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Blood Falls: A novel management approach for a subglacial feature of outstanding scientific importance

J.R. Carr (1), P.A. Penhale (2), A. Dahood (2), N. Biletnikoff (2), and C.M. Harris (3)

(1) University of Durham, Durham, United Kingdom (j.r.carr@durham.ac.uk), (2) Natinal Science Foundation, United States, (3) Environmental Research and Assessment, Cambridge, United Kingdom

Blood Falls is a subglacial feature located in the ablation zone of the Taylor Glacier, Taylor Valley, McMurdo Dry Valleys, Antarctica. Blood Falls has a unique physical configuration, microbial ecology and geochemistry and consists of a subglacial brine reservoir and an iron-rich, saline surface discharge at the Taylor Glacier terminus. The feature provides a rare opportunity to sample properties of a subglacial reservoir and its ecosystem without the need for direct contact and is a key site for exobiological studies.

The Blood Falls subglacial feature is globally unique and of outstanding scientific importance. As such, it warrants special protection from potential damage by drilling and/or surface activities. Moreover, currently subglacial environments are not represented in the Antarctic protected area network. To address these points, the United States National Science Foundation is working with the scientific community to develop at Blood Falls the first subglacial protected area in Antarctica. The protected area aims to maintain the integrity of the Blood Falls system, whilst allowing continued access for scientific and management purposes. Novel management approaches are being designed to protect the values of the site in three dimensions. Specific guidelines on activities conducted within the area, most notably drilling and coring, are being defined in a management plan. This new approach incorporates uncertainties in the location of the Blood Falls brine reservoir and the connectivity of the subglacial hydrological system of the Taylor Glacier. The management approaches employed at Blood Falls draw on the experience of the subglacial research community and potentially offer an effective framework for the protection of other subglacial environments.