Electronic Supplement 1

Alberca de Tacámbaro (TAC), Michoacán
19°12'38" N, 101°27'33" W, 1475 masl

Climate
Warm, sub-humid, summer rains
$(A)C(w_1)(w)$
Mean Annual Temperature 19.1 °C
Temp. Range 16.8 (Jan) - 21.8 (May) °C
Annual Precipitation 1172 mm
Annual Evaporation 1452 mm

Limnology

Lake type	Volcanic (crater)
Area	8.2 ha
Maximum Depth	28 m[b]
Relative Depth	8.7 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~5m
Transparency	0.7 m
Ionic dominance	$[HCO_3^-]$
	$[Mg^{2+}] > [Ca^{2+}] > [Na^+]$
Salinity category	Freshwater
Trophic category	Eutrophic
Nutrient ratios	DIN:TP 0.1:1
	DIN:P-PO_4 17:1
	SiO_2:DIN 530:1
	SiO_2:P-PO_4 8 400:1

Chemical parameters

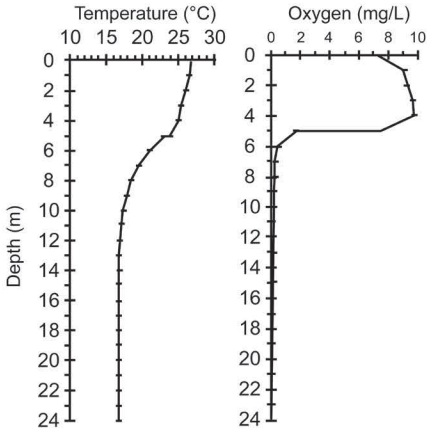
Variable	Littoral	Surface	Bottom
pH	ND	7.8	7.3
EC	ND	182	208
Total Alk	128	115	122
CO_3^{2-}	27	31	LDL
HCO_3^-	102	76	149
SO_4^{2-}	4.1	4.0	LDL
Cl^-	4.3	3.1	2.7
Na^+	9.2	8.7	7.8
K^+	3.2	3.0	2.9
Ca^{2+}	16	16	19
Mg^{2+}	14	14	14
TDS	163	143	139

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	26	23	36
SiO_2	53	52	51
DIN	ND	0.02	1.93
TP	ND	0.10	0.10
P-PO_4	ND	0.003	0.01
Chlorophyll *a*	ND	38.9	15.8

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Achnanthidium minutissimum*, *Staurastrum* sp., *Woronichinia* sp.
Diatoms. *Achnanthidium minutissimum*
Testate amoebae. *Centropyxis aculeata*
Cladocerans. *Bosmina longirostris*
Ostracodes. *Cypridopsis*, *Potamocypris*

Previous work
Ortíz-Rubio, 1906; Hernández-Morales *et al.*, [b]2008, 2009, [c]2011, 2014; Caballero *et al*., 2016.

Figure A1-1 Climatic and limnological data of Alberca de Tacámbaro. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/L CO_3^{2-}, 4 mg/LSO_4^{2-}. *ND* = Not Determined. Date of sampling: June 17, 2011.

Alberca de Teremendo (TER), Michoacán
19°48'21" N, 101°27'15" W, 2058 masl

Climate
Temperate, sub-humid, summer rains
$C(w_1)(w)$
Mean Annual Temperature 16.8 °C
Temp. Range 13.9 (Jan) – 20.0 (May) °C
Annual Precipitation 695 mm
Annual Evaporation 1626 mm

Limnology
Lake type Volcanic (crater)
Area 15 ha
Maximum Depth Recorded 9 m
Rel. Depth 2.1 %
Mixing pattern Warm monomictic
Thermocline and oxycline ~2 m
Transparency 0.2 m
Ionic dominance
$[HCO_3^-]$
$[Na^+] - [Mg^{2+}] > [Ca^{2+}]$
Salinity category Freshwater
Trophic category Hypertrophic
Nutrient ratios
DIN:TP 4:1
DIN:P-PO_4 269:1
SiO_2:DIN 102:1
SiO_2:P-PO_4 27400:1

Previous work
No previous studies.

Chemical parameters

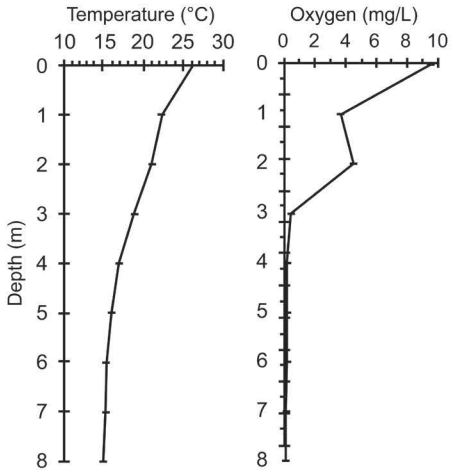
Variable	Littoral	Surface	Bottom
pH	ND	8.3	7.4
EC	ND	353	442
Total Alk	228	228	258
CO_3^{2-}	35	36	LDL
HCO_3^-	207	205	315
SO_4^{2-}	LDL	LDL	LDL
Cl^-	6.9	7.0	7.0
Na^+	37	36	32
K^+	15	15	13
Ca^{2+}	18	18	29
Mg^{2+}	23	23	22
TDS	309	309	327

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	53	54	72
SiO_2	102	101	89
DIN	ND	0.23	5.46
TP	ND	0.12	0.28
P-PO_4	ND	0.002	0.18
Chlorophyll *a*	ND	244.5	23.0

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Botryococcus* sp., *Ceratium* sp., *Peridinium* sp.
Diatoms. *Gomphonema lagenula*, *Nitzschia amphibia*
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*, *Bosmina* (E.) *longispina*
Ostracodes. *Cypria, Potamocypris*

Figure A1-2 Climatic and limnological data of Alberca de Teremendo. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/L CO_3^{2-}, 4 mg/LSO_4^{2-}. Below critical value Testate amoebae < 100 specimens. Date of sampling: June 18, 2011.

Alchichica (ALC), Puebla
19°24'44" N, 97°24'07" W, 2321 masl

Climate
Dry, temperate, summer rains
BS_1 k'w
Mean Annual Temperature 13.9 °C
Temp. Range 10.4 (Jan) - 16.3 (May) °C
Annual Precipitation 388 mm
Annual Evaporation 1741 mm

Limnology

Lake type	Volcanic (maar)
Area	200 ha
Maximum Depth	62 m[b]
Relative Depth	3.8 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~14 m
Transparency (Alcocer, *per. com.*)	5 m
Ionic dominance	$[Cl^-] >> [CO_3^{2-}] >> [SO_4^{2-}]$
	$[Na^+] >> [Mg^{2+}]$
Salinity category	Hyposaline
Trophic category	Mesotrophic
Nutrient ratios	DIN:TP 0.3:1
	DIN:P-PO_4 0.3:1
	SiO_2:P-PO_4 0.01:1

Chemical parameters

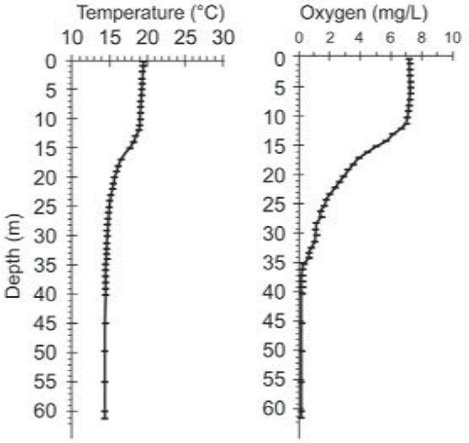
Variable	Littoral	Surface	Bottom
pH	ND	8.3	10.2
EC	ND	14960	14730
Total Alk	2193	2225	2172
CO_3^{2-}	940	971	959
HCO_3^-	765	739	701
SO_4^{2-}	997	1013	1116
Cl^-	3915	3900	3820
Na^+	2573	2645	2595
K^+	238	242	239
Ca^{2+}	20	20	20
Mg^{2+}	462	462	453
TDS	8882	9039	8809

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	437	427	420
SiO_2	LDL	LDL	LDL
DIN	ND	0.02	0.06
TP	ND	0.12	0.07
P-PO_4	ND	0.12	0.05
Chlorophyll *a*	ND	10.5	3.9

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m³



Main taxa in this study
Phytoplankton. *Ankistrodesmus* sp., *Nodularia spumigena* Diatoms. *Amphora pediculus*, *Hyppodonta hungarica*, *Navicula erifuga* Testate amoebae. Below critical value Cladocera. Absent Ostracodes. *Candona*, *Limnocythere*

Previous work*
Vilaclara *et al.*, 1993; Alcocer *et al.*, [c]2000, 2008, 2014, [b]2015; Oliva et al., 2001, 2008; Alcocer and Lugo 2003; [a]Filonov *et al.*, 2006; Alcocer and Filonov, 2007; Adame *et al.*, 2008; Armienta *et al.*, 2008; Ramos-Higuera *et al.*, 2008; Kaźmierczak *et al.*, 2011; Oseguera *et al.*, 2011; Couradeau *et al.*, 2011; Ortega-Mayagoitia *et al.*, 2011; Ardiles *et al.*, 2012; Gérard *et al.*, 2013; Hernández *et al.*, 2014; Mancilla *et al.*, 2014; Filonov *et al.*, 2015; Pérez *et al.*, 2015.

* Older studies cited within these references.

Figure A1-3 Climatic and limnological data of Alchichica. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 3 mg/LSiO_2. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. Date of sampling: June 11, 2011.

Aljojuca (ALJ), Puebla
19°05'23" N, 97°32'05" W, 2371 masl

Climate
Temperate, dry sub-humid, summer rains (C)(w_0)(w)
Mean Annual Temperature 14.7 °C
Temp. Range 12.0 (Jan) - 16.7 (May) °C
Annual Precipitation 851 mm
Annual Evaporation 1644 mm

Limnology
Lake type Volcanic (maar)
Area 42 ha
Maximum Depth 51 m[b]
Relative Depth 7 %
Mixing pattern Warm monomictic[c]
Thermocline and oxycline ~ 11 m
Transparency 11.5 m
Ionic dominance
$[HCO_3^-] >> [Cl^-] > [SO_4^{2-}]$
$[Na^+] > [Mg^{2+}] >> [Ca^{2+}]$
Salinity category Subsaline
Trophic category Mesotrophic
Nutrient ratios DIN:TP 3:1
DIN:P-PO_4 5:1

Chemical parameters

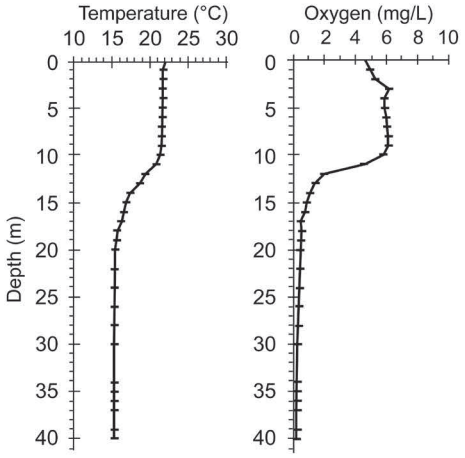
Variable	Littoral	Surface	Bottom
pH	ND	9.5	9.5
EC	ND	1152	1147
Total Alk	651	649	635
CO_3^{2-}	157	140	102
HCO_3^-	475	506	568
SO_4^{2-}	43	43	41
Cl^-	60	59	58
Na^+	189	185	183
K^+	27	27	26
Ca^{2+}	24	24	24
Mg^{2+}	70	70	68
TDS	705	699	735

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	142	140	144
SiO_2	LDL	LDL	8.0
DIN	ND	0.20	0.83
TP	ND	0.15	0.32
P-PO_4	ND	0.10	0.31
Chlorophyll *a*	ND	11.9	14.5

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Botryococcus* sp.
Diatoms. *Cyclotella meneghiniana*
Testate amoebae. *Centropyxis aculeata*, *Centropyxis constricta*
Cladocerans. *Alona quadrangularis*, *Daphnia longispina*-group
Ostracodes. *Cypridopsis*, *Fabaeformiscandona*

Previous work
Arredondo-Figueroa *et al.,* 1983; [b]Vilaclara *et al.,* 1993; Arredondo, 2002; Alcocer *et al*., 2002; Peralta *et al.,* 2002; [c]Armienta *et al.,* 2008; Bhattacharya, 2015; Pérez *et al.,* 2015.

Figure A1-4 Climatic and limnological data of Aljojuca. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 3 mg/LSiO_2. *ND* = Not Determined. Date of sampling: June 13, 2011.

Atezca (ATE), Hidalgo
20°48'22" N, 98°44'47" W, 1316 masl

Climate
Temperate, humid, summer rains
C(m)
Mean Annual Temperature 18.3 °C
Temp. Range 15.1 (Jan) - 25.2 (May) °C
Annual Precipitation 1713 mm
Annual Evaporation 1034 mm

Limnology

Lake type	Volcanic (dam)
Area	27 ha
Maximum Depth	16 m[b]
Relative Depth	2.7 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~5 m
Transparency	2 m
Ionic dominance	$[HCO_3^-]$ $[Ca^{2+}] > [Mg^{2+}] > [Na^+]$
Salinity category	Freshwater
Trophic category	Mesotrophic
Nutrient ratios	
DIN:TP	43:1
DIN:P-PO_4	267:1
SiO_2:DIN	37:1
SiO_2:P-PO_4	9900:1

Chemical parameters

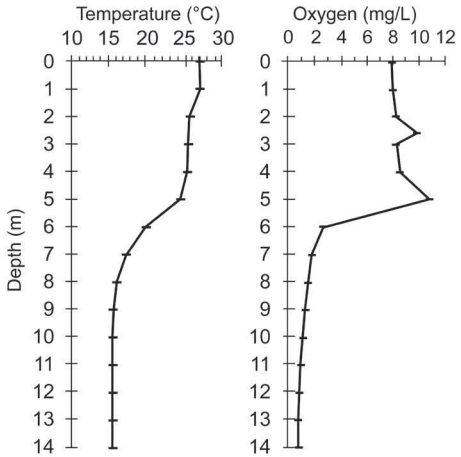
Variable	Littoral	Surface	Bottom
pH	9.9	9.3	7.7
EC	97	105	174
Total Alk	52	59	75
CO_3^{2-}	14	5.0	LDL
HCO_3^-	36	61	92
SO_4^{2-}	LDL	LDL	LDL
Cl^-	2.1	2.4	2.1
Na^+	5.1	5.0	4.8
K^+	1.8	2.1	2.1
Ca^{2+}	11	12	12
Mg^{2+}	4.6	5.1	6.7
TDS	46	65	64

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	12	13	25
SiO_2	18	17	24
DIN	ND	0.11	0.34
TP	ND	0.01	0.05
P-PO_4	ND	0.001	0.03
Chlorophyll *a*	ND	11.2	43.5

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton.
Aphanizomenon flosaquae
Diatoms. *Discostella stelligera*, *Planothidium rostratum*
Testate amoebae.
Cucurbitella sp., *Difflugia protaeiformis*
Cladocerans. *Daphnia pulex*-group
Ostracodes. *Cypridopsis*

Previous work
[c]Díaz-Pardo *et al.,* 1998, [b]2002; Vázquez and Favila 1998; Conserva and Byrne, 2002; Pérez *et al.,* 2015.

Figure A1-5 Climatic and limnological data of Atezca. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}. *ND* = Not Determined.Date of sampling: June 09, 2011.

Atlangatepec (ATL), Tlaxcala
19°33'35" N, 98°10'38" W, 2511 masl
Ramsar site 1986

Climate
Temperate, sub-humid, summer rains
$C(w_1)(w)$
Mean Annual Temperature 12.8 °C
Temp. Range 9.6 (Jan) - 15.4 (May) °C
Annual Precipitation 680 mm
Annual Evaporation 1889 mm

Limnology

Lake type	Reservoir (dike)
Area	800 ha
Maximum Depth	7 m[b]
Relative Depth	0.2 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.1 m
Ionic dominance	$[HCO_3^-]$ >> *$[SO_4^{2-}]$ - $[Cl^-]$*
	$[Na^+]$> $[Ca^{2+}]$ > $[Mg^{2+}]$
Salinity category	Freshwater
Trophic category	Eutrophic
Nutrient ratios	DIN:TP 3:1
	DIN:P-PO_4 3:1
	SiO_2:DIN 27:1
	SiO_2:P-PO_4 90:1

Chemical parameters

Variable	Littoral
pH	7.7
EC	292
Total Alk	128
CO_3^{2-}	LDL
HCO_3^-	157
SO_4^{2-}	24
Cl^-	17
Na^+	23
K^+	16
Ca^{2+}	22
Mg^{2+}	12
TDS	212

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral
DIC	34
SiO_2	29
DIN	0.24
TP	0.18
P-PO_4	0.16
Chlorophyll *a*	33.6

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	19.6	7.0
1	15.4	6.3

Main taxa in this study
Phytoplankton. Below critical value
Diatoms. *Amphora pediculus*, *Navicula* sp., *Nitzschia palea* var. *debilis*, *Stephanodiscus minutulus*
Testate amoebae. *Difflugia* spp.
Cladocerans. *Bosmina longirostris*, *Chydorus* cf. *sphaericus*.
Ostracodes. *Candona*, *Darwinula*, *Limnocythere*

Previous work
Pérez-Rodríguez 1995; Pérez-Rodríguez *et al.,* 2001; Salomón-Serna *et al.,* 2003; Sánchez-Santillán *et al.,* 2004; [b]Rodríguez and Ritter, 2007; García-Nieto *et al.,* 2011; Ramsar, 2011b; Castilla-Hernández *et al.,* 2014; Pérez *et al.,* 2015.

Figure A1-6 Climatic and limnological data of Atlangatepec. *b* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}. *Below critical value* Phytoplankton < 11 specimens. Date of sampling: June 11, 2011.

Atotonilco (ATO), Jalisco
20°23'57" N, 103°39'55" W, 1355 masl
Ramsar site 1607

Climate
Warm, dry sub-humid, summer rains
(A)C(w_0)(w)
Mean Annual Temperature 20.5 °C
Temp. Range 16.4 (Jan) - 23.7 (June) °C
Annual Precipitation 805 mm
Annual Evaporation 1865 mm

Limnology

Lake type	Tectonic
Area	1400 ha[a]
Maximum Depth Recorded	0.5 m[b]
Relative Depth	<0.1 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.1 m
Ionic dominance	$[HCO_3^-]$ > $[Cl^-]$ >> *$[SO_4^{2-}]$* $[Na^+]$
Salinity category	Hyposaline
Trophic category	Mesotrophic

Nutrient ratios	
DIN:TP	1:1
DIN:P-PO_4	1:1
SiO_2:DIN	5:1
SiO_2:P-PO_4	4:1

Chemical parameters

Variable	Littoral	Surface
pH	9.6	9.6
EC	5550	5500
Total Alk	2082	2092
CO_3^{2-}	747	729
HCO_3^-	1021	1071
SO_4^{2-}	372	414
Cl^-	696	727
Na^+	1490	1863
K^+	74	75
Ca^{2+}	13	10
Mg^{2+}	12	11
TDS	3839	3905

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface
DIC	389	390
SiO_2	87	88
DIN	ND	4.27
TP	ND	12.19
P-PO_4	ND	11.35
Chlorophyll *a*	ND	18.5

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	20.9	4.7

Main taxa in this study
Phytoplankton. Below critical value
Diatoms. Absent
Testate amoebae. Absent
Cladocerans. *Alona quadrangularis*, *Daphnia longispina*-group
Ostracodes. C*andona*, *Limnocythere*, *Potamocypris*

Previous work
Pérez-Arteaga *et al.,* 2002; Conant, 2003; [a,b]Ramsar 2006.

Figure A1-7 Climatic and limnological data of Atotonilco. *a* and *b* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *ND* = Not Determined. *Below critical value* Phytoplankton < 11 specimens. Date of sampling: October 09, 2011.

Burro (BUR), Michoacán
19°25'07" N, 101°30'09" W, 2708 masl

Climate
Temperate, humid sub-humid, summer rains
$C(w_2)(w)$
Mean Annual Temperature 16.2 °C
Temp. Range 12.7 (Dec) - 18.6 (May) °C
Annual Precipitation 902 mm
Annual Evaporation 1286 mm

Limnology
Lake type Probably volcanic
Area 9.0 ha
Maximum Depth Recorded 1 m
Relative Depth 0.3 %
Mixing pattern Warm polymictic
Thermocline and oxycline No
Transparency 0.3 m
Ionic dominance
$[HCO_3^-]$ >> *[Cl^-]*
$[Na^+]$ > $[Mg^{2+}]$ > *[Ca^{2+}]*
Salinity category Freshwater
Trophic category Eutrophic
Nutrient ratios DIN:TP 7:1
DIN:P-PO_4 136:1

Previous work
No previous studies.

Chemical parameters

Variable	Littoral
pH	6.9
EC	27
Total Alk	16
CO_3^{2-}	LDL
HCO_3^-	19
SO_4^{2-}	LDL
Cl^-	2.3
Na^+	1.9
K^+	3.6
Ca^{2+}	1.6
Mg^{2+}	1.5
TDS	21

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral
DIC	6.7
SiO_2	LDL
DIN	0.32
TP	0.11
P-PO_4	0.01
Chlorophyll *a*	45.4

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	19.7	5.3

Main taxa in this study
Phytoplankton. *Aulacoseira granulata*, *Coelastrum sphaericum*, *Staurodesmus* sp.
Diatoms. *Aulacoseira ambigua*, *Caloneis aerophila, Eunotia monodon*, *Eunotia naegelii*
Testate amoebae. Below critical value
Cladocerans. *Alona rectangula*, *Bosmina longirostris*
Ostracodes. Absent

Figure A1-8 Climatic and limnological data of Burro. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}. ***Below critical value*** Testate amoebae < 100 specimens. Date of sampling: June 17, 2011.

Colorada (COL), Jalisco
20°45'56" N, 103°58'49" W, 1366 masl

Climate
Warm, sub-humid, summer rains
(A)C(w_1)(w)
Mean Annual Temperature 19.2 °C
Temp. Range 13.7 (Jan) - 23.8 (June) °C
Annual Precipitation 982 mm
Annual Evaporation 1745 mm

Limnology

Lake type	Reservoir (dike)
Area	410 ha
Maximum Depth Recorded	3 m
Relative Depth	0.1 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.6 m
Ionic dominance	
	$[HCO_3^-] > [SO_4^{2-}]$
	$[Ca^{2+}] > [Mg^{2+}] - [Na^+]$
Salinity category	Freshwater
Trophic category	Hypertrophic
Nutrient ratios	
DIN:TP	1:1
DIN:P-PO_4	1:1
SiO_2:DIN	2:1
SiO_2:P-PO_4	15:1

Previous work
No previous studies.

Chemical parameters

Variable	Littoral	Surface	Bottom
pH	8.1	7.8	7.4
EC	615	611	618
Total Alk	239	235	236
CO_3^{2-}	10	15	11
HCO_3^-	120	157	265
SO_4^{2-}	120	115	115
Cl^-	11	11	11
Na^+	33	33	34
K^+	21	21	21
Ca^{2+}	66	67	66
Mg^{2+}	27	27	27
TDS	457	469	462

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	56	55	56
SiO_2	32	32	32
DIN	ND	0.21	0.82
TP	ND	0.76	0.81
P-PO_4	ND	0.70	0.76
Chlorophyll *a*	ND	141.0	102.8

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	28.7	8.8
1	25.0	8.2
2	24.2	4.4

Main taxa in this study
Phytoplankton. *Actinastrum* sp., *Planktothrix* sp.
Diatoms. *Aulacoseira* sp., *Aulacoseira ambigua, Cyclotella meneghiniana*
Testate amoebae. *Centropyxis aculeata*
Cladocerans. *Alona quadrangularis*
Ostracodes. *Candona*, Cyprididae sp.1

Figure A1-9 Climatic and limnological data of Colorada. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *ND* = Not Determined. Date of sampling: October 06, 2011.

El Sol (SOL), Estado de México
19°06'29" N, 99°45'34" W, 4283 masl

Climate
High-altitude cold
E(T)H
Mean Annual Temperature 3.9 °C
Temp. Range -2.5 (Jan) – 10.2 (Apr) °C
Annual Precipitation 1227 mm
Annual Evaporation 970 mm

Limnology

Lake type	Volcanic (crater)
Area	23.7 ha[a]
Maximum Depth	15 m[b]
Relative Depth	3.2 %
Mixing pattern	Warm polymictic[c]
Thermocline and oxycline	No and ~8 m
Transparency	2.2 m
Ionic dominance	
	$[HCO_3^-]$ >> *$[Cl^-]$ - $[SO_4^{2-}]$*
	$[Ca^{2+}]$ > $[Mg^{2+}]$ >> *$[Na^+]$*
Salinity category	Freshwater
Trophic category	Oligotrophic
Nutrient ratios	
DIN:TP	0.2:1
DIN:P-PO_4	4:1
SiO_2:DIN	120:1
SiO_2:P-PO_4	500:1

Chemical parameters

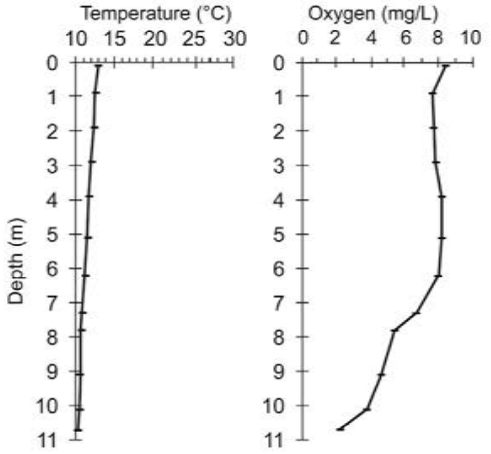
Variable	Surface	Bottom
pH	7.2	7.0
EC	57	87
Total Alk	34	36
CO_3^{2-}	LDL	LDL
HCO_3^-	41	44
SO_4^{2-}	LDL	LDL
Cl^-	2.2	2.2
Na^+	0.4	0.5
K^+	0.4	0.3
Ca^{2+}	11	12
Mg^{2+}	3.6	3.7
TDS	19	48

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Surface	Bottom
DIC	ND	ND
SiO_2	LDL	LDL
DIN	0.004	0.03
TP	0.04	0.01
P-PO_4	LDL	LDL
Chlorophyll *a*	4.7	6.7

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Ankistrodesmus* sp., *Botryococcus braunii*, *Monoraphidium minutum*, *Oocystis lacustris*
Diatoms. *Cavinula pseudoscutiformis*, *Navicula* NTB, *Psammothidium levanderi*
Testate amoebae. Below critical value
Cladocerans. *Alona manueli*, *Daphnia longispina*-group
Ostracodes. Sample not analyzed

Previous work
Banderas *et al.*, 1991; Caballero, 1996; Sarma *et al.*, 1996; Banderas-Tarabay, 1997; González-Villela *et al.*, 2000; Banderas and González, 2002; [a,b]Alcocer *et al.*, 2004; Armienta *et al.*, 2008; [c]Dimas-Flores *et al.*, 2008; Sinev and Zawisza, 2013; Cuna *et al.*, 2015.

Figure A1-10 Climatic and limnological data of El Sol. *a*, *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}, 3 mg/LSiO_2, 0.005 mg/L P-PO^4. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. Date of sampling: August 21, 2010.

Juanacatlán (JUA), Jalisco
20°37'37" N, 104°44'20" W, 1981 masl

Climate
Temperate, humid sub-humid, summer rains
$C(w_2)(w)$
Mean Annual Temperature 19.7 °C
Temp. Range 15.7 (Jan) - 23.1 (May) °C
Annual Precipitation 885 mm
Annual Evaporation 1528 mm

Limnology
Lake type Volcanic (dam)
Area 20 ha
Maximum Depth Recorded 25 m
Relative Depth 5 %
Mixing pattern Warm monomictic
Thermocline and oxycline ~9 and 7 m
Transparency 6.1 m
Ionic dominance
$[HCO_3^-]$ >> *$[SO_4^{2-}]$*
$[Ca^{2+}]$ > $[Mg^{2+}]$ > *$[Na^+]$*
Salinity category Freshwater
Trophic category Mesotrophic
Nutrient ratios
DIN:TP 7:1
DIN:P-PO_4 187:1
SiO_2:DIN 60:1
SiO_2:P-PO_4 1640:1

Chemical parameters

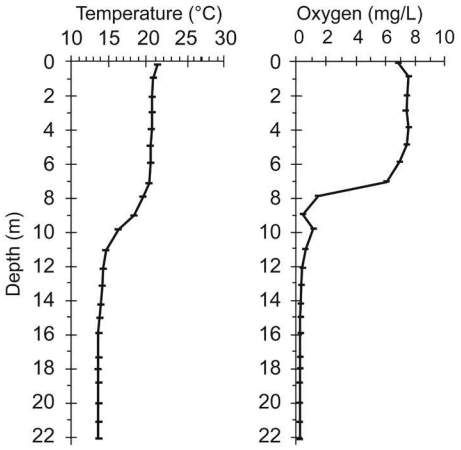
Variable	Littoral	Surface	Bottom
pH	9.3	9.2	7.7
EC	123	123	178
Total Alk	64	63	94
CO_3^{2-}	7.4	4.9	LDL
HCO_3^-	64	67	115
SO_4^{2-}	7.6	7.2	LDL
Cl^-	1.3	1.5	1.7
Na^+	7.4	7.4	7.1
K^+	1.6	1.7	2.2
Ca^{2+}	12	13	17
Mg^{2+}	6.6	6.8	6.6
TDS	113	86	91

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	13	13	24
SiO_2	17	16	20
DIN	ND	20.0	5.3
TP	ND	0.02	0.33
P-PO_4	ND	0.01	0.26
Chlorophyll *a*	ND	11.2	11.2

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Fragilaria crotonensis*, *Lyngbya* sp., *Oscillatoria margaritifera*, *Scenedesmus obtusus*
Diatoms. *Fragilaria crotonensis*
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*, *Daphnia pulex*-group
Ostracodes. Absent

Previous work
Davies *et al.,* 2002, 2005; Metcalfe *et al.,* 2010; Jones *et al.,* 2015.

Figure A1-11 Climatic and limnological data of Colorada. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *ND* = Not Determined. Date of sampling: October 06, 2011.

La Luna (LUN), Estado de México
19°06'24" N, 99°45'09" W, 4283 masl

Climate
High-altitude cold
E(T)H

Mean Annual Temperature	3.9 °C
Temp. Range	-2.5 (Jan) – 10.2 (Apr) °C
Annual Precipitation	1227 mm
Annual Evaporation	970 mm

Limnology

Lake type	Volcanic (crater)	
Area	2.5 ha	
Maximum Depth Recorded	10 m[b]	
Relative Depth	5.6 %	
Mixing pattern	Warm polymictic[c]	
Thermocline and oxycline	No	
Transparency	10 m	
Ionic dominance		
	$[HCO_3^-]$ >> *$[SO_4^{2-}]$ - $[Cl^-]$*	
	$[Ca^{2+}]$ >> *$[Na^+]$* >> *$[Mg^{2+}]$*	
Salintiy category	Freshwater	
Trophic state	Ultra-oligotrophic	
Nutrient ratios	DIN:TP	33:1
	DIN:P-PO_4	200:1
	SiO_2:DIN	1:1
	SiO_2:P-PO_4	110:1

Chemical parameters

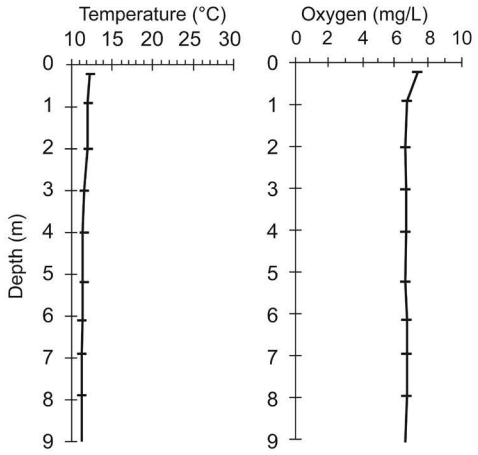
Variable	Surface	Bottom
pH	6.3	6.1
EC	10	9
Total Alk	4.6	4.2
CO_3^{2-}	LDL	LDL
HCO_3^-	5.6	4.2
SO_4^{2-}	LDL	LDL
Cl^-	1.3	2.2
Na^+	0.4	0.5
K^+	0.4	0.3
Ca^{2+}	1.6	1.5
Mg^{2+}	0.1	0.1
TDS	20	60

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Surface	Bottom
DIC	ND	ND
SiO_2	0.5	0.6
DIN	0.2	0.2
TP	0.01	0.01
P-PO_4	LDL	LDL
Chlorophyll *a*	0.3	0.9

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. Pico-cyanoprokaryota, *Chrysochromulina* aff. *parva*, *Gymnodinium* sp.
Diatoms. *Encyonema perpusillum*
Testate amoebae. Below critical value
Cladocerans. *Alona manueli, Alonella pulchella*
Ostracodes. Sample not analyzed

Previous work
Caballero, 1996; Sarma *et al*., 1996; Cervantes-Martínez *et al.,* 2000; Davies *et al.,* 2002; [b]Alcocer *et al.,* 2004; Vilaclara *et al.,* 2005; Armienta *et al.,* 2008; [c]Dimas-Flores *et al.,* 2008; Zawisza *et al.,* 2012; Sinev & Zawisza 2013; Cuna *et al.,* 2014; Cuna *et al*., 2015.

Figure A1-12 Climatic and limnological data of La Luna. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}, 3 mg/$LSiO_2$, 0.005 mg/L P-PO_4. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. August 21, 2010.

La Magdalena (MAG), Michoacán
19°12'30" N, 101°28'22" W, 1517 masl

Climate
Warm, sub-humid, summer rains
$(A)C(w_1)(w)$
Mean Annual Temperature 19.1 °C
Temp. Range 16.8 (Jan) - 21.8 (May) °C
Annual Precipitation 1172 mm
Annual Evaporation 1452 mm

Limnology

Lake type	Reservoir (dike)
Area	22 ha
Maximum Depth Recorded	4 m
Relative Depth	0.8 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	~2m
Transparency	0.5 m
Ionic dominance	$[HCO_3^-]$ >> *$[Cl^-]$ - $[SO_4^{2-}]$*
	$[Ca^{2+}]$ - $[Mg^{2+}]$ > $[Na^+]$
Salinity category	Freshwater
Trophic category	Hypertrophic
Nutrient ratios DIN:TP	11:1
DIN:P-PO_4	233:1
SiO_2:DIN	10:1
SiO_2:P-PO_4	2 208:1

Previous work
No previous studies.

Chemical parameters

Variable	Littoral	Surface	Bottom
pH	ND	8.8	8.3
EC	ND	128	129
Total Alk	58	58	58
CO_3^{2-}	LDL	11	LDL
HCO_3^-	71	48	71
SO_4^{2-}	7.8	7.6	7.4
Cl^-	6.2	6.9	6.5
Na^+	7.1	7.5	7.2
K^+	4.1	4.0	4.1
Ca^{2+}	11	11	11
Mg^{2+}	6.8	6.8	6.8
TDS	86	85	94

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	15	15	16
SiO_2	23	23	24
DIN	ND	0.56	1.23
TP	ND	0.11	0.14
P-PO_4	ND	0.01	0.01
Chlorophyll *a*	ND	173.9	31.0

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	26.0	8.8
1	26.0	9.1
2	24.4	2.3
3	24.2	0.4

Main taxa in this study
Phytoplankton. *Aulacoseira granulata*, *Botryococcus* sp.
Diatoms. *Discostella stelligera*
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*
Ostracodes. Absent

Figure A1-13 Climatic and limnological data of La Magdalena. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. June 17, 2011.

La Preciosa (PRE), Puebla
19°22'24" N, 97°23'07" W, 2340 masl

Climate
Dry, temperate, summer rains
$BS_1k'w$
Mean Annual Temperature 13.9 °C
Temp. Range 10.4 (Jan) - 16.3 (May) °C
Annual Precipitation 388 mm
Annual Evaporation 1741 mm

Limnology

Lake type	Volcanic (maar)
Area	91 ha
Maximum Depth	46 m[b]
Relative Depth	4.3 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~15 m (?)
Transparency	4.6 m
Ionic dominance	$[HCO_3^-] > [Cl^-] >> [SO_4^{2-}]$ $[Mg^{2+}] > [Na^+]$
Salinity category	Subsaline
Trophic category	Oligotrophic
Nutrient ratios DIN:TP	48:1
SiO_2:DIN	30:1

Chemical parameters

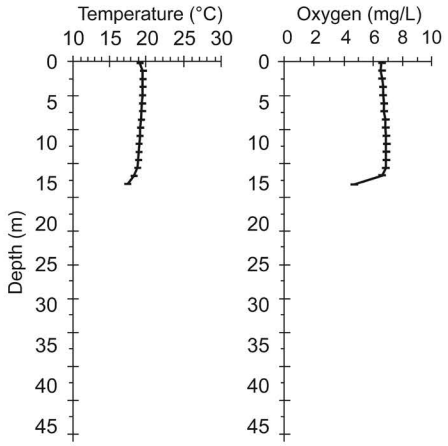
Variable	Littoral	Surface	Bottom
pH	ND	9.3	ND
EC	ND	2070	ND
Total Alk	715	721	713
CO_3^{2-}	194	188	185
HCO_3^-	478	497	494
SO_4^{2-}	127	128	123
Cl^-	392	390	388
Na^+	206	200	198
K^+	18	18	18
Ca^{2+}	10	12	12
Mg^{2+}	213	211	211
TDS	1 308	1333	1296

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	154	155	155
SiO_2	29	28	30
DIN	ND	0.22	0.06
TP	ND	0.01	0.01
P-PO4	ND	LDL	LDL
Chlorophyll *a*	ND	6.6	4.6

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Chaetoceros* sp., *Peridinium* sp.
Diatoms. *Cyclotella meneghiniana*
Testate amoebae. Sample not analyzed
Cladocerans. *Alona quadrangularis*, *Daphnia longispina*-group
Ostracodes. *Candona*, *Limnocythere*

Previous work
Arredondo-Figueroa *et al.,* 1983; [b]Vilaclara *et al.,* 1993; Alcocer *et al.,* 1998; Alcocer *et al.,* 2002; Arredondo, 2002; Davies *et al.,* 2002; Peralta *et al.,* 2002; [c]Armienta *et al.,* 2008; Cohuo-Durán *et al.,* 2014; Barrera-Moreno *et al.,* 2015; Pérez *et al.,* 2015.

Figure A1-14 Climatic and limnological data of La Preciosa. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.005 mg/L P-PO_4. *ND* = Not Determined. June 11, 2011.

La Vega (VEG), Jalisco
20°38'49" N, 103°51'9" W, 1274 masl
Ramsar site 2026

Climate
Warm, sub-humid, summer rains
(A)C(w_1)(w)
Mean Annual Temperature 21.7 °C
Temp. Range 17 (Jan) - 25.7 (June) °C
Annual Precipitation 773 mm
Annual Evaporation 1698 mm

Limnology

Lake type	Reservoir (dike)
Area	1610 ha
Maximum Depth	6 m[b]
Relative Depth	0.1 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.4 m
Ionic dominance	
	$[HCO_3^-]$ >> *$[Cl^-]$ - $[SO_4^{2-}]$*
	$[Na^+]$ >> *$[Ca^{2+}]$ - $[Mg^{2+}]$*
Salinity category	Freshwater
Trophic category	Hypertrophic
Nutrient ratios	
DIN:TP	6:1
DIN:P-PO_4	12:1
SiO_2:DIN	21:1
SiO_2:P-PO_4	252:1

Chemical parameters

Variable	Littoral	Surface	Bottom
pH	8.8	8.5	8.2
EC	396	421	425
Total Alk	186	195	189
CO_3^{2-}	11	32	17
HCO_3^-	205	173	196
SO_4^{2-}	21	30	27
Cl^-	22	25	24
Na^+	70	76	76
K^+	11	12	12
Ca^{2+}	14	14	14
Mg^{2+}	8.7	8.7	9.2
TDS	328	340	342

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	40	36	42
SiO_2	73	74	74
DIN	ND	0.81	0.95
TP	ND	0.28	0.35
P-PO_4	ND	0.15	0.20
Chlorophyll *a*	ND	110.0	93.6

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	31.1	15.3
1	26.3	8.3
2	25.4	2.9

Main taxa in this study
Phytoplankton. Below critical value
Diatoms. *Aulacoseira granulata* var. *angustissima*, *Cyclostephanos* sp., *Cyclotella meneghiniana*
Testate amoebae. Below critical value
Cladocerans. *Alona quadrangularis*, *Bosmina longirostris*
Ostracodes. Absent

Previous work
Favari *et al.,* 2003; INGESA, 2007; [b]Ramsar, 2011; De la Mora *et al.,* 2013.

Figure A1-15 Climatic and limnological data of La Vega. *b* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *ND* = Not Determined. *Below critical value* Phytoplankton < 11 specimens; Testate amoebae < 100 specimens. October 06, 2011.

Metztitlán (MET), Hidalgo
20°40'53" N, 98°51'56" W, 1258 masl
Ramsar site 1337

Climate
Dry, warm, summer rains
BS_0hw
Mean Annual Temperature 20.7 °C
Temp. Range 16.5 (Jan) – 24.0 (May) °C
Annual Precipitation 406 mm
Annual Evaporation 1788 mm

Limnology

Lake type	Tectonic	
Area	2937.4 ha[a]	
Maximum Depth	10 m[b]	
Relative Depth	0.2 %	
Mixing pattern	Warm polymictic[c]	
Thermocline and oxycline	No	
Transparency	0.2 m	
Ionic dominance		
	$[HCO_3^-]$ >> *$[SO_4^{2-}]$* >> *$[Cl^-]$*	
	$[Ca^{2+}]$ > $[Na^+]$ > *$[Mg^{2+}]$*	
Salinity category	Freshwater	
Trophic category	Eutrophic	
Nutrient ratios	DIN:TP	4:1
	DIN:P-PO_4	5:1
	SiO_2:DIN	27:1
	SiO_2:P-PO_4	142:1

Chemical parameters

Variable	Surface	Bottom
pH	8.9	8.8
EC	505	508
Total Alk	240	378
CO_3^{2-}	29	LDL
HCO_3^-	234	461
SO_4^{2-}	57	95
Cl^-	14	20
Na^+	44	75
K^+	11	14
Ca^{2+}	59	81
Mg^{2+}	17	25
TDS	310	484

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Surface	Bottom
DIC	56	85
SiO_2	31	41
DIN	0.27	ND
TP	0.17	ND
P-PO_4	0.11	ND
Chlorophyll *a*	42.2	ND

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	30.0	5.8
1	24.6	5.7
2	24.3	5.4
3	23.9	5.0

Main taxa in this study
Phytoplankton. *Peridinium* sp.
Diatoms. *Cyclostephanos* spp.
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*
Ostracodes. Below critical value

Previous work
Ibañez *et al.,* 2002, 2008; Juárez & Ibáñez, 2003; [a]Ramsar, 2004c; Monks *et al.,* 2005; Fernández-Bringas *et al*., 2008; [b]Mendoza *et al.,* 2011; [c]Barrera-Escorcia *et al*., 2013; Pérez *et al*., 2015.

Figure A1-16 Climatic and limnological data of Metztitlán. *a*, *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens; Ostracodes < 100 adult and juvenile valves. June 10, 2011.

Ojo de Agua (OJO), Jalisco
20°25'17" N, 103°54'27" W, 1340 masl

Climate
Warm, dry sub-humid, summer rains
(A)C(w_0)(w)
Mean Annual Temperature 20.9 °C
Temp. Range 16.7 (Jan) - 24.5 (June) °C
Annual Precipitation 866 mm
Annual Evaporation 1971 mm

Limnology

Lake type	Reservoir (dam)
Area	58 ha
Maximum Depth Recorded	1.5 m
Relative Depth	0.2 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.5 m
Ionic dominance	$[HCO_3^-]$ >> *$[SO_4^{2-}]$* >> *$[Cl^-]$*
	$[Ca^{2+}]$ >> *$[Na^+]$* - *$[Mg^{2+}]$*
Salinity category	Freshwater
Trophic category	Eutrophic
Nutrient ratios	DIN:TP 63:1
	DIN:P-PO_4 346:1
	SiO_2:DIN 6:1
	SiO_2:P-PO_4 2000:1

Previous work
No previous studies.

Chemical parameters

Variable	Surface
pH	8.5
EC	277
Total Alk	137
CO_3^{2-}	7.7
HCO_3^-	151
SO_4^{2-}	24
Cl^-	7.3
Na^+	14
K^+	7.4
Ca^{2+}	35
Mg^{2+}	9.5
TDS	190

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Surface
DIC	31
SiO_2	15
DIN	0.63
TP	0.02
P-PO_4	0.01
Chlorophyll *a*	28.3

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	28.1	8.1
1	28.0	9.1

Main taxa in this study
Phytoplankton. Below critical value
Diatoms. Sample not analyzed
Testate amoebae. *Centropyxis aculeata*, *Cucurbitella* sp.
Cladocerans. *Alona quadrangularis*, *Daphnia longispina*- group
Ostracodes. Absent

Figure A1-17 Climatic and limnological data of Ojo de Agua. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. ***Below critical value*** Phytoplankton < 11 specimens. October 07, 2011.

Pátzcuaro (PAT), Michoacán
19°33'18" N, 101°38'17" W, 2041 masl
Ramsar site 1447

Climate
Temperate, humid sub-humid, summer rains
$C(w_2)(w)$
Mean Annual Temperature 16.8 °C
Temp. Range 13.1 (Jan) - 19.7 (June) °C
Annual Precipitation 1004 mm
Annual Evaporation 1495 mm

Limnology

Lake type	Volcanic (dam)
Area	13000 ha[a]
Maximum Depth	9.4 m[b]
Relative Depth	0.1 %
Mixing pattern	Warm polymictic[c]
Thermocline and oxycline	No
Transparency	0.2 m
Ionic dominance	$[HCO_3^-]$ >> *$[Cl^-]$* > *$[SO_4^{2-}]$*
	$[Na^+]$ >> *$[Mg^{2+}]$* > *$[Ca^{2+}]$*
Salinity category	Subsaline
Trophic category	Hypertrophic
Nutrient ratios	DIN:TP 450:1
	DIN:P-PO_4 11:1
	SiO_2:DIN 23:1
	SiO_2:P-PO_4 243:1

Chemical parameters

Variable	Littoral	Surface
pH	8.3	8.2
EC	830	988
Total Alk	427	552
CO_3^{2-}	19	88
HCO_3^-	483	496
SO_4^{2-}	29	31
Cl^-	46	54
Na^+	139	169
K^+	38	48
Ca^{2+}	26	22
Mg^{2+}	27	36
TDS	557	647

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface
DIC	107	123
SiO_2	32	27
DIN	ND	0.28
TP	ND	0.17
P-PO_4	ND	0.06
Chlorophyll *a*	ND	107.4

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	23.4	6.2
1	21.8	5.6
2	21.7	5.5

Main taxa in this study
Phytoplankton. *Anabaena* sp., *Leptolyngbya* sp., *Staurastrum* sp.
Diatoms. Absent
Testate amoebae. Below critical value
Cladocerans. *Alona quadrangularis*, *Bosmina longirostris*
Ostracodes. *Cypria*, *Limnocythere*

Previous work*
Bradbury, 2000; Alcocer & Bernal-Brooks, 2002; Gomez-Tagle *et al.,* 2002; [b,c]Orbe & Acevedo 2002; Bernal-Brooks *et al*., 2002, 2003; Bischoff *et al.,* 2004; Israde-Alcántara *et al.,* 2005; [a]Ramsar, 2005, Metcalfe *et al.,* 2007; González-Sosa *et al.,* 2010; Berry *et al*., 2011; Tomasini-Ortiz *et al.,* 2012; Huerto & Vargas, 2014.
* Older studies cited within these references.

Figure A1-18 Climatic andlimnological data of Pátzcuaro. a, b and c indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. ND = Not Determined. ***Below critical value*** Testate amoebae < 100 specimens. June 18, 2011.

Quechulac (QUE), Puebla
19°22'28" N, 97°21'06" W, 2345 masl

Climate
Dry, temperate, summer rains
$BS_1k'w$
Mean Annual Temperature 13.9 °C
Temp. Range 10.4 (Jan) - 16.3 (May) °C
Annual Precipitation 388 mm
Annual Evaporation 1741 mm

Limnology

Lake type	Volcanic (maar)
Area	64 ha
Maximum Depth Recorded	40 m[b]
Relative Depth	4.4 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~10 m
Transparency	4.2 m
Ionic dominance	
	$[HCO_3^-]$ >> $[Cl^-]$
	$[Mg^{2+}]$ > $[Na^+]$ >> *$[Ca^{2+}]$*
Salinity category	Freshwater
Trophic category	Oligotrophic
Nutrient ratios	
DIN:TP	5:1
DIN:P-PO_4	6:1
SiO_2:DIN	15:1
SiO_2:P-PO_4	90:1

Chemical parameters

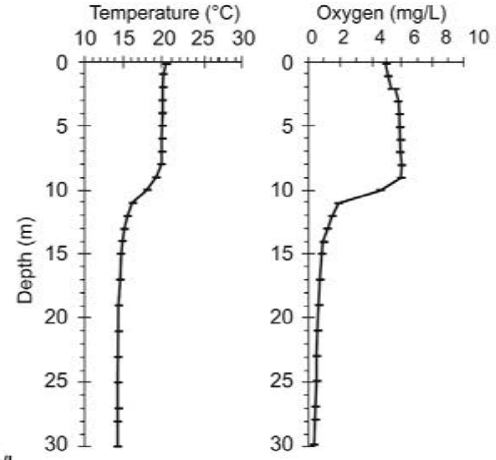
Variable	Littoral	Surface	Bottom
pH	ND	9	9.2
EC	ND	756	781
Total Alk	330	328	338
CO_3^{2-}	50	66	29
HCO_3^-	301	265	354
SO_4^{2-}	18	18	17
Cl^-	99	102	97
Na^+	90	91	86
K^+	8	8	8
Ca^{2+}	11	11	16
Mg^{2+}	61	61	60
TDS	445	439	445

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	73.6	73.5	83.9
SiO_2	11	12	14
DIN	ND	0.18	0.66
TP	ND	0.08	0.20
P-PO_4	ND	0.07	0.17
Chlorophyll *a*	ND	7.2	9.2

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m³



Main taxa in this study
Phytoplankton. *Fragilaria crotonensis*, *Peridinium gatunense*
Diatoms. *Aulacoseira granulata*, *Fragilaria crotonensis*
Testate amoebae. Below critical value
Cladocerans. *Chydorus* cf. *sphaericus*, *Daphnia longispina*-group
Ostracodes. Below critical value

Previous work
Arredondo-Figueroa *et al.*, 1983; Vilaclara *et al.*, 1993; [b]Arredondo, 2002; Alcocer *et al.*, 2002; Davies *et al.*, 2002; Peralta *et al.*, 2002; [c]Armienta *et al.*, 2008; Cohuo-Durán *et al.*, 2014; Pérez *et al.*, 2015.

Figure A1-19 Climatic and limnological data of Quechulac. b and c indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. ND = Not Determined. Below critical value Testate amoebae < 100 specimens; Ostracodes < 100 adult and juvenile valves. June 12, 2011.

San Pedro Lagunillas (SPL), Nayarit
21°12'33" N, 104°43'37" W, 1261 masl

Climate
Warm, humid sub-humid, summer rains
$(A)C(w_2)(w)$
Mean Annual Temperature 22.9 °C
Temp. Range 19.8 (Jan) - 25.3 (June) °C
Annual Precipitation 971 mm
Annual Evaporation 1033 mm

Limnology

Lake type	Volcanic (dam)
Area	296 ha
Maximum Depth Recorded	7 m
Relative Depth	0.4 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.7 m
Ionic dominance	$[HCO_3^-]$ >> *$[Cl^-]$*
	$[Na^+]$ >> *$[Ca^{2+}]$ - $[Mg^{2+}]$*
Salinity category	Freshwater
Trophic category	Hypertrophic
Nutrient ratios	DIN:TP 21:1
	DIN:P-PO_4 152:1
	SiO_2:DIN 8:1
	SiO_2:P-PO_4 1200:1

Previous work
Brown, 1985.

Chemical parameters

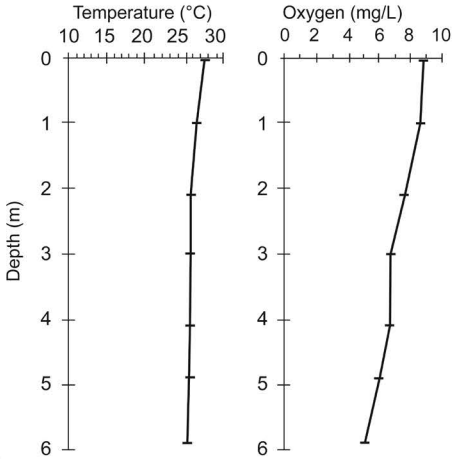
Variable	Littoral	Surface	Bottom
pH	8.0	8.2	7.9
EC	273	269	269
Total Alk	125	123	121
CO_3^{2-}	LDL	6.1	6.1
HCO_3^-	153	137	135
SO_4^{2-}	LDL	LDL	6.3
Cl^-	18	18	17
Na^+	28	28	28
K^+	24	24	24
Ca^{2+}	14	14	13
Mg^{2+}	7.0	7.3	7.0
TDS	182	182	182

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	30	27	29
SiO_2	ND	20	20
DIN	ND	0.60	0.49
TP	ND	0.06	0.06
P-PO_4	ND	0.01	0.01
Chlorophyll *a*	ND	81.7	92.2

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton.
Dictyosphaerium sp., *Planktolyngbya* sp.
Diatoms. *Aulacoseira ambigua*
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*
Ostracodes. Absent

Figure A1-20 Climatic and limnological data of San Pedro Lagunillas. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-},4 mg/LSO_4^{2-}. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. October 05, 2011.

Santa Gertrudis (SGE), Jalisco
20°03'43" N, 103°21'14" W, 1743 masl

Climate
Warm, dry sub-humid, summer rains
$(A)C(w_o)(w)$
Mean Annual Temperature 16.4 °C
Temp. Range 13.8 (Jan) - 18.7 (June) °C
Annual Precipitation 967 mm
Annual Evaporation 1496 mm

Limnology

Lake type	Reservoir (dike)
Area	50 ha
Maximum Depth Recorded	2.3 m
Relative Depth	0.3 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.5 m
Ionic dominance	$[HCO_3^-]$ >> *[Cl⁻]*
	$[Ca^{2+}]$ - $[Mg^{2+}]$ - $[Na^+]$
Salinity category	Freshwater
Trophic category	Eutrophic
Nutrient ratios	DIN:TP 20:1
	DIN:P-PO_4 173:1
	SiO_2:DIN 10:1
	SiO_2:P-PO_4 2000:1

Previous work
No previous studies.

Chemical parameters

Variable	Littoral	Surface
pH	7.6	8.0
EC	156	155
Total Alk	80	80
CO_3^{2-}	LDL	LDL
HCO_3^-	97	97
SO_4^{2-}	LDL	LDL
Cl^-	6.3	6.9
Na^+	8.0	8.1
K^+	7.4	7.2
Ca^{2+}	14	14
Mg^{2+}	7.5	7.3
TDS	104	110

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface
DIC	21	19
SiO_2	17	17
DIN	ND	0.39
TP	ND	0.04
P-PO_4	ND	0.01
Chlorophyll *a*	ND	38.9

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m³

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	22.8	5.5
1	22.7	5.5

Main taxa in this study
Phytoplankton. *Peridiniopsis elpatiewskyi*
Diatoms. *Aulacoseira ambigua*
Testate amoebae. *Centropyxis aculeata*
Cladocerans. *Bosmina longirostris*
Ostracodes. Absent

Figure A1-21 Climatic and limnological data of Santa Gertrudis. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}. *ND* = Not Determined. October 08, 2011.

Santa María del Oro (SMO), Nayarit
21°22'10" N, 104°34'09" W, 737 masl

Climate
Hot, dry sub-humid, summer rains
$Aw_0(w)$
Mean Annual Temperature 20.9 °C
Temp. Range 16.4 (Jan) - 24.9 (June) °C
Annual Precipitation 1220 mm
Annual Evaporation 1708 mm

Limnology

Lake type	Volcanic (crater)
Area	370 ha[a]
Maximum Depth	65 m[b]
Relative Depth	3 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~12 m
Transparency	11.8 m
Ionic dominance	
	$[HCO_3^-]$ - $[Cl^-]$
	$[Na^+] > [Mg^{2+}] > [Ca^{2+}]$
Salinity category	Subsaline
Trophic categpry	Mesotrophic
Nutrient ratios	DIN:TP 4:1
	DIN:P-PO_4 13:1
	SiO_2:DIN 41:1
	SiO_2:P-PO_4 516:1

Chemical parameters

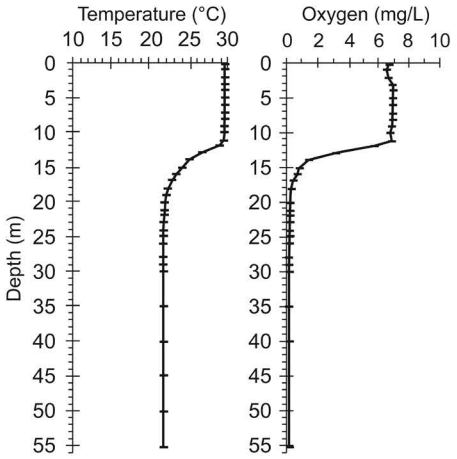
Variable	Littoral	Surface	Bottom
pH	8.6	8.6	7.8
EC	1347	1354	1430
Total Alk	439	441	480
CO_3^{2-}	80	89	58
HCO_3^-	374	358	467
SO_4^{2-}	LDL	LDL	LDL
Cl^-	266	262	279
Na^+	196	196	188
K^+	19	19	19
Ca^{2+}	16	16	28
Mg^{2+}	73	72	70
TDS	789	792	831

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	ND	96	58
SiO_2	18	17	21
DIN	ND	0.10	1.92
TP	ND	0.06	0.22
P-PO_4	ND	0.02	0.04
Chlorophyll *a*	ND	17.2	1.1

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Aulacoseira granulata*, *Oscillatoria* sp., *Staurastrum* sp.
Diatoms. *Aulacoseira granulata*
Testate amoebae. Below critical value
Cladocerans. *Alona quadrangularis*, *Daphnia longispina*-group
Ostracodes. *Candona*, *Darwinula*, *Potamocypris*

Previous work
[a,b,c]Serrano *et al.,* 2002; Armienta *et al.,* 2008; Vázquez-Castro *et al.,* 2008; Sosa-Nájera *et al.,* 2010; Caballero *et al.,* 2013; Rodríguez-Ramírez *et al.,* 2015.

Figure A1-22 Climatic and limnological data of Santa María del Oro. *a*, *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 4 mg/LSO_4^{2-}. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. October 05, 2011.

Santa Rosa (SRO), Jalisco
20°02'27" N, 103°16'58" W, 1879 masl

Climate
Temperate, sub-humid, summer rains
$C(w_1)(w)$
Mean Annual Temperature 16.1 °C
Temp. Range 12.6 (Jan) – 19.0 (May) °C
Annual Precipitation 983 mm
Annual Evaporation 1497 mm

Limnology

Lake type	Reservoir (dam)
Area	1.3 ha
Maximum Depth Recorded	1.8 m
Relative Depth	1.4 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.3 m
Ionic dominance	$[HCO_3^-]$ >> *[Cl⁻]*
	$[Mg^{2+}]$ > $[Na^+]$ - $[Ca^{2+}]$
Salinity category	Freshwater
Trophic category	Mesotrophic
Nutrient ratios	DIN:TP 36:1
	DIN:P-PO_4 120:1
	SiO_2:DIN 4:1
	SiO_2:P-PO_4 467:1

Previous work
No previous studies.

Chemical parameters

Variable	Littoral	Surface
pH	9.2	9.0
EC	224	224
Total Alk	120	123
CO_3^{2-}	11	10
HCO_3^-	125	123
SO_4^{2-}	LDL	LDL
Cl^-	8.2	8.4
Na^+	15	15
K^+	10	10
Ca^{2+}	18	18
Mg^{2+}	13	13
TDS	178	175

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface
DIC	30	22
SiO_2	21	22
DIN	ND	1.29
TP	ND	0.08
P-PO_4	ND	0.02
Chlorophyll *a*	ND	18.5

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m³

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	22.7	8.4
1	21.6	7.0

Main taxa in this study
Phytoplankton. *Botryococcus* sp., *Pediastrum simplex*
Diatoms. *Aulacoseira ambigua*
Testate amoebae. *Difflugia* sp
Cladocerans. *Bosmina longirostris*, *Chydorus* cf. *sphaericus*
Ostracodes. *Potamocypris*

Figure A1-23 Climatic and limnological data of Santa Rosa. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 4 mg/LSO_4^{2-}. *ND* = Not Determined. October 08, 2011.

Sayula (SAY), Jalisco
19°57'04" N, 103°36'33" W, 1347 masl
Ramsar site 1338

Climate
Dry, warm, summer rains
$BS_1hw(w)$
Mean Annual Temperature 21.1 °C
Temp. Range 18.0 (Jan) - 24.2 (May) °C
Annual Precipitation 658 mm
Annual Evaporation 1960 mm

Limnology

Lake type		Tectonic
Area		16800 ha[a]
Maximum Depth Recorded		1 m
Relative Depth		<0.1%
Mixing pattern		Warm polymictic
Thermocline and oxycline		No
Transparency		0.1 m
Ionic dominance		
		$[HCO_3^-]$ - $[Cl^-]$
		$[Na^+]$ >> *$[Mg^{2+}]$*
Salintiy category		Subsaline
Trophic category		Mesotrophic
Nutrient ratios	DIN:TP	3:1
	DIN:P-PO_4	3:1
	SiO_2:DIN	3:1
	SiO_2:P-PO_4	10:1

Chemical parameters

Variable	Littoral	Surface
pH	9.4	9.3
EC	3890	3980
Total Alk	1179	1250
CO_3^{2-}	349	331
HCO_3^-	728	853
SO_4^{2-}	96	94
Cl^-	774	803
Na^+	979	1 039
K^+	34	33
Ca^{2+}	31	11
Mg^{2+}	22	15
TDS	2530	2658

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface
DIC	247	264
SiO_2	58	39
DIN	LDL	3.00
TP	LDL	1.98
P-PO_4	LDL	1.97
Chlorophyll *a*	LDL	20.4

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	22.5	4.6

Main taxa in this study
Phytoplankton. *Amphora* sp.
Diatoms. Absent
Testate amoebae. Below critical value
Cladocerans. Absent
Ostracodes. *Candona*, *Limnocythere*

Previous work
Delgadillo, 1957; [a]Ramsar, 2004a; Munguia *et al.*, 2005.

Figure A1-24 Climatic and limnological data of Sayula. a indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit. *Below critical value* Testate amoebae < 100 specimens. October 08, 2011.

Tecocomulco (TEC), Hidalgo
19°51'37" N, 98°23'13" W, 2535 masl
Ramsar site 1322

Climate
Temperate, sub-humid, summer rains
$C(w_1)(w)$

Mean Annual Temperature	13.3 °C
Temp. Range	10.4 (Jan) - 15.4 (May) °C
Annual Precipitation	635 mm
Annual Evaporation	1540 mm

Limnology

Lake type	Tectonic
Area	1900 ha
Maximum Depth	2 m[b]
Relative Depth	0.1 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.4 m
Ionic dominance	$[HCO_3^-]$ >> *[Cl⁻]* $[Na^+]$ >> *[Ca^{2+}] - [Mg^{2+}]*
Salinity category	Freshwater
Trophic category	Eutrophic
Nutrient ratios	DIN:TP 4:1 DIN:P-PO_4 5:1 SiO_2:DIN 7:1 SiO_2:P-PO_4 35:1

Chemical parameters

Variable	Surface
pH	8.8
EC	341
Total Alk	177
CO_3^{2-}	LDL
HCO_3^-	215
SO_4^{2-}	LDL
Cl^-	16
Na^+	34
K^+	26
Ca^{2+}	19
Mg^{2+}	12
TDS	213

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Surface
DIC	45
SiO_2	8
DIN	0.27
TP	0.17
P-PO_4	0.11
Chlorophyll *a*	50.1

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	21.2	5.9

Main taxa in this study
Phytoplankton. *Kirchneriella obesa*
Diatoms. *Cocconeis placentula*, *Epithemia sorex*, *Navicula tenelloides*
Testate amoebae. *Arcella discoides*, *Centropyxis aculeata*, *C. constricta*, *Cucurbitella* sp., *Difflugia oblonga*
Cladocerans. *Alona quadrangularis*, *Chydorus* cf. *sphaericus*
Ostracodes. *Cypridopsis*

Previous work*
Ramsar, 2003; Caballero *et al.*, 2005; De la Lanza & Rodríguez, 2005; [b]Huizar & Ruiz, 2005; Bautista-Hernández *et al.*, 2008; Vázquez-Rodríguez *et al.*, 2008; Roy *et al.*, 2009; De la Lanza-Espino *et al.*, 2011; Quiroz-Flores *et al.*, 2014; Quisehuatl-Tepexicuapan, *et al.*, 2014; Rico-Sánchez *et al.*, 2014; Pérez *et al.*, 2015.
* Older studies cited within these references.

Figure A1-25 Climatic and limnological data of Tecocomulco. *b* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}. June 10, 2011.

Tecuitlapa (TEU), Puebla
19°07'30" N, 97°32'36" W, 2368 masl

Climate
Temperate, dry sub-humid, summer rains (C)(w_0)(w)
Mean Annual Temperature 14.7 °C
Temp. Range 12.0 (Jan) - 16.7 (May) °C
Annual Precipitation 851 mm
Annual Evaporation 1644 mm

Limnology

Lake type	Volcanic (maar)
Area	18 ha
Maximum Depth	2.5 m[b]
Relative Depth	0.1 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.1 m
Ionic dominance	$[CO_3^{2-}]$ >> *[Cl^-]* $[Na^+]$
Salinity category	Subsaline
Trophic category	Hypertrophic
Nutrient ratios	DIN:TP 2:1
	DIN:P-PO_4 3:1
	SiO_2:DIN 15:1
	SiO_2:P-PO_4 48:1

Chemical parameters

Variable	Littoral
pH	10.3
EC	3710
Total Alk	2047
CO_3^{2-}	815
HCO_3^-	841
SO_4^{2-}	119
Cl^-	218
Na^+	971
K^+	107
Ca^{2+}	12
Mg^{2+}	22
TDS	2700

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral
DIC	392
SiO_2	42
DIN	0.68
TP	0.71
P-PO_4	0.46
Chlorophyll *a*	92.9

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	26.2	5.7

Main taxa in this study
Phytoplankton. Sample not analyzed
Diatoms. Sample not analyzed
Testate amoebae. Below critical value
Cladocerans. Sample not analyzed
Ostracodes. Below critical value

Previous work
[b]Arredondo-Figueroa *et al.,* 1983; Arredondo-Figueroa & Aguilar, 1987; Ramírez-García & Vázquez-Gutiérrez, 1989; Vilaclara *et al.,* 1993; Arredondo, 2002; Peralta *et al.,* 2002; Armienta *et al*., 2008; Pérez *et al.,* 2015.

Figure A1-26 Climatic and limnological data of Tecuitlapa. b indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. ***Below critical value*** Testate amoebae < 100 specimens; Ostracodes < 100 adult and juvenile valves. June 13, 2011.

Tepetiltic (TEP), Nayarit
21°16'30" N, 104°41'18" W, 1430 masl

Climate
Warm, humid sub-humid, summer rains
(A)C(w_2)(w)
Mean Annual Temperature 21.8 °C
Temp. Range 18.4 (Jan) - 24.3 (June) °C
Annual Precipitation 1327 mm
Annual Evaporation 1899 mm

Limnology
Lake type Volcanic (crater)
Area 132 ha
Maximum Depth Recorded 2.5 m
Relative Depth 0.2 %
Mixing pattern Warm polymictic
Thermocline and oxycline ~2 m
Transparency 0.5 m
Ionic dominance
$[HCO_3^-]$ >> *$[Cl^-]$*
$[Ca^{2+}] > [Mg^{2+}] - [K^+]$
Salinity category Freshwater
Trophic category Hypertrophic
Nutrient ratios
DIN:TP 21:1
DIN:P-PO_4 181:1
SiO_2:DIN 3:1
SiO_2:P-PO_4 503:1

Previous work
No previous studies.

Chemical parameters

Variable	Littoral	Surface
pH	8.0	8.3
EC	110	111
Total Alk	61	64
CO_3^{2-}	LDL	LDL
HCO_3^-	75	78
SO_4^{2-}	LDL	LDL
Cl^-	2.8	2.8
Na^+	3.8	3.8
K^+	8.1	8.1
Ca^{2+}	11	11
Mg^{2+}	5.3	4.9
TDS	69	75

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface
DIC	16	15
SiO_2	7	7
DIN	ND	0.60
TP	ND	0.06
P-PO_4	ND	0.01
Chlorophyll *a*	ND	76.4

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	26.6	8.3
1	26.6	8.2
2	25.2	5.7

Main taxa in this study
Phytoplankton. *Aulacoseira granulata*, *Pediastrum simplex*, *Tetraedron gracile*
Diatoms. *Aulacoseira ambigua*
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*
Ostracodes. Absent

Figure A1-27 Climatic and limnological data of Tepetiltic. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}. *ND* = Not Determined. ***Below critical value*** Testate amoebae < 100 specimens. October 05, 2011.

Yuriria (YUR), Guanajuato
20°14'51" N, 101°08'58" W, 1730 masl
Ramsar site 1631

Climate
Warm, dry sub-humid, summer rains
(A)C(w_0)(w)

Mean Annual Temperature	19.7 °C
Temp. Range	15.3 (Jan) - 23.5 (May) °C
Annual Precipitation	638 mm
Annual Evaporation	1802 mm

Limnology

Lake type	Reservoir (dam and river diversion)
Area	7200 ha
Maximum Depth	2.6 m[b]
Relative Depth	<0.1 %
Mixing pattern	Warm polymictic
Thermocline and oxycline	No
Transparency	0.2 m
Ionic dominance	$[HCO_3^-]$ >> *$[Cl^-]$* - *$[SO_4^{2-}]$* $[Na^+]$> $[Ca^{2+}]$ > *$[Mg^{2+}]$*
Salinity category	Freshwater
Trophic category	Eutrophic
Nutrient ratios	DIN:TP 9:1 DIN:P-PO_4 29:1 SiO_2:DIN 10:1 SiO_2:P-PO_4 283:1

Chemical parameters

Variable	Surface
pH	8.0
EC	624
Total Alk	279
CO_3^{2-}	7.8
HCO_3^-	324
SO_4^{2-}	50
Cl^-	42
Na^+	73
K^+	23
Ca^{2+}	48
Mg^{2+}	20
TDS	447

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Surface
DIC	69
SiO_2	29
DIN	0.68
TP	0.16
P-PO_4	0.05
Chlorophyll *a*	73.8

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3

Depth (m)	Temperature (°C)	Oxygen (mg/L)
0	26.2	7.2
1	22.4	4.6

Main taxa in this study
Phytoplankton. *Euglena* sp., *Lepocinclis* sp., *Pediastrum duplex*
Diatoms. *Aulacoseira granulata*
Testate amoebae. Below critical value
Cladocerans. *Alona affinis*, *Bosmina longirostris*
Ostracodes. *Candona*, *Cypria*

Previous work
[b]Ramos & Novelo, 1993; Davies *et al*., 2002; Conant, 2003; Ramsar, 2004b; López-López *et al.,* 2011; Ruiz-Picos & López-López, 2012; Espinal *et al.,* 2013.

Figure A1-28 Climatic and limnological data of Yuriria. b indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. ***Below critical value*** Testate amoebae < 100 specimens. June 16, 2011.

Zempoala (ZEM), Estado de México
19°03'00" N, 99°18'50" W, 2804 masl

Climate
Cool, humid, summer rains
C(E)(m)(w)
Mean Annual Temperature 12.0 °C
Temp. Range 9.5 (Jan) - 14.1 (May) °C
Annual Precipitation 1187 mm
Annual Evaporation 1402 mm

Limnology

Lake type	Volcanic (dam)
Area	10 ha
Maximum Depth	8 m[b]
Relative Depth	2.2 %
Mixing pattern	Warm monomictic[c]
Thermocline and oxycline	~4 m
Transparency	3.3 m
Ionic dominance	$[HCO_3^-]$ $[Ca^{2+}] > [Mg^{2+}] > [Na^+]$
Salinity category	Freshwater
Trophic category	Mesotrophic
Nutrient ratios	DIN:TP 62:1
	SiO_2:DIN 30:1

Chemical parameters

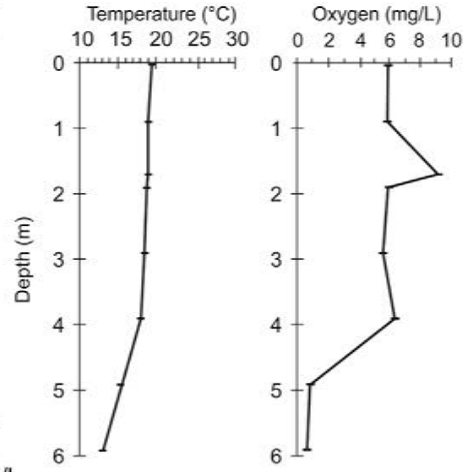
Variable	Littoral	Surface	Bottom
pH	9.2	8.8	7.7
EC	96	93	229
Total Alk	48	48	56
CO_3^{2-}	LDL	LDL	LDL
HCO_3^-	59	59	69
SO_4^{2-}	LDL	LDL	LDL
Cl^-	1.4	1.4	1.6
Na^+	5.5	5.5	5.3
K^+	1.6	1.5	2.6
Ca^{2+}	9.2	9.6	9.2
Mg^{2+}	5.1	4.1	6.6
TDS	71	68	76

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	12	11	ND
SiO_2	27	25	32
DIN	ND	0.20	0.26
TP	ND	0.01	0.03
P-PO_4	ND	LDL	LDL
Chlorophyll *a*	ND	9.2	271.7

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Asterionella formosa*, *Ceratium* sp., *Fragilaria crotonensis*, *Peridinium* sp.
Diatoms. *Achnanthidium minutissimum*, *Asterionella formosa*
Testate amoebae. *Centropyxis* spp.
Cladocerans. *Bosmina longirostris*, *Daphnia longispina*-group
Ostracodes. Below critical value

Previous work
Bonilla-Barbosa & Novelo, 1995; [c]García-Rodríguez & Tavera, 2002; Almeida-Lenero *et al.*, 2005; [b]Díaz-Vargas *et al.*, 2005; Quiroz *et al.*, 2008; García *et al.*, 2010; Hansen, 2012; Trejo-Albarrán *et al.*, 2014; Pérez *et al.*, 2015.

Figure A1-29 Climatic and limnological data of Zempoala. b and c indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 4 mg/LSO_4^{2-}, 0.005 mg/L P-PO_4. *ND* = Not Determined. *Below critical value* Ostracodes < 100 adult and juvenile valves. June 08, 2011.

Zirahuén (ZIR), Michoacán
19°26'07" N, 101°44'22" W, 2082 masl

Climate
Temperate, humid sub-humid, summer rains
$C(w_2)(w)$
Mean Annual Temperature 16.0 °C
Temp. Range 12.6 (Jan) - 18.4 (June) °C
Annual Precipitation 1102 mm
Annual Evaporation 1217 mm

Limnology
Lake type Volcanic (dam)
Area 930 ha
Maximum Depth Recorded 40 m[b]
Relative Depth 1.2 %
Mixing pattern Warm monomictic[c]
Thermocline and oxycline ~14 m
Transparency 2.5 m
Ionic dominance
$[HCO_3^-] >> [Cl^-]$
$[Ca^{2+}] - [Mg^{2+}] - [Na^+]$
Salinity category Freshwater
Trophic category Oligotrophic
Nutrient ratios DIN:TP 0.02 :1
DIN:P-PO_4 1:1

Chemical parameters

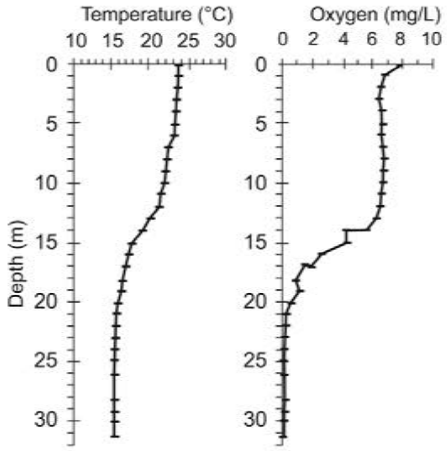
Variable	Littoral	Surface	Bottom
pH	ND	6.5	7.4
EC	ND	119	120
Total Alk	65	63	63
CO_3^{2-}	LDL	5.0	LDL
HCO_3^-	79	66	76
SO_4^{2-}	LDL	LDL	LDL
Cl^-	5.9	5.8	5.2
Na^+	8.6	8.1	7.9
K^+	4.8	4.3	4.1
Ca^{2+}	11	10	10
Mg^{2+}	6.8	5.9	6.8
TDS	79	77	88

Units: EC in µS/cm, Total Alkalinity in mg/L $CaCO_3$, ionic concentrations and TDS in mg/L

Trophic parameters

Variable	Littoral	Surface	Bottom
DIC	ND	20	18
SiO_2	LDL	LDL	LDL
DIN	ND	0.001	0.10
TP	ND	0.11	0.09
P-PO_4	ND	LDL	LDL
Chlorophyll *a*	ND	4.6	2.6

Units: DIC in µgC/g, SiO_2, DIN, TP, P-PO_4 in mg/L and Chlorophyll *a* in mg/m^3



Main taxa in this study
Phytoplankton. *Ceratium* sp., *Pediastrum simplex*, *Peridinium* sp., *Staurastrum* spp.
Diatoms. *Cyclotella ocellata*
Testate amoebae. Below critical value
Cladocerans. *Bosmina longirostris*, *Leydigia leydigii*
Ostracodes. *Cypria*

Previous work*
Chacon-Torres & Rosas-Monge, 1998; Bernal-Brooks & MacCrimmon, 2000a, 2000b; Bernal-Brooks, 2002; Davies *et al.*, 2004, 2005; [c]Martínez-Almeida & Tavera, 2005; Bernal-Brooks & Ruiz, 2007; Armienta *et al.*, 2008; Ortega *et al.*, 2010; Ortiz & Rendón, 2010; [b]Torres-Rodríguez *et al.*, 2012.
* Older studies cited within these references.

Figure A1-30 Climatic and limnological data of Zirahuén. *b* and *c* indicate the bibliographical source of the data. Ionic dominance includes ions present at > 5 % relative concentrations in meq/L, in italics are ions between 5 and 25 %; "-" was used when ionic relative concentrations were similar; ">" when they were less than double and ">>" when they were higher than double. *LDL* = Lower Detection Limit: 0.01 mg/LCO_3^{2-}, 3 mg/$LSiO_2$, 0.005 mg/L, 4 mg/LSO_4^{2-}, P-PO^4. *ND* = Not Determined. *Below critical value* Testate amoebae < 100 specimens. June 18, 2011.