



Supplement of

Diversity and assembly processes of microbial eukaryotic communities in Fildes Peninsula Lakes (West Antarctica)

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18 **Table S1 Physical and chemical properties in five lakes.**

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20 **on genus level.**

21 **Figure S1 Rarefaction curves of similarity-based operational taxonomic units**
22 **(OTUs) at a 97% sequence similarity level (a) and Shannon index(b).**

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55 **Table S1 Physical and chemical properties in five lakes**

Lake	WT	Sal	pH	NO ₂ ⁻	PO ₄ ³⁻	SiO ₃ ²⁻	NH ₄ ⁺	Chl <i>a</i>
CH_17	0.90	0	8.05	0.02	0.11	—	—	0.25
KT_17	2.40	0.10	7.89	0.02	0.04	—	—	0.40
XH_17	1.60	0.10	7.91	0.03	0.02	—	—	0.33
YO_17	4.90	0.10	7.92	0.03	0.02	—	—	0.33
YY_17	0.90	0.10	8.05	0.05	0.95	—	—	2.11
CH_18	2.00	0.14	8.27	0.1	0.16	51.50	0.27	0.31
KT_18	2.70	0.12	7.91	0.01	0.06	21.89	0.42	0.43
XH_18	2.60	0.09	7.75	0	0.04	22.34	0.46	0.56
YO_18	3.50	0.07	7.87	0.08	0.07	24.10	0.27	0.89
YY_18	2.10	0.09	7.55	0	1.78	1.43	0.74	1.26
CH_19	3.37	0.12	7.82	0.15	0.10	45.47	0.15	—
KT_19	2.27	0.09	7.81	0.11	0.08	12.67	0.11	—
XH_19	3.69	0.07	7.91	0.03	0.07	6.24	0.23	—
YO_19	7.14	0.06	7.95	0.11	0.10	6.27	0.18	—
YY_19	2.22	0.07	7.65	0.14	2.29	2.67	0.05	—

56 Note: “—” represents missing data

57 WT: Water temperature; Sal: Salinity; NO₂⁻: Nitrite; PO₄³⁻: Phosphate; SiO₃²⁻: Silicate;

58 NH₄⁺: Ammonium nitrogen; Chl *a*: Chlorophyll *a*.

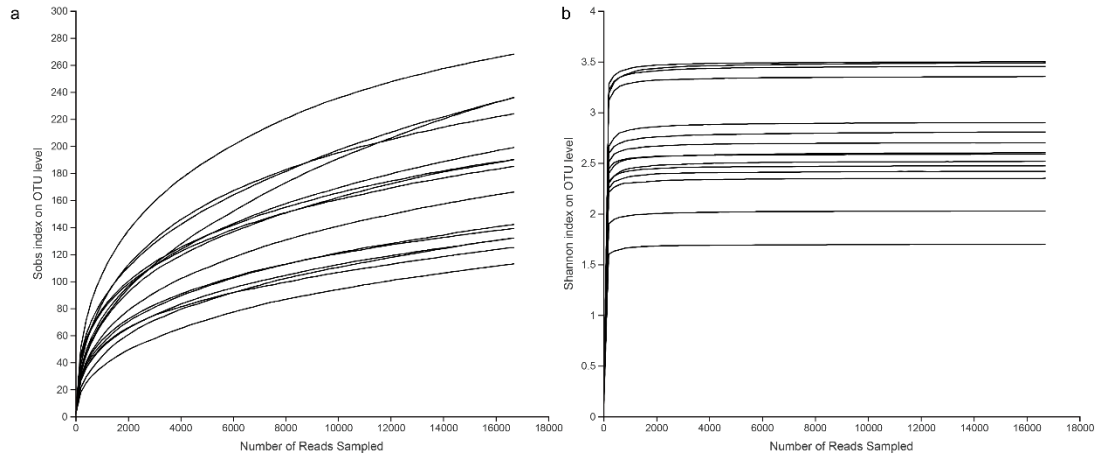
59 Units: (μM): PO₄³⁻, NH₄⁺, NO₂⁻, SiO₃²⁻; (μg L⁻¹): Chl *a*; (°C): WT.

60 **Table S2 Analysis of spatial and temporal variation in microbial eukaryotes**

61 **based on genus level**

Lake (5 lakes)	Genus (P<0.05)
CH vs. KT	<i>Chlorella</i> , <i>Chrysophaerella</i>
CH vs. XH	<i>Chlorella</i> , <i>Ochromonas</i> , <i>Paraphysomonas</i>
CH vs. YO	<i>Ochromon</i>
CH vs. YY	<i>Chlorella</i>
KT vs. XH	<i>Chrysophaerella</i> , <i>Komma</i> , <i>Synura</i>
KT vs. YO	<i>Komma</i> , <i>Monochrysis</i> , <i>Spumella</i>
KT vs. YY	<i>Chrysophaerella</i> , <i>Hydrurus</i> , <i>Monochrysis</i> , <i>Ochromonas</i> , <i>Synura</i>
XH vs. YO	<i>Ochromonas</i>
XH vs. YY	<i>Ochromonas</i>
YO vs. YY	<i>Ochromonas</i>

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Fig. S1 Rarefaction curves of similarity-based operational taxonomic units

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(OTUs) at 97% sequence similarity level (a) and Shannon index(b).

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