Protecting Antarctica's McMurdo Dry Valleys

Restricted & Scientific Zones in Antarctic Specially Managed Area No. 2

Poster prepared by:
Brad Herried, Polar Geospatial Center
Rachel Carr, Colin Harris, Katharina Lorenz, Environmental Research & Assessment
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Basemap data provided by Landsat Image Mosaic of Antarctica (LIMA)
Find more about the McMurdo Dry ValleysManagement Plan at:
www.mcmurdodryvalleys.aq

What are the McMurdo Dry Valleys?

The McMurdo Dry Valleys is the largest relatively ice-free region in Antarctica. The dramatic landscape of this cold desert ecosystem comprises mountain ranges, nunataks, glaciers, ice-free valleys, coastline, ice-covered lakes, ponds, meltwater streams, permafrost, patterned soils, and sand dunes. The McMurdo Dry Valleys require special management to ensure human impacts are minimized and important values are protected for science and for future generations.

The area has therefore been designated as **Antarctic Specially Managed Area No. 2**, and a Management Plan provides guidance for activities within the region. The Management Plan has been comprehensively revised and updated in 2011 as part of the five-yearly review process required by the Antarctic Environmental Protocol. Many improvements have been made, with more detailed maps and guidelines, and in particular changes were introduced to the zoning system for greater clarity. Most specifically, the former 'Special Features' are now clearly identified and designated as 'Scientific' or 'Restricted' Zones. While a permit is not required to enter these zones, special management conditions are set out in the Management Plan to help ensure these remarkable features are properly protected.

Scientific Zones

Scientific Zones are designated to raise visitor awareness of specific sites of current and on-going scientific research in order to help ensure important scientific values or experiments are not disturbed. Explorers Cove and Boulder Pavement were adopted in 2011 as Scientific Zones. Long-term studies are being conducted at these sites to improve understanding of these unique environments and ecosystems.

Restricted Zones

Restricted Zones are designated at sites of high scientific value and which are particularly sensitive to human disturbance. The Trough Lake Catchment, Mount Feather Sirius Deposit, Don Juan Pond, Argo Gully, Prospect Mesa, Hart Ash Deposit, Victoria Valley Sand Dunes and Battleship Promontory are designated as Restricted Zones. Owing to their sensitivity, access to these zones should be for compelling reasons that cannot be served elsewhere within the region.

Don Juan Pond

South Fork, Wright Valley (-77° 33.77', 161° 11.32')

A small hypersaline lake, only ~10 cm deep, containing a calcium-chloride-rich brine with a salinity level of ~40%, making it the most saline natural water body known on Earth. Microbial life, including numerous heterotrophic bacteria and a yeast, are found in the pond and a mat of mineral material is concentrated at the edge.


C. Harris, ERA/USAP (14 Dec 2009)


C. Harris, ERA/USAP (11 Dec 2009)

Mt Feather Sirius Deposit

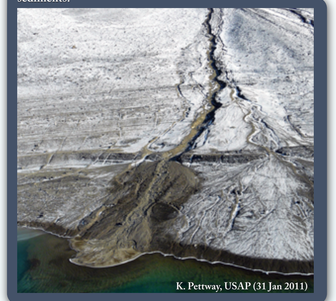
Quartermain Mountains (-77° 56.05', 160° 26.30')

An area of semi-lithified glacigenic deposits at an elevation of 2500 meters. The deposits contain microfossils and other evidence of high scientific importance for interpretation of the Neogene glacial history of the Dry Valleys and the East Antarctic ice sheet.

Argo Gully

Lake Vanda, Wright Valley (-77° 31.09', 161° 38.77')

Contains exposed beds of massive glacial silt deposits of marine diatom and silicoflagellate material, indicating that the Wright Valley was formerly a shallow marine fjord dated to the Middle Miocene. The beds are horizontally stratified, in contrast to the underlying sediments.

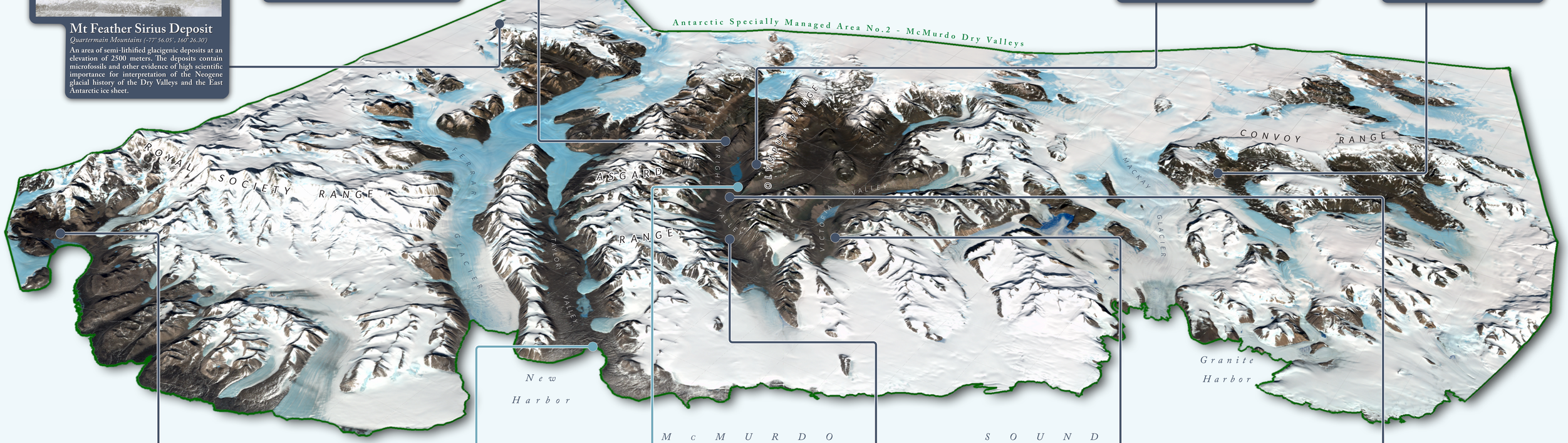

K. Pettway, USAP (31 Jan 2011)


C. Harris, ERA/USAP (15 Dec 2009)

Battleship Promontory

Alatna Valley, Convoy Range (-76° 55.17', 161° 02.77')

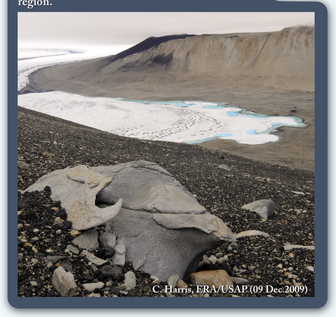
Area of dramatic Beacon Sandstone outcrops 300 m in height deeply weathered into striking spires, ledges and eroded gully formations. It hosts rich microbial communities, including lichens, cyanobacteria, nonphotosynthetic bacteria and fungi, with the highest microbial biodiversity yet recorded in the Dry Valleys.



Trough Lake Catchment

Pyramid Trough (-78° 18.17', 163° 20.57')

Contains a significant wetland system comprising a variety of pond and stream habitats in a confined area that support a range of rich biological communities including lichens and bryophytes. It also hosts groups of cyanobacteria that are rare in other wetland systems in the region.


C. Harris, ERA/USAP (09 Dec 2009)


C. Harris, ERA/USAP (07 Dec 2009)

Explorers Cove

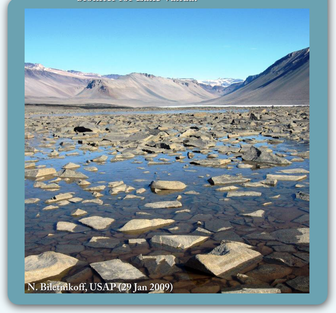
New Harbor, Taylor Valley (-77° 34.66', 163° 31.82')

Comprises two tide pool systems on the coast of Explorers Cove. These tidally inundated sand flats are characterized by tide pools containing benthic mats of diatoms and cyanobacteria, a significant source of nutrients for the Explorers Cove near-shore marine ecosystem.

Boulder Pavement

Wright Valley (-77° 31.33', 161° 54.58')

Comprises a part of the Onyx River which fans out and flows slowly through an extensive and relatively flat area of boulders, where conditions are favorable for the growth of algae and cyanobacteria, forming the most extensive microbial mats in the Wright Valley and a biofilter for Lake Vanda.

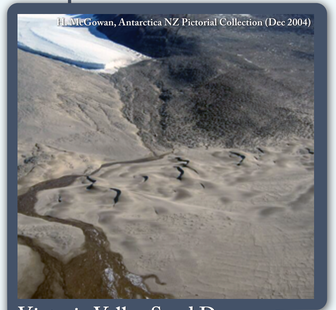

N. Bilenkoff, USAP (29 Jan 2009)

Hart Ash Deposit

Wright Valley (-77° 29.76', 162° 22.35')

In situ preserved deposit of volcanic ash airfall tephra protected by a surface layer of gravel. It is not immediately visible unless the surface gravel is removed. The deposit is dated to ~3.9 million years old, making it of high scientific importance for interpreting the paleoclimate of the Dry Valleys.


J. Aislabie, Antarctica NZ Pictorial Collection (2005)


H. McGowan, Antarctica NZ Pictorial Collection (Dec 2004)

Victoria Valley Sand Dunes

Victoria Valley (-77° 22.19', 162° 12.45')

Comprised of two distinctive areas made up of crescent-, transverse- and whaleback-shaped dunes and numerous sand mounds. It is the only area where major eolian sand depositional forms occur in Antarctica. The dunes differ from the usual desert and coastal formations because the sand in the dunes is interbedded with compacted snow and contains permafrost.

Prospect Mesa

Wright Valley (-77° 31.33', 161° 54.58')

Deposit of fossiliferous gravels overlying till containing a high density of well-preserved extinct marine pecten shells of a single specis. It is the only known site where this species is found. The precise age of the deposit is unknown, but scientists suggest the fossils were deposited *in situ* in a marine fjord.


C. Harris, ERA/USAP (15 Dec 2009)