

**Table S1.** Ecological requirements of diatoms species (according to Van Dam et al. [38]) recognized in the Pilato and Palazzo Borghese lakes. Moisture aerophily: (-) Unknown; (1) Aquatic; (2) Occasionally aerophilic; (3) Aquatic to aerophilic; (4) Aerophilic; (5) Terrestrial. pH requirements: (-) Unknown; (1) Acidobiontic pH<5.5; (2) Acidophilic pH<7; (3) Neutrophilic pH=7; (4) Alkaliphilic pH>7; (5) Alkalobiontica pH exclusively>7; (6) Euryionic. Oxygen: (-) Unknown; (1) Polyoxybiontic 100% sat.; (2) Oxybiontic 75% sat.; (3) Moderate O<sub>2</sub> >50% sat.; (4) Low O<sub>2</sub> ≈30% sat.; (5) Very low O<sub>2</sub> <10% sat. Salinity: (-) Unknown; (1) Halophobe; (2) Oligohalobus; (3) Halophilic; (4) Mesohalobus; (5) Saumatre à marin; (6) Marin à saumatre; (7) Marin. Trophic status: (-) Unknown; (1) Oligotrophic; (2) Oligo-Mesotrophic; (3) Mesotrophic; (4) Meso-Eutrophic; (5) Eutrophic; (6) Hypereutrophic; (7) Indifferent.

Taxon	Pilato Lake	Palazzo Borghese Lake	Moisture aerophily	pH requirements	Oxygen requirements	Salinity	Saprobity	Trophic state
<i>Achnanthes coarctata</i>	X	X	5	3	1	1	1	2
<i>Achnanthidium lineare</i>	X		-	3	-	-	-	-
<i>Achnanthidium minutissimum</i>	X	X	3	3	1	2	2	7
<i>Amphora inariensis</i>	X	X	-	-	-	2	-	1
<i>Amphora meridionalis</i>	X		-	-	-	-	-	-
<i>Amphora ovalis</i>	X		1	4	2	2	2	5
<i>Aulacoseira granulata</i>	X	X	1	4	3	2	2	5
<i>Aulacoseira granulata</i> var. <i>angustissima</i>	X	X	1	4	3	2	2	5
<i>Caloneis silicula</i>	X		1	4	2	2	1	4
<i>Cocconeis euglypta</i>	X		2	4	3	2	2	5
<i>Cocconeis euglyptoides</i>	X		-	-	-	-	-	-
<i>Cocconeis pediculus</i>	X		1	4	2	3	2	5
<i>Craticula ambigua</i>		X	-	-	-	2	-	5
<i>Craticula molestiformis</i>	X	X	3	4	4	2	4	5
<i>Cyclotella intermedia</i>	X	X	-	-	-	-	-	-
<i>Cyclotella meneghiniana</i>	X		2	4	5	3	4	5
<i>Cymbella excisa</i>	X		2	4	1	2	2	5
<i>Cymbella excisa</i> var. <i>procera</i>	X		2	-	1	2	2	5
<i>Cymbella parva</i>	X	X	-	-	-	-	-	-
<i>Cymbella perparva</i>	X		-	4	-	-	-	-
<i>Cymbella vulgata</i>	X		-	-	-	-	-	-
<i>Cymbella</i> var. <i>plitvicensis</i>	X		-	-	-	-	-	-
<i>Cymboplectura yateana</i>	X		-	-	-	-	-	-
<i>Denticula tenuis</i>	X		3	4	1	1	1	3
<i>Diadensis contenta</i>	X		4	4	1	2	2	7
<i>Diadensis perpusilla</i>	X		5	3	1	2	1	1
<i>Diatoma moniliformis</i>	X			5		4		5
<i>Diploneis krammerii</i>	X		4	4	1	2	1	-
<i>Diploneis oculata</i>	X		3	3	-	2	2	-
<i>Encyonema auerswaldi</i>	X		-	-	-	-	-	-
<i>Encyonema</i> langebertalotii	X		-	3	-	-	-	-
<i>Encyonema minutum</i>	X		-	3	-	2	-	-
<i>Encyonema ventricosum</i>	X		-	3	-	-	-	-
<i>Epithemia adnata</i>	X		2	5	2	2	2	4
<i>Epithemia sorex</i>	X		2	5	2	2	2	5

Taxon	Pilato Lake	Palazzo Borghese Lake	Moisture aerophily	pH requirements	Oxygen requirements	Salinity	Saprobity	Trophic state
<i>Eucocconeis laevis</i>	X		3	3	1	1	1	1
<i>Eunotia arcus</i>	X		3	-	-	1	1	2
<i>Eunotia bilunaris</i>	X		3	-	2	2	2	7
<i>Eunotia minor</i>			4	-	1	-	1	-
<i>Fallacia insociabilis</i>	X	X	4	3	1	1	1	3
<i>Fistulifera saprophila</i>		X	3	3	4	2	4	5
<i>Fragilaria acidoclinata</i>	X		-	2	-	1	-	-
<i>Gomphonema angustatum</i>		X	-	3	-	2	-	4
<i>Gomphonema cuneolus</i>	X		-	-	-	-	-	-
<i>Gomphonema cymbelliclinum</i>		X	-	4	-	-	-	-
<i>Gomphonema drutelingense</i>		X	-	-	-	-	-	-
<i>Gomphonema longilineare</i>		X	-	-	-	-	-	-
<i>Gomphonema micropus</i>	X	X	3	4	2	2	2	5
<i>Gomphonema minutum</i>	X	X	-	3	-	2	2	5
<i>Gomphonema olivaceum</i>	X		1	-	2	2	2	5
<i>Gomphonema pumilum</i>	X		-	-	-	2	-	7
<i>Gomphonema rosenstokianum</i>		X	-	-	-	-	-	-
<i>Gomphonema sarcophagus</i>		X	3	4		2	2	3
<i>Gomphonema tergestinum</i>	X	X	3	4	1	2	1	2
<i>Gyrosigma attenuatum</i>		X	1	5	3	2	2	5
<i>Gyrosigma sciotense</i>	X		-	4	1	3	2	5
<i>Hantzschia abundans</i>	X	X	4	3	2	2	3	7
<i>Hantzschia amphioxys</i>	X	X	4	3	2	2	3	7
<i>Hantzschia calcifuga</i>		X	-	-	-	-	-	-
<i>Luticola binodis</i>		X	-	-	-	-	-	-
<i>Luticola mutica</i>	X	X	4	3	1	3	3	5
<i>Luticola nivalis</i>	X		4	3	-	3	2	5
<i>Meridion circulare</i>	X	X	1	4	2	2	2	7
<i>Muelleria gibbula</i>		X	5	3	-	2	-	-
<i>Navicula capitatoradiata</i>	X		1	4	3	2	3	5
<i>Navicula cryptotenella</i>	X		2	4	-	2	2	7
<i>Navicula densilineolata</i>	X		-	4	-	1	-	1
<i>Navicula gregaria</i>	X		3	4	4	3	3	5
<i>Navicula lanceolata</i>	X		3	4	3	3	3	5
<i>Navicula lundi</i>	X	X	3	4	2	2	2	5
<i>Navicula microdigitoradiata</i>	X		-	-	-	-	-	-
<i>Navicula reichardtiana</i>		X	-	4	-	2	3	-
<i>Navicula tripunctata</i>	X		3	4	2	2	2	5
<i>Navicula trivialis</i>	X		3	4	3	3	3	5
<i>Navicula wildii</i>	X	X	-	4	-	2	-	2
<i>Neidium bisulcatum</i>	X	X	3	3	1	1	1	1
<i>Neidium longiceps</i>		X	3	2	1	1	1	1
<i>Nitzschia acidoclinata</i>		X	3	3	1	1	2	3
<i>Nitzschia angustata</i>	X		1	-	1	2	1	3
<i>Nitzschia clausii</i>		X	3	4	2	4	3	5

Taxon	Pilato Lake	Palazzo Borghese Lake	Moisture aerophily	pH requirements	Oxygen requirements	Salinity	Saprobity	Trophic state
<i>Nitzschia dissipata</i>	X		3	4	2	2	2	4
<i>Nitzschia inconspicua</i>	X		3	4	3	3	3	5
<i>Nitzschia linearis</i>	X		3	4	2	2	2	4
<i>Nitzschia pusilla</i>	X		3	3	2	2	2	7
<i>Nitzschia subtilis</i>	X		-	2	-	2	-	-
<i>Nitzschia sociabilis</i>	X		4	3	2	2	3	5
<i>Nitzschia supralitorea</i>		X	1	3	2	2	2	5
<i>Pinnularia borealis</i>	X	X	4	3	1	2	2	2
<i>Pinnularia grunowii</i>	X	X	-	-	-	-	-	-
<i>Pinnularia microstauron</i> <i>var. angusta</i>	X	X	-	-	-	-	-	-
<i>Pinnularia obscura</i>		X	-	-	-	-	-	-
<i>Pinnularia rupestris</i>		X	3	3	1	1	-	1
<i>Pinnularia schoenfelderi</i>	X	X	3	3	3	2	2	1
<i>Placoneis placentula</i>	X	X	1	4	2	2	2	5
<i>Planothidium</i> <i>frequentissimum</i>	X		-	4	3	2	4	7
<i>Planothidium joursacense</i>	X		-	4	2	2	1	2
<i>Planothidium lanceolatum</i>	X		3	4	3	2	3	5
<i>Psammothidium daonense</i>	X		1	3	1	1	1	1
<i>Pseudostaurosira robusta</i>	X		-	-	-	-	-	-
<i>Reimeria sinuata</i>	X		3	3	1	2	2	3
<i>Rhoicosphenia abbreviata</i>	X		2	4	2	2	2	5
<i>Sellaphora atomoides</i>		X	-	-	-	-	-	-
<i>Sellaphora pseudopupula</i>	X	X	-	-	-	-	-	-
<i>Sellaphora saugerresi</i>	X		3	3	4	2	4	5
<i>Stauroneis gracilis</i>	X		-	-	-	-	-	-
<i>Stauroneis reichardtii</i>		X	-	-	-	-	-	-
<i>Staurosira construens</i>	X		1	4	1	2	2	4
<i>Staurosira venter</i>	X	X	1	4	1	2	2	4
<i>Staurosirella lapponica</i>	X		2	4	-	2	-	-
<i>Tryblionella apiculata</i>		X	2	4	3	4	3	5
<i>Ulnaria acus</i>	X	X	2	4	2	2	3	5
<i>Ulnaria ulna</i>	X		2	4	3	2	4	7