

Figure S1

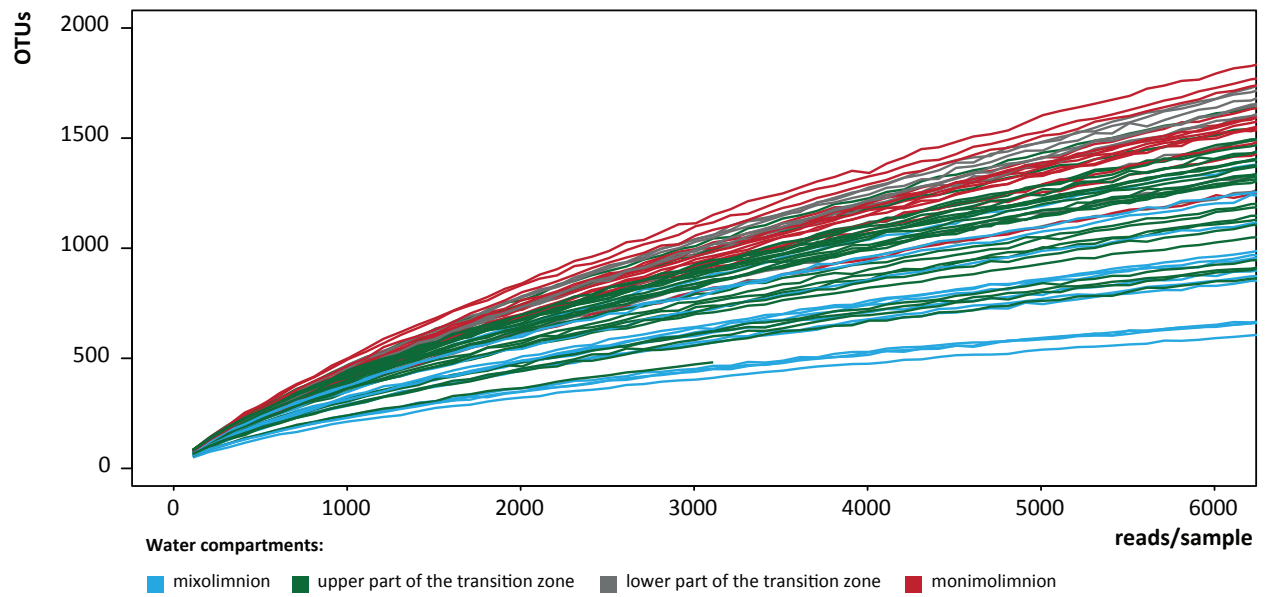


Figure S1: Richness estimates based on count data from the global Sakinaw Lake dataset, which contained a total of 66 amples collected between June 2007 and May 2011, indicated that the mixolimnion had fewer OTUs than samples from the transition zone and monimolimnion.

Figure S2

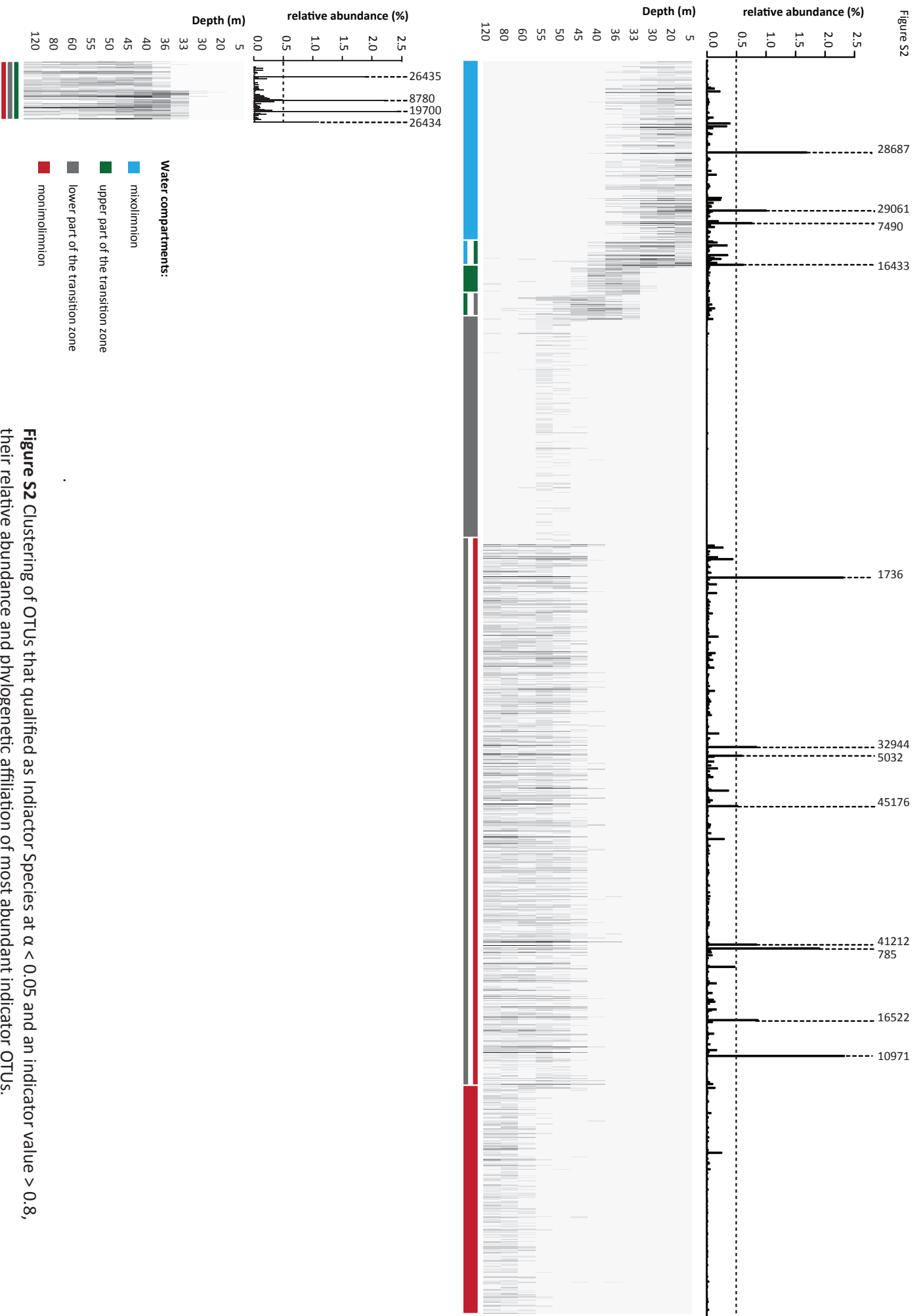


Figure S2 Clustering of OTUs that qualified as Indicator Species at $\alpha < 0.05$ and an indicator value > 0.8 , their relative abundance and phylogenetic affiliation of most abundant indicator OTUs.

Table S1 Global Sakinaw Lake dataset

Compartment	Depth	June 6 2007	October 23 2007	May 21 2008	August 5 2009	January 5 2010	January 27 2011	May 24 2011
epilimnion	5 m						X	X
	10 m		X		X			
	20 m							X
	25 m	X			X			
	30 m	X	X		X	X	X	X
upper part of the chemocline	31 m			X				
	32 m			X				
	33 m	X	X	X	X	X	X	X
	34 m			X				
	35 m			X				
	36 m		X	X	X	X	X	X
	37 m			X	X			
	38 m			X				
	39 m			X				
	40 m	X	X		X	X	X	X
45 m		X		X	X	X	X	
lower part chemocline	50 m				X	X	X	X
	55 m	X	X		X	X	X	X
monimolimnion	60 m		X		X			X
	80 m		X		X	X	X	X
	120 m	X	X		X	X	X	X

	June 6 2007	October 23 2007	May 21 2008	August 5 2009	January 5 2010	January 27 2011	May 24 2011	Total
Reads	84 931	10 4953	79 498	205 121	111 795	133 902	181 464	901 664
non-singleton OTUs	9 141	9 920	5 973	12 409	9 182	11 922	12 908	23 230

Table S4: Common baseline conditions of environmental parameter in geographically distinct meromictic lakes.

Lake	Lake type	Geographical location	Depth of chemocline (total depth)	max H ₂ S	max. SO ₄ ²⁻ μ M/L (depth)	max soluble Fe (μ M) (depth)	max soluble Mn (μ M) (depth)	max CH ₄ (μ M) (depth)	max cell counts	Reference
Sakinaw Lake	ex-fjord	Sunshine Coast British Columbia, Canada	33 m (140 m)	4500 (120 m)	81.81 (36 m)	4.02 (36 m)	5.75 (36 m)	3000 (below 40 m)	$2.8 \cdot 10^5$ cells mL ⁻¹	Vagle, S., et al., <i>Limnology and Oceanography</i> , 2010, 55(3): p. 1313-1326.
Lake Cadagno	alpine lake	Canton of Ticino, Switzerland	12 m (20 m)	205 (18 m)	1560 (16 m)	1.6 (20 m)	NA	44 (7.6 cm above sediment)	10^7 cells mL ⁻¹	Peduzzi, S., M. Tonolla, and D. Hahn, <i>Aquatic Microbial Ecology</i> , 2003, 30(3): p. 295-302.
Lake Pavin	crater lake	Auvergne, Central France	60 m (90 m)	3.7 μ M (85 m)	16.9 (60 m)	1211 (90 m)	25.7 (85 m)	6200 (90 m)	$1.2 \cdot 10^7$ cells mL ⁻¹	Wagner, S., S. Schulz, and K. Hanselmann, <i>Fems Microbiology Ecology</i> , 1990, 74(1): p. 39-48.
Lake Mahoney	saline lake	Okanagan Valley British Columbia, Canada	5 m (15 m)	30000–35000 (15 m)	400000–500000 (15 m)	NA	NA	NA	10^8 cells mL ⁻¹	Lehours, A. C., C. Bardot, et al. (2005). <i>Appl Environ Microbiol</i> 71(11): 7389-7400.
Lake A	ex-fjord	High Arctic, Canada	13 m (60 m)	NA	NA	35.8 (30 m)	176.5 (10-29 m)	NA	$2.52 \cdot 10^7$ cells mL ⁻¹	Bura-Nakic, E., E. Viollier, et al. (2009). <i>Chemical Geology</i> 266(3-4): 311-317.
										Klepac-Ceraj, V., et al., <i>Microbial diversity under extreme euxinia: Mahoney Lake, Canada. Geobiology</i> , 2012, 10(3): p. 223-35.
										Van Hove, P., et al., <i>Canadian Journal of Earth Sciences</i> , 2006, 43(5): p. 533-546.