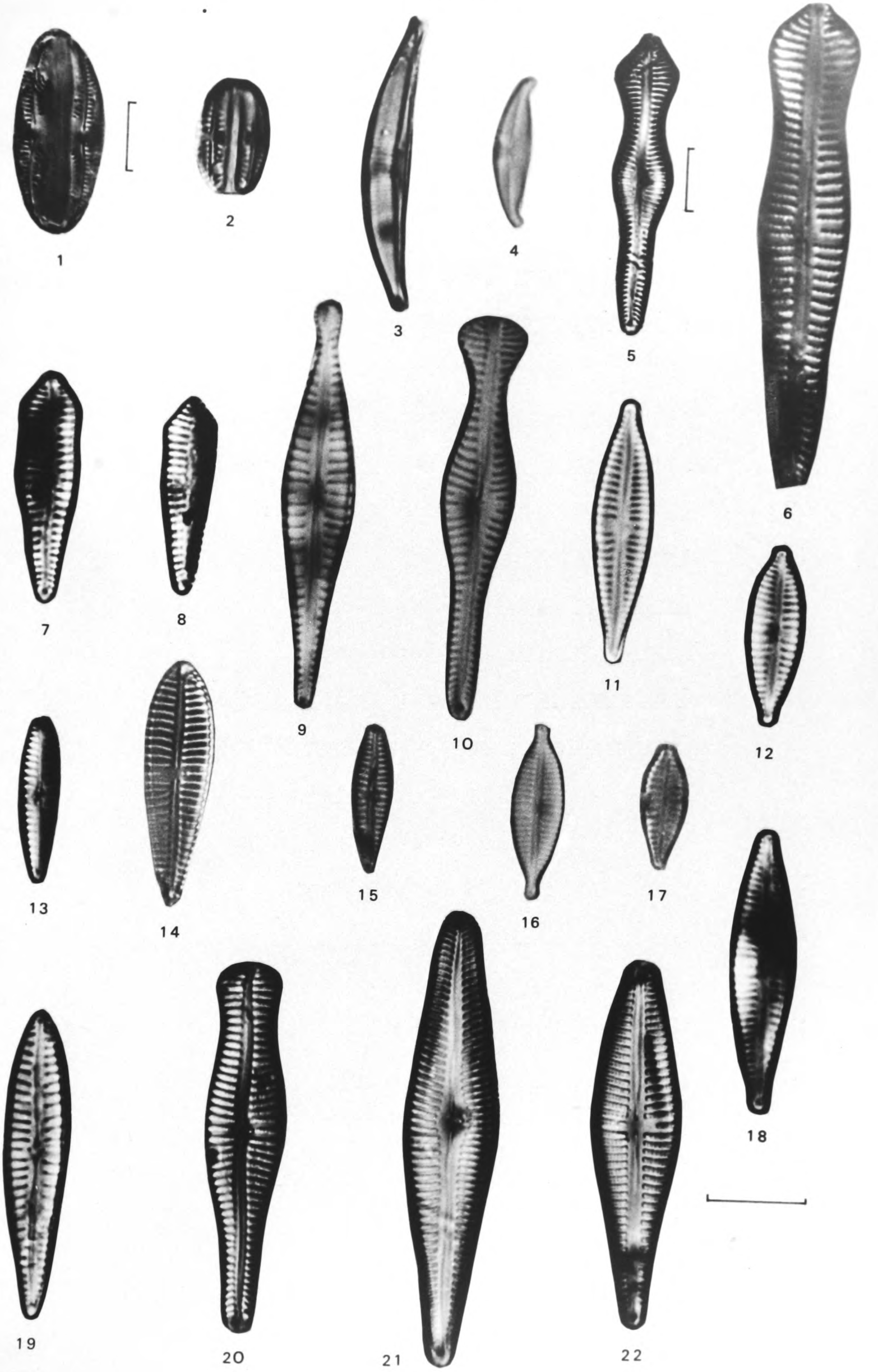


PLATE 45

1 *Gomphonema gracile* Ehr. emend. Van Heurck

2 *Gomphonema gracile* ?

3 *Gomphonema martini* Fricke

4 *Gomphonema affine* Kützing

5 *Gomphonema affine* Kützing

6 *Gomphonema affine* var. *insigne* (Greg.) Andrews

7 *Gomphonema intricatum* var. *pusilla* Mayer

8 *Gomphonema ventricosum* Gregory

9 *Gomphonema ventricosum* Gregory

10 *Gomphonema clevei* Fricke

11 *Gomphonema clevei* Fricke

12 *Gomphonema clevei* var. *javanica* Hustedt

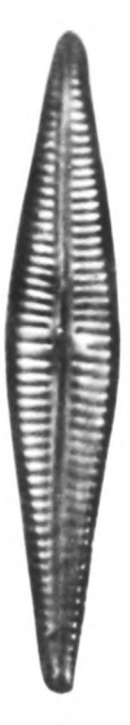
13 *Gomphonema fanensis* Maillard

14 *Gomphonema fanensis* Maillard

15 *Gomphonema olivaceum* (Lyngb.) Kützing

16 *Denticula elegans* Kützing

PLATE 45



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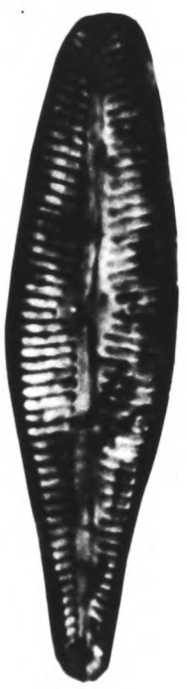

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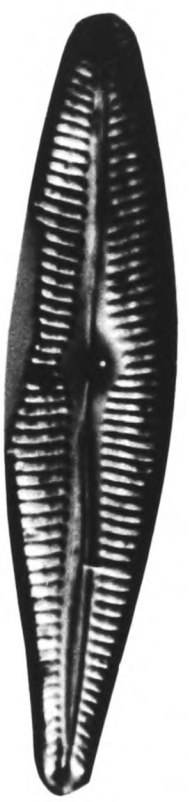

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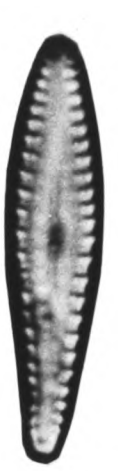

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PLATE 46

1 *Epithemia adnata* (Kütz.) Brébisson

2 *Epithemia adnata* var. *porcellus* (Kütz.) Patrick comb. nov.

3 *Epithemia adnata* var. *proboscidea* (Kütz.) Patrick comb. nov.

4 *Epithemia adnata* var. *proboscidea* (Kütz.) Patrick comb. nov.

5 *Epithemia adnata* var. *minor* (Perag. & Hérib.) Patrick comb. nov.

6 *Epithemia turgida* (Ehr.) Kützing

7 *Epithemia turgida* (Ehr.) Kützing

8 *Epithemia sorex* Kützing

9 *Rhopalodia gibberula* var. *Van Heurckii* O. Müller (type 1)

10 *Rhopalodia gibberula* var. *Van Heurckii* O. Müller (type 1)

11 *Rhopalodia gibberula* var. *Van Heurckii* O. Müller (type 2)

12 *Rhopalodia gibberula* var. *Van Heurckii* O. Müller (type 2)

13 *Rhopalodia musculus* (Kütz.) O. Müller

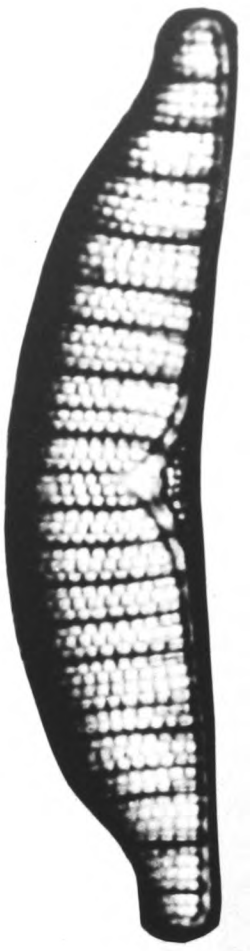
PLATE 46



1



2



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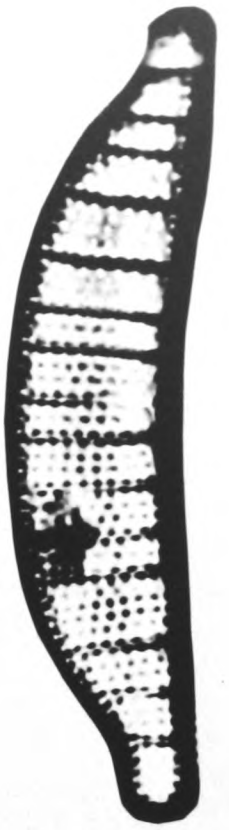

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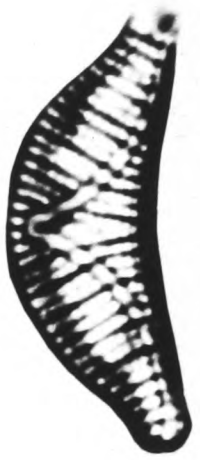

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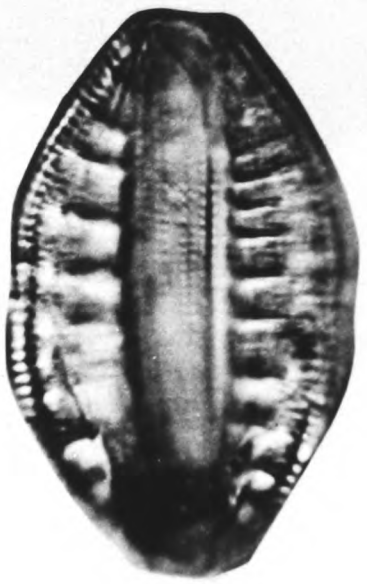

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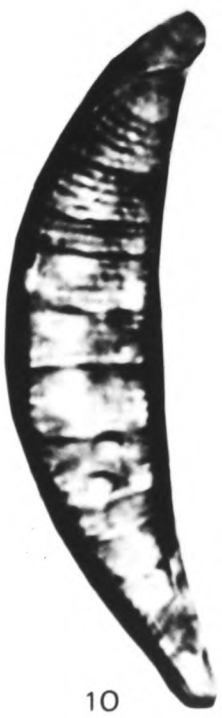

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PLATE 47

1 *Hantzschia amphioxys* (Ehr.) Grunow

2 *Hantzschia amphioxys* (Ehr.) Grunow

3 *Gomphonitzschia* ? Grunow

4 *Nitzschia littoralis* Grunow

5 *Nitzschia tryblionella* Hantzsch

6 *Nitzschia punctata* (W. Sm.) Grunow

7 *Nitzschia hungarica* Grunow

8 *Nitzschia umbonata* (Ehr.) Lange-Bertalot comb. nov.

9 *Nitzschia linearis* W. Smith

10 detail of above

11 *Nitzschia dissipata* (Kützz.) Grunow

12 *Nitzschia gracilis* Hantzsch

13 *Nitzschia gracilis* Hantzsch

14 *Nitzschia paleacea* Grunow

15 *Nitzschia palea* (Kützz.) W. Smith

16 *Nitzschia palea* (Kützz.) W. Smith

17 *Nitzschia palea* (Kützz.) W. Smith

PLATE 47



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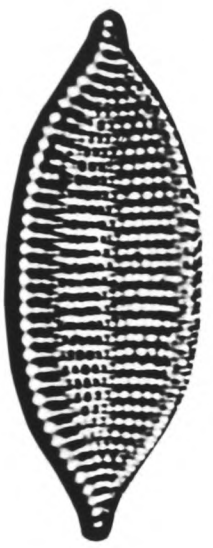

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PLATE 48

1 *Nitzschia palea* var. *debilis* (Kützt.) Grunow

2 *Nitzschia palea* var. *tenuirostris* Grunow

3 *Nitzschia palea* var. *tenuirostris* Grunow

4 *Nitzschia tropica* Hustedt

5 *Nitzschia tropica* Hustedt

6 *Nitzschia inconspicua* Grunow

7 *Nitzschia rostellata* Hustedt

8 *Nitzschia amphibia* Grunow

9 *Nitzschia amphibia* Grunow

10 *Nitzschia romana* Grunow

11 *Nitzschia intermedia* Hantzsch ex Cleve & Grunow

12 *Nitzschia gandersheimiensis* Krasske

13 *Nitzschia communis* Rabenhorst

14 *Nitzschia acicularis* W. Smith

15 *Nitzschia longissima* var. *reversa* Grunow

16 *Nitzschia sigma* var. *diminuta* Grunow

17 *Nitzschia sigma* var. *diminuta* Grunow

18 *Nitzschia ignorata* Krasske

19 *Nitzschia ignorata* Krasske

20 *Nitzschia ignorata* Krasske

PLATE 48


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PLATE 49

1 Cymatopleura solea (Bréb.) W. Smith

2 Surirella tenera Gregory

3 Surirella ovalis Brébisson

4 Surirella ovata var. apiculata W. Smith

5 Surirella striatula Turpin

6 Surirella muriella fo. linearis

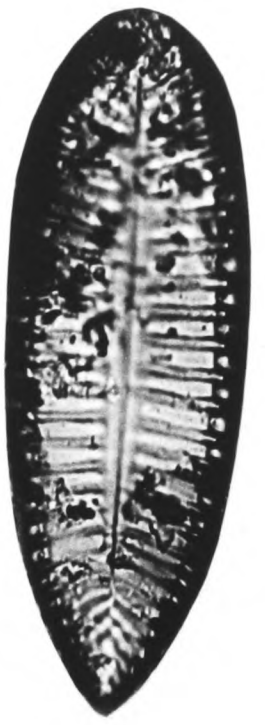
7 Campylodiscus clypeus Ehrenberg

8 Campylodiscus clypeus Ehrenberg

PLATE 49



1



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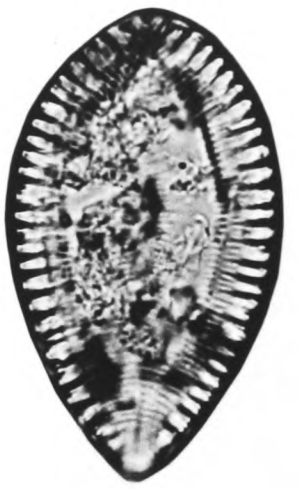

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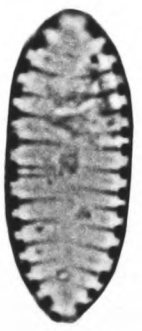

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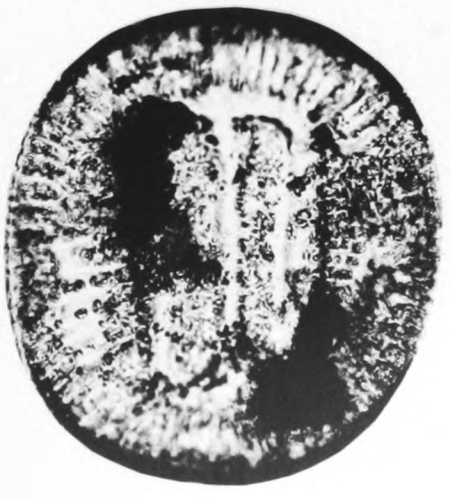

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PLATE 50

1 Sponge spicule

2 Chrysophyte cyst

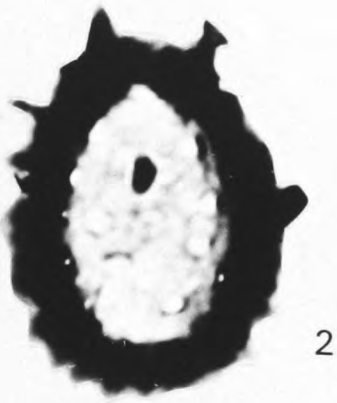
3 Chrysophyte cysts (smooth)

PLATE 50



1

x 400



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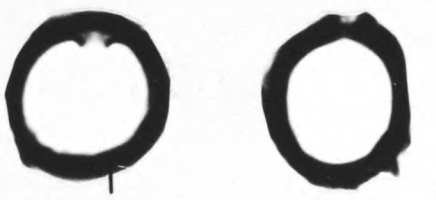

3

x 2000