

Supplementary Figures for “Fate of Planktothrix-derived toxins in aquatic food webs: a case study in Lake Mindelsee”

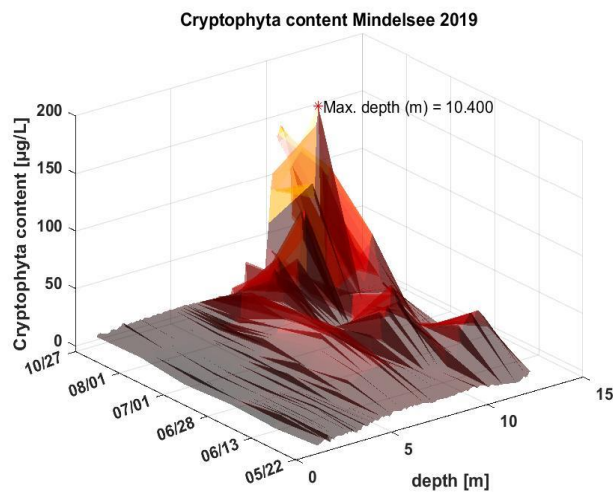


Figure S1: “cryptophyta” content depending on lake depth and month as determined by a Moldaenke FluoroProbe was used as a proxy for red cyanobacteria abundance and suggested a *Planktothrix* spp. bloom formation in October 2019 in Lake Mindelsee. MATLAB R2021b was used for visualization of fluorescence probe data (as described in Fournier et al., 2021).

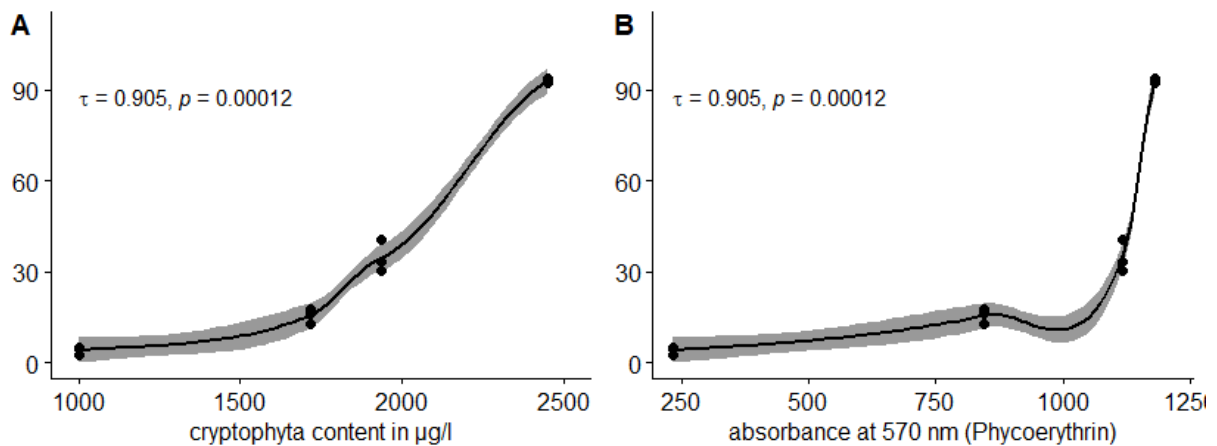


Figure S2: Correlation of the abundance of *Planktothrix* as determined with Illumina sequencing and the values as determined with the fluorescence probe was calculated using Kendall's rank correlation test after fitting the data with a local area regression fitting (loess model in stat_cor for R). A: relative abundance of *Planktothrix* as determined by Illumina sequencing and “cryptophyta” content as determined by the fluorescence probe. B: relative abundance of *Planktothrix* as determined by Illumina sequencing and absorbance at 570 nm as determined by the fluorescence probe.

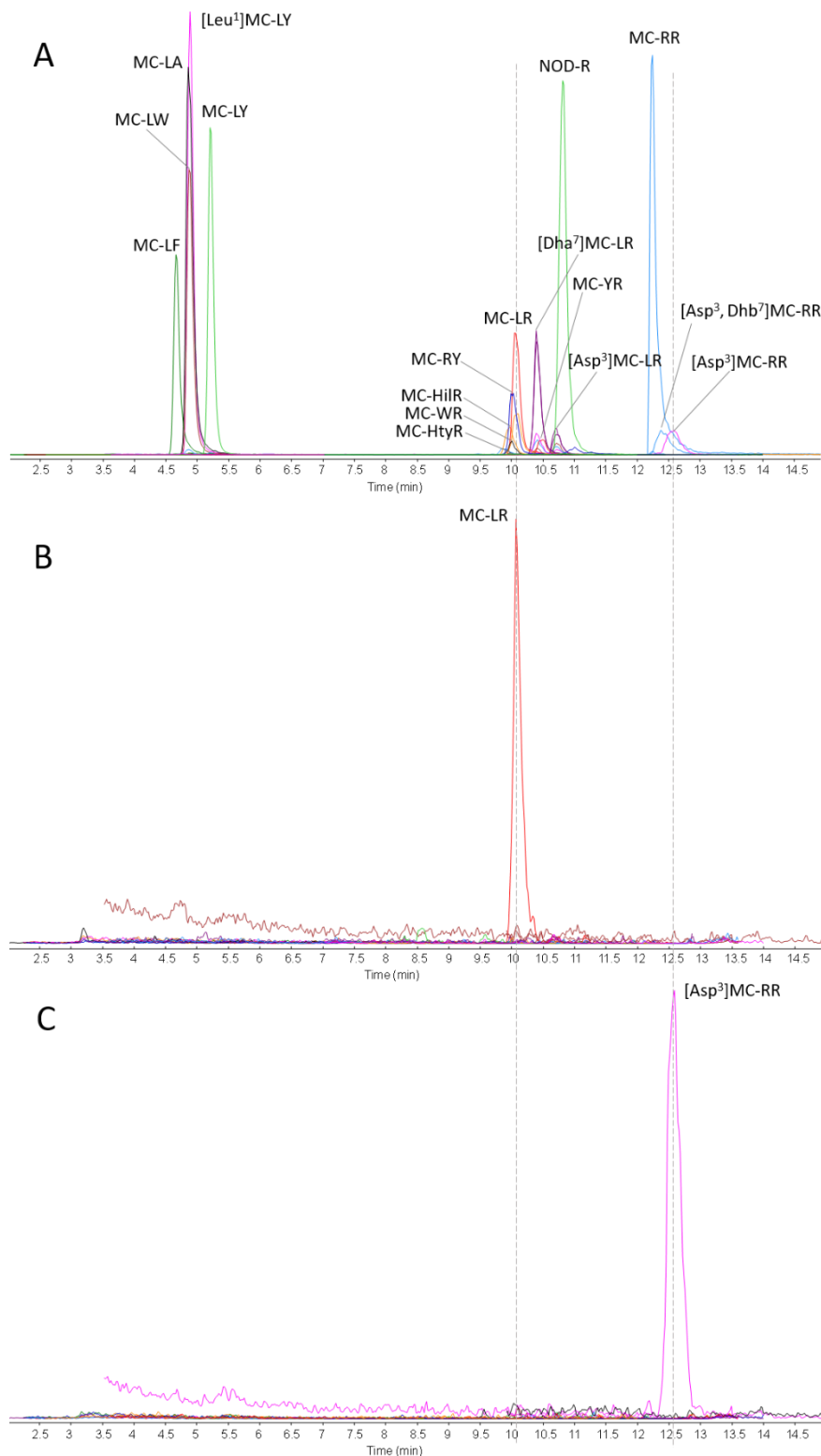


Figure S3: Detection of microcystins in a mixed standard (A) and phytoplankton samples from July (B) and October (C) using the multi-class HILIC-MS/MS method. Transitions (precursor > product m/z) included 986.9 > 135.1 for MC-LF, 1025.5 > 165.1 for MC-LW, 910.9 > 135.1 for MC-LA, 1044.6 > 135.1 for [Leu¹]MC-LY, 1002.9 > 135.1 for MC-LY, 1059.7 > 135.1 for MC-HtyR, 1068.9 > 135.1 for MC-WR, 1009.9 > 135.1 for MC-HiIR, 1045.5 > 135.1 for MC-RY, 995.9 > 135.1 for MC-LR, 981.9 > 135.1 for [Asp³]MC-LR and [Dha⁷]MC-LR, 1055.5 > 135 for MC-YR, 825.5 > 135.1 for NOD-R, 519.7 > 135.1 for MC-RR, 512.4 > 135.1 for [Asp³]MC-RR and [Asp³, Dhb⁷]MC-RR.

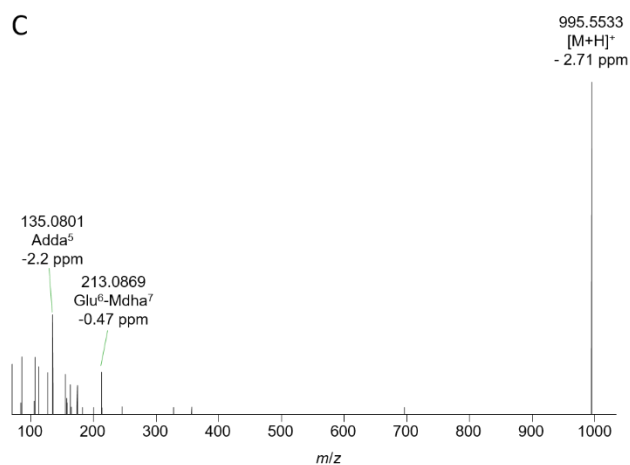
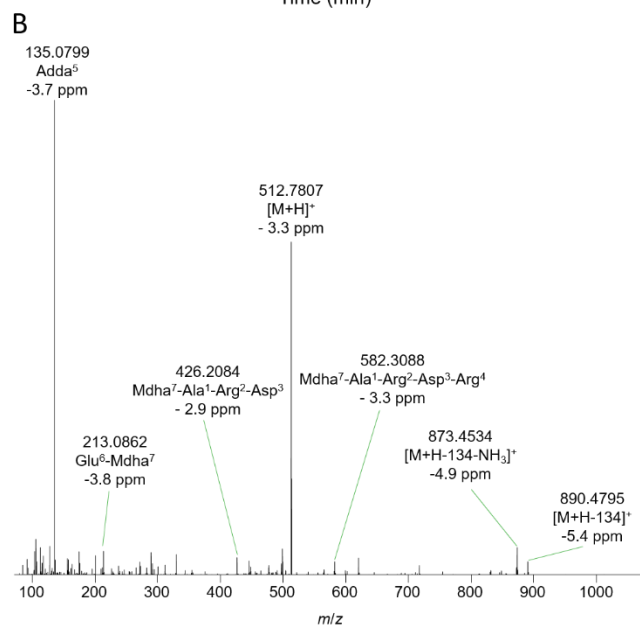
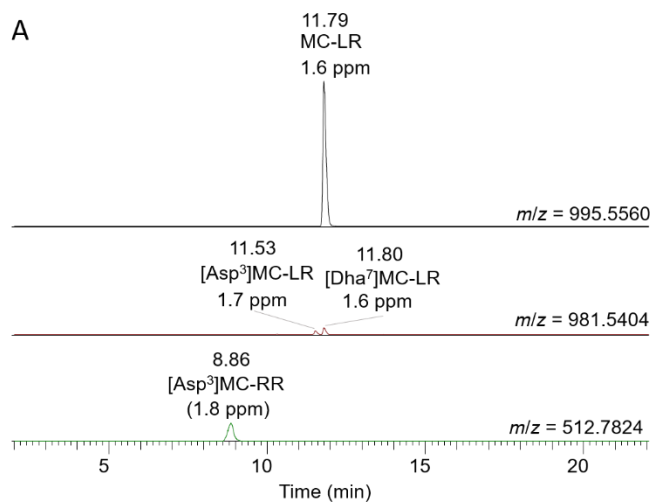


Figure S4: Liquid chromatography–high resolution tandem mass spectrometry confirmation of microcystins detected in phytoplankton samples including extracted ion chromatograms (± 5 ppm, A) and product ion spectrum of [Asp³]MC-RR (B) and MC-LR (C).

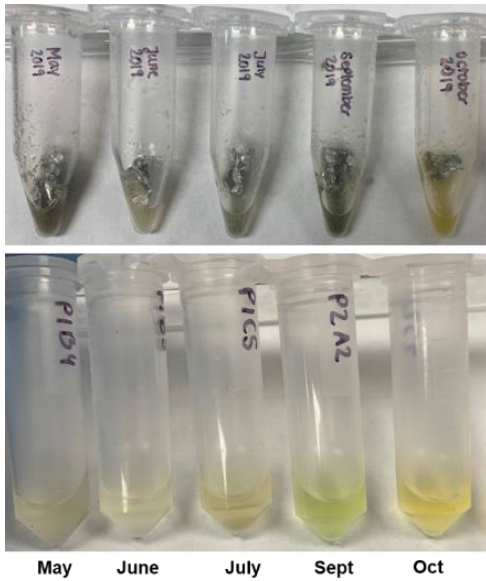


Figure S5: Extracts of zooplankton samples collected in Lake Mindelsee show a distinct green color, suggesting that photosynthetic pigments originating from the zooplankton diet were co-extracted.

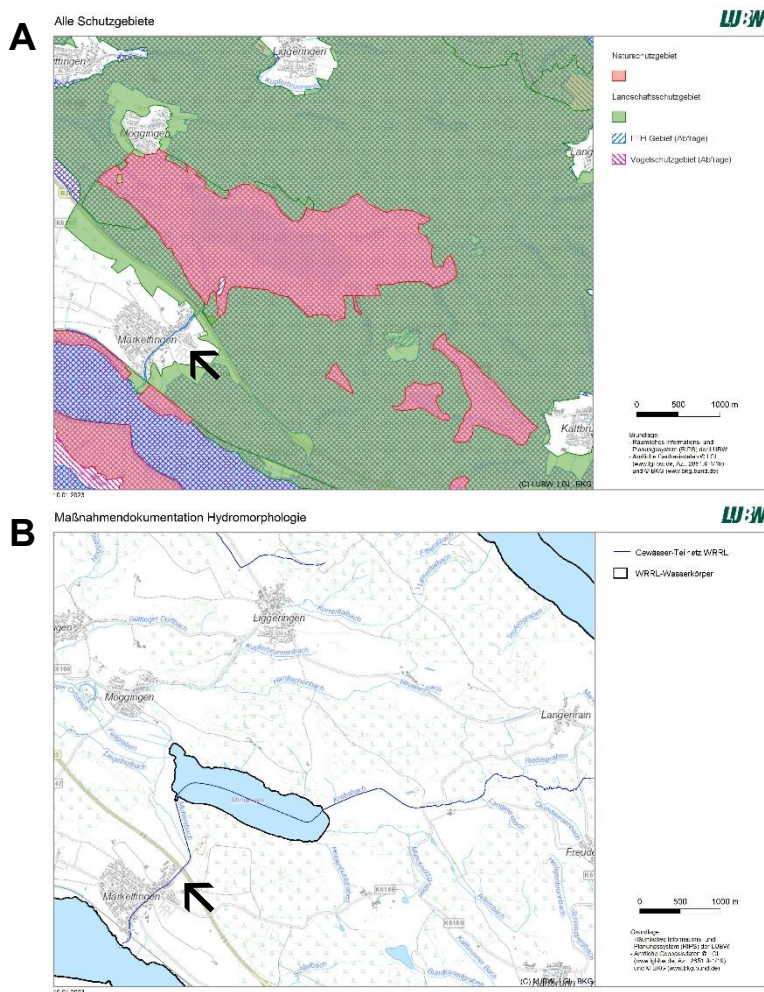


Figure S6: protected areas (A) and hydromorphology (B) around/of Lake Mindelsee (Baden-Wuerttemberg Landesanstalt fuer Umwelt (LUBW), n.d.). The connecting stream “Mühlbach” between Lake Mindelsee and Lake Constance is highlighted with an arrow (→) in both maps.

Table S1: BLAST results for *Planktothrix* affiliated ASVs found in Lake Mindelsee in 2019 using the algorithm megablast (Altschul et al., 1990)

ASV	megablast result	accession number hit 1	accession number hit 2
108	<i>Planktothrixserta</i>	NR_177723.1	identical
109	<i>Planktothrixagardhii</i>	LC455659.1	identical
110	<i>Planktothrixagardhii</i>	LC455659.1	identical
111	<i>Planktothrixrubescens/agardhii</i>	LR882958.1	LR882949.1
112	<i>Planktothrixrubescens/agardhii</i>	LR882958.1	LR882949.1
113	<i>Planktothrixagardhii</i>	LC455659.1	identical
114	<i>Planktothrixserta</i>	NR_177723.1	identical
115	<i>Planktothrixisothrix/serta</i>	ON527120.1	NR_177723.1
116	<i>Planktothrixisothrix/serta</i>	ON527120.1	NR_177723.1
117	<i>Planktothrixisothrix/serta</i>	ON527120.1	NR_177723.1
118	<i>Planktothrixisothrix/serta</i>	ON527120.1	NR_177723.1
119	<i>Planktothrixisothrix/serta</i>	ON527120.1	NR_177723.1
120	<i>Planktothrixisothrix/serta</i>	ON527120.1	NR_177723.1
121	<i>Planktothrixserta/isothrix</i>	NR_177723.1	ON527120.1

References

- Altschul, S. F., Gish, W., Miller, W., Myers, E. W., & Lipman, D. J. (1990). Basic local alignment search tool. *Journal of Molecular Biology*, 215(3), 403–410. [https://doi.org/10.1016/S0022-2836\(05\)80360-2](https://doi.org/10.1016/S0022-2836(05)80360-2)
- Baden-Wuerttemberg Landesanstalt fuer Umwelt (LUBW). (n.d.). *Umwelt-Daten und -Karten Online (UDO)*. Retrieved June 29, 2021, from <https://udo.lubw.baden-wuerttemberg.de/public/>
- Fournier, C., Riehle, E., Dietrich, D. R., & Schleheck, D. (2021). Is Toxin-Producing *Planktothrix* sp. an Emerging Species in Lake Constance? *Toxins 2021*, Vol. 13, Page 666, 13(9), 666. <https://doi.org/10.3390/toxins13090666>