

## Supplemental material for

### Abundance of aerobic anoxygenic bacteria in freshwater lakes on James Ross Island, Antarctic Peninsula

Hana Medová<sup>1,\*</sup>, Michal Koblížek<sup>1</sup>, Josef Elster<sup>2,3</sup>, Linda Nedbalová<sup>3,4</sup>

#### Methods

##### *Sampling*

The studied lakes are situated on James Ross Island, NE Antarctic Peninsula. The geomorphological, physical and chemical characteristics of 10 lakes (Black, Blue-green, Cyanobacterial, Federico, Ginger, Omega 1, Vondra 1–4) have been described previously (Nedbalová *et al.* 2013). The additional five stable shallow lakes from the area of Clearwater Mesa (CW1 64°01'36''S, 57°42'13''W; CW2 64°01'33''S, 57°42'48''W; CW3 64°01'48''S, 57°42'59''W, CW4 64°01'58''S, 57°43'41''W; all at an altitude of 250 m a.s.l. and Noodle 64°02'02''S, 57°41'00''W at 170 m a.s.l.) have been analysed in this study. The lakes were classified into two groups: the maximum expected age of young lakes could be approximately a century or rather some decades, whereas the old lakes originated several thousand years ago. Most of the localities were old stable shallow lakes, only Blue-green, Ginger and Omega 1 can be classified as young kettle lakes and Federico as young lake in moraine (Nedbalová *et al.* 2013).

Sampling of the surface layer was done from the lake shore during the Antarctic summer in January and February 2009. The samples were collected in sterile, plastic test tubes, fixed with formaldehyde (2% final concentration) and stored at 4°C. The composition of the planktonic community was analysed using the infrared epifluorescence microscopy as described previously (Medová *et al.* 2011). The heterotrophic, phototrophic and cyanobacterial cells were distinguished when comparing the images recorded in the blue (all DNA-containing cells), red (Cyanobacteria and algae) and infrared (AAPs and Cyanobacteria) channel. In the field, basic physico-chemical parameters were measured. The nutrient analysis was performed within one month in the laboratory. Water temperature spanned between 0.3–9.2°C, oxygen saturation 86–180%, pH 7.1–9.5, conductivity 33–4,000  $\mu\text{S cm}^{-1}$ , dissolved organic carbon (DOC) 0.68–9.10  $\text{mg l}^{-1}$  (mean DOC: old lakes 4.2  $\text{mg l}^{-1}$ , young lakes 1.0  $\text{mg l}^{-1}$ )  $\text{NO}_3\text{-N}$  0–95  $\mu\text{g l}^{-1}$ ,  $\text{NH}_4\text{-N}$  0–107  $\mu\text{g l}^{-1}$ , and soluble reactive phosphorus (SRP) 3.6–113.4  $\mu\text{g l}^{-1}$  (mean SRP: old lakes 13.5  $\mu\text{g l}^{-1}$ , young lakes 73.8  $\mu\text{g l}^{-1}$ ) (Nedbalová *et al.* 2013).