

Supplementary material 2: Diatoms species list, Author = author of species description, Code = species codes used in the CCA analysis, Mean Ind = mean number of individuals, SD = standard deviation, RL= Red List species, and distribution of species in the different lakes. RL= Red List species (Lange-Bertalot, 1996): 1 = threatened with extinction, 2 = severely endangered, 3 = endangered, V =decreasing, G = presumed endangered, R = extremely rare, D = data scarce, * = at present not considered threatened, ** = surely not threatened; ° = increasing.

| Taxa | Author | Code | Mean ind | SD | RL | Rosole | P1 Rosole | L1 Rosole | Manzina | L1 Pisella | L2 Pisella | Bianco | Nero |
|-----------------------------------|-------------------------------------|------|----------|-------|----|--------|-----------|-----------|---------|------------|------------|--------|------|
| <i>Achnanthes hintzii</i> | Lange-Bertalot & Krammer | AHIN | 0.1 | 0.17 | R | | x | | | | | | |
| <i>Achnanthidium bioretii</i> | (Germain) Edlund | ABRT | 0.0 | 0.11 | V | | | | x | | | | |
| <i>Achnanthidium minutissimum</i> | (Kützing) Czarnecki | ADMI | 66.7 | 50.00 | ** | x | x | x | x | x | x | x | x |
| <i>Adlaia minuscula</i> | (Grunow) Lange-Bertalot | ADMS | 4.0 | 7.30 | * | | x | x | | | | | x |
| <i>Amphora aequalis</i> | Krammer | AAEQ | 0.0 | 0.11 | | | | | x | | | | |
| <i>Amphora fogediana</i> | Krammer in Krammer & Lange-Bertalot | AMFO | 0.1 | 0.33 | R | | | | | | | x | |
| <i>Amphora inariensis</i> | Krammer | AINA | 0.4 | 0.70 | 3 | | | x | | | | x | |
| <i>Amphora libyca</i> | Ehrenberg | ALIB | 0.1 | 0.22 | ** | | | | x | | | | |
| <i>Amphora pediculus</i> | (Kützing) Grunow | APED | 0.1 | 0.22 | ** | | | | x | | | | |
| <i>Brachysira brebissonii</i> | Ross in Hartley | BBRE | 0.2 | 0.35 | * | | x | | | | | | x |
| <i>Brachysira neoexilis</i> | Lange-Bertalot | BNEO | 0.1 | 0.19 | * | | | | x | | | | x |
| <i>Brachysira vitrea</i> | (Grunow) Ross in Hartley | BVIT | 0.5 | 0.71 | 3 | | | | x | | x | x | x |
| <i>Cavinula pusio</i> | (P.T. Cleve) Lange-Bertalot | CVPU | 1.0 | 2.65 | | | | x | | | | | |
| <i>Cocconeis placentula</i> | Ehrenberg | CPLA | 0.2 | 0.33 | ** | x | | | x | | | | |
| <i>Cyclotella antiqua</i> | W. Smith | CATQ | 0.3 | 0.66 | ° | | | | | | | x | |
| <i>Cyclotella gordoniensis</i> | Kling & Hakansson | CGOR | 0.1 | 0.26 | | | | | x | | | | x |
| <i>Cymbella affinis</i> | Kützing | CAFF | 17.1 | 27.01 | | x | x | | x | | x | x | x |
| <i>Cymbella compacta</i> | Ostrup | CCMP | 1.0 | 2.65 | * | | | | | x | | | |
| <i>Cymbella rupicola</i> | (Grunow) Krammer | CRPC | 0.3 | 0.66 | R | | | | | x | | | |
| <i>Craticula halophila</i> | (Grunow ex Van Heurck) Mann | CHAL | 0.9 | 2.32 | ** | x | | | | | | | |
| <i>Craticula molestiformis</i> | (Hustedt) Lange-Bertalot | CMLF | 1.5 | 3.97 | ** | x | | | | | | | |
| <i>Delicata costei</i> | (Maillard) Krammer & Lange-Bertalot | DCOS | 0.6 | 1.65 | | | | | x | | | | |
| <i>Denticula tenuis</i> | Kützing | DTEN | 18.2 | 21.40 | * | | x | | x | x | x | x | x |
| <i>Diadesmis perpusilla</i> | (Grunow) D.G. Mann in Round & al. | DPER | 0.1 | 0.33 | ** | | | | | x | | | |
| <i>Diatoma mesodon</i> | (Ehrenberg) Kützing | DMES | 0.0 | 0.11 | * | | | | x | | | | |
| <i>Discostella stelligeroides</i> | (Hustedt) Houk & Klee | DSTO | 0.1 | 0.33 | | | | | | | x | | |
| <i>Encyonema caespitosum</i> | Kützing | ECAE | 0.3 | 0.66 | ** | | | | | | | | x |
| <i>Encyonema minutum</i> | (Hilse ex Rabenhorst) D.G. Mann | ENMI | 25.9 | 31.92 | * | x | x | x | x | x | x | x | x |
| <i>Encyonema silesiacum</i> | (Bleisch in Rabenhorst) D.G. | ESLE | 1.7 | 3.23 | * | | | | x | x | | | x |

| | Mann | | | | | | | | | | | |
|--|--------------------------------------|------|------|--------|----|---|---|---|---|---|---|---|
| <i>Encyonopsis aequalis</i> | (W. Smith) Krammer | EAQL | 0.1 | 0.22 | ° | | | | x | | | |
| <i>Encyonopsis descripta</i> | (Hustedt) Krammer | EDES | 1.3 | 2.38 | G | x | | x | | | | |
| <i>Encyonopsis microcephala</i> | (Grunow) Krammer | ENCM | 19.2 | 49.07 | * | | x | | | x | | x |
| <i>Eolimna subadnata</i> | (Hustedt) Moser, L-B & Metzeltin | EOSA | 0.4 | 0.99 | D | | x | | | | | |
| <i>Eucocconeis diluviana</i> | (Hustedt) Lange-Bertalot | EUDI | 0.7 | 1.87 | R | | | | x | | | |
| <i>Eunotia exigua</i> | (Brebisson ex Kützing) Rabenhorst | EEXI | 0.9 | 1.36 | ** | | | x | | | x | x |
| <i>Eunotia praerupta</i> | Ehrenberg | EPRA | 0.6 | 0.98 | 3 | | x | x | | | | |
| <i>Eunotia pseudopapilio</i> | Lange-Bertalot & Norpel-Schempp | EPPL | 0.8 | 2.15 | ° | | x | | | | | |
| <i>Eunotia triodon</i> | Ehrenberg | ETRD | 0.1 | 0.33 | 1 | | x | | | | | |
| <i>Fragilaria arcus</i> | (Ehrenberg) Cleve | FARC | 0.3 | 0.66 | ** | | | | x | | | x |
| <i>Fragilaria capucina</i> | Desmazieres | FCAP | 0.6 | 1.65 | ** | | | | | | | x |
| <i>Fragilaria gracilis</i> | Østrup | FGRA | 39.6 | 103.33 | * | | | | | | x | x |
| <i>Fragilaria tenera</i> | (W. Smith) Lange-Bertalot | FTEN | 0.1 | 0.22 | V | | | | x | | | |
| <i>Fragilaria virescens</i> | Ralfs | FVIR | 1.1 | 2.04 | V | | x | | | | x | |
| <i>Gomphonema acuminatum</i> | Ehrenberg | GACU | 0.1 | 0.33 | ** | | | | | | x | |
| <i>Gomphonema duplipunctatum</i> | Lange-Bertalot & Reichardt | GDUP | 0.1 | 0.22 | R | | | | x | | | |
| <i>Gomphonema gracile</i> | Ehrenberg | GGRA | 0.1 | 0.33 | D | x | | | | | | |
| <i>Gomphonema parvulum</i> var. <i>aequalis</i> | Mayer | GPAE | 1.1 | 2.46 | z | | | x | | | | x |
| <i>Gomphonema truncatum</i> | Ehrenberg | GTRU | 0.1 | 0.33 | * | | | | | x | | |
| <i>Karayevia suchlandtii</i> | (Hustedt) Bukhtiyarova | KASU | 0.1 | 0.33 | R | | | | | | x | |
| <i>Luticola goeppertiana</i> | (Bleisch in Rabenhorst) D.G. Mann | LGOE | 0.9 | 2.48 | ** | | x | | | | | |
| <i>Meridion circulare</i> | (Greville) C.A. Agardh | MCIR | 0.4 | 0.69 | ** | | | | x | | | x |
| <i>Microcostatus krasskei</i> | (Hustedt) Johansen & Sray | MKRA | 16.5 | 40.68 | V | x | | x | x | | | x |
| <i>Microcostatus kuelbsii</i> | (Lange-Bertalot) Lange-Bertalot | MKUE | 0.1 | 0.33 | R | | | | | x | | |
| <i>Microcostatus maceria</i> | (Schimanski L-B. Kusber & Metzeltin | MMAC | 0.1 | 0.33 | 3 | | | x | | | | |
| <i>Navicula capitatoradiata</i> | Germain | NCPR | 1.4 | 3.64 | ** | x | | | | | | |
| <i>Navicula cryptotenella</i> | Lange-Bertalot | NCTE | 3.0 | 4.18 | ** | x | | x | x | | x | x |
| <i>Navicula exilis</i> | Kützing | NEXI | 0.4 | 1.16 | G | x | | | | | | |
| <i>Navicula meniscus</i> | Schumann | NMNS | 0.1 | 0.33 | V | x | | | | | | |
| <i>Navicula mutica</i> var. | Kützing | NMBI | 0.0 | 0.11 | | | | x | | | | |

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|---|--|------|------|-------|----|---|---|---|---|---|---|---|
| <i>Navicula radiosa</i> | Kützing | NRAD | 1.4 | 3.64 | ** | | | | x | | | |
| <i>Navicula veneta</i> | Kützing | NVEN | 1.1 | 2.98 | ** | | x | | | x | | |
| <i>Navicymbula pusilla</i> | (Grunow) Krammer | NCPU | 4.3 | 11.24 | ** | | | | | x | | |
| <i>Nitzschia alpina</i> | Hustedt | NZAL | 0.1 | 0.33 | G | | | x | | x | | |
| <i>Nitzschia dissipata</i> | (Kützing) Grunow | NDIS | 0.4 | 0.68 | ** | x | | | | x | x | x |
| <i>Nitzschia elegantula</i> | Grunow | NELE | 9.6 | 19.12 | * | x | x | x | x | x | x | x |
| <i>Nitzschia fonticola</i> | Grunow in Cleve & Möller | NFON | 0.2 | 0.50 | ** | | | | | | x | |
| <i>Nitzschia frustulum</i> | (Kützing) Grunow | NIFR | 2.7 | 6.92 | ** | x | | | | | x | |
| <i>Nitzschia inconspicua</i> | Grunow | NINC | 0.3 | 0.56 | ** | | | | | x | x | |
| <i>Nitzschia microcephala</i> | Grunow in Cleve & Möller | NMIC | 1.0 | 2.65 | ** | | | | | | x | |
| <i>Nitzschia modesta</i> | Hustedt | NIMD | 0.5 | 1.32 | * | | | | | | x | |
| <i>Nitzschia palea</i> | (Kützing) W. Smith | NPAL | 7.4 | 17.28 | ** | x | | | x | | x | |
| <i>Nitzschia perminuta</i> | (Grunow) M. Peragallo | NIPM | 0.4 | 1.16 | * | | | | | | x | |
| <i>Nitzschia solita</i> | Hustedt | NISO | 0.4 | 0.99 | * | x | | | | | | |
| <i>Pantocsekiella comensis</i> | (Grunow in Van Heurck) K.T. Kiss & Ács | PCMS | 4.3 | 11.46 | * | | | | x | | | |
| <i>Pantocsekiella costei</i> | (Druart & F. Straub) K.T. Kiss & Ács | PCOS | 0.4 | 0.99 | * | | x | | | | | |
| <i>Pinnularia borealis</i> var. <i>islandica</i> | Ehrenberg | PBIS | 0.1 | 0.33 | ** | | x | | | | | |
| <i>Pinnularia borealis</i> var. <i>sublinearis</i> | Ehrenberg | PBSL | 0.5 | 1.32 | ** | | | x | | | | |
| <i>Pinnularia brebissoni</i> var. <i>bicuneata</i> | (Kützing) Rabenhorst | PBBB | 0.1 | 0.33 | | | | x | | | | |
| <i>Pinnularia divergentissima</i> var. <i>martini</i> | (Grunow) Cleve | PDMA | 2.3 | 4.02 | | | x | x | | | | |
| <i>Pinnularia intermedia</i> | (Lagerstedt) Cleve | PITM | 0.3 | 0.83 | V | | x | | | | | |
| <i>Pinnularia kuetzingii</i> | Krammer | PKUT | 1.3 | 2.44 | | | x | | x | | | |
| <i>Pinnularia obscura</i> | Krasske | POBS | 0.3 | 0.66 | ** | | x | | | | | |
| <i>Pinnularia schoenfelderi</i> | Krammer | PSHO | 0.6 | 1.65 | G | x | | | | | | |
| <i>Pinnularia subcapitata</i> | Gregory | PSCA | 1.0 | 2.65 | * | | | | x | | | |
| <i>Pinnularia submicrostauron</i> | Schroeter | PSBM | 0.0 | 0.08 | D | | | | | | x | |
| <i>Pinnularia suchlandtii</i> | Hustedt in A. Schmidt | PSUC | 0.0 | 0.11 | G | | | | x | | | |
| <i>Psammothidium curtissimum</i> | (Carter) Aboal | PMTC | 1.8 | 2.43 | | x | x | x | x | x | x | x |
| <i>Psammothidium helveticum</i> | (Hustedt) Bukhtiyarova & Round | PHEL | 14.0 | 17.37 | * | x | x | x | x | x | x | x |
| <i>Psammothidium kryophilum</i> | (Petersen) Reichardt | PKRY | 0.1 | 0.33 | 3 | | | | x | | | |
| <i>Psammothidium levanderi</i> | (Hustedt) Czarnecki in | PLVD | 0.0 | 0.11 | 3 | | | | x | | | |

| Czarnecki & Edlund | | | | | | | | |
|--------------------------------------|---|------|------|-------|----|---|---|---|
| <i>Psammothidium marginulatum</i> | (Grunow) Bukhtiyarova & Round | PMRG | 6.4 | 14.09 | 3 | x | x | |
| <i>Psammothidium perpusillum</i> | (Oestrup) Lange-Bertalot | PPEP | 0.1 | 0.17 | | | | x |
| <i>Psammothidium scoticum</i> | (Flower & Jones) Bukhtiyarova & Round | PSCT | 20.1 | 45.53 | R | x | x | x |
| <i>Psammothidium subatomoides</i> | (Hustedt) Bukhtiyarova & Round | PSAT | 1.0 | 2.29 | V | x | | |
| <i>Psammothidium ventrale</i> | (Krasske) Bukhtiyarova & Round | PVEN | 0.1 | 0.17 | 3 | | | x |
| <i>Pseudostaurosira brevistriata</i> | (Grun. in Van Heurck) Williams & Round | PSBR | 3.8 | 7.77 | ** | x | x | x |
| <i>Pseudostaurosira elliptica</i> | (Schumann) Edlund, Morales & Spaulding | PSSE | 4.9 | 9.61 | * | x | | x |
| <i>Pseudostaurosira robusta</i> | (Fusey) Williams & Round | PRBS | 0.0 | 0.11 | * | | | x |
| <i>Puncticulata radiosa</i> | (Lemmermann) Håkansson | PRAD | 0.3 | 0.66 | * | | | x |
| <i>Rossithidium petersennii</i> | (Hustedt) Round & Bukhtiyarova | RPET | 0.5 | 0.88 | 3 | | x | x |
| <i>Sellaphora pupula</i> | (Kützing) Mereschkowsky | SPUP | 0.1 | 0.33 | ** | x | | |
| <i>Sellaphora stroemii</i> | (Hustedt) Mann | SSTM | 0.2 | 0.37 | 3 | | x | x |
| <i>Stauroneis anceps</i> | Ehrenberg | STAN | 0.6 | 1.65 | V | | x | |
| <i>Staurosira construens</i> | Ehrenberg | SCON | 0.3 | 0.66 | ** | x | | |
| <i>Staurosira binodis</i> | Lange-Bertalot in Hofmann Werum & Lange-Bertalot | SBND | 0.5 | 1.32 | * | x | | |
| <i>Staurosira pseudoconstruens</i> | (Marciniak) Lange-Bertalot | SPCO | 0.1 | 0.33 | | | | x |
| <i>Staurosirella pinnata</i> | (Ehrenberg) Williams & Round | SPIN | 2.2 | 2.97 | ** | x | x | x |
| <i>Surirella minuta</i> | Brébisson ex Kützing | SUMI | 0.1 | 0.33 | ** | | | x |
| <i>Surirella roba</i> | Leclercq | SRBA | 1.0 | 2.65 | * | x | | x |
| <i>Surirella tenuis</i> | Mayer | STNU | 0.4 | 0.99 | R | | x | |
| <i>Tryblionella coarctata</i> | (Grunow in Cleve & Grunow) D.G. Mann | TCOA | 0.9 | 2.32 | * | | x | |