

LGP Baseline Measurements 03/04 Season

General Site Description

Site Name: Luther Lake (Unofficial name. Small basin below Luther Peak, SW of Seabee Hook, Cape Hallett)



Geographical coordinates	72°22.222'S, 169°53.312'E	GPS
Elevation	~ 100 m	Estimated
Slope	0°	Estimated
Date visited: 15 Jan 2004		
Aspect: NW		
Samples taken? Yes – 15 samples of cyanobacteria, water samples for chemical analyses		
Photos taken? Yes		
Aerial Photos available? Unknown		
Notes taken by Phil Novis (Landcare, New Zealand) and Ian Hawes (NIWA, New Zealand)		

Soil Parameters

Geomorphological characteristics	<input type="checkbox"/> Pro-Glacial <input type="checkbox"/> Nival - Chionophilous <input type="checkbox"/> Periglacial <input type="checkbox"/> Fluvial <input type="checkbox"/> Coastal <input type="checkbox"/> Fell-Field	<input type="checkbox"/> Slope <input type="checkbox"/> Plateau <input checked="" type="checkbox"/> Valley <input type="checkbox"/> Landslide <input type="checkbox"/> Scree slope <input type="checkbox"/> Rock wall <input type="checkbox"/> Other
Rock Lithology	<input checked="" type="checkbox"/> Siliceous rock <input type="checkbox"/> Calcareous rock	Rock type
Soil Typology	<input type="checkbox"/> Soil Absence <input checked="" type="checkbox"/> Soil Presence	<input checked="" type="checkbox"/> Mineral soil <input type="checkbox"/> Organic soil <input type="checkbox"/> Other

Surface Lithology	<input type="checkbox"/> <u>Outcropping Rock</u> <input type="checkbox"/> <u>Loose Material</u> <input type="checkbox"/> Glacial <input type="checkbox"/> Fluvial <input type="checkbox"/> Eolic <input type="checkbox"/> Coastal <input type="checkbox"/> <u>Scree Slope, Debris</u>
Surface Texture	~5% Blocks ($\varnothing > 25\text{cm}$) ~45% Pebbles ($5\text{cm} < \varnothing < 25\text{cm}$) ~50% Gravel ($0.2\text{cm} < \varnothing < 5\text{cm}$) ~10% Sand and finer material ($\varnothing < 0.2\text{cm}$)

Vegetation

Plants and Lichens	None seen at Lake, but extensive presence of encrusting lichens in catchment
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Fauna


Mammals	None seen
Birds	None seen
Invertebrates	None seen

Glacial

Ablation/accumulation	NA
Ice temperature	NA
Snow pit measurements	NA

Aquatic Non-Marine Systems

The intention here is to document the distribution of melt pools, ephemeral streams, ponds and lakes, their melting characteristics and basic limnological features. Required observations combine both one-off and time series and are designed to characterise the pond and its biota as far as is possible without resorting to specialised techniques and equipment (beyond a temperature/conductivity meter).

Type of water body	Lake
Sketch/map of water body and immediate catchment.	
Size and depth	~ 0.5 km ² ; depth unknown
Inflows and outflows (for non running systems) – None seen, appear to be nourished from snow banks	
Duration and spatial distribution of free water – apparently permanent; under ice layer	
Evidence of water level variation? Very little	
Isolated habitat or part of a connected network? Isolated	
Proximity to other aquatic systems No nearby aquatic systems known	
Any sign of salt or vegetation accumulation around margins? Cyanobacterial mat accumulation	
Range of levels over season (peg or otherwise reference the margin) Unknown	
Water sources Snowfall and drainage from snowfield above	<ul style="list-style-type: none"> - 100% Snow - % Glacier - % Non-glacial Ice - % Other
Catchment:	<ul style="list-style-type: none"> - Size: ~2 km² upslope of lake - Vegetation: None apart from lake benthos - Geology (see Soils section) - Geomorphology (see Soils section) - Animal influence: Petrels high on Luther Peak; probably no influence. - Snow and Ice: extensive snowfield on peak W of lake
Ice cover:	<ul style="list-style-type: none"> - permanent ice (if there are records): 95% of lake - % of coverage (anchored or loose) anchored to shore - thickness 0 - ~15 cm - transparency (clear, dirty ice, snow cover, etc.) snow cover

Water properties.	<ul style="list-style-type: none"> - Clarity (measured or estimated) 100% (estimated) - Colour (measured or estimated) clear (estimated) - Foams (e.g. none, slight, abundant) None - Conductivity (measured) 220-480 $\mu\text{S cm}^{-1}$, increasing in a layer at the base of the ponds - Temperature (measured) 3-6°C
Bed characteristics	<ul style="list-style-type: none"> - Substrate (%) Unknown - Vegetated (% cover) <ul style="list-style-type: none"> o cyanobacterial mats (70%) <ul style="list-style-type: none"> ▪ Colour: Black and red-brown ▪ Thickness: up to 4 cm ▪ Gross morphology: gelatinous balls of mainly <i>Nostoc</i>, with filamentous <i>Leptolyngbya</i> often coating these. o Encrusting (note colour) o Mosses - None seen o green algae: colonial green alga seen in samples; <i>Tetracystis</i>- like
Others	Animal observations (rotifers, crustacea, mites etc): None
Sample collection and preservation	Water samples were taken for analysis of major ions and nutrients. These analyses will be undertaken by NIWA Hamilton. Data as yet not available.

Aquatic Marine Systems

N/A

Environmental (AWS) NA

Not available