

***Recreation: A Background Paper  
Contributing to the Te Waihora/Lake  
Ellesmere: State of the Lake 2013  
Technical Report No. 1.***

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# Recreation

## Te Waihora/Lake Ellesmere – State of the Lake 2013

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### **How will we know when we have achieved success?**

Compatible recreation needs are provided for, including good access, water quality, and habitat for wildlife, including for sports fisheries.

### **Summary**

Since the 1880s Te Waihora/Lake Ellesmere and its immediate environs have provided for a wide range of recreational activities – today it remains popular for trout fishing, waterfowl hunting, cycling, whitebaiting, walking and picnicking, a variety of boating activities and bird watching. For some of the more traditional activities, such as trout fishing and water sports, participation has declined drastically until around the 1970s and seems to have remained static since. However, there are newer activities such as cycling on the Little River Rail Trail that have had spectacular growth in recent years. While much of the data are old it is considered that around 20-30,000 recreation days per annum occur at the lake – this is significant in a regional context. Unfortunately for many of these activities, and others, there is little or no ongoing monitoring either in regard to levels of use or quality of experience. And, while there is conflict between some groups of recreational users, little or no action has been taken to implement effective responses or to monitor changes over time. Recommendations are made for an improved monitoring programme.

### **Introduction**

Only 30kms or so from the city of Christchurch, and with over 400,000 people resident in the area, Te Waihora/Lake Ellesmere and environs have long been, since the 1880s, popular for a wide range of outdoor recreational activities. Key activities include fishing (for trout, flounder/patiki, eel/tuna, inanga/whitebait), waterfowl hunting, water sports (swimming, kayaking, sailing, power boating, windsurfing), walking, cycling, bird watching, photography, camping, walking and picnicking. More recently, activities such as geocaching have gained in popularity. The context for these recreational activities has been described by Booth (2009) but there has been little or no research, across the range of activities, into indicators relating to related to numbers participating, trends over time, and changes in experience of these activities – these are the matters that are the central focus of this report.

Analysis of relevant planning documents (e.g., the Te Waihora Joint Management Plan, p89, DOC and Ngai Tahu 2005) identified that the overall aim for recreation associated with the lake and environs is: compatible recreation needs are provided for, including enjoyment, good access, good water quality, and good habitat for wildlife and fisheries, including sports fisheries. The indicators reported on and evaluated reflect the range of uses, based on those classified as wildlife

dependent, water based or land based. Indicators are based on the Pressure (and Driving Force – if identifiable)-State-Response model of environmental reporting.

## What data has been collected and how?

Data were collected for indicators (mainly around levels of use) for the key recreational activities to explore aspects of the state of the activity, pressures on the activity and responses to those pressures (Table 1).

<b>Outcomes - main themes</b>	<b>State</b>	<b>Pressure</b>	<b>Response</b>
Providing for compatible recreation needs – access, good water quality and habitat	For selected activities – change in number of participants, location of activity, perception of experience  <b>What do we measure?</b> Numbers participating Locations Reports from users on quality of experience	Conflict between users Water quality Lake level management and water flows  <b>What can we describe and measure?</b> Perceptions of conflicts Perceptions of other pressures, e.g., water quality and quantity Prosecutions/warnings for breaching rules, water quality - see water quality state indicators, Lake level/water flows – see water quantity	Regulation Advocacy Direct action  <b>What can we describe and measure?</b> Occurrence of recreation related rules/regulations Access maps Facilities plans Advocacy Conflict resolution procedures

Table 1. Indicator framework used for recreation at Te Waihora/Lake Ellesmere

A set of activities was selected, representing a broad cross section of recreation pursuits at the lake - some are known for the high level of participation historically, some are still popular, and some which are relatively new to the area. The availability and quality of quantitative data is variable and mostly very poor, and has been supplemented with anecdotal reports. The indicators which have been considered are number of participants and changes over time of these numbers, locations of activities and any changes over time, and the quality of the experience and changes over time, with most emphasis on the first of these.

Activities not included in the selected list of recreational activities reported and presented in Table 2, and reasoning for their exclusion, follows:

- Flounder fishing – no data are available and it is considered a much lesser activity than trout or whitebait fishing
- Eel fishing – no data are available and it is considered a much lesser activity than trout or whitebait fishing
- Geocaching - a new activity but on drier lake edges, undertaken at most by a few dozen people
- Off-road driving: on the lake bed this is largely illegal and is thus not reported
- Blokarting – as above.

<b>Activity class</b>	<b>Activity type</b>	<b>Numbers users /trends</b>	<b>Locations of activity</b>	<b>Perceptions - +ve or -ve</b>
A) Wildlife dependent	i. Fishing – trout	Quantitative, time series	Expert knowledge	Expert knowledge
	ii. Fishing – whitebait	Expert knowledge	Expert knowledge	No information
	iii. Waterfowl hunting	Quantitative, time series	Quantitative, time series	Expert knowledge
	iv. Bird watching	Quantitative, Expert knowledge	Expert knowledge	Expert knowledge
B) Water-based	i. Swimming	Expert knowledge	Expert knowledge	No information
	ii. Boating - yachts	Quantitative, expert knowledge	Expert knowledge	Expert knowledge
	iii. Boating – water skiing	Quantitative, expert knowledge	Expert knowledge	Expert knowledge
	iv. Boating – power	Quantitative, expert knowledge	Expert knowledge	Expert knowledge
	v. Boating – wind surfing	Quantitative, expert knowledge	Expert knowledge	Expert knowledge
C) Land-based	i. Cycling	Quantitative	Quantitative	Expert knowledge
	ii. Photography	Qualitative	Expert knowledge	Expert knowledge
	iii. Walking	Qualitative	Expert knowledge	Qualitative
	iv. Picnicking	Qualitative	Expert knowledge	Qualitative

Table 2. The recreation activity and indicator framework

A) Wildlife dependent recreation:

Overall context:

There are four major activities in this category: trout angling, whitebaiting, waterfowl hunting and bird watching. A fifth and possibly even a sixth, flounder fishing and eel fishing, are likely also important but there are no data.

**Fishing**

i. Trout:

There is a mix of quantitative and qualitative (expert knowledge) available regarding the trout fishery.

State:

*Angler numbers:* Historically (1920s to 1950s) the Selwyn River was considered one of the best brown trout fisheries in the country (Hughey and Taylor 2009), yet no quantitative data exist on angler numbers over this period. Indeed it has only been from the late 1970s that survey data on angler use has become available. Over these more recent times angling days have declined from 54,000 in 1978/9 to around 4200 in 2007/8 (Table 3 and Figure 1). This decline more than matches the decline in trout spawning in the Selwyn, the major spawning river in the Te Waihora/Lake Ellesmere catchment (Figure 2).

*Quality of fishing:* Despite reduced numbers of anglers and a reduced number of trout (see Millichamp 2009) those fish that are present are considered of high quality with many of trophy quality (K Hughey pers. obs.).

*Location of effort:* Anecdotal reports suggest that the number of good fishing spots has declined significantly (e.g., the Irwell, once a premiere fishery, is now mostly unfishable due to low flows; Millichamp pers. comm. 2013).

Catchment Name	River Name	Season					
		1994/95		2001/02		2007/08	
		Days	1_SE	Days	1_SE	Days	1_SE
Kaituna	Kaituna	89	87				
Halswell	Halswell	1760	881	221	126	459	182
L II	L II	2132	1111	681	289	595	245
Selwyn	Hawkins	207	137	77	45		
	Hororata	160	132				
	Selwyn	6702	1372	2127	545	1003	303
Irwell	Irwell	433	237	35	31		
Harts Creek	Harts Creek	1008	517	484	120	630	334
Lake Ellesmere	Lake Ellesmere	424	283	152	152	192	78
	Total	13739	2113	4159	678	4232	927

Table 3. Number of recreational angler days (plus 1 Standard Error) for Te Waihora/Lake Ellesmere and tributaries (data source: National Angler Surveys, M Unwin, NIWA, pers. comm. May 2013).

Note that due to the size of the SE numbers should be rounded to the nearest hundred.

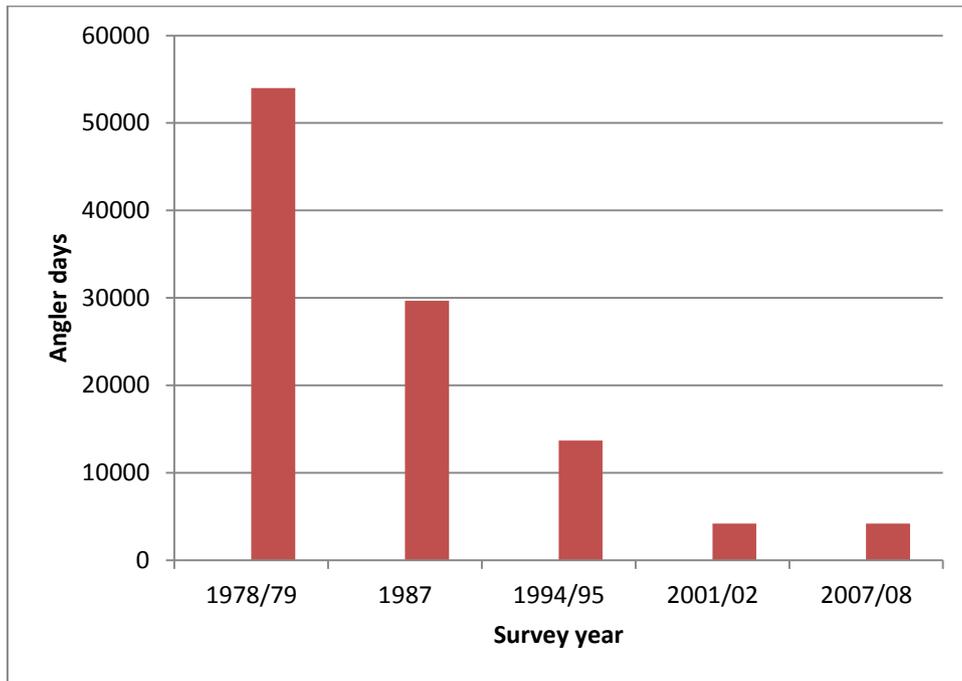


Figure 1. Angler usage of the Te Waihora/Lake Ellesmere system. (Data source: NIWA, 2009; Kitto, 2010; Teirney et al, 1987, P. 19.)

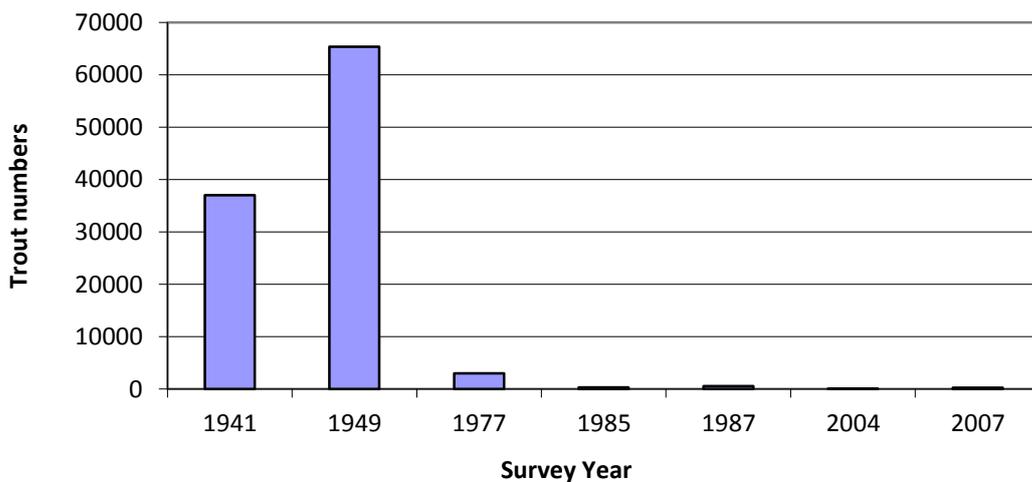


Figure 2. Estimates of the Selwyn River brown trout spawning runs from census traps, 1941-2007 (Source: Millichamp 2009).

Pressure (and Driving Force):

Major pressures (see Table 3) are the decline in fish numbers (bycatch and lack of spawning areas), and to a lesser extent angler access (see Millichamp 2009) and poor water quality (Agricultural intensification, Natural eutrophication processes) (see Water Quality report).

Response:

*Managed access points* – these are all available for angling around the lake

*Advocacy programmes* – Fish and Game North Canterbury are advocating for improved quality and quantity of water in the tributaries of the lake. If this is successful then the

quality of the angling experience should improve, which in turn should be reflected in an increase in angler numbers – this programme has yet to be successful

*Planning* – LWRP and CWMS efforts to improve water quality (streams and lake) and quantity (streams)

Commentary:

State indicators have all been in long term decline. Turning these around will require action regarding water quality and quantity which in turn should increase fish numbers (see Millichamp 2009).

ii. Whitebait:

State:

There are no quantitative ongoing monitoring data on whitebaiting at the lake.

*Numbers of whitebaiters:* Terry Lassen (pers. comm. 12<sup>th</sup> August 2013) reports the LII can be really busy with people coming and going throughout a day – he estimates 20-30 people on a good day and this has been consistent since the 1960s/70s. Hughey (pers. obs.) has observed up to 10 seen on single kayak trips over a number of years in the 2000s. On the Halswell, Colin Arps (pers. comm. 18<sup>th</sup> July 2013) reports 10-12 in a good season on peak days with numbers consistent since the 1970s. No information was forthcoming for the Selwyn, Taumutu area or the Kaituna but as a minimum at least 10 should be present on good days at Selwyn and Taumutu and perhaps as many as 5 at Kaituna. Terry Lassen's observation (pers. comm. 12<sup>th</sup> August 2013) is that the whitebait run is better if the lake is opened later, e.g., Oct/Nov – it is not so good if the lake is open in Aug/Sept. He has also observed that there are cycles - perhaps 1 in every 10-12 years there is a really good year.

*Trends in numbers:* Little is known about trends of whitebaiter numbers over time except that numbers appear to be static from around the 1970s. What is known, through personal observation and discussion with whitebaiters on the LII river, is that whitebaiting is typically good a few days after the lake is opened to the sea during the whitebait season and depending on the size of the run can be good for several weeks after.

*Location of whitebaiting:* Occurs at the lake outlet, in the lower Selwyn, Lower LII and Lower Halswell and on the lower Kaituna.

Pressure (and Driving Force):

*Timing of lake opening:* When lake openings do not occur at the right time there is effectively no whitebait run, i.e., if they do not occur sometime in the whitebait season, mainly in the months September-November inclusive, although it appears October-November is the best time.

Response:

*Management action:* A spring lake opening is now more explicitly provided for (WCO) and so the lake is likely to be open to the sea more often during the whitebait season.

Commentary:

A data collection programme is required to monitor whitebaiting associated with the lake. This could be run on a voluntary, but organised basis in cooperation with the local hut communities, e.g., at Selwyn and Greenpark. Or, there could be a formal programme

organised around openings during the whitebait season involving occasional visits over a 3-4 week period to each of the main whitebaiting locations. Data collection would need to include fishing effort, catch and access related issues.

iii. Waterfowl hunting

Context:

Te Waihora/Lake Ellesmere is the "single most important waterfowl hunting area in the Canterbury region" (Blackford and Law 1996, p226). Meis (1988) noted that 41.5% of total hunting days in North Canterbury over the period 1971-84 were from Lake Ellesmere. She noted also that the total number of hunter days ranged over this period from an average of 2.66 to 7.21 days per annum. Finally, the NCAS (1987) estimated a total of 950 participated in opening day hunting on Te Waihora/Lake Ellesmere in 1987. Given 950 hunters were recorded on the lake on opening day of 1987, and taking a mid range hunter day point of around 5 hunter days per annum this would give a total of about 5000 hunter days per annum.

State:

*Numbers:* There is no ongoing data on hunter-user days on Te Waihora/Lake Ellesmere. One indicator regularly monitored in recent times is the number of registered and maintained maimai (hunting hides) on the lake. This data has been collected in recent years as users of each maimai need to be registered and now pay a rental fee, some of which goes to Ngai Tahu as part of the Ngāi Tahu Claims Settlement Act 1998. Numbers of maimais have been recorded on four occasions since 1987 when Meis (1988) reported 400 present (Figure 2). While numbers have varied substantially over time there is no obvious trend apparent.

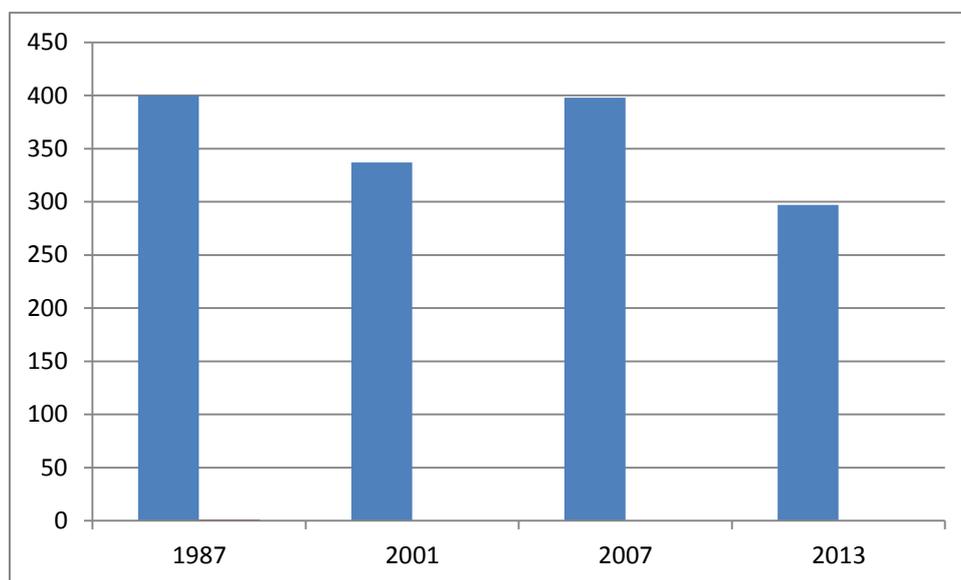


Figure 2. Numbers of maimai established around Te Waihora/Lake Ellesmere (Data source: Meis 1988; Booth 2007, P. 89; Terry 2001, P.10; T. Hawker, Fish and Game North Canterbury, pers. comm. 15 May 2013).

Main hunting areas follow the pattern of maimai locations as shown in Figure 2. The key area is clearly Greenpark Sands around to the Selwyn Delta where there are multiple lines of maimai.

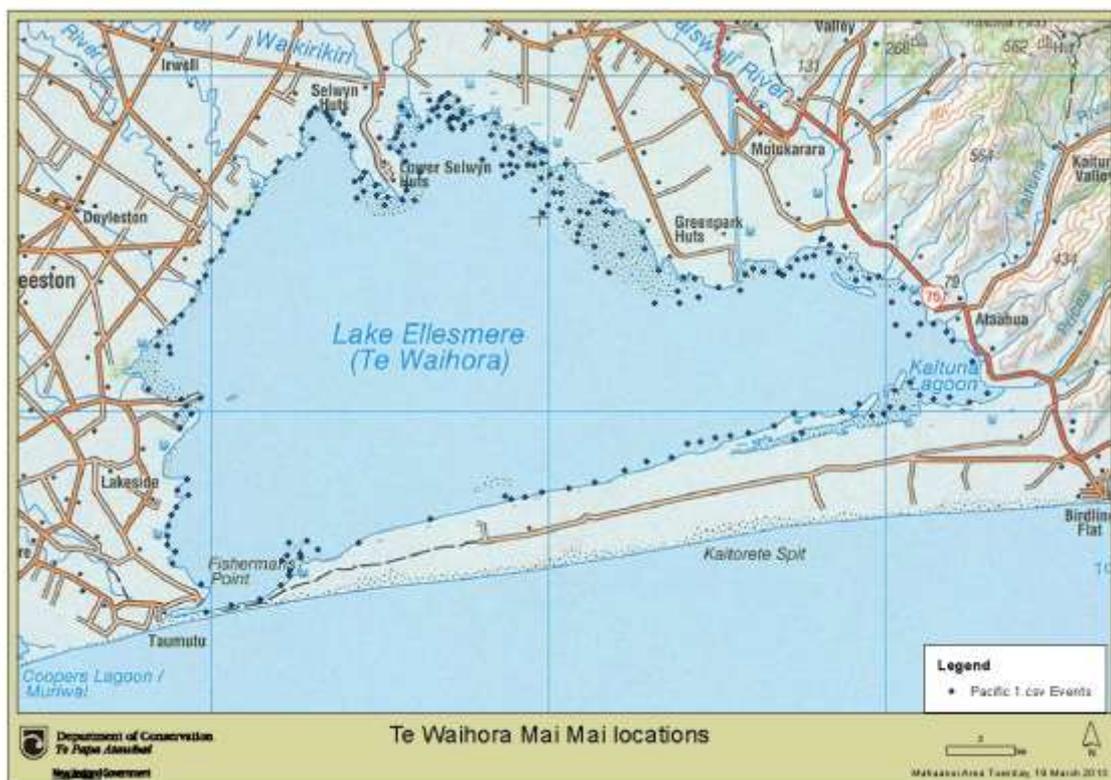


Figure 2. Locations of maimai in the 2013 survey (courtesy T. Hawker, Fish and Game North Canterbury, 15 May 2013)

Pressure (and Driving Force):

*Conflicting values:* Bird watching is a conflicting activity that negatively impacts both parties, i.e., hunters 'scare' bird watchers and birds while bird watchers scare waterfowl away from hunter locations (K Hughey pers. obs.) (Canada goose are now hunted year round because the Government changed the status of geese in 2011 from Schedule 1 to Schedule 5 of the Wildlife Act 1953, meaning the species is not protected and anyone can hunt or kill it at any time – see <http://www.doc.govt.nz/about-doc/role/legislation/wildlife-act/change-to-protection-status-of-canada-geese/> accessed 15 August 2013); 4-wheel drive use has led to access restrictions for hunters (the need to protect native vegetation).

*Lake level:* Fluctuating lake levels affect waterfowl hunting with low lake levels on opening weekend (1<sup>st</sup> weekend in May) negative for waterfowl hunting (lake level management regime).

*Water quality - Toxic algae warnings:* Perceived very seriously by duck hunters especially those using dogs, which is most duck hunters (K. Hughey pers. obs.) (Agricultural intensification – see Water Quality, Natural eutrophication processes).

*Access points/visitor facilities:* Duck hunters now have restricted access, for driving, to maimai on some parts of the lake, especially along Greenpark Sands where DOC and Ngai

Tahu have closed a large area to vehicle access (Maimai agreement). Signage in poor condition: causes confusion (Lack of resources)

Response:

*Lake level management:* WCO seeks to manage lake levels in a way that meets the needs of all native bird species, but also has to manage for fish and native vegetation

Commentary:

Waterfowl hunting remains a major recreational use of the lake but we have no quantitative data about the number of hunter days. More could be done to explain to users what some of the conflicting values are and why there are new restrictions imposed on hunters. A survey of actual hunter use, perhaps repeated every 5 or so years, would establish trends in hunter days per annum, patterns of use around the lake, and could also explore other issues of management relevance, both to Fish and Game and for lake management more generally.

#### iv. Birdwatching

Context:

Te Waihora/Lake Ellesmere is the single most bird-diverse habitat site in New Zealand, i.e., 167 species recorded there out of a total number of extant bird species in New Zealand of 324, in 1996. The diversity of habitat types, the large habitat area available for shallow and deep water wading bird species, abundant food supplies, and location close to Christchurch, mean it is a very popular site also for bird waters. Hughey (1987) estimated that around 1000 bird watching days per annum occurred at Te Waihora/Lake Ellesmere – there is no known further research into this question.

State:

*Numbers:* A number of individual and commercial trips have occurred around the lake, but apart from the Hughey (1987) estimate of 1000 bird watching days no data are available on the total number of visits. The Ornithological Society of New Zealand (OSNZ) undertakes four organised visits per year of about 10 to 12 people per trip (J. Walker, personal communication, December 22, 2012), and there is also a very large number of individual bird watching trips (K. Hughey pers. obs.). The regional representative of the OSNZ commented that the number of bird watchers has increased in the past year.

Pressures (and Driving Force):

*Conflicting values:* Hunting season can scare birds and bird watchers, particularly now that Canada goose hunting can occur on a year-round basis (see waterfowl hunting for explanation); Off road driving (see waterfowl hunting for explanation);

*Lake level:* perceived as sometimes not being managed in a way that is appropriate for migratory wading birds, although it is important to note that habitat conditions around the lake mean there are many places that different groups of birds can use under a variety of lake level conditions.

Response:

*Lake level management:* WCO seeks to manage lake levels in a way that meets the needs of all native bird species, but also has to manage for fish and native vegetation.

Commentary:

The OSNZ could be asked to survey its members about the ongoing level of use they make of the lake for bird watching, or to ask members to keep a diary of their visits over a year or more.

B) Water-based activities – boating generally, including windsurfing

Overall context:

Since the early 1880s there have been organised boating and swimming events at Te Waihora-Lake Ellesmere. Annual New Year's Day regattas occurred for many years and appeared to peak in popularity in the 1920s and 1930s (see Papers Past for reports on Ellesmere Aquatic Club Regattas at Fisherman's Point). Consequently, historically and in contemporary times there has been a very wide range of water-based recreational activities associated with the lake including: powerboating, windsurfing, rowing, kayaking and swimming. While an obvious indicator of the state of each is 'level of use' there are no long term data for any of these activities. Swimming, while popular many years ago in the lake, is no longer regarded as an activity linked directly to the lake; it is however still popular on the Selwyn River in the Chamberlains and Coes Ford areas – there are however no long term data about swimming at these sites.

State:

*Numbers:* As a consequence of the above context it is not possible, except anecdotally and perceptually (and thus relatively), to report on the state of water-based activity recreation on the lake. While very large numbers of people used the lake for a range of boating activities from the 1920s to the 1950s, the growth of water skiing as a sport meant many more participated in this activity from the 1950s to the 1970s – probably thousands of boater days per annum occurred but no hard data have been found. Following the Wahine storm in 1968 and the loss of the stabilising weed beds, there was a huge decline in boating activities on the lake, a decline that has continued – however, other reasons also contributed to this decline including improved access to other boating sites in Canterbury as transport options became quicker and relatively much more affordable.

One of the newest activities has been wind surfing which seemed to peak in the 1990s, decline, and more recently increase again as new 'speed' wind surfers have discovered parts of the lake which are establishing an international reputation for the lake in this regard (David Boyd, pers. comm., 2013). Kerry O'Brien (pers. comm. 2013) notes that windsurfer numbers peaked in the 1990s and from his experience at Lakeside Domain there is now very little recreational boating activity occurring on the lake.

Pressure (and Driving Force):

*Water levels:* Bad boating conditions occur when the lake is open to the sea for an extended period of time and the lake 'bottoms out' (Lake level management regime).

*Water quality:* Algal blooms, occasional bad smell, poor water clarity (Agricultural intensification, Natural eutrophication processes).

*Access/facilities:* Lack of launching sites for kayakers and rowers on rivers like the LII (Lack of planning and resources).

Response:

LWRP and CWMS efforts to improve water quality

Commentary:

There is little quantitative information about the state of water-based recreational activities on the lake, but there is no doubt it has declined both in terms of number of users and their experience over time. Quantitative data could be collected as the basis for recording changes related to any management response that targets access/facilities, water quality improvements, and changes to the lake level management regime.

### C) Land-based activities

A range of land-based activities occur in the area but only one, cycling on the Rail Trail, is monitored quantitatively. Other activities include: photography, walking and picnicking.

#### i. Cycling

Context:

A cycling trail is being constructed, in stages, to connect Christchurch with Little River. The Motukakara to Little River section follows the old railway line in large part beside, or 'in' the lake – this section has been open since 2008. Other parts of the trail are progressively being developed. The DOC maintains automatic counters along the trail.

State:

Figure 3 shows the number of users of the trail on a monthly basis, for the Motukarara to Birdlings Flat counter. Peak user numbers were highest in the year after the track was opened and have declined since. Despite this decline around 6500 people a year use the trail.

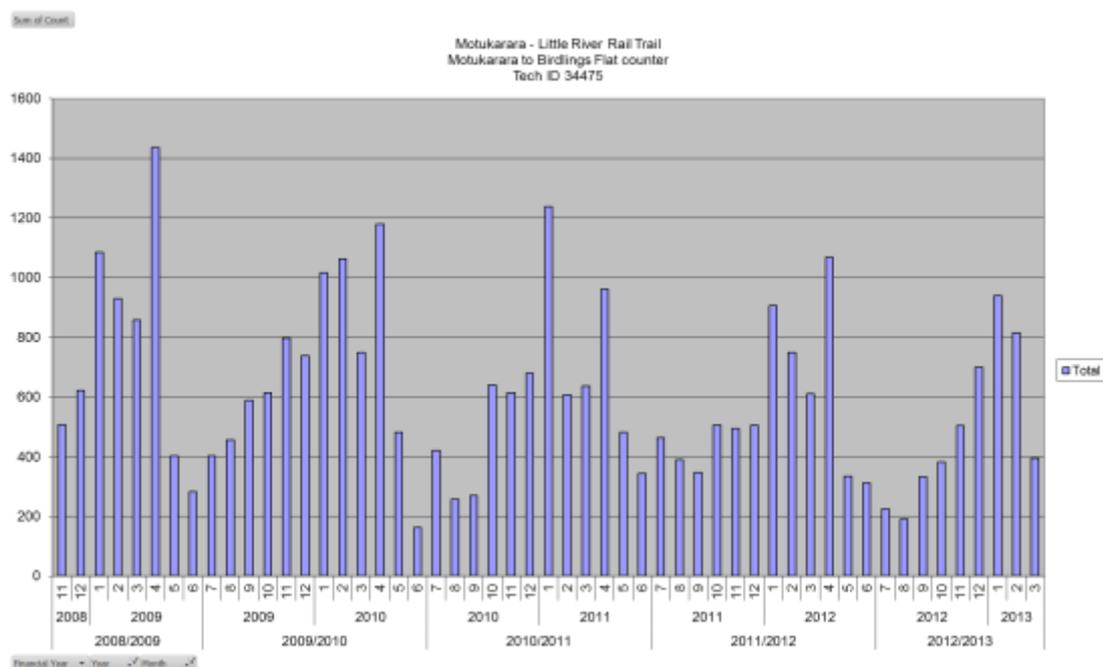


Figure 3. Monthly cycling data for the Motukarara-Birdlings Flat section of the Little River Rail Trail (Source: D Milward, DOC, May 2013, Pers. comm.)

Pressures (and Driving Force):

*Access/facilities:* Currently there is no off-road cycling connect between the trail and Christchurch (Ongoing planning and implementation issues). Wind and lake flies can be annoying to cyclists (Natural processes).

Response:

The trail is progressively being linked to others so that there is a continuous largely off-road connection to Christchurch.

Commentary:

This important resource is used by a large number of people. Full connection to Christchurch should increase the level of trail use. Some targeted research and monitoring into perceptions of trail users related to the lake and its other values would be interesting and potentially important.

## Discussion

There is very little long term trend data available regarding use and quality of recreational activities associated with Te Waihora/Lake Ellesmere. The most complete set of data are from the national angler survey but even that data has major limitations, e.g., the data does not go back to the 'hay days' of the trout fishery. Despite the lack of contemporary data it is possible, within the constraints of many limitations and assumptions to suggest a level of use of the lake and immediate environs (as shown in Table 4).

<b>Activity</b>	<b>Highest historic data</b>	<b>Most recent data</b>	<b>Year of most recent data</b>	<b>Where most recent data are published</b>	<b>Likely trend since data collected</b>	<b>Estimated level of use 2013 – recreation use days (range)</b>
Trout angling	100,000 – probably in the 1960s	4200	2007-08	National Angler Survey; M Unwin, NIWA, May 2013, pers. comm.	Static	3300-5100
Cycling on Rail Trail	6000-7000 – contemporary activity	6315	2012	Permanent track counter; D Millward, DoC, May 2013, pers. comm.	Current data, static	6000-7000
Waterfowl hunting	5000-10000 – probably much more activity before habitat loss	5000	1987	Based on Meis (1988)	Static	4000-6000

<b>Activity</b>	<b>Highest historic data</b>	<b>Most recent data</b>	<b>Year of most recent data</b>	<b>Where most recent data are published</b>	<b>Likely trend since data collected</b>	<b>Estimated level of use 2013 – recreation use days (range)</b>
Boating	10000-20000 – huge regattas held in 20s through to 40s	na	na	Multiple pers. comms.	Declining	1500-3000
Bird watching	1000 – 1980s onward	1000	1987	Hughey (1987)	Static	500-1500
Other – whitebaiting, walking, picnicking Other (e.g., eeling, floundering, photography, 4WDiving, camping at Lakeside and geocaching)	10000-20000 – likely to have been very large numbers in 20s through to early 80s, esp picnickers	na	na	Pers. obs. and multiple pers. comms.	Increasing	0-2000 1000-5000 1000-5000 1000-2000
Lower range	132000				Lower range	18300
Mid range	145000				Mid range	26950
Upper range	158000				Upper range	36600

Table 4. Estimated levels of recreation use days of Te Waihora/Lake Ellesmere and immediate lake-related environs

In terms of the state of recreation at Te Waihora/Lake Ellesmere the total level of estimated use if roughly accurate, across a range of activities, is impressive at a regional scale, but needs verification with improved and strategic monitoring over time. What is clear is that for many activities numbers of participants is now greatly reduced. Unfortunately however, there is almost no quantitative trend data on the quality of the recreational experience, although it can be mostly presumed to have declined as numbers of participants have declined.

In terms of pressures there is some qualitative information which was supplied by 'key informants' in some activity classes and this is recorded in Table 5. Clearly, more work is required to verify or otherwise almost all of these perceptions, e.g., there is no evidence to show water quality is degrading invertebrate food production in the lake.

<b>Activity</b>	<b>What's positive</b>	<b>What's negative</b>	<b>Perceptions of change over time?</b>
Fishing <i>R. Millichamp, (F&amp;G)</i>	<ul style="list-style-type: none"> <li>• Good access</li> <li>• Lake opening timed to favour fish recruitment</li> </ul>	<ul style="list-style-type: none"> <li>• Decline in fish numbers</li> <li>• Poor water quality (in places)</li> </ul>	<ul style="list-style-type: none"> <li>• Fish numbers declined</li> <li>• The loss of weed beds (1968 Wahine storm) has increased the erosion of the lake margin</li> </ul>
Hunting <i>R. Millichamp, (F&amp;G)</i>	<ul style="list-style-type: none"> <li>• Good access</li> </ul>	<ul style="list-style-type: none"> <li>• Toxic algae warnings</li> <li>• Fluctuating lake levels affect maimai access</li> <li>• Signage in poor condition – causes confusion</li> </ul>	<ul style="list-style-type: none"> <li>• Waterfowl hunting has remained reasonably stable over recent years</li> </ul>
Birdwatching <i>J. Walker, OSNZ</i>	<ul style="list-style-type: none"> <li>• Abundance and diversity of birds</li> <li>• Bird hides to minimise the impact on birdlife</li> <li>• Enjoyment of the surrounding environment</li> </ul>	<ul style="list-style-type: none"> <li>• Hunting season</li> <li>• Off road driving</li> <li>• Poor water quality which degrades invertebrate food production,</li> <li>• Water levels not ideal for waders</li> </ul>	<ul style="list-style-type: none"> <li>• More bird watchers in recent years</li> <li>• The awareness of the abundance of birds has increased the number of visits</li> </ul>
Water based activities <i>G. Duncan, Ellesmere Aquatic Club</i>	<ul style="list-style-type: none"> <li>• Convenient for local residents</li> <li>• Facilities, such as camping areas, toilets, boat ramp</li> </ul>	<ul style="list-style-type: none"> <li>• Low water level when the lake is open to the sea</li> <li>• Algal blooms</li> <li>• Poor water clarity</li> <li>• Occasional bad smell</li> </ul>	<ul style="list-style-type: none"> <li>• Low lake level has been an issue for water based recreation at Lake Domain</li> <li>• Alternative water bodies attract recreational users</li> </ul>

Table 5. Key contact/expert perceptions of drivers of quality of experience changes in selected recreation activities at Te Waihora/Lake Ellesmere.

Finally, there is little or no information about Responses, largely because there appears to have been few 'time-bound' efforts to address many of the concerns expressed for the individual activities.

## Conclusions and Recommendations

Te Waihora/Lake Ellesmere remains an important recreational resource in Canterbury, and for bird watching is of international significance. However, most activities declined in use through to the 1970s/80s and have remained roughly static since – the main exception being the increase in cycling (because of the Rail Trail).

<b>Activity class</b>	<b>Activity type</b>	<b>Numbers data</b>	<b>Perceptions of quality</b>	<b>Strategy</b>
A) Wildlife dependent	i. Fishing – trout	Numbers of anglers/ angler days by location	Quality of fish Angling experience	Ongoing 6-yearly national angler survey;

<b>Activity class</b>	<b>Activity type</b>	<b>Numbers data</b>	<b>Perceptions of quality</b>	<b>Strategy</b>
				possibly complemented by more targeted local surveys linked also to key strategies
	ii. Fishing – whitebait	Number of whitebaiters, angler days by location	Whitebaiting experience	Targeted monitoring and on-river interviews – perhaps biennial
	iii. Waterfowl hunting	Number of hunters/ hunter days Number of mai mais	Hunting experience	Biennial or similar hunter survey
	iv. Bird watching	Number bird watchers using lake Birdwatching days	Bird watching experience	OSNZ self survey
B) Water-based	i. Swimming	Number of swimmer days at Coes Ford	Swimming experience	SDC survey
	ii. Boating - yachts	Number of users Number of user days	Yachting experience	Key informant survey
	iii. Boating – water skiing	Number of users Number of user days	Water skiing experience	Key informant survey
	iv. Boating – power	Number of users Number of user days	Boating experience	Key informant survey
	v. Boating – wind surfing	Number of users Number of user days	Wind surfer experience	Key informant survey
C) Land-based	i. Cycling	Number of users per day	Biker experience	Rail trail counter Random interviews
	ii. Photography	Number of users per day	Photographer experience	

<b>Activity class</b>	<b>Activity type</b>	<b>Numbers data</b>	<b>Perceptions of quality</b>	<b>Strategy</b>
	iii. Walking?	Number of users per day	Walker experience	Rail trail counter Selwyn mouth counter Random interviews
	iv. Picnicking	Number of users per day	Picnicker experience	Holiday weekend counts Random surveys

## **Recommendations**

Due to the fact that there is little quantitative information about trends in numbers, quality of activity, and other related matters it is important given proposed changes to management of the lake that the following are measured:

- User days per annum statistics for the main activities – trout angling, waterfowl hunting, whitebaiting, cycling, bird watching, walking and picnicking, i.e., user days per year – perhaps undertaken on a bi- or triennial basis;
- Quality of activity measures – size and number of trout, number of waterfowl, access and other visitor-related facilities and provisions including improved signage, 'walk ways', boat ramps including for kayaks on the LII, water level and quality parameters by activity: perceived quality can be gauged during the user days surveys;

Two other issues became apparent during development of this report:

1. There are conflicts between some recreation groups, e.g., Canada goose hunters and the needs of bird watchers and the birds themselves – a facilitated discussion forum is required to clarify and attempt to resolve these issues;
2. Along with the lack of indicator data there is a general lack of information about recreational opportunities and how best to manage them. An ongoing strategy to improve and share information could well be developed alongside the proposed case for constructing and developing a visitor/research centre.

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