

# ブリティッシュコロンビア州マウントロブソン州立公園の枯死葉における 菌類多様性の調査

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## Assessment of fungal diversity on dead leaves in Mt. Robson Provincial Park, British Columbia

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The taxonomic diversity of fungi associated with dead leaves was investigated in Mount Robson Provincial Park (53°03-09'N, 119°06-12'W), British Columbia, Canada. A total of 108 samples of dead leaves were collected during the fieldwork in August 2010, including 63 samples of *Dryas drumandii*, *Salix* spp., and *Picea engelmannii* from the foreland of Robson glacier (1670-1710 m a.s.l.) and 45 samples of *P. engelmannii* along an elevational gradient (870 to 1670 m a.s.l.). DNA was extracted from dead leaves, and fungal rDNA ITS1 regions were amplified with PCR and sequenced with a Roche 454 GS-FLX Titanium sequencer (Osono 2014). A total of 118,438 sequences were obtained, and after removing chimera, short, and low-quality sequences and pyrosequencing errors the remaining sequences were assembled into 330 operational taxonomic units (OTUs) with a 97% similarity criterion. A pipeline Clident was used to systematically annotate the taxonomy of the OTUs (Tanabe and Toju 2013), resulting in the identification of 124 OTUs (38% of 330) to family, 99 (30%) to genus, and 45 (14%) to species. Of 59 fungal families identified, Herpotrichiellaceae was the most OTU-rich family, including 12 OTUs, followed by Corticiaceae (9 OTUs), Teratosphaeriaceae (5 OTUs), and Tricholomataceae (5 OTUs). The most frequent OTU was Phacidiaceae sp. that was found in 90% of the samples examined, followed by Agaricomycetes sp. (73%), Dacrymycetales sp. (71%), and two unidentified Ascomycota (67% and 69%). Of 330 OTUs, 257 were detected on three plant taxa along the primary successional sere at 14, 60, and 102 years after the retreat of Robson glacier. The mean number of OTUs was significantly lower on *P. engelmannii* than on *D. drumandii* and *Salix* spp. and was significantly greater at the site 60 years after the retreat than at the site after 102 years. The OTU compositions were not significantly different among plant taxa or sites differing in the years after glacier retreat. The mean number of OTUs was significantly and positively correlated with C/N ratio of dead leaves, implying the litter quality control on the richness of fungal assemblages on dead leaves during the primary succession after the glacier retreat. A total of 238 OTUs were detected on dead leaves of *P. engelmannii* from five sites along the elevational gradient. The mean number of OTUs was not significantly different between five sites, whereas the OTU compositions were significantly different between the sites, mainly attributed to the turnover of minor OTUs with low frequencies. Our results suggested the diversity of fungal assemblages in Mount Robson Provincial Park were sensitive to environmental changes that could lead to glacier retreat or shift in elevational range.

## References

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