

Restoring the Balance:
A Biodiversity and Natural Heritage
Strategy for the Lake Ohau Basin

The Ohau Conservation Trust



Version control:

Version #	Date	Sign off	Summary of changes
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2	30 June 2016	Trustees, via Viv Smith, Secretary	Draft Strategy updated from 2014
3	25 September 2016	Trustees	Minor changes to reflect Trust projects
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This Strategy fits within, and helps give effect to relevant Department of Conservation, Environment Canterbury and Waitaki District Council biodiversity strategies.

Contents

Part A: The Ohau Conservation Trust	4
Introduction	4
The Ohau Basin	4
Establishment of the Trust.....	5
Into the future.....	5
Vision Statement	6
Aims	6
Geographic Scope of Interest	6
Key Habitat Types in the Ohau Basin	7
Cultural Values of the Ohau Basin	9
Ngāi Tahu association with Lake Ōhau	9
Key Human Values of the Lake Ohau Basin	10
Key Partners	11
Related Strategic Documents/Plans	12
Part B: Key Remnant/Endangered Ecosystems of the Ohau Basin	15
Introduction	15
Key Examples of Remnant/Endangered Ecosystems Requiring Immediate Support	16
Key Species and Their Importance	17
Key Threats	18
Part C: What the Trust Aims to Achieve	19
Introduction	19
In 3 – 5 Years We Want To See	19
In 5 – 10 Years We Want To See	20
In 10 – 30 Years We Want To See	20
Part D: Action Plans	21
Support Projects for 2016 - 2019	21
'Flagship' Field Conservation Projects for 2016 - 2026	23
Appendix 1: Overall sub-habitat threat matrix	27
Appendix 2: Pest plant sub-habitat threat matrix	28
Appendix 3: Preliminary classification of key sub-habitats near Lake Ohau Alpine Village	29
Appendix 4: Draft Predator Control Strategy	30
Appendix 5: Project definition template	32
Appendix 6: Current work programme, by Ecological Management Sub-unit habitats, and project leader as at 30 June 2016	35

Part A: The Ohau Conservation Trust

Introduction

The Ohau Basin

The 'Ohau Basin' is unique regionally, nationally and internationally. It contains a matrix of wide climate and geomorphological gradients in a way that rarely occurs elsewhere. These gradients drive large variability in habitat structure and function which have historically led to an extraordinary diversity of ecosystems and biota in the basin.

The climate aspects of the basin's gradients occur at different scales. These are:

- i. **Broad scale:** the basin lies at the intercept of the stormy weather systems from the Southern Oceans and Antarctica and of the sub-tropical warm and ultra-humid cyclonic systems from the north Tasman Sea and equatorial western Pacific. These varied systems result in contrasting conditions from being extremely cold, often with low humidity, to being warm and extremely wet. Patterns within this complex range of weather and climate vary over annual to decadal time scales;
- ii. **Medium scale:** within the basin there is also a wide spatial humidity gradient from super-humid conditions (> 6m of precipitation per year) on the western boundary, decreasing to semi-arid conditions (< 0.5m of precipitation per year) in the south east only ~ 20 km away; and seasonal temperature extremes from hot continental to extremely cold glacial/alpine conditions over weekly to seasonal time scales. This gives an annual temperature range of > 50 °C in many of the basin's habitats. Permanent snow fields and glaciers exist in some areas of the Basin while 'desert-like' conditions occur in other parts;
- iii. **Small scale:** within sections of the basin there are also major altitudinal changes of > 2000m, which drive additional smaller-scale vertical gradients in precipitation and temperature. These generally occur over small distances of less than 1 kilometre.

Sitting within the basin there is also a complex mosaic of land forms which are subject to these wide variations in weather and climate. The landforms reflect recent intense tectonic and glacial activity. They create the major habitats of: Lake Ohau; the adjacent 'beach barrier lake' of Lake Middleton; kettle lakes and wetlands; glacial outwash fans; an extensive range of streams and rivers (glacier-fed, mountain-fed, foothills-fed, spring-fed, and lake-fed); braided river flats; elevated 'range land' terraces; eroding mountain sides/tops; talus boulder fields; glaciers which are the shrinking remnants of the Pleistocene ice age; and permanent snow fields. In themselves, Lakes Ohau and Middleton are somewhat rare in being semi-clear water glacial lakes that are not fully regulated and subject to the major variations in climate and weather of the basin. Over geological time such areas are thought to have been the 'hot-spots' of evolution and endemism leading to the possibility that



prior to human influence the Ohau basin could have contained extremely high levels of regional biodiversity, if not some of the highest in New Zealand.

Establishment of the Trust

Initially, in an effort to protect the scenic and the biodiversity values of the Ohau Basin, conservation efforts focused on wilding pine control and vegetation restoration. This work was carried out by concerned local landowners such as Bob and Marion Aubrey and Shelton Downs manager Mike King. These efforts have already left a significant legacy that is now being enjoyed by current residents and a growing number of visitors to the area. In November 2004 the Ohau Conservation Trust was formed, as part of an initiative by the Department of Conservation to better develop community-based conservation initiatives in the Mackenzie area (and thereby help facilitate the Department's objectives). Three Trustees were appointed at the establishment of the Trust. In 2016, there are five Trustees. The Trust has always had a number of supporters/volunteers and this number has grown significantly in recent years, consisting of local station and business owners, Lake Ohau Alpine Village residents and absentee landowners. Trust supporters now number over 80. These follow the Trust's activities and many donate funds annually. Supporters reside throughout New Zealand and a number overseas.

The Trust's initial focus was also on weed control (primarily wilding pines, broom, gorse and lupins) to protect the wild and scenic tussock rangelands and lake foreshore biodiversity and scenic qualities. This was soon followed in 2009 by the development of a native vegetation restoration plan by Anne Steven for the Lake Ohau foreshore from the village through to Parsons Creek. This plan has since guided control/eradication of gorse, broom, blackberry, briar rose and wilding conifers, and a steady planting programme for beech, alpine scrub and tussocks in the area (where possible from locally sourced seed materials). Significant effort has been focussed on plantings in the McKinnon and Aubrey Reserves. In 2012 activities were further extended to include a predator trapping programme along the Lake Ohau foreshore from the village to near the outlet of Parsons Creek. All these efforts have already made a significant difference in restoring and protecting the integrity of the indigenous biodiversity of the Ohau area. For example, extensive resident bellbird populations now inhabit the area.

Into the future

Public interest is building greatly in the Ohau basin. There has been a rapid increase in popularity of the area for wilderness recreation such as back-country skiing and tramping, and a 'high value' section of the national Te Araroa Walking Trail now winds through the basin. Since the development of the Alps to Ocean (A2O) Cycleway in 2012, many thousands more visitors have also enjoyed the area. Indeed, the Ohau section of the cycleway has already become a ride that is nationally renowned. However, pressures such as extensive weed and predator invasion (leading to a 'homogenisation' of the basin's biodiversity) and proposed intensive dairy farming to the south are also occurring and these are in conflict with the existing values of the basin. Thus, the importance of understanding and sustainably managing the unique biodiversity and landscape values of the Ohau basin is increasing greatly and a higher level of biodiversity management is required to conserve (and restore) the region's unique assets for future generations. This **'Ohau Basin Biodiversity and Natural Heritage Conservation Strategy'** sets out the pathway that the Ohau Conservation Trust intends to take to achieve this ambition. This strategy will be reviewed and updated annually.

Vision Statement

The Ohau Conservation Trust wishes to protect the special natural values of the Ohau basin. The Trust will promote awareness of, and protect, the unique habitats and biodiversity of the Lake Ohau area.

Aims

The Trust aims to implement its Vision in the Ohau basin by;

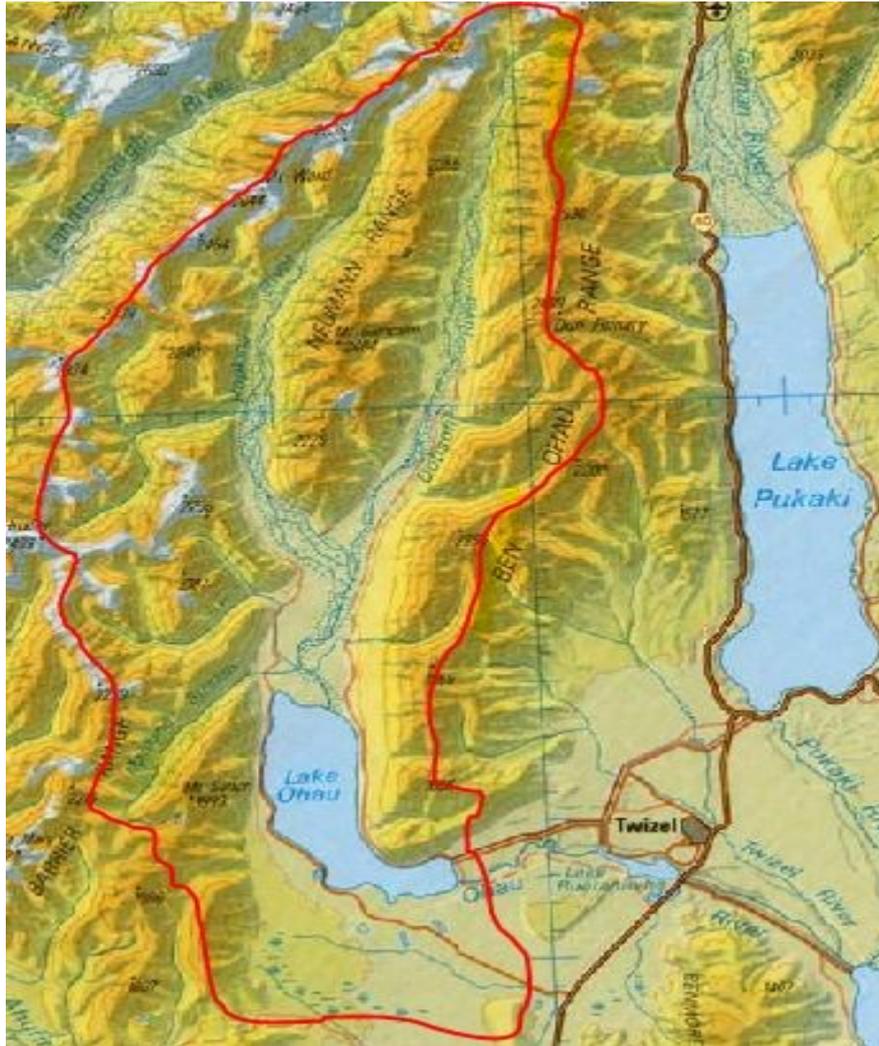
- a. Initiating and supporting research into the state of habitats and their biodiversity;
- b. Taking a leadership role in the protection and restoration of key habitats and their indigenous fauna and flora;
- c. Working with central and local government, Te Rūnanga o Ngāi Tahu, other organisations, businesses and individuals throughout New Zealand to collaborate on projects and better resource the work of the Trust;
- d. Promoting and providing support for biodiversity and conservation education;
- e. Developing a broad supporter/volunteer base, nationally and internationally, of people who can actively contribute to the realisation of the Trust's vision and aims.

Geographic Scope of Interest

The Trust's scope of *direct* interest covers the area upstream of a line from the top of Ben Ohau around to the Lake Ohau outlet, across to the Wairepo Stm and west to the Quailburn saddle. This therefore includes the catchments of all the direct tributaries of Lake Ohau, enabling a 'whole of catchment' consideration of biodiversity values and related conservation issues.

We term this the 'Ohau Basin'. The predominant landholder/manager in the region is the Department of Conservation, but there are significant tracts of land in local authority and private ownership. The Trust pledges to work collaboratively with all landholders in pursuit of its Vision.





Map of the coverage of The Ohau Conservation Trust's area of interest.

Key Habitat Types in the Ohau Basin¹

The Ohau Basin contains a complex mosaic of habitats in a relatively small, and confined, geographical area. As noted earlier, these are the product of a long history of intense tectonic and glacial activity, together with major climate gradients and variability over time. The Department of Conservation have identified six broad ecological management units (EMUs) in the Ohau basin. These are as follows (with finer resolution habitat 'sub-units'):

- a. Huxley - Hopkins
 - i. Tussock 'range lands'
 - ii. Sub-alpine scrub lands (matagouri, manuka, dracophyllum etc)
 - iii. Dry mountain and silver beech forests
 - iv. Glacial outwash fans
 - v. Braided rivers, their stabilised 'river flats' and deltas
 - vi. Mountain rock and shingle screes
 - vii. Wetlands
 - viii. Alpine tarns

¹ Some of these are rare/endangered Regionally and Nationally.

- ix. Glacial-fed rivers
- x. Mountain-fed rivers
- xi. Foothills-fed streams
- xii. Spring-fed streams
- b. Dobson River
 - i. Tussock 'range lands'
 - ii. Sub-alpine scrub lands (matagouri, manuka, dracophyllum etc)
 - iii. Dry mountain and silver beech forests
 - iv. Glacial outwash fans
 - v. Braided rivers, their stabilised 'river flats' and deltas
 - vi. Mountain rock and shingle screes
 - vii. Wetlands
 - viii. Alpine tarns
 - ix. Glacial-fed rivers
 - x. Mountain-fed rivers
 - xi. Foothills-fed streams
 - xii. Spring-fed streams
- c. Ahuriri East²
 - i. Beech forest 'patches' and riparian corridors linking alpine and lowland habitats
 - ii. Tussock 'range lands'
 - iii. Sub-alpine scrub lands (matagouri, manuka, dracophyllum etc)
 - iv. Mountain rock and shingle screes
 - v. Dry mountain and silver beech forests
 - vi. Alpine tarns
 - vii. Mountain-fed rivers
 - viii. Foothills-fed streams
 - ix. Spring-fed streams
 - x. Lake-fed streams
- d. Ben Ohau
 - i. Foothills-fed streams
 - ii. Totara forests
 - iii. Alpine tussock/scrub lands
 - iv. Mountain rock and shingle screes
 - v. Foothills-fed streams
- e. Lake Ohau Moraines
 - i. Kettle lakes
 - ii. Wetlands
 - iii. Terminal moraines
 - iv. Lateral moraines
- f. Lake Ohau
 - i. Lake Ohau Lake gravel beach dunes
 - ii. Wetlands
 - iii. Shallow water benthic habitats
 - iv. Deepwater benthic habitats

² Of the Ahuriri East EMU, only the western face of the Ohau Range from the Quailburn saddle through to stream behind the Ohau Lodge and the headwaters of the Maitland Stream are relevant to the OCT interests and this Strategy.

v. Water column

Each of these habitats is home to a wide range of plant, insect and animal species. Many of these are now 'at risk' or threatened regionally, if not nationally (see below).



Cultural Values of the Ohau Basin

The Statutory Acknowledgement contained in Schedule 32 to the Ngāi Tahu Claims Settlement Act 1998 records the particular cultural, spiritual, historic, and traditional association of Ngāi Tahu with Lake Ōhau. The Statutory Acknowledgement is reproduced below. Many of the ecosystems and habitats in the Ohau Basin contain birds and plants that are identified as Taonga species by Te Rūnanga o Ngāi Tahu, such as Kārearea/NZ Falcon, Titipounamu/SI Rifleman, Korimako/Bellbird, Kōwhai, Tawai/Beech and Mānuka.

The Trust acknowledges these connections to, and interest in the Ohau basin and its special natural values and will seek to establish collaborative approaches with Te Rūnanga o Ngāi Tahu where there are opportunities for this.

Ngāi Tahu association with Lake Ōhau

Ōhau is one of the lakes referred to in the tradition of “Ngā Puna Wai Karikari o Rakaihautu” which tells how the principal lakes of Te Wai Pounamu were dug by the rangatira (chief) Rakaihautu. Rakaihautu was the captain of the canoe, Uruao, which brought the tribe, Waitaha, to New Zealand. Rakaihautu beached his canoe at Whakatū (Nelson). From Whakatū, Rakaihautu divided the new arrivals in two, with his son taking one party to explore the coastline southwards and Rakaihautu taking another southwards by an inland route. On his inland journey southward, Rakaihautu used his famous kō (a tool similar to a spade) to dig the principal lakes of Te Wai Pounamu, including Ōhau. It is probable that the name “Ōhau” comes from one of the descendants of Rakaihautu, Hau.

For Ngāi Tahu, traditions such as this represent the links between the cosmological world of the gods and present generations, these histories reinforce tribal identity and solidarity, and

continuity between generations, and document the events which shaped the environment of Te Wai Pounamu and Ngāi Tahu as an iwi.

Ōhau was traditionally occupied by the descendants of Te Rakitauhope and was the site of several battles between Ngāi Tahu and Ngāti Mamoe. Later, it supported Te Maiharoa and his followers in the 1870s when they took occupation of land in the interior in protest against the Crown's failure to honour the 1848 Canterbury Purchase.

As a result of this history of occupation, there are a number of urupā and wāhi tapu associated with the lake. Urupā are the resting places of Ngāi Tahu tūpuna and, as such, are the focus for whānau traditions. Urupā and wāhi tapu are places holding the memories, traditions, victories and defeats of Ngāi Tahu tūpuna, and are frequently protected by secret locations.

Ōhau was an important mahinga kai, and part of a wider mahinga kai trail that ran from Lake Pūkaki to the coast. The main foods taken in this area were weka, forest and water fowl and freshwater fish such as tuna (eel) and kōkopu.

The tūpuna had considerable knowledge of whakapapa, traditional trails and tauranga waka, places for gathering kai and other taonga, ways in which to use the resources of the lake, the relationship of people with the lake and their dependence on it, and tikanga for the proper and sustainable utilisation of resources. All of these values remain important to Ngāi Tahu today.

The mauri of Ōhau represents the essence that binds the physical and spiritual elements of all things together, generating and upholding all life. All elements of the natural environment possess a life force, and all forms of life are related. Mauri is a critical element of the spiritual relationship of Ngāi Tahu Whānui with the lake.

Key Human Values of the Lake Ohau Basin

The Ohau basin has become increasingly recognised as a 'hotspot' of passive and active recreational pursuits, and associated business activity. While easily accessible, the area lacks the heavy infrastructural development and population pressures of the neighbouring areas of Aoraki/Mt Cook, Wanaka and the further afield areas of Queenstown and Te Anau. However, it holds many of the same attractions and human values, but in an even more accessible, compressed, area. The development of the 'Alps to Ocean' cycleway has greatly increased awareness and appreciation of the Ohau basin. Over the summer of 2014 more than 4000



people cycled the lower section of the track beside Lake Ohau (Department of Conservation statistics).

The following is a summary of the key human values currently enjoyed in the Lake Ohau Basin:

- a. Landscape and botanical appreciation/aesthetics
- b. Walking/hiking/tramping
- c. Camping
- d. Biking
- e. Kayaking
- f. Boating (incl. river jet boating)
- g. Fishing
- h. Snow skiing
- i. Water skiing
- j. Nature immersion/bird watching
- k. Photography
- l. Windsurfing

Key Partners

In executing its Vision and Aims, the Ohau Conservation Trust pledges to work actively and constructively with other groups that have formal governance roles, business interests, and informal environmental interests in the basin.

Key governance partners include all relevant central and local government authorities (and temporary 'panels' as are established from time to time), in particular the following:

- a. Central Government
 - i. Department of Conservation
 - ii. Land Information NZ
 - iii. Ministry of Business, Innovation and Employment
 - iv. Walking Access NZ
 - v. Ministry for the Environment
 - vi. Crown Research Institutes (NIWA, GNS, Landcare)
- b. Local Government
 - i. Waitaki District Council
 - ii. Mackenzie District Council
 - iii. Environment Canterbury (particularly Upper Waitaki Zone Water Management Committee)
 - iv. Mackenzie Tourism and Development Trust
 - v. Alps to Ocean Cycle Trail
- c. Te Rūnanga o Ngāi Tahu
 - i. Te Rūnanga o Waihao
 - ii. Te Rūnanga o Arowhenua
 - iii. Te Rūnanga o Moeraki

Key business enterprises that the Trust may partner with include:

- a. Lake Ohau Lodge
- b. Meridian Energy

- c. High Country Stations (Huxley Gorge Station, Lake Ohau Station, Glen Lyon Station, Ohau Downs Station, Shelton Downs Station)
- d. Fishing Guides
- e. Tourism Waitaki
- f. Mackenzie Tourism and Development Trust
- g. Benmore Irrigation Co
- h. Mackenzie Federated Farmers
- i. Mackenzie Irrigation Company

Key environmental groups that the Trust may partner with include:

- a. Lake Ohau Protection Society
- b. Mackenzie Country Trust
- c. Mackenzie Guardians
- d. Royal Forest and Bird Protection Society
- e. Fish and Game
- f. QE II National Trust
- g. Environmental Defence Society
- h. Lindis Pass Conservation Trust
- i. Landcare Trust
- j. Mackenzie Wilding Tree Control Trust

Key community groups that the Trust may partner with include:

- a. Lake Ohau Alpine Village Residents and Ratepayers Assoc.
- b. Ahuriri Community Board
- c. Twizel Pukaki Landcare Group
- d. Twizel Area School
- e. Glen Mary Ski Club
- f. High Country Landscape Group
- g. Federated Mountain Clubs of NZ



Related Strategic Documents/Plans

There is a wide range of strategic national and local body plans that affect the management of the Ohau Basin and its environments. The Ohau Conservation Trust will attempt to work in harmony with, and help give effect to, their main related strategies and plans. Where there are any important specific points of difference with the Trust's Vision and Aims, the Trust will endeavour to resolve these in a constructive way so that the overall intent of the Trust is not unduly compromised, whilst still having due regard to the authority of the national/local body. The following are the most relevant national strategic documents³:

- a. New Zealand Biodiversity Strategy. Department of Conservation.

³ These documents are generally available through the relevant departmental websites.

- b. Proposed National Policy Statement on Indigenous Biodiversity. Ministry for Environment.
- c. Statement of National Priorities for Protecting Rare and Threatened Biodiversity on Private Land. Ministry for Environment and Department of Conservation.
- d. National Policy Statement for Freshwater. Ministry for the Environment. 2013.
- e. Conservation General Policy. Department of Conservation, 2005.
- f. Wilding Conifer Management Strategy. 2013. Ministry of Primary Industries.
- g. National Bovine TB Pest Management Strategy. 2009. Animal Health Board.
- h. South Island Wilding Conifer Strategy. 2001. Department of Conservation.
- i. Himalayan Thar Control Plan. 1993. Department of Conservation.

The following are the most relevant regional strategy documents⁴:

- a. The Mackenzie Agreement: A shared vision and strategy. 2013.
- b. Ecological Management Units of the Upper Waitaki Ohau Region. Department of Conservation.
- c. Conservation Management Strategy for Canterbury 2014 – 2024. Department of Conservation.
- d. Waitaki District Biodiversity Strategy, Waitaki District Council, 2014.
- e. Waitaki District Biodiversity Strategy, Report No. 3107. Wildlands, 2013.
- f. A Biodiversity Strategy for the Canterbury Region, 2009. Canterbury Regional Council, 2008.
- g. Canterbury Regional Pest Management Strategy, 2005 - 2015. Environment Canterbury.
- h. Operational Plan for Tahr Control – Canterbury. 2013 (reviewed annually). Department of Conservation.

The following are the predominant Goals/Objectives from these plans and strategies that relate to the management of the Ohau basin:

- a. A Biodiversity Strategy for the Canterbury Region, 2008. Canterbury Regional Council, 2008.
 - i. Protect and maintain the health of all significant habitats and ecosystems.
 - ii. Restore the natural character of degraded indigenous habitats and ecosystems.
 - iii. Increase the integration and sustainable use of indigenous species in modified environments (e.g. farm, urban, lifestyle blocks).
 - iv. Enhance public awareness, understanding and support of biodiversity.
 - v. Encourage, celebrate and support action by landowners and communities to protect, maintain and restore biodiversity.
 - vi. Improve the range and quality of knowledge and information about Canterbury’s biodiversity for its sustainable management.

⁴ Some of these documents are available through the relevant organisation websites.



The following areas are considered by Environment Canterbury to require high priority action and efforts:

- Threatened Environments:
 - environments where less than 20% indigenous cover remains.
 - environments where there are low levels of protection coupled with increasing threats to remaining indigenous habitats and ecosystems.
- Habitats and ecosystems that are naturally rare or distinctive.
- Habitats and ecosystems that support rare and threatened species.

“The coastal, lowland and montane environments are where the greatest losses of indigenous biodiversity have already occurred within the Canterbury region. In addition, the indigenous cover that remains in these environments supports a disproportionately large percentage of New Zealand’s most threatened species, habitats and ecosystems”

“An area of increasing priority in Canterbury is the inland hill country and inter-montane basin environments. The extent of indigenous habitat loss within these environments has not, historically, been as great as in lower elevation and coastal areas due to less extensive and intensive land use. However, as a result of several factors, including the Land Tenure Review process and the development of irrigation potential at increasingly higher altitudes, parts of these environments are currently undergoing some of the most rapid changes in land use within the region.”

- b. Waitaki District Biodiversity Strategy, Waitaki District Council, 2014
 - i. Goal 1: To identify the current state of biodiversity in the Waitaki District (Actions: 1.1, 1.2, 1.3, 1.4)
 - ii. Goal 2: To first protect, then maintain and restore, the Waitaki’s significant biodiversity (Actions: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8)
 - iii. Goal 3: To become the District’s exemplar biodiversity landholder, manager and supporter (Actions: 3.1, 3.2, 3.4, 3.5)
 - iv. Goal 4: To engage with landholders and the broader community in the identification, protection and enhancement of the Waitaki’s biodiversity (Actions: 4.1, 4.3, 4.4, 4.5)
 - v. Goal 5: To realise and celebrate local biodiversity, and encourage protection and enhancement of biodiversity across the community (Actions 5.6, 5.7).

The Department of Conservation has been active in carrying out ecological, biodiversity and biosecurity work in the Ohau Basin for more than 20 years. Key documents that have guided this work are as follows:

- a. Ohau Conservation Area Possum Control Operational Plan – 2010 – 2015. Department of Conservation.
- b. Project River Recovery Strategic Plan – 2012 – 2019. Department of Conservation.
- c. Interim Report of Intrinsic Values of the Upper Waitaki River Catchment (Draft). Department of Conservation.
- d. *Pittosporum patulum* Recovery Plan 1999 – 2009. Department of Conservation.
- e. Loranthaceous Mistletoe Recovery Plan 2001 – 2011. Department of Conservation.

All the content of these documents is highly relevant to the Ohau Conservation Trust’s Vision and Aims and will strongly guide the Trust’s activities in the future.



Part B: Key Remnant/Endangered Ecosystems of the Ohau Basin

Introduction

As noted earlier, the Ohau Basin contains a complex mosaic of habitats in a relatively small, and confined, geographical area. These are the product of a long history of intense tectonic and glacial activity, together with climate change/variability and extreme weather events. These provide the stage upon which the biotic component of the basin has established and evolved. The populations of plants, invertebrates and vertebrates interact in complex processes involving dependencies, mutualism, competition and predation to form specific ecosystems which reflect the physical nature of their immediate physical habitat controls (their ‘habitat template’). While the broad structure and distribution of the habitats in the basin is still strongly dominated by the Pleistocene glacial events, there has been increasing influence of human usage of the area, often to the detriment or exclusion of indigenous biota.

We now see a basin that, for many of the habitats, only contains remnants of what were once extensive ecosystems. The basin has incurred the same post-human colonisation pressures as much of the rest of New Zealand: fire, land clearance and associated agricultural

development, and invasive species. This has resulted in massive reductions in the areal extent of indigenous ecosystems (particularly habitats such as wetlands) and the dominance of many fewer, mostly introduced species leading to significant biotic homogenisation in the basin. In particular, invasive weed and predator species outcompete indigenous species, graze the vegetation to levels close to local extinctions, and heavily predate the insect, reptile and bird populations. Only very modest examples of the once extensive ecosystems and populations of most endemic species remain in the basin. A summary of current threats to remaining habitats is given in Appendices 1 and 2.

Key Examples of Remnant/Endangered Ecosystems Requiring Immediate Support

The following are examples of key remnant ecosystems in the Ohau basin. Many of these are now regionally or nationally at risk so require immediate support to allow their continued existence:

- a. Alpine tarn/wetland systems and associated vegetation and invertebrates on the Ohau Range
- b. Ohau terminal moraine vegetation/vertebrate/invertebrate communities
- c. Glacial outwash fans habitat for arid sub-alpine plant communities and associated invertebrates
- d. Wairepo kettle lake and Ohau moraine wetland vegetation/vertebrate/invertebrate communities
- e. Riparian beech forest corridors and bird habitats on the Ohau Range linking the West Coast to East Coast environs and alpine to lowland habitats



- f. Remnant beech forest 'patches' and associated bird habitat on the flanks of the Ohau Range
- g. Sub-alpine podocarp-broadleaf scrub/forest lands and bird habitat on the flanks of Ben Ohau
- h. Snow tussock lands of the Ruataniwha Conservation Park/Area
- i. Sub-alpine manuka/matagouri scrubland and bird habitat on the flanks of the Ben Ohau and Ohau Ranges
- j. Alpine spring-fed streams and their associated indigenous fish and invertebrate communities
- k. Remnant Pleistocene headwater glacier and moraine ecosystems
- l. Littoral areas of Lake Ohau and the Kettle Lakes and their associated plant and invertebrate communities.

Key Species and Their Importance

Within these ecosystems there are a number of populations of regionally and nationally endangered 'sentinel species'⁵. Some of these will require specific effort to maintain or reintroduce as their life history cannot be sustained by habitat enhancement and predator control alone.

Some species that are not nationally threatened are regionally or locally significant. For example, bellbird although not considered threatened nationally, definitely has local significance due to their importance for pollinating mistletoe species. Some plant species are significant due to the fact that they are quite rare locally and representative of some of the communities that used to exist pre fire and pastoralism.

Examples of significant or at risk species in the Ohau basin are as follows:

- a. Mistletoe: *Peraxilla tetrapetala* (At Risk – declining), *Alepis flavida* (At Risk – declining), *Tupeia antartica* (At Risk – declining)
- b. *Pittosporum patulum* (Threatened – nationally endangered)
- c. Hall's totara
- d. Kowhai/Kōwhai
- e. Bellbird/Korimako
- f. Tui
- g. Kea (Threatened – nationally endangered)
- h. Kaka (Threatened – nationally vulnerable)
- i. Crested grebe/Kāmana (Threatened – nationally vulnerable)
- j. Rock wren (Threatened – nationally endangered)
- k. Longfin eels/Tuna (At risk – declining)
- l. Big-nose galaxias (Threatened – nationally vulnerable)
- m. Upland longjaw galaxias (Threatened – nationally vulnerable)
- n. Spotted skink *Oligosoma lineocellatum* 'Mackenzie basin' (Threatened – nationally vulnerable)
- o. Jewelled gecko (At risk – declining)
- p. *Isoetes alpina*
- q. Black stilt/Kakī (Threatened – nationally critical)
- r. Banded dotterel (Threatened – nationally vulnerable)
- s. Wrybill (Threatened – nationally vulnerable)
- t. Black-fronted tern/Tara (Threatened – nationally endangered)
- u. Eastern falcon/Kārearea (At risk – recovering)
- v. Black-billed gull (Threatened – nationally critical) not very common these days but used to be in the 1960's



⁵ a species which is a good indicator of environmental state and health such as mistletoe which reflects degree of possum browsing and state of nectar feeding/pollinating native birds

Key Threats

The following represent key threats to the biodiversity of the Ohau basin:

a. Pest plants

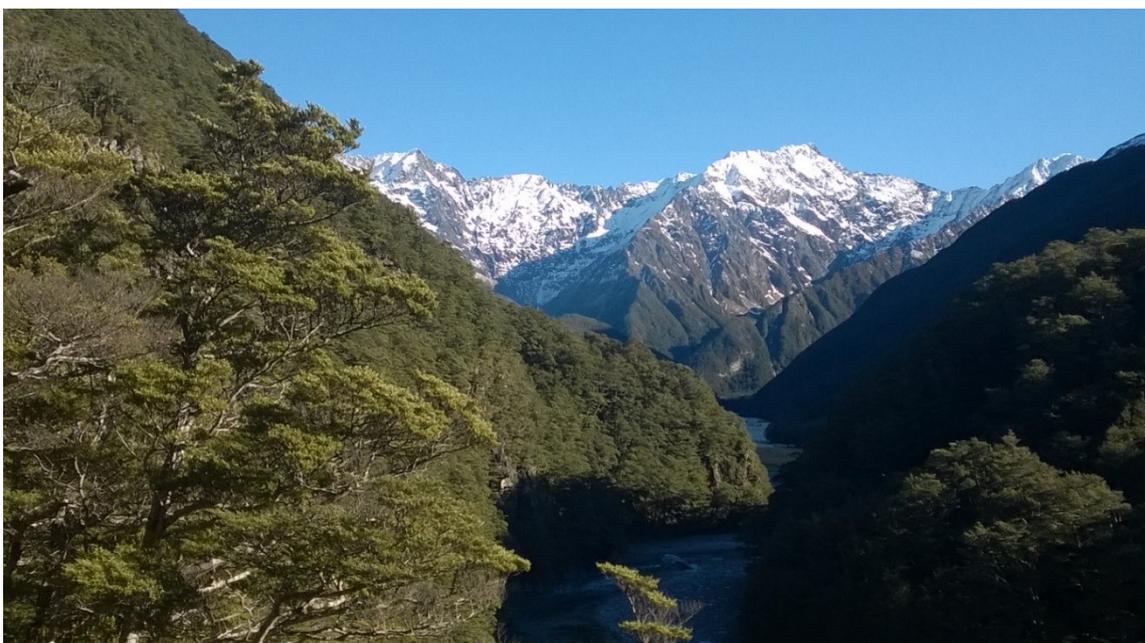
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|--------------------|---------------------------|
| i. Conifers | ix. Lupins |
| ii. Broom | x. Hieracium |
| iii. Gorse | <i>xi. Lagarosiphon</i> |
| iv. Briar rose | <i>xii. Ceratophyllum</i> |
| v. Willows | xiii. Didymo |
| vi. Rowan trees | xiv. Elderberry |
| vii. Silver birch | xv. Alders |
| viii. Cotoneasters | |

b. Pest insects/animals

- | | |
|-----------------------------|-----------------------|
| i. Rabbits | viii. Rats/mice |
| ii. Hares | ix. Hedgehogs |
| iii. Possums | x. Magpies |
| iv. Pigs | xi. Wasps |
| v. Deer | xii. Trout |
| vi. Cats | xiii. Blackback gulls |
| vii. Stoats/weasels/ferrets | xiv. Harrier hawks |

c. Human threats

- i. Fire
- ii. Further land use intensification
- iii. Camping pollution (particularly 'freedom' campers)
- iv. 'Excessive' tourism



Part C: What the Trust Aims to Achieve

Introduction

The Ohau Conservation Trust is motivated to protect the special natural values of the Lake Ohau basin as well as to promote an awareness of, and protect, the unique habitats and biodiversity of the Ohau area. Specific milestones that the Trust aims to achieve in the Ohau basin over the short, medium and long-term are as follows:

In 3 – 5 Years We Want To See

- a. Extensive communication/promotion of the activities of the Trust, through;
 - i. the web site
 - ii. regional media (papers, tourist magazines)
 - iii. national media.
- b. Delineation and scientific description of the current state of:
 - i. all the main habitats⁶,
 - ii. ecosystems, and
 - iii. key species in the Ohau basin.
- c. Based on (b) above, a 'Biodiversity and Planning Spatial Framework' for the basin that will serve to guide the Trust's activities, be a basis for planning scientific studies and monitoring programmes and to contribute to Environment Canterbury and Waitaki District Council plans.
- d. Definition and monitoring of key climatic and geophysical processes influencing the Ohau environs.
- e. Definition and monitoring of key threats and risks to the main habitats and species.
- f. A dynamic website to guide the public to the recreational and natural history assets of the Ohau basin.
- g. Development of 'easy-to-read' public information resources on the Ohau basin (eg, pamphlets, web pages etc), covering;
 - i. natural history
 - ii. human history.
- h. A comprehensive scientific information database for the Ohau basin that is accessible to the public on-line through the Trust's website.
- i. A comprehensive invasive species control and eradication plan for the Ohau basin⁷.
- j. Completion of native replanting in the Aubrey Reserve in front of the village, rabbit fencing and a long-term predator and weed control programme for the reserve.
- k. Redevelopment of the facilities and habitats around Lake Middleton, including:
 - i. full perimeter fencing to stop stock access (on western shores)
 - ii. wetland/native plant restoration for water quality protection, re-development of nesting/spawning habitat, and biodiversity enhancement
 - iii. water quality and aquatic vegetation monitoring programmes
 - iv. partial removal of willow along the foreshore
 - v. re-definition of camping areas and vehicle egresses.
- l. Weed and predator control and replanting along the alpine section of the Alps to Ocean (A2O) cycleway and Te Araroa Walking Trail to restore and enhance ecosystems along the route.

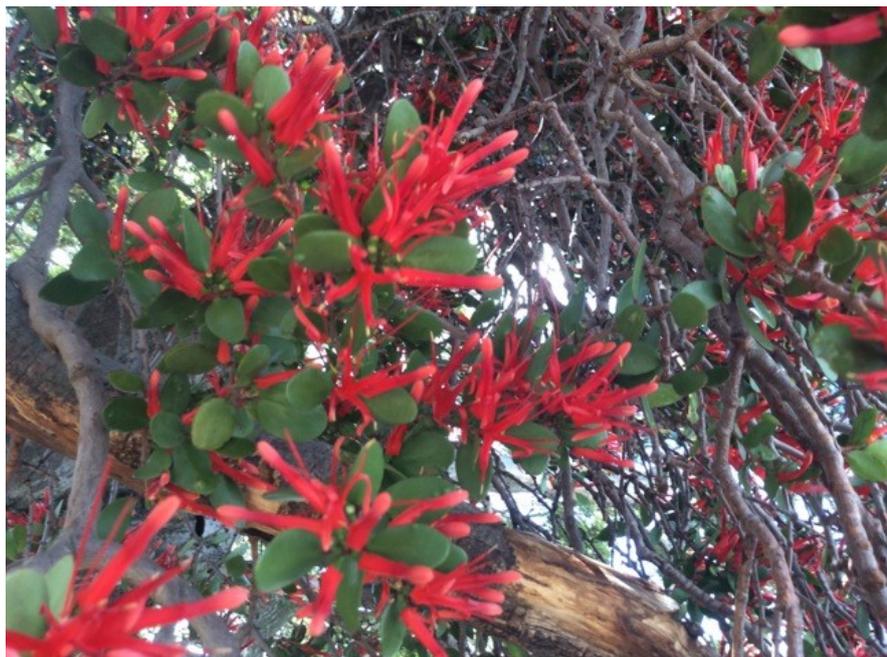
⁶ See Appendix 3 for an example of a habitat delineation map.

⁷ See Appendix 4 for a draft preliminary Predator Control Strategy

- m. Lake shore vegetation protection, replanting and restoration, fencing to keep stock out to promote native plant regeneration (kowhai and beech) and protect new plantings, weed and predator control, protection from fire, stopping use of vehicles along the beaches and margins of the lake, no new access routes established (particularly along the lake shore section of the A20 cycleway and Te Araroa Walking Trail), and beech planting and development a picnic area at 'Boat Harbour'.

In 5 – 10 Years We Want To See

- a. Invasive species fully controlled in all habitats:
 - i. plants
 - ii. animals
- b. Full protection for significant 'type' examples of key habitats and biotypes, particularly:
 - i. wetlands
 - ii. lake margins
 - iii. rangelands
 - iv. beech forest
 - v. tall tussock and subalpine scrub lands.
- c. Comprehensive 'state of the environment' monitoring of key habitats to determine the effectiveness of restoration projects.
- d. Rare and endangered species population state monitoring.



- e. Comprehensive natural history interpretation facilities at key points along popular human egresses.

In 10 – 30 Years We Want To See

- a. Restoration of all key habitats completed.
- b. Forests that are world renowned for their mistletoe blooms.
- c. Fully developed riparian corridors linking alpine and lowland habitats for birds.
- d. Prolific bellbirds and tui; kea, kaka and kereru returned to the basin.
- e. Rare and endangered species fully restored.
- f. Removal of all seeding wilding conifers.

Part D: Action Plans

Support Projects for 2016 - 2019

Over the 2016 – 2019 period the Trust aims to complete the following projects to better support the execution of this Strategy:

a. Database of scientific studies with information on, or relevant to, the Lake Ohau Basin.

The objective of this project is to enable ready access by Trustees, Trust supporters, and the public, to relevant scientific information on the basin. This would be accessible through the Trust's website. The project would consist of a compilation of current references and metadata on relevant scientific studies.

b. Delineation, classification, quantification and conservation status of key habitats in the Ohau Basin.

The objective of this project is to enable a 'spatial planning framework' to be developed for the basin to assist assessment of rareness of habitats and priorities for the Trust's conservation efforts, together with scientific studies. An example of an initial attempt at key habitat classification and delineation is given in Appendix 3. This is critical to scientifically based development of future work programmes.

c. Ohau environmental monitoring programme.

The objective of this programme would be to better understand the ecological integrity of some of the basin's key habitats and the climatic factors affecting them. Weather would also need to be monitored at multiple stations and providing this on-line (in real time) would provide a significant resource for residents and visitors to the basin (most of whom are heavily involved in weather dependent pursuits). The ecological data will provide a critical resource against which we can evaluate 'change' (particularly relevant in relation to measuring the effects of developing human pressures and the benefits of any Trust restoration efforts). Key monitoring tasks include:

- i. Weather/climate at 3 – 6 key locations
- ii. Lake Ohau water quality
- iii. Lake Middleton water quality
- iv. Lake Middleton aquatic plants
- v. Vegetation of key habitats, using:
 - a. Photo registration points
 - b. Simple 'community based' measurement protocols
- vi. Bird population status.

d. Enhance the OCT website.

The objective of this is to develop an Ohau 'knowledge network' and to link this with other related initiatives (e.g., on Lake Wanaka). Tasks would include:

- i. Posting the Trust's Biodiversity Strategy on-line and publicising it
- ii. Developing a summary of biodiversity and heritage values/state for the basin and posting on the website

- iii. Preparing a summary of cultural and human history in the basin and posting online
- iv. Posting the database of references to Ohau basin scientific studies online
- v. Develop direct web access to 'real time' weather data and climate summaries
- vi. Develop an OCT donation portal.

e. Volunteer and Supporter drive.

To implement the Vision and Aims of the OCT, many more supporters and volunteers are required, particularly from the Twizel, Omarama, Otematata and Oamaru areas. We need supporters to lead our various initiatives and projects. This would be done through:

- i. an enhanced website
- ii. holding more fundraising events (e.g., Lake Ohau Lodge dinners)
- iii. placing noticeboards at the start of the A2O cycleway and Te Araroa Walking Trail around Lake Ohau (both ends) advertising the Trust's contact details and its role in maintaining the environments along the cycleway.



f. Funding drive.

Most of the initiatives and projects will require funding support to implement. Indeed, the work for many of the projects will need to be contracted out, which will require significant resources and good systems for funds management. Key tasks would include:

- i. maintaining a record of sources of funding, their requirements and contact details
- ii. installing an electronic donations facility on the OCT website
- iii. encouraging the donation of 'endowments'
- iv. placing noticeboards at the start of the A2O cycleway and Te Araroa Walking Trail around Lake Ohau (both ends) advertising the Trust and its role in maintaining the environments along the cycleway, together with requests for financial support
- v. developing new funding applications for significant projects.

g. Communication and education programme.

It is critical that the Ohau Conservation Trust significantly increases its public profile as this will give the Trust greater credibility for securing additional supporters/volunteers and funding. Measures may include:

- i. an enhanced Website
- ii. public talks (in conjunction with fund raising)
- iii. articles for local and national media
- iv. pamphlets for public distribution.

‘Flagship’ Field Conservation Projects for 2016 - 2026⁸

Over the 2016 – 2026 period the Trust aims to complete the following conservation projects (see map at the end of this section for a location of these project sites):

a. Project “Scenic Rangeland”

The lower moraine terraces and flanks of the Ohau and Ben Ohau Ranges appear to have been vegetated in the past with a mix of sub-alpine scrub, totara, beech and snow tussock. These areas and their vegetation have been a major contributor to the iconic landscape status of the Ohau and Mackenzie Basins. However, these ecosystems are now under major threat from invasive weeds (predominantly wilding pines, woody weeds such as briar rose and cotoneaster and hieracium) and the tussocks and herb fields are being over-grazed by hares and rabbits. There are also many moist ‘hollows’ and small gullies that would once have contained manuka, matagouri, totara and/or beech pockets which have been removed (most probably by human initiated burning). The objectives of this project are to prevent further invasive species encroachment on the terraces and flanks of the Ohau Range between the Lake Ohau Lodge and Quailburn Stream and, where appropriate, restore the scrub and totara/beech vegetation to the hollows and gullies. The key tasks of this project are to:

- i. Remove wilding pines from the flanks of the Ohau Range (Ruataniwha Conservation Park) in an area from the Lake Ohau Lodge to the Quailburn
- ii. Control the invasion of the outwash moraine terraces in this area by woody weeds such as briar rose and cotoneaster
- iii. Restore totara/beech forest and manuka scrub patches to sheltered, moist, hollows and gullies in this area.

b. Project: “Bird Song”

Native birds (particularly bellbirds, tui and possibly kakariki) would have been much more prominent in the past and are a key part of the ecosystems of the Ohau Basin. Only bellbirds remain as resident populations. These nectar eaters are a vector for pollen distribution and are a critical part of the life history of mistletoe so must be supported and their populations enhanced. Significant nesting, rearing and adult feeding habitat for these species remains in the basin. In fact, extremely high quality habitat is available for species such as bellbirds in the form of extensive stands of manuka which are contiguous with patches of beech forest. The absence of some bird species such as tui, and relatively low numbers of bellbirds, is most like due to high densities of predators (most commonly the usual assemblage of mustelids, feral cats,

⁸ Appendices 1 and 2 summarise key threats by habitat upon which the ‘Flagship’ projects have been based. Full definition of projects and their associated work streams will be carried out on an ‘as and where required’ basis. These will follow the ‘Project Definition’ template as shown in Appendix 5.

rats and mice). The most vulnerable time for such bird species is after laying their eggs and when raising the chicks through to fledging. This project is therefore focussing on:

- i. Removal of predators from key nesting locations and riparian (foothills to lake) corridors. Initially this work would focus on the Lake Ohau foreshore from the Lake Ohau Alpine Village to Parsons Ck, Parsons Ck, and the beech forest patches on the flanks of the Ohau Range⁹
- ii. Eventually establishing a predator-proof breeding and feeding habitat
- iii. Reintroducing kaka and other 'sentinel' species such as tui to the area.

c. Project: "Middleton"

Lake Middleton is the only small, highly accessible, lake in the Ohau Basin that is warm and sheltered in summer and well suited for human recreation. It is a key asset for the local community and attracts significant holiday makers (usually family camping groups and boat users). It is also the home to a number of indigenous semi-aquatic birds such as crested grebes and scaups. However, the habitats surrounding the lake have been largely destroyed by land development and now the water quality is showing signs of severe degradation from eutrophication. This enhances the potential for toxic algal blooms and excessive growth of aquatic weeds (eg, *Elodea* and *Ceratophyllum*). The lake is in desperate need of measures to mitigate water quality degradation and restore safe habitat for indigenous aquatic bird populations. Key tasks are to include:

- i. Riparian fencing on the western side to prevent stock encroachment on the lake shore and margins
- ii. Restoration of native wetland vegetation on the western shores for nutrient and sediment abatement and improvement of bird habitat
- iii. Fencing and restoration of riparian vegetation along the inflow stream on Shelton Downs Station for sediment and nutrient abatement, and for enhancing the mountains to lake riparian corridor for birds
- iv. Willow thinning and replanting of native lake-edge trees
- v. Extensive predator control
- vi. Re-definition of camping areas to protect key habitats and lake-side vegetation.
- vii. Working with other organisations to establish a formed walking track around the lake and to provide information about the lake and the wider Ohau Basin.

⁹ See Appendix 4 for a preliminary draft 'Predator Control Strategy'.



d. Project “Mistletoe”

The Basin contains nationally and internationally significant mistletoe populations. However, these are currently under significant threat from possum browsing. The objective of this project would be to (as far as practicable) facilitate the eradication of possums from some specific, high visibility, beech forest patches and complement this by reducing possum numbers to low levels in adjacent areas. Locations which could be considered first include Parsons Ck, the beech forest patches on the foothills of the

Ohau Range along the A2O cycleway and Te Araroa Walking Trail including Freehold Creek, Sawyers Creek, and upper Parsons Ck. Other areas for attention, in collaboration with DOC’s possum control operations could be, Round Bush and Greta Stream. Predator trapping will also be important as mistletoe depend on birds for pollination.

e. Project: “Kowhai”

The Lake Ohau foreshore zone shows signs that it was once a primary habitat for the iconic tree species *Sophora microphylla* (kowhai). Significant regrowth of kowhai is occurring along the southern shore of the lake and in some areas along both the eastern and western shores. Threats in the past have been direct removal by human initiated fire and grazing by sheep and cattle. The further restoration of these populations, and associated patches of beech and herbaceous vegetation (hebes etc), would add hugely to the aesthetic values of the basin, together with providing additional food sources for bellbird and tui populations. Key tasks need to include:

- i. Strategic re-planting of kowhai and associated vegetation along the lake shore gravel dunes from just south-east of the Lake Ohau Alpine village to the Lake Ohau Lodge
- ii. Targeted enhancement of existing kowhai and beech patches along the lake-edge section of the A2O cycleway and Te Araroa Walking Trail from the Lake Ohau outlet to the Lake Ohau Alpine Village
- iii. Fencing to prevent sheep and cattle grazing of the foreshore reserve area along the above section of the A2O cycleway and Te Araroa Walking Trail
- iv. Increased gravel dune area predator control.

f. Project: “Greta Valley”¹⁰

The Greta Valley, on the north side of Ben Ohau, is a gem of a habitat in the Ohau Basin. A crystal-clear stream drains down through a gorge flanked by significant mountain beech forest from a hanging valley that is home to extensive tall tussock

¹⁰ The southern flanks of this basin are part of an existing DoC programme to protect the Totara Forest of the Ben Ohau EMU and all OCT efforts in this basin will be co-ordinated with the DoC programme.

and meadows of alpine plants. The riparian forest provides a very good existing bird passage corridor from the mountain tops to the lake, and to the adjacent regionally unique podocarp-broadleaf patches on the south-western flanks of Ben Ohau. Indeed, the southern slopes of this basin and the adjoining western flanks of Ben Ohau are part of the DoC 'Ben Ohau Totara Forest' Ecological Management Unit. The craggy bluffs in the lower part of the valley are spectacular and home to the NZ falcon/Kārearea. Wilding pines are just starting to take hold in this valley and need to be removed urgently before they spread further. Public access could be improved as it is a stunning place to enable people to visit and more easily enjoy the scenic and biodiversity qualities of the valley. Key tasks include:

- i. Wilding pine removal
- ii. Upgrading of the track up the valley to the top of Ben Ohau
- iii. Possum and predator control
- iv. Development of biodiversity and landscape information material for walkers and bikers.

Map showing location of Project sites



Appendix 1: Overall sub-habitat threat matrix

For areas neighbouring the Lake Ohau Alpine Village (ie, within the Ahuriri East, Lake Ohau, Ben Ohau and Lake Ohau Moraines Ecological Management Units)

Sub Habitats Within Ohau Basin's Ecological Management Units	Pest Plants	Pest Insects/ Animals	Human Threats
Terrestrial			
Aubrey Reserve, Lake Ohau foreshore	Y	Y	Y
Lake Ohau gravel beach dunes	Y		Y
Terminal moraines	Y	Y	Y
Lateral moraines	Y	Y	Y
Braided river flats and deltas	Y	Y	Y
Beech forests 'blocks'		Y	
Podocarp-broadleaf sub-alpine forest (eg, slopes of Ben Ohau)	Y	Y	
Riparian corridor forests	Y	Y	
Alpine Ruataniwha Conservation estate (above A20 cycleway, Te Araroa Walking Trail and Glen Lyon Rd)	Y	Y	
Tussock range lands	Y	Y	
Sub-alpine scrub lands (matagouri, manuka, dracophyllum etc)	Y	Y	
Aquatic			
Lake Ohau		Y	
Lake Middleton	Y	Y	Y
Kettle lakes	Y	Y	Y
Wetlands	Y	Y	Y
Alpine tarns	Y		
Mountain streams (Freehold, Sawyers, Parsons, Ski field, Greta etc)			
Alpine spring-fed streams			
Valley floor spring-fed streams	Y	Y	Y
Areas of focussed community/visitor activity and interest			
Lake Ohau Alpine village	Y	Y	
Lake Ohau Lodge and ski field	Y	Y	
Aubrey reserve	Y	Y	Y
A20 cycleway/Te Araroa Walking Trail (and ribbon environments)	Y	Y	Y
Lake Middleton reserve	Y	Y	Y

Appendix 2: Pest plant sub-habitat threat matrix

For areas neighbouring the Lake Ohau Alpine Village (ie, within the Ahuriri East, Lake Ohau, Ben Ohau and Lake Ohau Moraines Ecological Management Units), Lake Ohau basin

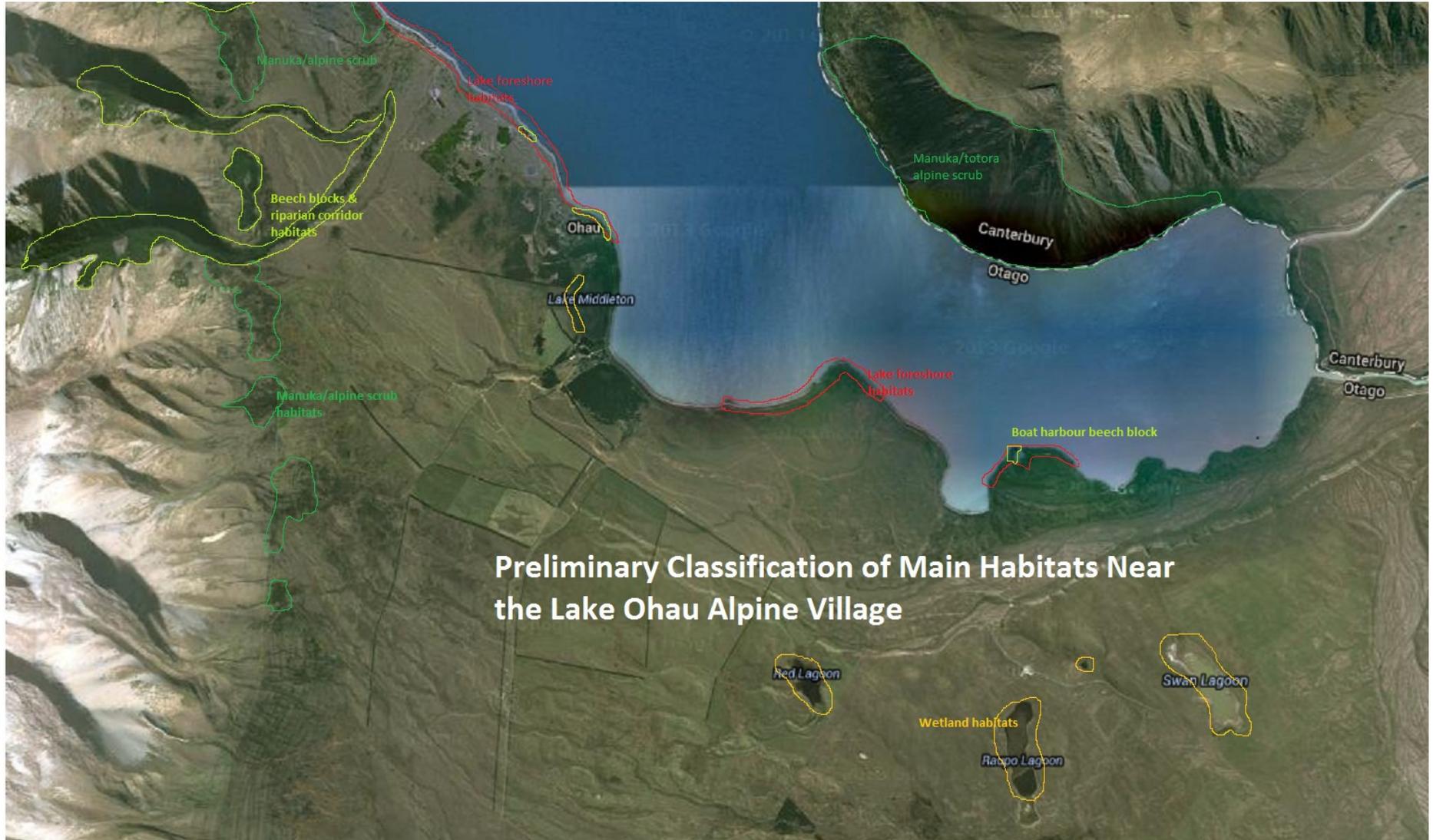
Group 1 weeds = pines, broom, gorse, briar rose, silver birch, lupins, hieracium

Group 2 weeds = rowan, cotoneaster, silver birch, lupins, gorse, broom

Group 3 weeds = willows, lagarosiphon, ceratophyllum

Sub Habitats Within Ohau Basin's Ecological Management Units	Group 1	Group 2	Group 3
Terrestrial			
Aubrey Reserve, Lake Ohau foreshore		Y	
Lake Ohau gravel beach dunes		Y	
Terminal moraines	Y	Y	
Lateral moraines	Y		
Braided river flats and deltas		Y	
Beech forests 'blocks'	Y		
Podocarp-broadleaf sub-alpine forest (eg, slopes of Ben Ohau)		Y	
Riparian corridor forests	Y		
Alpine Ruataniwha Conservation estate (above A ₂ O cycleway/Te Araroa Walking Trail and Glen Lyon Rd)	Y		
Tussock range lands	Y	Y	
Sub-alpine scrub lands (matagouri, manuka, dracophyllum etc)	Y	Y	
Aquatic			
Lake Ohau			Y
Lake Middleton			Y
Kettle lakes			Y
Wetlands			Y
Alpine tarns			Y
Mountain streams (Freehold, Sawyers, Parsons, Ski field, Greta etc)		Y	Y
Alpine spring-fed streams		Y	Y
Valley floor spring-fed streams		Y	Y
Areas of focussed community/visitor activity and interest			
Lake Ohau Alpine village	Y		
Lake Ohau Lodge and ski field	Y		
Aubrey reserve	Y		
A ₂ O cycleway/Te Araroa Walking Trail (and ribbon environments)	Y		
Lake Middleton reserve	Y	Y	

Appendix 3: Preliminary classification of key sub-habitats near Lake Ohau Alpine Village



Appendix 4: Draft Predator Control Strategy.

Introduction

Restoring biodiversity to the Ohau Basin is a key element of The Ohau Conservation Trust's Vision. A primary component of the biodiversity of the basin is the indigenous bird community. The main threat to this community is the loss of habitat and predation pressure. In this strategy we set out plans for controlling or eradicating the main predator species from selected areas that have been determined as critical to the maintenance of locally important birds such as bellbirds, robins, rifleman, warblers and fantails, and allow the reintroduction of others such as kaka and tuis.

Main Predator Threats

The main predators that need to be controlled in the Ohau Basin are:

1. Rats and mice – ground and tree dwelling
2. Possums – ground and tree dwelling
3. Mustelids and cats – mostly ground dwelling, but will climb in search of prey.

Strategy for the Control Process

Birds are at their most vulnerable when on the nest, as eggs and prior to fledging. Breeding areas are therefore key places to target for predator control. For many of our indigenous birds such as bellbirds, areas of thick manuka scrub and podocarp-broadleaf scrub are the preferred habitat for breeding. Beech forest is a secondary habitat that is important for feeding and rearing. Therefore the highest value habitats to target are areas where manuka scrub and beech forest co-exist.

Benefits to vegetation habitat can also occur from predator control. In particular, possums selectively browse mistletoe and broadleaf trees which are also preferred food for many bird species. In selecting control areas, the potential to enhance mistletoe and podocarp-broadleaf vegetation should therefore be considered.

Further issues to address include 'public value', accessibility, and timing of effort. Any control effort needs to have as a priority areas that will, at least initially, be of benefit to public enjoyment and be easily accessible to allow bait stations and traps to be serviced. Also, predator activity is highest in the summer/autumn seasons so control effort needs to be highest at these times. Many birds nest in late spring so this needs to be taken into account too.

Riparian corridor linkages are also important to allow for the safe passage of migrating birds from highland to lowland areas during the year (in search of food and mates). This is also important to allow trans-valley passage.

Therefore the selection of priority control areas needs to take into account the following criteria, in order of priority:

1. Value of area for bird nesting and rearing
2. Ancillary benefits for vegetation habitat
3. Value to human outdoor and recreational activities
4. Accessibility for programme maintenance
5. Riparian corridor linkages
6. Seasonal activity of predators and target bird species.

Proposed Priority Areas for OCT Predator Control Programme

Based on the above criteria, the following are suggested as priority areas for predator control:

1. Parsons Creek picnic area and adjacent manuka scrubland
2. Lake Ohau Lodge and adjacent manuka scrubland
3. Freehold Creek and adjacent manuka scrublands
4. A2O beech forest patches and adjacent manuka scrubland
5. Lake Ohau Village and surrounds (incl. Aubrey Reserve and Lake Middleton area)
6. Round Bush and adjacent manuka scrublands
7. Quailburn beech forest and adjacent subalpine scrub

Predator Control Systems

The different pest types require different control approaches, as follows:

1. Rats and mice – best controlled through poison bait stations
2. Possums – caught through poison bait stations and/or mechanical means (gas-actuated bolt traps and Trapinator traps, both with bait lures)
3. Mustelids and feral cats (gas-actuated bolt traps and/or ground placed mechanical ‘DoC’ traps with bait lures)

In developing a plan, potential for interference by the public and unintended consequences on domestic animals also need to be considered.

Overall Plan

A possible plan is summarised in Table 1.

Table 1: BS = bait stations; MT = mechanical traps

	Mice/Rats	Possums	Mustelids/cats
1: Parsons Ck	BS	MT	MT
2: Ohau Lodge	BS	MT	MT, GT
3: Freehold Ck	BS	BS	GT
4: A2O forest	BS	BS	GT
5: Ohau Village	BS	MT	MT, GT
6: Round Bush	BS	MT	MT, GT
7: Quailburn	BS	MT	GT

Appendix 5: Project definition template.

Ohau Conservation Trust: Project Definition Form

SHORT TITLE: ?????

PROJECT LEADER: ?????

CO-LEADER: ?????

HABITAT AREA: ?????

COLLABORATORS: ?????

SUBCONTRACTORS: ?????

TYPE¹¹: ?????

TOTAL COST (incl. GST): \$

Funds required from OCT - \$

Funds required from sponsor - \$

'In kind' inputs - \$

OTHER INPUTS REQUIRED: ?????

OUTLINE OF NEED

Summary of why this project is needed and how it will contribute to delivering the Ohau Conservation Trust's Strategic Plan.

¹¹ Relates to the type of project: Habitat restoration, Predator control, Weed control, Facility development

OBJECTIVES

Summary of what you intend to achieve.

DETAILED WORK PROGRAMME, BY MILESTONE

Milestone # 1: ????

Summary of work to be carried out.

Task A¹²: ??????

Task B: ????

etc

Milestone # 2: ???

Summary of work to be carried out.

Task A: ??????

Task B: ????

etc

Milestone # 3: ???

Summary of work to be carried out.

Task A: ??????

Task B: ????

etc

BUDGET

Revenue for project:

- Ohau Conservation Trust - \$????
- Grants¹³ - \$????

Costs by Milestone:

- Direct Labour - \$????

¹² Include dates for activities.

¹³ If more than one source then list separately.

- Sub-contractors¹⁴ - \$????
- Materials and Supplies¹⁵ - \$????
- Travel - \$????

'Donated' Labour Summary:

PERSONNEL	Milestone #1 (hrs)	Milestone #2 (hrs)	Milestone #3 (hrs)	Milestone #4 (hrs)
????				
????				
????				
????				
????				
????				

Approval:

Signature/Date

OCT Chairman

Signature/Date

OCT Secretary/Treasurer

¹⁴ List each sub-contractor separately.

¹⁵ This needs to be broken down into the major components.

Appendix 6: Current work programme, by Ecological Management Sub-unit habitats, and project leader as at 30 June 2016

Habitats	Pest Plants	Pest Insects/Animals	Vegetation Restoration
Terrestrial			
Aubrey Reserve, Lake Ohau foreshore	Lupin etc control (M. McMillan, OCT)		
Lake Ohau gravel beach dunes	Lupin etc control (M. McMillan, OCT)		Tussock/beechn/scrub/kowhai (W. Biggs, OCT)
Terminal moraines			
Lateral moraines			
Braided rivers and deltas			
Beech forests 'blocks' (eg, Round Bush)			
Podocarp-broadleaf sub-alpine forest (eg, slopes of Ben Ohau)	Wilding conifer control (DOC)		
Riparian corridor forests		Mistletoe Project - Possum Control (V. Smith, OCT)	
Alpine Ruataniwha Conservation estate (above A20 cycleway/Te Araroa Walking Trail and Glen Lyon Rd)	Wilding conifer control (DOC)		
Tussock range lands	Wilding conifer control between village and lodge (OCT)		
Sub-alpine scrub lands (matagouri, manuka, dracophyllum etc)	Wilding conifer control on flanks of Ohau Range between ski field road and Tarnbrae summit (OCT) Cotoneaster control around Lodge (OCT, DOC & ECan)		
Aquatic			
Lake Ohau			
Lake Middleton	Annual vegetation surveys (NIWA)		
Kettle lakes			
Wetlands			
Alpine tarns			
Mountain streams (Freehold, Sawyers, Parsons, Ski field, Greta etc)			
Alpine spring-fed streams			
Valley floor spring-fed streams			
Areas of focussed community/visitor activity and interest			

Lake Ohau Alpine village	Lupin/broom/pine control on public lands and unoccupied sections (OCT)		
Lake Ohau Lodge and ski field	Wilding conifer control adjacent to road (OCT)		
Aubrey reserve			
A2O cycleway/Te Araroa Walking Trail (and ribbon environments)	Wilding conifer control on flanks of Ohau Range between ski field road and Tarnbrae summit along A2O (OCT)		
Lake Middleton reserve	Wilding conifer control on western edge of Lake (OCT)		