

Scientific Information

2001/2002 Annual

New Zealand

Forward Plans

LGP

The Latitudinal Gradient Project (LGP) is aimed at increasing the understanding of the coastal marine, freshwater and terrestrial ecosystems that exist along the Victoria Land coastline in the Ross Sea region, and describing potential environmental variability that may occur in the future.

Antarctica New Zealand is providing the logistical capabilities for research camps to be located at specific sites along the Victoria Land coast. Thus, the opportunity to work at particular locations in collaboration with other scientists from various disciplines and National Antarctic Programmes is provided.

LGP has been formally incorporated into the SCAR programme RiSCC (Regional Sensitivity to Climate Change). Certain data collected within the LGP will be housed and made available within the RiSCC database framework. Details on how the data will be shared and the timing of when the data will be made available have yet to be decided. It is intended that publications arising from the LGP will be published in a special issue of a refereed journal.

Research under the LGP will be both ship-based and land-based. At present, ship-based research, funded under the Ministry of Fisheries' BioRoss programme and the Italian Antarctic Programme, has been scheduled for January to March 2004 with a research voyage planned using two vessels aimed at supporting near-shore and deep-water marine research. The vessels dedicated to this research are NIWA's *RV Tangaroa*, and the Italian Antarctic Programme's *RV Italica*. Further information about the ship-based research can be found in the BioRoss research plan and in the BioRoss call for statements of interest. (Contact Dr Dean Peterson, Science Strategy Manager, Antarctica New Zealand).

Five land-based sites have been proposed to be studied for two years each starting in the 2003/04 season. The proposed sites are Cape Hallett (first site in 03/04 and 04/05), Darwin Glacier, Terra Nova Bay area, Granite Harbour and Beardmore Glacier. A year out between each site will allow for reconnaissance of the next site and facilitate re-location of camp resources, as well as providing time for data analysis and write-up.

ANDRILL

ANDRILL is a multinational scientific initiative to investigate Antarctica's role in Cenozoic to recent (65 million years ago to the present) global environmental change, and hence its potential future role, through stratigraphic drilling of Antarctica's ice marginal sedimentary basins. An ANDRILL consortium has been established, comprising four countries – Germany, Italy, New Zealand and the United States of America.

A key aim of ANDRILL is to understand the role of Antarctic drivers on global climate variability, which requires a fundamental knowledge of cryospheric evolution not only in recent times, but also

for times as long ago as 40 million years into the past. This was a time when global temperature and atmospheric carbon dioxide (CO₂) were last similar to that which might well be reached by the end of this century. Through better understanding the interaction between the Antarctic cryosphere (ice sheets, ice shelves, and sea ice) and global systems during previous warmer periods, there will be a more comprehensive understanding of the impacts of predicted future climate warming – both in Antarctica and globally.

The goals of ANDRILL are to:

- Determine the fundamental behaviour of the Antarctic cryosphere, including the magnitude and frequency of its changes on centennial to million year time-scales.
- To obtain geological records from critical intervals in the development of the Antarctic cryosphere to guide and constrain glaciological and climatic models.
- To document the evolution and timing of major Antarctic rift and tectonic systems, and the stratigraphic development of associated sedimentary basins.
- To determine, by correlating near-ice margin and Southern Ocean stratigraphic records, the role of the Antarctic.

BIOROSS

The Marine Biodiversity Research: Biodiversity of the Ross Sea Programme has been developed collaboratively by the Ministry of Fisheries, Antarctica New Zealand and the Ministry of Foreign Affairs and Trade. The programme is a critical initiative for achieving the goals of *The New Zealand Biodiversity Strategy – Our Chance to Turn the Tide* (www.doc.govt.nz/cons/biodiversity/biodiversity_template.html) and for improving understanding of biodiversity and providing information to enable action to be taken to protect and enhance the environment. The overarching objectives of the programme are to develop an inventory of the biodiversity present in selected marine communities in the Ross Sea region and to facilitate better state of the environment reporting.

The Ministry of Fisheries is funding a marine biodiversity research voyage to the Ross Sea in early 2004. The survey will be carried out in collaboration with the Italian Antarctic Programme and Land Information New Zealand. The overall objective of the survey is to carry out a quantitative survey of the biodiversity of selected marine communities in the Ross Sea region, including the Balleny Islands.

2.1.2 Science Activities in Previous Year

Subject	Investigation	Locality	Principal Investigator
Marine Biology	Ecology of Antarctic Demersal Fishes	Cape Roberts Cape Evans	Dr John A Macdonald
Glaciology	Deciphering the Glacial History of Northern Victoria Land	Mesa Range Northern Victoria Land	Dr Paul Augustinus
Terrestrial/Heritage	Evaluation of Deterioration of Historic Huts & Bio-Diversity of Terrestrial Microorganisms	Cape Evans Cape Royds Mt Fleming	Prof Roberta Farrell
Molecular Biology	Probing and Exploiting DNA Diversity in Antarctic Biotopes	Cape Crozier Dry Valleys Scott Base	Professor Roy Daniel Dr Don Cowan
Terrestrial Biology	Biodiversity and Performance of Lichens and Mosses	Botany Bay Granite Harbour	Prof T G Allan Green
Terrestrial Biology	Biodiversity of Terrestrial Invertebrates	Cape Crozier Botany Bay Marble Point Terra Nova Bay Cape Evans Cape Bird	Dr Ian Hogg Dr Chrissen Gemmill
Molecular Biology	Molecular Ecology of Antarctic Fauna	Cape Bird	Professor David Lambert
Marine Biology	Stress and Corticosterone Responses in the Adelie Penguin	Cape Bird	Dr John F Cockrem
Glaciology	Glacial History of East Antarctic Ice Sheet at Allan Hills	Allan Hills	Prof Peter Barrett
Climatology	Climate and Landscape History from Shallow Drilling in the Dry Valleys	Table Mt Dry Valleys	Dr Warren Dickinson
Climatology	Holocene Climate History from Coastal Ice	Lower Victoria Glacier Polar Plateau	Ms Nancy Bertler
Terrestrial	Natural Spatial Subsidies in Continental Antarctic Soils	Garwood Valley East Beacons	Dr L G Greenfield
Geophysical/Human Impacts	Geophysical Response of Contaminants in Soil and Permafrost in the Vicinity of Scott Base	Scott Base Mount Pleasant, Lake Vida Lake Vanda Bull Pass	Dr David Nobes
Atmospheric	Dynamics and Ionisation in the Antarctic Middle Atmosphere	Scott Base Arrival Heights	Dr Grahame Fraser
Marine Biology	Cardiovascular and Respiratory Physiology of Antarctic Fish	Scott Base	Assoc Prof Bill Davison

Marine Biology Human impacts	Human Impacts and the Microbial-Chemical Ecology of Antarctic Sponges	Scott Base Turtle Rock	Dr C N Battershill Professor Murray Munro
Geology	Phreatomagmatic Eruption Processes of Incipient Ferrar Volcanism	Allan Hills	Dr James D.L. White
Geology	Magmatism in the Transantarctic Mountains	Reeves Bluff Mulock GI Worcester Range	Assoc Prof Alan Cooper
Marine Biology	The Effect of Spatial and Temporal Variation in Marine Productivity on energy acquisition in Female Weddell Seals	Hutton Cliffs Cape Royds	Dr Lloyd S Davis
Glaciology	Basal Ice and Substrate Deformation at Subfreezing Temperatures	Lower Wright Valley Taylor Valley	Dr Sean Fitzsimons
Marine Biology	Mechanisms of Evolutionary Adaptation in Antarctic Fish	Scott Base McMurdo	Dr Craig Marshall
Atmospheric	Monitoring Magnetosphere-Ionosphere Coupling and Space Weather at High Latitudes	Scott Base Arrival Heights	Professor Brian Fraser
Human Psychology	Cold Expectations: The Impact of Prior Perceptions on Mood in Antarctica	Scott Base	Dr Gary Steel
Marine Ecology	Ecology of Coastal Benthic Communities in Antarctica	New Harbour Cape Evans Bratina Island	Dr Ian Hawes Drs. Alf Norkko/Simon Thrush
Atmospheric	Processes and Interactions in the Antarctic Atmospheric	Scott Base Arrival Heights	Dr Stephen Wood
Atmospheric	Tropospheric and Stratospheric Air Sampling	WINFLY Scott Base Return Flight	Mr G Brailsford
Climatology	Climate Data Acquisition – Scott Base and Arrival Heights	Scott Base Arrival Heights	Mr Andrew Harper
Seismology	Seismological and Geomagnetic Observatories		Dr Fred Davey
Seismology	Seismic and Reconnaissance Survey for Stratigraphic Drill sites	New Harbour Windless Bight Brown Penn	Dr Tim Naish
Marine Biology	Adelie Penguin Population Dynamics	Cape Bird Cape Crozier Cape Royds	Dr Peter Wilson
Terrestrial/Human impacts	Impacts of Fuel Spills on Antarctic Soils	Marble Point Bull Pass Dry Valleys	Dr Jackie Aislabie
Glaciology	Sea Ice and Southern Ocean Processes	Cape Evans Scott Base	Dr T G Haskell
Marine Biology	UV-B Effects on Ice Algae	Cape Evans	Dr Ken G Ryan

Operational Information

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NATIONAL EXPEDITIONS

Year Round Facility

Scott Base

- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77°51'00"S
- **Longitude:** 166°45'46"E
- **Date opened:** 25 January 1957.
- **Maximum population:** 85 person (summer), average 10 person (winter)
- **Medical support:** Scott Base has a first aid facility. Advanced medical care is available at McMurdo Station (United States Antarctic Program).

Summer Field Camp

- Not applicable.

Refuge Huts

Cape Royds Hut

- **Region:** Cape Royds, Ross Island
- **Latitude:** 77°33'S
- **Longitude:** 166°10'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 2 person

Cape Evans Hut

- **Region:** Cape Evans on the west coast of Ross Island at northern entrance to Erebus Bay
- **Latitude:** 77°38'S
- **Longitude:** 166°24'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 4 person

Lower Wright Hut

- **Region:** South side of Wright Valley (approximately 1 mile west of Wright Lower Glacier)
- **Latitude:** 77°26'S
- **Longitude:** 162°37'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 2 person

Bratina Island Hut

- **Region:** Near northern tip of Brown Peninsula
- **Latitude:** 78°01'S
- **Longitude:** 165°32'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 12 person

Cape Bird Hut

- **Region:** Adjacent to Adelie penguin rookeries at northern tip of Macdonalds Beach
- **Latitude:** 77°14'S
- **Longitude:** 166°28'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 8 person

Lake Vanda

- **Region:** Three relocatable huts opposite former site of Vanda Station, near the mouth of the Onyx River
- **Latitude:** 77°31'S
- **Longitude:** 161°40'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 8 person

Cape Roberts

- **Region:** Situated on promontory on south east edge of Granite Harbour
- **Latitude:** 77°02'S
- **Longitude:** 163°12'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 4 person

Cape Hallett

- **Region:** Adelie penguin rookery on Seabee Hook
 - **Latitude:** 72°19'S
 - **Longitude:** 170°16'E
 - **Medical facilities:** Survival box
 - **Accommodation capacity:** 6 persons
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Major Field Activities

New Zealand Event number K114 – Seismic and Reconnaissance Survey for Stratigraphic Drill Sites

- **Region:** New Harbour / Windless Bight / Brown Penn
- **Latitude:** 78°20'S
- **Longitude:** 166°20'E

New Zealand Event number K131 – Sea Ice and Southern Ocean Processes

- **Region:** Cape Evans / Scott Base
- **Latitude:** 77°38'S
- **Longitude:** 166°24'E

New Zealand Event number K081 – Ecology of Coastal Benthic Communities in Antarctica

- **Region:** New Harbour / Cape Evans / Bratina Island
 - **Latitude:** 77°36'S (New Harbour) / 77°38'S (Cape Evans) / 78°01'S (Bratina Island)
 - **Longitude:** 163°51'E (New Harbour) / 166°24'E (Cape Evans) / 163°32'E (Bratina Island)
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Vessels

- Nil
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Aircraft

C130H Hercules

- **Number and type of aircraft:** 2 x C130H Hercules
- **Number of flights:** 15
- **Period of flights:** 15 November – 10 December 2001 (12 flights) and 24-29 January 2002 (3 flights)
- **Routes:** Christchurch/McMurdo and McMurdo/Christchurch
- **Purpose:** Delivery of personnel and essential supplies from New Zealand to Ross Island.

Bell 212

- **Number and type of aircraft:** 1 x Bell 212
- **Number of flights:** Various
- **Period of flights:** 6 November 2001 – 30 January 2002
- **Routes:** Operations within 100 n.m. of Scott Base
- **Purpose:** Delivery of personnel and supplies from Scott Base to field camp sites.

Research Rockets

- Not applicable.

Military

Number	Rank
1	Wing Commander
4	Squadron Leader
1	Major
5	Flying Officer
11	Flight Lieutenant
3	Lieutenant
1	Pilot Officer
1	Chief Petty Officer
2	Sergeant Engineer
3	Flight Sergeant Engineer
2	Master Air Load Master
5	Sergeant Air Load Master
2	Flight Sergeant Air Load Master
3	Sergeant
4	Corporal
3	Mechanical Engineer
6	Lance Corporal
1	Able Communications Operator

- 3 Sapper
- 2 Leading Aircraft Person
- 3 Private
- 1 Able Weapons Person
- 1 Leading Musician
- 1 Aircraft Person

- Number and type of personal armaments carried: Nil
- Number and type of armaments on ships and aircraft: Nil
- List of armaments on stations/bases: Nil

NON-GOVERMENTAL EXPEDITIONS

Ship-Based Operations

Akademik Shokalskiy

- **Operator:** Heritage Expeditions (The Robert Falcon Scott Memorial Expedition Voyage #1894)
- **Flag state:** Russia
- **Number of voyages:** 2
- **Ports of departure / arrival:** Hobart (5 January 2002) to Bluff (2 February 2002)
- **Areas of operation:**

15 Jan 2002	Cape Adare
16 Jan 2002	Possession Island
17 Jan 2002	Terra Nova Bay Station
17 Jan 2002	Inexpressible Island
19 Jan 2002	Cape Bird
19 Jan 2002	Cape Evans
20 Jan 2002	Cape Royds
21 Jan 2002	Franklin Island
22 Jan 2002	Cape Hallett
- **Operator:** Heritage Expeditions (The Robert Falcon Scott Memorial Expedition Voyage # 1895)
- **Ports of departure / arrival:** Bluff (4 February 2002) to Bluff (27 February 2002)
- **Areas of operation:**

11 Feb 2002	Cape Adare
16 Feb 2002	Cape Bird
14 Feb 2002	Cape Evans
16 Feb 2002	Franklin Island
12 Feb 2002	Cape Hallett
15 Feb 2002	Cape Royds
13 Feb 2002	Terra Nova Bay

Kapitan Khlebnikov

- **Operator:** Quark Expeditions (The Lords of Antarctica KLB 251101)
- **Flag state:** Russia
- **Number of voyages:** 3
- **Antarctic ports of departure/arrival:** Hobart (24 November 2001) to Hobart (19 December 2001)
- **Areas of operation:**

9 Dec 2001	Cape Adare
7 Dec 2001	Coulman Island
5 Dec 2001	Drygalski Ice Tonuge
8 Dec 2001	Cape Hallett
8 Dec 2001	Cape Roget
4 Dec 2001	Cape Washington
- **Operator:** Quark Expeditions (Farthest South KLB 271201)
- **Ports of departure/arrival:** Hobart (26 December 2001) to Lyttelton (20 January 2002)
- **Areas of operation:**

3 Jan 2002	Cape Adare
3 Jan 2002	Drygalski Ice Tonuge
5 Jan 2002	B15A Iceberg
6 Jan 2002	Cape Royds
6 Jan 2002	Cape Evans
7 Jan 2002	Canada Glacier
8 Jan 2002	McMurdo Station
8 Jan 2002	Scott Base
9 Jan 2002	Franklin Island
10 Jan 2002	Campbell Glacier
10 Jan 2002	Terra Nova Bay
12 Jan 2002	Cape Hallett
- **Operator:** Quark Expeditions (Great Explorers)
- **Ports of departure/arrival:** Lyttelton (19 January 2001) to Hobart (12 February 2002)
- **Areas of operation:**

27 Jan 2002	Cape Hallett
28 Jan 2002	Inexpressible Island
28 Jan 2002	Campbell Glacier
28 Jan 2002	Terra Nova Bay
29 Jan 2002	Drygalski Ice Tonuge
29 Jan 2002	B15A Iceberg
29 Jan 2002	Franklin Island
30 Jan 2002	Cape Royds
30 Jan 2002	Cape Evans

30 Jan 2002	Canada Glacier
31 Jan 2002	McMurdo Station
31 Jan 2002	Scott Base
1 Feb 2002	Ironside Glacier
2 Feb 2002	Cape Adare

Land-Based Operations

- Nil

Draft

Permit Information

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Visits to Protected Areas

Arrival Heights SSSI No. 2

Event Number	Number authorised	Dates	Purpose
K055	4	14-29/01/02	Equipment maintenance
K069	2	12-25/01/02	Equipment maintenance
K085	4	Year round visits	Equipment maintenance
K085	1	14/10/01	Recreation/familiarisation
K087	1	Year round visits	Equipment maintenance
K089	1	24/01/02	Equipment maintenance
K391C	5	01/11/01	Education
K392	6	25/10/01	Official Visitors
K392	7	01/11/01	Official Visitors
K394RT	1	22/11/01	Artist
K396	8	28/12/01	Education
K407C	7	24/11/01	Recreation/familiarisation

Beaufort Island SPA No. 5

Event Number	Number authorised	Dates	Purpose
K122A	2	07/01/01	Adélie penguin research

Botany Bay SSSI No. 37

Event Number	Number authorised	Dates	Purpose
K024	3	14-26/11/02	Equipment maintenance

Cape Crozier SSSI No. 4

Event Number	Number authorised	Dates	Purpose
K023	4	06/03/02	Soil sampling

Cape Evans SPA No. 25

Event Number	Number authorised	Dates	Purpose
K012	4	02/12/01	Recreation/familiarisation
K021	6	10-14/01/02	Microbiological sampling
K042	2	25/11/01	Recreation/familiarisation
K047	1	25/11/01	Recreation/familiarisation
K049	2	09/12/01	Recreation/familiarisation
K054	3	25/11/01	Recreation/familiarisation
K054	1	09/12/01	Recreation/familiarisation
K054	1	23/12/01	Recreation/familiarisation
K057	5	18/11/01	Recreation/familiarisation
K059	5	21/10/01	Recreation/familiarisation
K061	1	25/11/01	Recreation/familiarisation
K061	2	23/12/01	Recreation/familiarisation
K062	2	25/11/01	Recreation/familiarisation
K064	1	23/12/01	Recreation/familiarisation
K073	2	14/10/01	Recreation/familiarisation
K081	7	27/11/01	Recreation/familiarisation
K085	1	25/11/01	Recreation/familiarisation
K114	1	25/11/01	Recreation/familiarisation
K114	1	14/10/01	Recreation/familiarisation
K114	3	04/11/01	Recreation/familiarisation
K122A	7	02/12/02	Recreation/familiarisation
K131	1	14/10/01	Recreation/familiarisation
K131	1	30/10/01	Recreation/familiarisation
K131	2	18/11/01	Recreation/familiarisation
K136	6	04/11/01	Recreation/familiarisation
K136	6	29/10/01	Recreation/familiarisation
K136	6	04/11/01	Recreation/familiarisation
K201	3	06/12/01	Recreation/familiarisation
K282	6	15-24/01/02	Heritage Conservation
K294	3	14/11/01	Media
K294	1	18/11/01	Media
K302	4	09/12/01	Recreation/familiarisation
K302	1	23/12/01	Recreation/familiarisation
K304	8	04/11/01	Recreation/familiarisation
K304	4	12/11/01	Recreation/familiarisation
K352B	3	21/10/01	Recreation/familiarisation
K352B	3	21/10/01	Recreation/familiarisation
K360	1	16/10/01	Recreation/familiarisation
K360	1	21/10/01	Recreation/familiarisation
K391A	5	27/11/01	Education
K391B	4	08/11/01	Education
K391B	1	12/11/01	Education
K391C	4	02/11/01	Education
K391D	5	05/02/02	Education

Event Number	Number authorised	Dates	Purpose
K392	6	25/10/01	Official Visitors
K392	8	30/10/01	Official Visitors
K393JF	1	08/11/01	Media
K393JF	1	12/11/01	Media
K393KG	1	03/11/01	Media
K393KH	1	08/11/01	Media
K393VM	1	18/11/01	Media
K393VM	1	25/11/01	Recreation/familiarisation
K394AN	1	18/01/02	Artist
K394DC	5	06/12/01	Artist
K394JH	3	14-17/11/01	Artist
K394MN	1	08/11/01	Artist
K394MN	1	12/11/01	Artist
K394RT	1	18/11/01	Artist
K396	13	22/12/01	Education
K396	13	23/12/01	Education
K400	1	21/10/01	Recreation/familiarisation
K400	5	29/10/01	Recreation/familiarisation
K400	2	02/11/01	Recreation/familiarisation
K401	2	21/10/01	Recreation/familiarisation
K401	1	02/11/01	Recreation/familiarisation
K401	2	12/11/01	Recreation/familiarisation
K401	3	18/11/01	Recreation/familiarisation
K401	2	06/12/01	Recreation/familiarisation
K401	2	09/12/01	Recreation/familiarisation
K401	3	22/12/01	Recreation/familiarisation
K401	2	23/12/01	Recreation/familiarisation
K402	8	12/09/01	Recreation/familiarisation
K402	3	21/09/01	Recreation/familiarisation
K402	3	14/10/01	Recreation/familiarisation
K402	1	02/11/01	Recreation/familiarisation
K402	1	04/11/01	Recreation/familiarisation
K402	1	06/12/01	Recreation/familiarisation
K402	2	09/12/01	Recreation/familiarisation
K402	2	22/12/01	Recreation/familiarisation
K402	1	23/12/01	Recreation/familiarisation
K407A	2	16/10/01	Inspection/monitoring
K407A	1	24/10/01	Recreation/familiarisation
K407C	8	25/11/01	Recreation/familiarisation
K550	2	06/12/01	Recreation/familiarisation

Cape Royds SPA No. 27

Event Number	Number authorised	Dates	Purpose
K012	4	02/12/01	Recreation/familiarisation
K021	6	8-10/01/02	Microbiological sampling
K042	2	25/11/01	Recreation/familiarisation
K047	1	25/11/01	Recreation/familiarisation
K049	2	09/12/01	Recreation/familiarisation
K054	3	25/11/01	Recreation/familiarisation
K054	1	09/12/01	Recreation/familiarisation
K054	1	23/12/01	Recreation/familiarisation
K057	5	18/11/01	Recreation/familiarisation
K059	5	21/10/01	Recreation/familiarisation
K061	1	25/11/01	Recreation/familiarisation
K061	2	23/12/01	Recreation/familiarisation
K062	2	25/11/01	Recreation/familiarisation
K064	1	23/12/01	Recreation/familiarisation
K073	2	14/10/01	Recreation/familiarisation
K081	7	27/11/01	Recreation/familiarisation
K085	1	25/11/01	Recreation/familiarisation
K114	1	25/11/01	Recreation/familiarisation
K114	1	14/10/01	Recreation/familiarisation
K114	3	04/11/01	Recreation/familiarisation
K122A	3	02/12/02	Recreation/familiarisation
K131	1	14/10/01	Recreation/familiarisation
K131	2	18/11/01	Recreation/familiarisation
K136	4	29/10/01	Recreation/familiarisation
K201	3	05/12/01	Recreation/familiarisation
K282	7	26/01-02/02/02	Heritage Conservation
K294	1	18/11/01	Recreation/familiarisation
K300	4	23/12/01	Recreation/familiarisation
K302	4	09/12/01	Recreation/familiarisation
K302	1	23/12/01	Recreation/familiarisation
K304	8	04/11/01	Recreation/familiarisation
K304	4	12/11/01	Recreation/familiarisation
K352B	3	21/10/01	Recreation/familiarisation
K360	1	21/10/01	Recreation/familiarisation
K391A	5	27/11/01	Education
K391B	1	04/11/01	Recreation/familiarisation
K391C	4	02/11/01	Education
K391D	5	05/02/02	Education
K392	6	24/10/01	Official Visitors
K393JF	1	04/11/01	Media
K393KG	1	03/11/01	Media
K393VM	1	18/11/01	Media
K393VM	1	25/11/01	Media

Event Number	Number authorised	Dates	Purpose
K394AN	1	17/01/02	Artist
K394DC	2	05/12/01	Artist
K394JH	3	17/01/02	Artist
K394MN	1	12/11/01	Artist
K394RT	1	18/11/01	Artist
K400	1	21/10/01	Recreation/familiarisation
K400	5	29/10/01	Recreation/familiarisation
K400	2	02/11/01	Recreation/familiarisation
K401	2	14/10/01	Recreation/familiarisation
K401	2	21/10/01	Recreation/familiarisation
K401	1	02/11/01	Recreation/familiarisation
K401	2	04/11/01	Recreation/familiarisation
K401	3	18/11/01	Recreation/familiarisation
K401	2	06/12/01	Recreation/familiarisation
K401	2	09/12/01	Recreation/familiarisation
K401	3	22/12/01	Recreation/familiarisation
K401	2	23/12/01	Recreation/familiarisation
K401	2	14/10/01	Recreation/familiarisation
K402	8	12/09/01	Recreation/familiarisation
K402	3	21/09/01	Recreation/familiarisation
K402	3	14/10/01	Recreation/familiarisation
K402	1	02/11/01	Recreation/familiarisation
K402	1	04/11/01	Recreation/familiarisation
K402	1	06/12/01	Recreation/familiarisation
K402	2	09/12/01	Recreation/familiarisation
K402	3	22/12/01	Recreation/familiarisation
K402	1	23/12/01	Recreation/familiarisation
K407C	8	25/11/01	Recreation/familiarisation
K550	2	06/12/01	Recreation/familiarisation

Cryptogram Ridge SPA No. 22

Event Number	Number authorised	Dates	Purpose
K407D	4	23/01/02	Inspection/monitoring, Surveying

Hut Point SPA No. 28

Event Number	Number authorised	Dates	Purpose
K012	1	20/12/01	Recreation/familiarisation
K015	2	17/12/01	Recreation/familiarisation
K021	4	06/01/02	Microbial sampling
K024	3	28/11/01	Recreation/familiarisation
K052	5	20/01/02	Recreation/familiarisation
K061	3	26/12/01	Recreation/familiarisation
K062	1	20/12/01	Recreation/familiarisation
K062	3	26/12/01	Recreation/familiarisation
K064	3	18/12/01	Recreation/familiarisation
K064	2	18/12/01	Recreation/familiarisation
K081	1	15/01/02	Recreation/familiarisation
K087	1	24/01/02	Recreation/familiarisation
K114	2	01/11/01	Recreation/familiarisation
K114	4	15/11/01	Recreation/familiarisation
K136	6	08/11/01	Recreation/familiarisation
K201	3	07/12/01	Recreation/familiarisation
K282	3	7-11/01/02	Heritage Conservation
K282	4	22/01/02	Official Visitors
K302	2	05/12/01	Recreation/familiarisation
K302	2	01/01/02	Recreation/familiarisation
K302	3	08/12/01	Recreation/familiarisation
K305	2	07/01/02	Recreation/familiarisation
K360	1	24/10/01	Recreation/familiarisation
K360	1	29/01/02	Recreation/familiarisation
K360	3	30/01/02	Recreation/familiarisation
K391A	5	23/11/01	Education
K391B	4	07/11/01	Education
K391C	4	31/10/01	Education
K391D	3	31/01/02	Education
K392	4	25/10/01	Official Visitors
K392	6	01/11/01	Official Visitors
K393KG	1	03/11/01	Media
K393KH	1	07/11/01	Media
K393KH	1	07/11/01	Media
K393VM	2	15/11/01	Media
K394AN	1	15/01/02	Artist
K394DC	2	05/12/01	Artist
K394DC	2	04/11/01	Recreation/familiarisation
K394JH	3	13/01/02	Artist
K394JH	3	14/01/02	Artist
K394JH	3	20/01/02	Artist
K394MN	1	07/11/01	Artist
K394RT	2	13/11/01	Artist

Event Number	Number authorised	Dates	Purpose
K396	9	26/12/01	Education
K396	12	27/12/01	Education
K400	1	24/10/01	Equipment maintenance
K400	1	30/01/02	Recreation/familiarisation
K401	2	14/10/01	Recreation/familiarisation
K401	2	21/10/01	Recreation/familiarisation
K401	2	12/11/01	Recreation/familiarisation
K401	1	16/11/01	Recreation/familiarisation
K401	4	27/12/01	Recreation/familiarisation
K401	1	06/01/02	Recreation/familiarisation
K401	2	14/04/02	Recreation/familiarisation
K402	2	14/04/02	Recreation/familiarisation
K407A	5	18/10/01	Recreation/familiarisation
K407C	8	27/11/01	Official Visitors
K407D	2	25/01/02	Surveying
K407D	2	28/01/02	Surveying
K550	2	03/12/01	Recreation/familiarisation
K550	3	07/12/01	Recreation/familiarisation
K550	1	18/12/01	Recreation/familiarisation

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Event Number	Number authorised	Dates	Purpose
K407D	4	22/01/02	Surveying
K407D	4	23/01/02	Inspection/monitoring, Surveying

Taking and Harmful Interference with Flora and Fauna

The following activities relating to flora and fauna were undertaken within the New Zealand Antarctic programme, under permit in accordance with Annex II of the Protocol on Environmental Protection to the Antarctic Treaty.

Species	Location	Amount	Purpose
algae	Lake Vanda	4 test tubes	Collected as part of environmental monitoring at past site of Vanda Station
Amphipods	Bird, Cape	120	Collected for research project Biodiversity Of Terrestrial Invertebrates
<i>Catharacta maccormicki</i>	Roberts, Cape	-	Population census as part of environmental monitoring programme of the Cape Roberts Scientific Drilling Project
foam	Garwood Valley	200	Collected for research project Spatial Subsidies In Antarctic Soils
<i>Gymnodraco acuticeps</i>	Evans, Cape	5	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Gymnodraco acuticeps</i>	Roberts, Cape	1	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Homaxinella balfourensis</i>	Winter Quarters Bay	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Homaxinella balfourensis</i>	Armitage, Cape	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Homaxinella balfourensis</i>	Pram Point	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Homaxinella balfourensis</i>	Scott Base	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Kirkpatrickia variolosa</i>	Winter Quarters Bay	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Kirkpatrickia variolosa</i>	Armitage, Cape	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Kirkpatrickia variolosa</i>	Pram Point	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Kirkpatrickia variolosa</i>	Scott Base	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Latrunculia apicalis</i>	Winter Quarters Bay	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Latrunculia apicalis</i>	Armitage, Cape	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Latrunculia apicalis</i>	Pram Point	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Latrunculia apicalis</i>	Scott Base	4 small samples	Collected for research project Ecology Of Antarctic Sponges

Species	Location	Amount	Purpose
<i>Leptonychotes weddelli</i>	Barne Glacier	-	Observation for population census as part of education programme Certificate In Antarctic Studies
<i>Leptonychotes weddelli</i>	Erebus Glacier Tongue	-	Observation for population census as part of education programme Certificate In Antarctic Studies
<i>Limatula sp.</i>	Winter Quarters Bay	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Limatula sp.</i>	Armitage, Cape	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Limatula sp.</i>	Pram Point	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Limatula sp.</i>	Scott Base	4 small samples	Collected for research project Ecology Of Antarctic Sponges
macrofauna cores	New Harbour	15	Collected for research project Aquatic Ecosystems / Benthic Communities
macrofauna cores	Evans, Cape	30	Collected for research project Aquatic Ecosystems / Benthic Communities
microbial mats	Bratina Island	25 cores	Collected for research project Aquatic Ecosystems / Benthic Communities
micro-organisms	Bratina Island		Collected for research project DNA Diversity In Biotopes
Mites	Penny Lake	2	Collected for research project Biodiversity Of Terrestrial Invertebrates
Mites	Bird, Cape	80	Collected for research project Biodiversity Of Terrestrial Invertebrates
Mites	Evans, Cape	15	Collected for research project Biodiversity Of Terrestrial Invertebrates
Moss	Penny Lake		Collected for research project Biodiversity Of Terrestrial Invertebrates
moss and lichen	Botany Bay	10 small samples	Collected for research project Biodiversity Of Lichens And Mosses
<i>Mycale ascerata</i>	Winter Quarters Bay	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Mycale ascerata</i>	Armitage, Cape	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Mycale ascerata</i>	Pram Point	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Mycale ascerata</i>	Scott Base	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Pagothenia borchgrevinki</i>	McMurdo Sound	60	Collected for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
<i>Pagothenia borchgrevinki</i>	Scott Base	100	Collected for research project Physiology Of Antarctic Fish

Species	Location	Amount	Purpose
<i>Pagothenia borchgrevinkii</i>	McMurdo Sound	40	Capture and release to take fin clippings for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
<i>Pygoscelis adeliae</i>	Bird, Cape	200	Banding and blood sampling for research project Molecular Ecology Of Antarctic Fauna
<i>Pygoscelis adeliae</i>	Bird, Cape	115	Blood sampling for research project Stress Responses In Penguins
<i>Pygoscelis adeliae</i>	Bird, Cape	726	Weigh-bridge, PIT, flipper banding, time depth recorders and satellite tags, stomach flushing, weigh and measure, bleed, inject labelled water, recapture, re-bleed, release for research project Adelie Penguin Population Dynamics
<i>Pygoscelis adeliae</i>	Beaufort Island		Work with US collaborators as part of research project Adelie Penguin Population Dynamics
<i>Pygoscelis adeliae</i>	Bird, Cape	3	Catch, inject adrenocorticotripin hormone, pen for 3 days, collect faeces 3 hourly for research project Validating A New Method For Measuring Stress Levels Of Adelie Penguins
Rotifers	Scott Base		Collected for research project Biodiversity Of Terrestrial Invertebrates
scallops	New Harbour	20	Collected for research project Aquatic Ecosystems / Benthic Communities
<i>Sea ice algae</i>	Evans, Cape	10 grams dry weight	Collected for research project UVB Effects On Sea Ice Algae
sea ice diatom cores	New Harbour	9	Collected for research project Aquatic Ecosystems / Benthic Communities
sea ice diatom cores	Evans, Cape	9	Collected for research project Aquatic Ecosystems / Benthic Communities
seaweed	Evans, Cape	200 grams	Collected for research project Aquatic Ecosystems / Benthic Communities
sediment cores	New Harbour	30	Collected for research project Aquatic Ecosystems / Benthic Communities
sediment cores	Evans, Cape	60	Collected for research project Aquatic Ecosystems / Benthic Communities
sediment samples	Bratina Island	5 cores	Collected for research project Aquatic Ecosystems / Benthic Communities
<i>Sphaerotylus antarcticus</i>	Winter Quarters Bay	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Sphaerotylus antarcticus</i>	Armitage, Cape	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Sphaerotylus antarcticus</i>	Pram Point	4 small samples	Collected for research project Ecology Of Antarctic Sponges
<i>Sphaerotylus antarcticus</i>	Scott Base	4 small samples	Collected for research project Ecology Of Antarctic Sponges
Sprintails	Penny Lake	56	Collected for research project Biodiversity Of Terrestrial Invertebrates

Species	Location	Amount	Purpose
Sprintails	Bird, Cape	100	Collected for research project Biodiversity Of Terrestrial Invertebrates
Sprintails	Evans, Cape	40	Collected for research project Biodiversity Of Terrestrial Invertebrates
starfish	New Harbour	20	Collected for research project Aquatic Ecosystems / Benthic Communities
starfish	Evans, Cape	30	Collected for research project Aquatic Ecosystems / Benthic Communities
<i>Trematomus bernachii</i>	McMurdo Sound	20	Capture and release to take fin clippings for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
<i>Trematomus bernachii</i>	Evans, Cape	424	Capture, weigh, measure, tag, inject with calcein, release for research project Ecology Of Antarctic Fishes
<i>Trematomus bernachii</i>	Roberts, Cape	129	Capture, weigh, measure, tag, inject with calcein, release for research project Ecology Of Antarctic Fishes
<i>Trematomus bernachii</i>	McMurdo Sound	20	Collected for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
<i>Trematomus bernachii</i>	Scott Base	12	Collected for research project Physiology Of Antarctic Fish
<i>Trematomus hansonii</i>	Evans, Cape	9	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus hansonii</i>	Roberts, Cape	21	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus newnesi</i>	Evans, Cape	1	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus newnesi</i>	McMurdo Sound	10	Collected for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
<i>Trematomus nicolai</i>	Evans, Cape	3	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus nicolai</i>	Roberts, Cape	8	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus nicolai</i>	McMurdo Sound	10	Collected for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
<i>Trematomus penellii</i>	Evans, Cape	54	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus penellii</i>	Roberts, Cape	68	Bycatch, released as part of research project Ecology Of Antarctic Fishes
<i>Trematomus penellii</i>	McMurdo Sound	10	Collected for research project Mechanisms Of Evolutionary Adaptation In Antarctic Fish
urchins	New Harbour	10	Collected for research project Aquatic Ecosystems / Benthic Communities
urchins	Evans, Cape	200 grams	Collected for research project Aquatic Ecosystems / Benthic Communities

Introduction of Non-Native Species

No non-native species were introduced, other than for food purposes.

Draft

Environmental Information

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Compliance with the Protocol

No new measures were adopted during the last year in accordance with Article 13 of the Protocol on Environmental Protection to the Antarctic Treaty. The Protocol is implemented in New Zealand legislation by the Antarctica (Environmental Protection) Act 1994.

List of IEEs and CEEs

New Zealand's Ministry of Foreign Affairs and Trade considered the following under the Antarctica (Environmental Protection) Act 1994.

Activity	Location	Level of Assessment	Decision Taken
Tour expedition using the <i>Akademik Shokalskiy</i>	Ross Sea region	Initial Environmental Evaluation	Proceed in accordance with IEE and conditions
Tour expedition using the <i>Kapitan Khlebnikov</i>	Ross Sea region	Initial Environmental Evaluation	Proceed in accordance with IEE and conditions

Monitoring Activities Report

The following environmental monitoring related to New Zealand activities was undertaken.

Activity	Location	Procedures	Information	Action
Liquid waste disposal	Scott Base	Weekly intake monitoring of faecal coliforms (colony forming units) and Biological Oxygen Demand (5 day).	FC mostly below 15 CFU/100mg in winter and 500 during summer. In late Dec. 01 and early Jan. 02, CFUs were too numerous to count. This is thought to relate to high base occupancy and sea ice pressure ridges preventing dispersal. BOD was largely below 2mg/litre, with a max. of 6.6 recorded.	Waste Water Treatment Plant being installed.

Activity	Location	Procedures	Information	Action
Fuel handling, storage and use	Scott Base and field operations	Volume of fuel stored and used monthly, by type. Number and locations of fuel spills.	Fuel usage was the second highest in five years. Only two spills were reported, both <100 litres with 80% recovery.	Spills related to unforeseen equipment failure. Continue preventative maintenance programme.
Terrestrial disturbance	Scott Base	Ground-based photo monitoring.	Continuation of long term record.	
Contaminated site clean up	Lake Vanda (past site of Vanda Station and control site)	Nutrient (dissolved reactive phosphorous, ammonium, nitrate) and heavy metal (Ag, Cd, Cr, Cu, Ni, Pb, Zn) analysis of lake water samples and chlorophyll concentrations and species composition in algal samples.	This year's water samples had a very high nutrient content, due to the highest lake inflows on record. No viable algal samples were found.	It was decided that the seven years of data now provide a good understanding of natural variations at the sites, and the monitoring need no longer be annual. Sampling will be resumed if lake level encroach on the former station site.
Waste	Scott Base and field operations	Total waste disposed of to landfill in New Zealand recorded. Analysis of waste generated at Scott Base conducted.	Total waste lowest in three years. Waste analysis showed 12% paper towels, 12% plastics, 20% light card and paper and 56% miscellaneous waste. (Does not include recyclables, e.g. glass, metal).	Waste reduction efforts to continue. Alternatives to paper towels to be investigated in particular.

Waste Management Plans

The following planning documents are in place for Scott Base and New Zealand field operations:

- Antarctica New Zealand Waste Management Policy (updated June 2001)
- Antarctica New Zealand Waste Management Handbook (updated October 2001).

During the past year, waste has been separated, stored, transported and disposed of in accordance with these documents. Efforts to minimise waste by source reduction are ongoing. All wastes other than sewage and domestic wastewater are returned to New Zealand for disposal (items recyclable within New Zealand are sent to appropriate agencies for recycling).

A wastewater treatment plant for Scott Base is being installed, intended to be operational in October 2002.

Relevant National Legislation

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No new legislation was adopted during the 2001/2002 period.

Other Information

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Inspection Reports

No inspections were conducted.

Notice of Activities Undertaken in Case of Emergencies

Nil

Permanent Information

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No additional information to be added since last update.