

Meeting	Taharoa Domain Governance Committee
Date	Monday 19 August 2019
Time	2.00 pm
Venue	Northern Wairoa War Memorial Hall – 37 Hokianga Road, Dargaville

Open Agenda

Membership

Chair: Ric Parore
Members: Alan Nesbit
Councillor Karen Joyce-Paki
Councillor Andrew Wade

Lisa Hong, Governance Advisor
lhong@kaipara.govt.nz

Contents

1	Opening	1
1.1	Karakia	1
1.2	Present	1
1.3	Apologies	1
1.4	Confirmation of agenda	1
1.5	Conflict of interest declaration	1
2	Public input	1
2.1	Lakes 380	1
3	Minutes	3
3.1	Confirmation of Open Taharoa Domain Governance Committee minutes 14 May 2019	3
4	Decision	11
4.1	Taharoa Domain Lake Health Sampling Request	13
5	Information	33
5.1	Taharoa Domain Operations Update May 2019 to July 2019	35
5.2	Financial report for the period ended 30 June 2019	43
5.3	Kai Iwi Lakes Dune Lakes Galaxias Working Group update	47
6	Public Excluded Taharoa Domain Governance Committee agenda items 19 August 2019	59
6.1	Confirmation of Public Excluded Taharoa Domain Governance Committee minutes 14 May 2019	
7	Open Taharoa Domain Governance Committee agenda 19 August 2019	61
	Closure	61

**Ordinary meeting of the
Taharoa Domain Governance Committee
Monday 18 August 2019 in Dargaville**

1 Opening

1.1 Karakia

1.2 Present

1.3 Apologies

1.4 Confirmation of agenda

The Committee to confirm the Agenda.

1.5 Conflict of interest declaration

Committee members are reminded of the need to be vigilant to stand aside from decision-making when a conflict arises between their role as a committee member and any private or other external interest they might have. It is also considered best practice for those members to the Executive Team attending the meeting to also signal any conflicts that they may have with an item before the Committee.

2 Public input

2.1 Sue Woods, Cawthron Institute

Lakes 380 project

3 Minutes

3.1 Confirmation of Open Taharoa Domain Governance Committee minutes 14 May 2019

General Manager Governance, Strategy and Democracy 1606.18

Recommended

That the Open unconfirmed minutes of the Taharoa Domain Governance Committee meeting held 14 May 2019 be confirmed as a true and correct record.

Meeting	Taharoa Domain Governance Committee
Date	Tuesday 14 May 2019
Time	Meeting started at 2.04pm Meeting concluded at 3.48pm
Venue	Northern Wairoa War Memorial Hall – 37 Hokianga Road, Dargaville
Status	Unconfirmed

Open Minutes

Membership

Chair: Ric Parore
Members: Alan Nesbit
Councillor Karen Joyce-Paki
Councillor Andrew Wade

Jason Marris
General Manager Governance, Strategy and Democracy

Contents

1	Opening	3
1.1	Karakia	3
1.2	Present.....	3
1.3	Apologies	3
1.4	Confirmation of agenda.....	3
1.5	Conflict of interest declaration.....	3
2	Presentation	3
2.1	Deputy Harbourmaster, Northland Regional Council.....	3
3	Minutes	4
3.1	Confirmation of Taharoa Domain Governance Committee minutes 12 February 2019	4
4	Information	4
4.1	Taharoa Domain Operations Update February 2019 to April 2019	4
4.2	Financial report for the period ended 31 March 2019.....	4
4.3	Kai Iwi Lakes Dune Lakes Galaxias Working Group update	4
5	Public Excluded TDGC minute items 14 May 2019	5
6	Open agenda TDGC 14 May 2019	6
	Closure	6

**Minutes of the Ordinary meeting of
Taharoa Domain Governance Committee
Tuesday 14 May 2019**

1 Opening

1.1 Karakia

Iwi Relations Manager opened the meeting with a karakia.

1.2 Present

Ric Parore (Chair) and Sonny Nesbit, Councillors Karen Joyce-Paki and Andrew Wade

In attendance	Designation	Item(s)
Curt Martin	Chief Operating Officer and General Manager Infrastructure	All
Sue Davidson	General Manager Risk, IT and Finance	All
Hamish Watson	Parks and Recreation Manager	All
Shelley Paniora	Infrastructure Officer	All
Kathie Fletcher	Policy Manager	1—4.2
Mark Schreurs	Policy Analyst	1—4.2
Virginia Smith	Policy Analyst	1—4.2
Francis Toko	Iwi Relations Manager	1—4.2
Tanya Wilson	Governance Advisor	All
Lisa Hong	Governance Advisor	All (minute-taker)

1.3 Apologies

Nil.

1.4 Confirmation of agenda

Moved Wade/Joyce-Paki

That the Taharoa Domain Governance Committee confirms the agenda for 14 May 2019.

Carried

1.5 Conflict of interest declaration

Nil.

2 Presentation

2.1 Deputy Harbourmaster, Northland Regional Council

Laurence Walkinshaw spoke in the public forum.

3 Minutes

3.1 Confirmation of Taharoa Domain Governance Committee minutes 12 February 2019

General Manager Governance, Strategy and Democracy 1606.18

Moved Joyce-Paki/Parore

That the unconfirmed minutes of the Taharoa Domain Governance Committee meeting held 12 February 2019 be confirmed as a true and correct record.

Carried

4 Information

4.1 Taharoa Domain Operations Update February 2019 to April 2019

Parks and Recreation Manager 4702.13.06

Moved Joyce-Paki/Wade

That the Taharoa Domain Governance Committee:

- a) *Notes the 'Taharoa Domain Operations Update February 2019 to April 2019'.*
- b) *Agrees to hold a workshop on the future management of the Taharoa Domain at a date to be agreed by the Committee.*

Carried

4.2 Financial report for the period ended 31 March 2019

Financial Services Manager 4702.24.02.01

Moved Joyce-Paki/Parore

That the Taharoa Domain Governance Committee receives the Financial Services Manager's report 'Financial report for the period ended 31 March 2019'.

Carried

4.3 Kai Iwi Lakes Dune Lakes Galaxias Working Group update

Policy Analyst 4702.24.05

Moved Parore/Nesbit

That the Taharoa Domain Governance Committee notes the 'Kai Iwi Lakes Dune Lakes Galaxias Working Group update' report giving an update on the work of the Kai Iwi Lakes Dune Lakes Galaxias Working Group and its members.

Carried

5 Public Excluded TDGC minute items 14 May 2019

The meeting went into Public Excluded session at 3.35pm

Moved

That the public be excluded from the following part of the proceedings of this meeting namely:

- *Kai Iwi Lakes Camp Ground – Options Report*

The general subject matter of each matter to be considered while the public is excluded, the reasons for passing this resolution in relation to each matter and the specific grounds under s48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered:	Reason for passing this Resolution	Ground(s) under Section 48(1) for the passing this resolution:
<i>Kai Iwi Lakes Camp Ground – Options Report</i>	<i>Part 1, Section 7(2)(f) maintain the effective conduct of public affairs through (ii) the protection of such members, officers, employees, and person from improper pressure or harassment.</i>	<i>S48(1) (a) That the public conduct of the whole or the relevant part of the proceedings of the meeting would be likely to result in the disclosure of information for which good reason for withholding would exist.</i>

Carried



6 Open agenda TDGC 14 May 2019

The meeting returned to open session at 3.47pm.

Closure

The meeting closed at 3.48pm.

Confirmed

Chair

Kaipara District Council

Dargaville

Unconfirmed

4 Decision

Taharoa Domain Lake Health Sampling Request

Meeting: Taharoa Domain Governance Committee
Date of meeting: 19 August 2019
Reporting officer: Hamish Watson, Parks and Recreation Manager

Purpose/Ngā whāinga

To seek approval from the Committee for Council to participate in a research project on Lakes Taharoa, Waikare and Kai Iwi by scientists from Lakes380.

Executive summary/Whakarāpopototanga

Staff have been approached by researchers to take part in a five-year study on the health of the three lakes in Taharoa Domain. Approval is sought from the Committee to take part in the study at no cost to the ratepayer. Updates from the project will be reported to the Committee in future governance operations reports.

Recommendation/Ngā tūhunga

That Taharoa Domain Governance Committee:

- a) Approves sampling by Lakes380 of the Lakes Taharoa, Waikare and Kai Iwi within the Taharoa Domain.
- b) Requests staff to advise Lakes380 of the Committee's decision.
- c) Requests staff to receive updates from Lakes380 and where appropriate update the Committee in the operations report.

Context/Horopaki

Lakes380 is a five-year project which aims to characterise the health of New Zealand lakes. Researchers state they "are motivated to better understand our lakes and want to contribute new knowledge". Three lakes in Taharoa Domain have been selected for inclusion in the study along with eight sites in Kaipara on the Pouto Peninsula.

The project is being offered at no cost to ratepayers.

Discussion/Ngā kōrerorero

The Committee has long expressed a desire to better understand the health of the lakes at the Domain. Researchers on the project state they are "motivated to better understand our lakes and want to contribute new knowledge to ensure they are held in high regard by all".

The research consists of sampling of four sediment cores, taken from the deepest part of each lake. In conjunction with sediment samples, water, soil, plant samples, photographs, video and drone flying form part of the research.

If the Committee approves the recommendation, staff will give permission to Lakes380 to fly a drone as part of the project. Within the Taharoa Domain Bylaw 2018, provision is available for use of power boats for research purposes on Lake Waikare. With Committee approval of the recommendation, staff will advise the research group.

The researchers seek hapū and iwi input through their process. Staff at operations level have approached Te Roroa for approval in principle and have asked researchers to engage with Te Roroa for their input into the research.

Options

Option 1: Approve sampling by Lakes380 within the Taharoa Domain and take part in the five-year research programme.

Option 2: Decline the request by Lakes380.

Policy and planning implications

One of the objectives of the Taharoa Domain Reserve Management Plan is “to improve the knowledge we have of Kai Iwi Lakes - its natural ecologies and the influences and risks to its values and pristine waters”. This project looks to complement that objective.

Risks and mitigations

Contamination of the lakes with unwanted plant, algae species from other lakes could occur. The researchers address this through a biosecurity standard operating procedure. More information about the entire project is supplied within an information pack, **Attachment A**, Lakes380 information pack, of the report.

Significance and engagement/Hirahira me ngā whakapāpā

The decisions or matters of this report do not trigger the significance criteria outlined in Council’s Significance and Engagement Policy, and the public will be informed via agenda on the website.

Next steps/E whaiake nei

Approve Lakes380 to proceed with the sampling, staff to ensure they are using safe methods to ensure their health and safety and the health of the lakes.

Attachments/Ngā tapiritanga

	Title
A	Lakes380 Information Pack

Hamish Watson, 2 August 2019



Lakes380

Our lakes' health
past, present, future
Me hoki whakamuri,
kia haere whakamua

Lakes380

Our lakes' health: past, present, future

Me hoki whakamuri kia haere whakamua

New Zealand lakes are an incredible taonga that each embody rich and unique histories.

Lakes380—*Our Lakes' Health: past, present, future* is a five-year research project that aims to collect and analyse sediments from 10% (380) of New Zealand's lakes. We are motivated to better understand our lakes and want to contribute new knowledge to ensure they are held in high regard by all, and protected now and for generations to come.

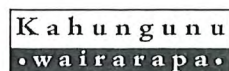
The Lakes380 project seeks hapū and iwi input to:

- guide the identification and selection of lakes most significant to your hapū and iwi
- grant mandate and access onto lakes ensuring that appropriate processes are adhered to by the research team
- inform us of your questions so that we can focus our studies to help answer them
- advise us on how best to provide information that addresses your needs

The project may benefit hapū and iwi through providing:

- a scientific story of a lake's history and changes that go back 1000 years
- opportunities to revitalise connections with lakes
- new knowledge to guide restoration efforts

We acknowledge the long association Māori have with lakes and hope that you are willing to engage with this research.



Lakes380 process for engagement

Engaging with Māori interests for all 380 lakes nationwide is our ideal, but is also a huge challenge. We acknowledge the complexities of the Māori organisational landscape and are developing an engagement plan on a regional basis with the ultimate goal of gaining consent (or be advised otherwise) from those with mana moana before taking any cores, water and plant samples from lakes.

We plan to take a region-by-region approach, and to engage at least six months before we conduct any fieldwork. We endeavour to undertake kanohi ki te kanohi relationships where possible.

Two scales of analysis

High-level analysis for all 380 lakes—data will show us what has changed in lakes over the past 1000 years.

In-depth analysis for a subset of 50 lakes—what has changed over the past 1000 years and why these changes have occurred.

What we propose to do

- Take four sediment cores from the deepest part of each lake (cores are 9 cm wide and may be up to 6 m long)
- Collect water, soil and plant samples



Possible study lakes

Lake Kai iwi, Lake Taharoa, Lake Kapoai, Lake Waikere,

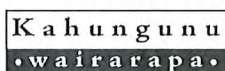
Lake Humuhumu, Lake Kahuparere, Lake Kaiwai, Lake Kanono, Lake Karaka, Lake Mokeno, Lake Omapere, Lake Rototuna, Lake Whakaneke, Lake Kihona, Lake Rotopokaka (Cola Lake), Lake Carrot, Lake Heather, Lake Morehurehu, Lake Ngatu, Lake Owhareiti, Lake Rotokawau (Karikari), Lake Rotootuauru/Swan, Lake Ngakapua, Lake Rotokawau (Potu), Lake Rotokawau (Sweetwater), Lake Rotoroa, Lake Te Kahika, Lake Wainui, Lake Waiparera, Waihopo Lake.

Research in your region will likely be between May-July 2019

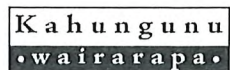
Please get in touch with our Lakes380 team

**Dr's Susie Wood (021 163 4084), Marcus Vandergoes (027 350 4145),
Charlotte Šunde (021 241 1715)**

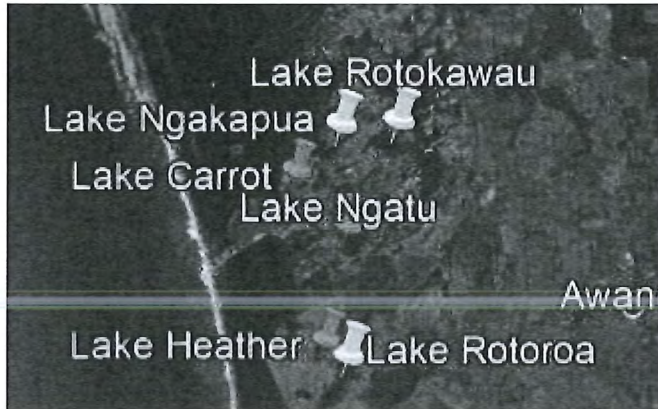
susie.wood@cawthron.org.nz www.lakes380.com



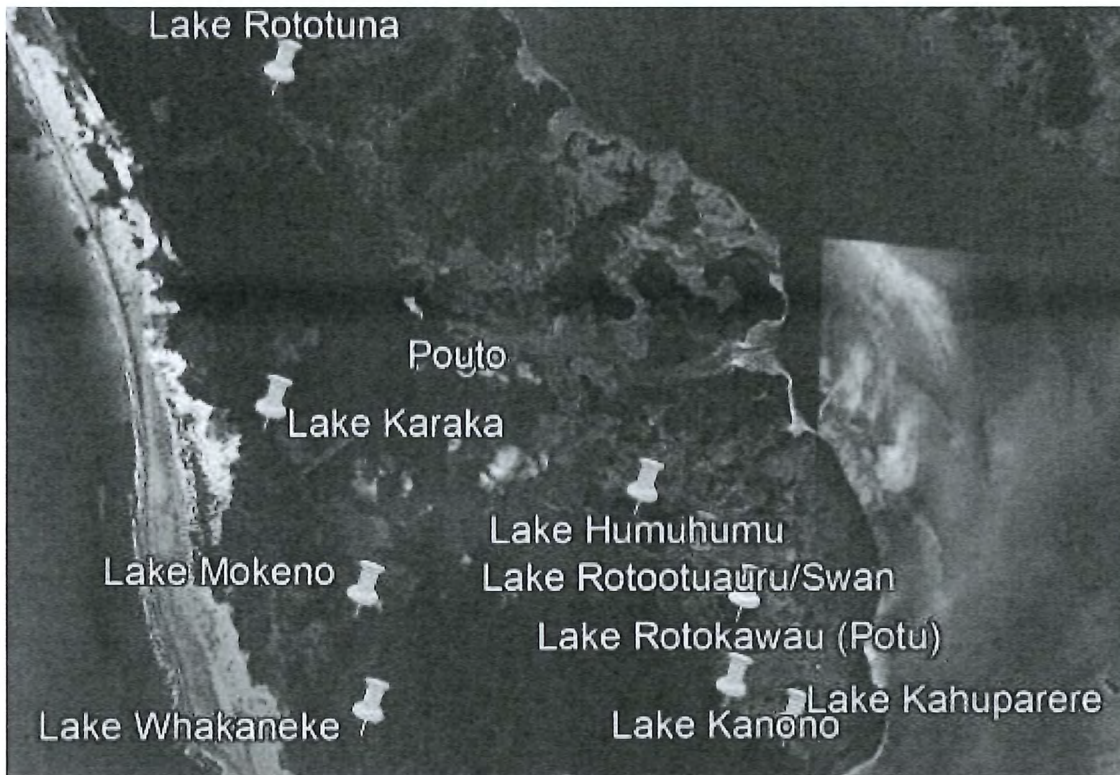
Lakes380 Project | Northland Lakes Selection Maps



Sweetwater



Pouto



Landowner information

Thank you for providing permission to cross your land to access a lake. This research is part of a nationwide project called Lakes380—Our Lakes' Health: past, present, future. This is a five-year research project that aims to collect and analyse sediment and water from 10% (380) of New Zealand's lakes. We aim to enhance our understanding of New Zealand's lakes, and to contribute new knowledge to make sure our lakes are valued and protected - now and for generations to come.

The following provides information on our activities at and near the lake. Further information on the project can be found at: www.lakes380.com. If you would like to be keep up-to-date with the project via email, ask us to join our mailing list to receive the Lakes380 newsletter.

What samples do you take at each lake?

At each lake we:

- Take four sediment cores from the deepest part of each lake (cores are 9 cm wide and may be up to 3 m long)
- Collect water, soil/lake sediment and plant samples
- Take photographs, videos and flight drones. This footage will be used as part of research and could also be used to promote the project through our website, social media or newsletter.

How many people, boats and vehicles will be at the lake?

Our field team is between 5 to 8 researchers. We usually travel in two 4WD vehicles (occasionally three). We have two (or very occasionally three) boats on the lake. These boats are; a small-motored aluminum dinghy, and an inflatable IRB and canoe (pictured below).

What the data will be used for?

It is our intention as we analyse results to publish scientific reports and articles and prepare non-scientific summaries to disseminate. In 2022, the final year of our project, we will give a series of presentations around New Zealand. Some of these results will also be found on public access website such as LAWA.

How long will you be at the lake?

Usually sampling take about 5 hours. For larger or more complex lakes we may spend the entire day at the site.

Contacting you - We will phone or contact you the day prior to accessing the lake and are happy to meet any other requirements. Please contact us with your requirements.

If you have any concerns or questions please contact the programme leaders:

Dr Marcus Vandergoes - 027 350 4145 or M.Vandergoes@gns.cri.nz

Dr Susie Wood - 021 163 4084 or Susie.wood@cawthron.org.nz



Safety Plan Details

Reference number	4.33
Title	Lakes380 Northland Phase 1
Details	Collecting core and WQ samples via inflatable canoe, GNS - 4m unpowered inflatable.
Activity type	Landbased Fieldwork
Standard Activity	[8.V10] Landbased fieldwork - general
State	Approved
Coordinator	Susie Wood (Mobile: 021 163 4084)
Project	Landbased Fieldwork - C&F
Locale	Northland
Start date	23/Jun/2019
End date	14/Jul/2019
Nominated contact	Approved
Comments	<p>Lake Access information - detailed important about each lake as access points has been email to FSC's.</p> <p>GNS will be using there own Field Safety System along side the FSC system. Should the FSC not be able to raise the field team in the first instance they should call the GNS Emergency Manager on 027 418 1890 to see if they know the location of the team and to ensure any search party sent is coordinated with GNS as well.</p>
Lodgement date	17/Jun/2019
Trip departure time	10:00
BST Project Number	16753 - Lakes380 - Our lakes' health: / 04 / 01 / 70
Is there cell phone coverage?	No
Third party communication details	GNS sat phone #8 (008816 214 63854).
Emergency plan details	Will use InReach to raise for help in no cellphone coverage.
Vehicle	Rental Vehicle
Additional Vehicle	Contractor Vehicle
Additional vehicle info (number plates of non-Cawthron vehicles, rental car info ect...)	GNS ute: KCW163 Cross-country rentals ute: JFC863
Third party safety plan	False

Day Plans

Date	Location	Details
24/Jun/2019	North Island (master site only)	Marcus, Jamie and Adelaine drive from Wellington to Whangarei Susie, Xav and Mailys fly from Nelson to Auckland pick up rental ute and drive to Whangarei
25/Jun/2019	North Island (master site only)	Team drives to private accommodation in Te Pahi. Riki flights to Kerikeri collects rental car and drives to Te Pahi.
26/Jun/2019	North Island (master site only)	Lake Ngakeketo iwi engagement day and sampling. 34°31'4.96"S 172°46'20.99"E
27/Jun/2019	North Island (master site only)	Lake Te Ketekete 34°28'51.82"S 172°42'55.93"E Lake Te Werahi 34°28'52.05"S 172°42'47.96"E
28/Jun/2019	North Island (master site only)	Lake Waitahora 34°27'14.68"S 172°49'0.98"E
29/Jun/2019	North Island (master site only)	Lake Wai Raupo 34°30'42.42"S 172°45'20.38"E Waihopo Lake 34°45'20.96"S 173° 2'34.19"E
30/Jun/2019	North Island (master site only)	Lake Te Kahika 34°37'26.51"S 172°59'56.28"E Lake Morehurehu 34°38'30.56"S 172°59'45.05"E
1/Jul/2019	North Island (master site only)	Day off. Team moved to Kaitaia accommodation. Mailys and Xav depart. Andrew arrives.
2/Jul/2019	North Island (master site only)	Lake Ngatu 35° 1'54.31"S 173°11'52.50"E Mckayla arrives evening.
3/Jul/2019	North Island (master site only)	Lake Waiporohita 34°54'0.00"S 173°20'60.00"E
4/Jul/2019	North Island (master site only)	Day off. Adelaine, Jamie, Marcus, Susie depart via Air Barrier Sean, Lisette, Carrie, Georgia arrive via Air Barrier
5/Jul/2019	North Island (master site only)	Lake Rotokawau 35° 1'7.90"S 173°12'21.09"E Lake Ngakapua 35° 1'10.31"S 173°11'38.55"E
6/Jul/2019	North Island (master site only)	Lake Rotoroa 35° 3'31.87"S 173°11'44.74"E Lake Heather 35° 3'4.13"S 173°11'36.73"E
7/Jul/2019	North Island (master site only)	Lake Carrot 35° 1'20.79"S 173°11'13.88"E Lake Waimimiha 35° 8'45.72"S 173°10'10.20"E
8/Jul/2019	North Island (master site only)	Day off
9/Jul/2019	North Island (master site only)	Lake Waiparera 34°56'39.54"S 173°10'51.11"E Lake Katawich 34°56'36.96"S 173° 9'50.06"E
10/Jul/2019	North Island (master site only)	Lake Rotokawau (#24422) 34°52'13.46"S 173°18'34.26"E #24423 (next to Rotokawau) 34°52'17.86"S 173°19'11.73"E
11/Jul/2019	North Island (master site only)	Lake Rotopotaka (Cola Lake) 34°57'1.54"S 173°22'56.07"E
12/Jul/2019	North Island (master site only)	Pack up. Drive to Whangarei sort/store gear and NRC. Pack cores for transport. Drive South of Auckland and find accommodation. Mckayla and Georgia depart field trip in Auckland. Sean, Andrew, Lizette and Carrie drive to Wellington in GNS ute 13/14th. Sean departs Wellington on flight. Carries departs trip in Wellington.

Vehicle Operator: Driver

Carrie Page	Mobile: 021 [REDACTED]	NOK 02724
Georgia Thomson-Laing	Mobile: 027 [REDACTED]	NOK 6154
Mckayla Holloway	Mobile: 021 [REDACTED]	NOK 63622
Sean Waters	Mobile: 021 [REDACTED]	NOK 44626
Susie Wood	Mobile: 021 [REDACTED]	NOK
Xavier Pochon	Mobile: 027 [REDACTED]	NOK 84
(GNS Science) Marcus Vandergoes	Private: 027 [REDACTED]	NOK
(GNS Science) Riki Ellison	Mobile: 022 [REDACTED]	NOK
(Victoria University) Adelaine Moody	Mobile: 027 [REDACTED]	NOK 5948
(Victoria University) Andrew Rees	Private: 022 [REDACTED]	NOK 4576
(Victoria University) Jamie Howarth	Mobile: 02 [REDACTED]	NOK

Fieldworker - Land Based

Carrie Page	Mobile: 02 [REDACTED]	NOK 02724
Georgia Thomson-Laing	Mobile: 027 [REDACTED]	NOK 6154
Mailys Picard	Private: 020 [REDACTED] 2	NOK
Mckayla Holloway	Mobile: 02 [REDACTED]	NOK 63622
Sean Waters	Mobile: 021 [REDACTED]	NOK 44626
Susie Wood	Mobile: 021 [REDACTED]	NOK
Xavier Pochon	Mobile: 027 [REDACTED]	NOK 84

Accommodation and travel details

Personnel List

24th June

Kensington Motel

85 Kamo Road

Whangarei

09 437 0555

25th June – 1st June

Rented house - corner of Te Paki Stream Road and Far North Road (SH1).

1st June – 11th June

Ahipara Holiday Park

168 Takahe Street, Ahipara,

+64 9 409 4864

NORTHLAND Flights

Inbound = to Northland

Outbound = from Northland

Flights North of Auckland are on Barrier Air.

Monday 24th June

Name	Departure time	Arrival time
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Susie	NSN-ALK 10:25	11:50 Inbound
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Xav	NSN-ALK 10:25	11:50 Inbound
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Maily's	NSN-ALK 10:25	11:50 Inbound
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Tuesday 25th June

Riki	WLG-KKE 11:45	14:40 Inbound
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Monday 1st July

Xav	KAT-ALK 12:40	13:45 Outbound
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Xav	ALK-NSN 15:15	04:40 Outbound
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Andrew	WLG-ALK 08:15	09:20 Inbound
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Andrew	ALK-KAT 11:00	12:05 Inbound
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Maily's	KAT-ALK 12:40	13:45 Outbound
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Maily's	ALK-NSN 15:15	04:40 Outbound
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Riki	KKE-WLG 09:50	02:05 Outbound
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Tuesday 2nd July

Mckayla	ALK-KAT 18:15	19:20 Inbound
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Thursday 4th July

Susie	KAT-ALK 12:40	13:45 Outbound
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Susie	ALK - NSN 15:15	16:40 Outbound
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Marcus	KAT-ALK 12:40	13:45 Outbound
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Marcus	ALK-WLG 15:00	16:05 Outbound
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Jamie	KAT-ALK 12:40	13:45 Outbound
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Jamie	ALK-WLG 15:00	16:05 Outbound
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Adelaine	KAT-ALK 12:40	13:45 Outbound
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Adelaine	ALK-WLG 15:00	16:05 Outbound
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Sean	NSN-ALK 07:20	08:45 Inbound
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Sean	ALK-KAT 11:00	12:05 Inbound
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Georgia	NSN-ALK 07:20	08:45 Inbound
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Georgia	ALK-KAT 11:00	12:05 Inbound
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Lizette	WLG-ALK 08:45	09:50 Inbound
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Lizette	ALK-KAT 11:00	12:05 Inbound
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Carrie	NSN-ALK 07:20	08:45 Inbound
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Carrie	ALK-KAT 11:00	12:05 Inbound
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Friday 12th July

Georgia	ALK-NSN 5:10pm	5:35pm Outbound
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Saturday 14th July

Sean	WLG-CHCH 17:05	18:00 Outbound
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Risk Summary

Risk ID	Based On	Description	Control Summary	PPE	Rank
RSK.AP.14511	RSK.ST.05255	Vehicle winch operation. Load coming loose and falling.	Winches should only be used by appropriately trained and experienced staff.	As directed by Field Team Leader.	4 - Medium
RSK.AP.14512	RSK.ST.10509	Loss of traction due to water, mud, oil, ice or snow on roads.	Drive to the conditions. Staff may need to modify travel times or cancel trips to minimise risk during significant risk times. Check weather forecast and road conditions. Appropriate tyres.	Chains need to be carried if snow/ice expected. Seat belt.	4 - Medium
RSK.AP.14513	RSK.ST.10510	Loss of control of the vehicle due to fatigue.	From Cawthron Vehicle Use Policy – It is expected that staff will not drive vehicles when fatigued and will not work/drive for more than 14 consecutive hours. Solo drivers must take a minimum of a 30 minute break every 5.5 hours and a minimum of a 10 minute break every two (2) hours. Where possible, driving should be shared between at least two staff members with field logs reflecting this. Consideration should be given to pre-journey work duties, the length of the trip and post-journey commitments, adequate provision for rest, food and water, sharing of driving, and an overnight stay may be required if driving time and non-driving duties exceed 14 hours in one day.	Seat belt.	4 - Medium
RSK.AP.14514	RSK.ST.10512	Collision, rolling, etc. due to poor visibility (fog, heavy rain, sun strike)	Reduce speed, use lights, pull over if visibility too poor. Increase following distance.	Seat belt.	4 - Medium
RSK.AP.14567	RSK.ST.10508	Loss of control of vehicle, collision. Driving into water at speed, brake failure.	Valid driver's licence. Take regular breaks as per vehicle policy. Shared driving. No cell phone use. Drive to the conditions. Vehicle maintenance up to date. Follow road rules. Adhere to maximum working hours re driving.	Seat belt.	4 - Medium
RSK.AP.14568	RSK.ST.10513	Loss of control/crash caused by wandering stock.	Identify areas where encountering wandering stock is likely and drive to the conditions. Notify local council or police of wandering stock.	Seat belt.	4 - Medium
RSK.AP.14569	RSK.ST.10542	Loss of traction/manoeuvrability if trailer is load too heavy or coupling coming loose/unhitched while driving	Appropriate training. Ensure tow ball connections are consistent. Rated D-shackles. Ensure that electrical connection and safety chain to car is working. Ensure that vehicle is rated to tow load. Check tow capability of vehicle vs. weight of load. Second person check trailer connection. Distribute load appropriately in trailer.		4 - Medium
RSK.AP.14570	RSK.ST.10544	Collision with heavy machinery or logs while travelling on forestry roads.	Drive with lights on. Appropriate driver training. Communication with others operating in the area (by radio or phone). Drive slowly and carefully.	VHF radio to communicate with others in the area.	4 - Medium
RSK.AP.14572	RSK.ST.05236	Repeated syringe use and/or puncture wounds from syringes or other tools/objects.	Staff awareness of syringe and chemical substances safe operations, and of infection risks from cuts, etc.	Teams should take a supply of clean water to wash hands with. Handwash. Gloves, appropriate footwear.	4 - Medium
RSK.AP.14573	RSK.ST.05256	Bank collapse, rock fall or other material falling while working on or near steep or unstable ground.	Work in pairs or teams in steep areas and avoid areas of potential rockfall. Notify team members of the risk. Survey area prior to fieldwork to identify easiest access routes. Training.	Sturdy footwear and clothing (long pants to be worn if working over abrasive terrain). Helmet if there is risk of rockfall from above.	4 - Medium
RSK.AP.14574	RSK.ST.05257	Accidental shooting while working in or near hunting area.	Identify times and places of risk and avoid hunting areas where possible. Make noise (be heard, be seen).	High visibility clothing.	4 - Medium
RSK.AP.14575	RSK.ST.05258	Drowning, hypothermia due to working near or in water.	Work in pairs, let someone know where you are and what you are doing.	PLB carried if working alone. Appropriate PPE for the environment.	4 - Medium

RSK.AP.14576	RSK.ST.05259	Working around potentially dangerous livestock like bulls, stags, rams etc.	Talk to land owner/manager, avoid potentially hazardous areas.		4 - Medium
RSK.AP.14577	RSK.ST.05264	Getting stuck in mud or quicksand.	Awareness of risk. Work in pairs.	Carry communication device at all times.	4 - Medium
RSK.AP.14580	RSK.ST.10497	Broaching or capsizing	Drive according to the sea conditions. Use engine kill-cord when underway in choppy conditions.	Life Jackets	4 - Medium
RSK.AP.14581	RSK.ST.10500	Deploying and retrieving equipment	Be aware of ropes/lines; always lower off cleat or winch. Keep body parts clear of bite. Don't lift over 23kgs. Use appropriate lines for the task. Use rated shackles where applicable. Use lifting equipment for loads over 23kgs or awkward loads. Operate boats at a slow speed.	Steel capped boots, gloves.	4 - Medium
RSK.AP.14578	RSK.ST.05266	Slips, trips & falls linked to uneven ground/wet or icy surface/clutter.	Keep area tidy. Deal with spills. Watch foot placement and be aware of conditions. Work in pairs.	Appropriate footwear.	3 - Low
RSK.AP.14579	RSK.ST.05267	Cuts & scrapes from knife use, broken glass, sharp objects.	Training, knife handling skills, careful around sharp objects. Dispose of broken glass appropriately.	Wear "shellfish opening/fish handling" gloves if opening shellfish. Wear suitable footwear.	3 - Low
RSK.AP.14582	RSK.ST.10507	Wind & Sea state	Consult up-to-date local area forecasts and monitor current conditions. When possible, avoid boating in strong winds and rough sea states in exposed locations. Skipper to drive according to conditions to minimise risk of injury and seasickness. All work must cease if boating operations become hazardous. Consider the use of seasick medications in rough conditions.	Life jackets, appropriate clothing and other PPE	3 - Low
RSK.AP.14571	RSK.ST.10514	Unsecured heavy items moving within the vehicle during normal operation.	Secure heavy items in back of vehicle. Straps/ropes and dive tank cradles can be utilized for this.		2 - Low
RSK.AP.14583	RSK.ST.05245	Working in cold conditions, including snow, fog, rain, high winds.	Staff are aware of environment and educated on the symptoms of exposure. Work is planned to avoid prolonged exposure.	Warm/waterproof clothing and footwear. Emergency supplies and shelter. Sunscreen and hat. Sunglasses, high-cover clothing.	2 - Low
RSK.AP.14584	RSK.ST.05244	Sun exposure	Staff are aware of environment and educated on the symptoms of exposure. Work is planned to avoid prolonged exposure.	Sunscreen and hat. Sunglasses, high-cover clothing. Ensure adequate water supply.	1 - Low

Asset Requirements

Asset Type	Asset Sub-Type	Quantity	Comment
Communications	Satellite Tracker	1	Please book a satellite tracker. If working outside of mobile phone coverage book an InReach device.

Asset Bookings

Asset	Type	Sub-Type	Asset Number	Start Date	End Date	Owner
InReach 1	Communications	Satellite Tracker		23/Jun/2019	14/Jul/2019	



4.33: Day Plan 26/Jun/2019

Day Plan

Date	26/Jun/2019
Site location	North Island (master site only)
Description	Lake Ngakeketo iwi engagement day and sampling. 34°31'4.96"S 172°46'20.99"E
Medical centre details	Kaitaia Hospital - 29 Redan Road, Kaitaia - Phone 09 408 9180
<u>CHECK-IN DETAILS</u>	
Check-in time(s)	6pm
Alert time(s)	7pm

Check List

Check	Task
<input type="checkbox"/>	>>> SAFETY BRIEFING <<<
<input type="checkbox"/>	Complements the Safety Plan does not replace it. Used at the outset of a job, or daily if on a multi-day trip. Use as prompts to ensure work is undertaken safely. Make it work for your situation!
<input type="checkbox"/>	Confirm Team Leader
<input type="checkbox"/>	Discuss team roles
<input type="checkbox"/>	Task at the site understood by all team members
<input type="checkbox"/>	Hazards and controls from safety plan understood
<input type="checkbox"/>	Discuss and record any additional risks identified on site
<input type="checkbox"/>	High risk/potentially fatal hazard discussed in depth
<input type="checkbox"/>	Discuss communication and emergency plan
<input type="checkbox"/>	Everyone is fit and well
<input type="checkbox"/>	Discuss correct PPE to use for task
<input type="checkbox"/>	Remind staff to report incidents and near misses
<input type="checkbox"/>	Team members: Initial each day to acknowledge active participation in the safety briefings and full understanding of the hazards in the safety plan and how to mitigate them.

Participant Acknowledgement



005 0000197

Name	Signature	Date
Adelaine Moody		
Andrew Rees		
Carrie Page		
Georgia Thomson-Laing		
Jamie Howarth		
Mailys Picard		
Marcus Vandergoes		
Mckayla Holloway		
Riki Ellison		
Sean Waters		
Susie Wood		
Xavier Pochon		



What sort of samples will be collected at each lake and how will they be used?

Sample type	Amount	Purpose
Core sample	Up to 6 cores will be taken each lake. These cores are up to 3 m long and 9 cm in diameter.	Collection of core samples from the lake beds for chemical, isotopic, environmental DNA and paleontological analyses (e.g., assessment of biological communities).
Rock and soil samples	Up to 2 kg per lake	Collection of small rock and soil samples (typically less than 2 kg) from boulders or rock outcrops and soils for isotopic, geochemical, nutrients and to assess catchment nutrient levels and productivity.
Lakebed sediment samples	Approx. 1.5 kg	To analyse the following: biological taxa identification and enumeration, environmental DNA/RNA, pigments, sedimentology, chemical and nutrients, and organic contaminants, and micro plastics.
Water samples	Up to 7 litres	To analyse the following: dissolved and total nutrients, chlorophyll-a and other pigments, trace metals, suspended and volatile solids, organic carbon, phytoplankton, zooplankton, environmental DNA.
Terrestrial vegetation sample	Up to 1.5 kg	Collection of small plant samples from the lake margin and immediate catchment for chemical, isotopic and environmental DNA analyses (e.g., assessment of catchment and biological communities).

We also intend to take photographs and video footage at each lake, and may use unmanned aerial vehicles (i.e. drones).

Where will the samples be taken and how will they be tracked?

Each lake will be given a unique barcode so that sample source and current location can be tracked.

Samples will be stored in archives at GNS Science Lower Hutt and analysed primarily at laboratories in New Zealand. In some cases, we need to work with our international collaborators to undertake specialised analyses. In those instances, we will set up Material Transfer Agreements with their organisation to ensure that the samples and data are not used for other purposes without prior consultation and consent.

How we will keep you informed

It is our intention that as results are analysed, we publish scientific reports and articles and prepare non-scientific summaries to disseminate. In 2022, the final year of our project, we will give a series of presentations around New Zealand.



Lakes380

Our lakes' health
past, present, future
Me hoki whakamuri,
kia haere whakamua

LAKES380 - BIOSECURITY

Standard Operating Procedure



Biosecurity Risks of Lake Sampling

Our work will be taking us to many different lakes across New Zealand and potentially multiple lakes in one day. Although we will generally be sampling one region at a time, different lakes/catchments can harbour a variety of species that may pose a threat to the ecological balance of other lakes. Some of these are invasive/pest species such as *Lagrosiphon*, *Didymo*, *Alligator weed*, *Lindavia* and *Egaria* (pictured above in order). It is our responsibility to thoroughly clean and decontaminate all our gear (boats, boots, coring and sampling equipment) between sites.

In addition to aquatic species, we also need to consider the biosecurity requirements on the land we cross to access these lakes. Some of the lakes may be on farms where the spread of the bacterium *Micoplasma bovis* is a risk.

Preparation

- Obtain appropriate permission to access or cross private land before sampling day.
- Communicate biosecurity standards and any site-specific requirements (e.g. *M. bovis*).
- Clean and dry all equipment and gear before leaving base.

Cleaning on site

After completion of sampling, thoroughly rinse all equipment to remove dirt before disinfecting with water from the site, check and dislodge any remaining plant material or seeds. Leave all debris on site, if you find any later, treat and dispose of it into a rubbish bin – do not wash down drains.

Disinfecting – needs to be undertaken between all lakes (even if sampling on the same day)

- Wash all equipment with 2% bleach emersion for 1 min OR a 5% good quality detergent for 5 mins
- For *M. bovis* use 0.2% citric acid (1 teaspoon in 1L water) or TriGene-type disinfectants. Soak for 5 mins.
- Where feasible dry all gear completely, inside and out (approx. 48 hrs).



5 Information

Taharoa Domain Operations Update May 2019 to July 2019

Meeting: Taharoa Domain Governance Committee
Date of meeting: 19 August 2019
Reporting officer: Hamish Watson, Parks and Recreation Manager

Purpose/Ngā whāinga

To present the operational report for the Kai Iwi Lakes (Taharoa Domain) for the May 2019 to July 2019 period so the Committee can be well-informed.

Executive summary/Whakarāpopototanga

Below is a summary of activities, operations and maintenance work carried out over the months of May 2019 to July 2019.

Recommendation/Ngā tūtohunga

That the Taharoa Domain Governance Committee:

- a) Notes the Taharoa Domain Operations Update – May 2019 to July 2019 report.

Context/Horopaki

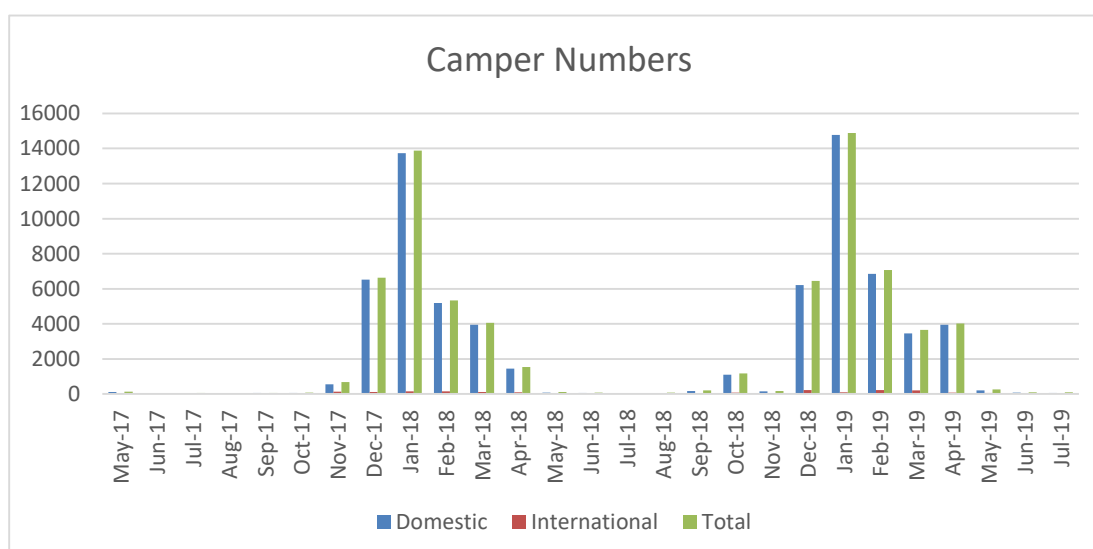
The Kai Iwi Lakes are among the best known dune lakes in New Zealand. It is the intent of the Kai Iwi Lakes (Taharoa Domain) Reserve Management Plan (RMP) to enable the Lakes and its surrounds to be enjoyed by all visitors while simultaneously enhancing the area and reducing risks through knowledge and active management.

Discussion/Ngā kōrerorero

- On 06 June 2019 a 'Get to know your dune lake' day was hosted at Lake Waikare, this is a programme jointly funded by Northland Regional Council (NRC) and the Ministry for the Environment's Freshwater Improvement Fund (FIF). A report from NRC is attached. (Attachment A).
- Restoration planting has continued with approximately 4,900 Manuka 2,850 Kanuka 860 Flax 660 Cabbage Trees having been planted to date.
- The new public toilet at Lake Waikare and caravan dump station at the entrance to Pine Beach Camp Ground have been installed and are now operational, just some minor ground tidy up work is left to complete and re-grassing of the area. The leftover soil from the excavations will be utilised around the site to level out some areas.
- Camper numbers have dropped with the cooler weather, however there are still a few campervans arriving.
- Bookings for the 2019/2020 season are open with Christmas and New Year bookings filling up fast.
- Council has employed new staff with Jordan Soole employed as the Taharoa Domain Manager and Tanya Wilson employed as the Camp Ground Coordinator, the latter is a fixed term contract.

- Ongoing track maintenance and spraying has been done around the Domain.
- Staff are still working through the options for the placing of beehives on the Taharoa Domain.
- Staff are still waiting for the bio security options and designs report; this is due in August 2019.
- Staff will be conducting a walk around the Domain/camp ground to gain an overall picture of where we are at and what we need to do looking forward.
- Water and wastewater resource consent parameters have been met for this period. Data has been sent to Northland Regional Council as per resource consent conditions.
- Staff are in discussions with a contractor to get all resource consent monitoring online so staff have immediate access to data and reports.
- Staff and Northland Regional Council are investigating developing a pest plant control and planting plan for Taharoa Domain.

Camper numbers:



Month	Total visitors	Domestic visitors	International visitors
July 2019	90	66	24
June 2019	103	85	18
May 2019	269	201	68
April 2019	4,026	3,949	77
March 2019	3,658	3,451	207
February 2019	7,072	6,856	216
January 2019	14,880	14,778	102
December 2018	6,448	6,216	232
November 2018	170	160	10
October 2018	1,170	1,099	71
September 2018	209	175	34
August 2018	85	50	35
July 2018	43	31	12
June 2018	73	59	14
May 2018	109	78	31
April 2018	1,544	1,446	98
March 2018	4,066	3,953	113

Month	Total visitors	Domestic visitors	International visitors
February 2018	5,331	5,188	143
January 2018	13,884	13,739	145
December 2017	6,626	6,514	112
November 2017	689	561	128
October 2017	74	64	10
September 2017	63	55	8
August 2017	27	12	15
July 2017	53	32	21
June 2017	47	29	12
May 2017	129	114	15

Policy and planning implications

It is the Park and Recreation Manager's responsibility to ensure all operations are conducted within budget.

Financial implications

The financial budgets are set within the Long Term Plan and respective Annual Plan.

Risks and mitigations

The RMP was developed using a public process and reflects the views of the community and other stakeholders at the time of its development.

Significance and engagement/Hirahira me ngā whakapāpā

The decisions or matters of this report do not trigger the significance criteria outlined in Council's Significance and Engagement Policy, and the public will be informed via agenda on the website.

Next steps/E whaiake nei

Council staff will continue to implement the RMP.

Attachments/Ngā tapiritanga

	Title
A	FIF Dune Lakes Education Day.

Hamish Watson, 1 August 2019

FIF Dune Lakes – Education Day, 2

Location: Lake Waikare, Kai Iwi Lakes, Dargaville

Date: June 6 2019

Schools present:

- Aranga School, x10 students
- Ruawai College, x20 students



Figure 1. A few clouds couldn't stop us from having a great day at the lake!

Thirty students from two local schools attended a 'Get to know your dune lake' day at Lake Waikare, an event organised by the FIF Dune Lakes project and Enviroschools. Students were welcomed with morning tea (mandarins and bananas), a health and safety briefing, and a karakia from Heni Matthews, Te Roroa. Heni also shared amazing purakau and kōrero as to why the Kai Iwi Lakes are so important.

The day was designed around three activities/stations, where the students were split into three groups and rotated around the stations throughout the day. Hot soup and buns were provided for lunch. Big thanks to the Kaipara District Council for organising the use of the old ski club for the day.

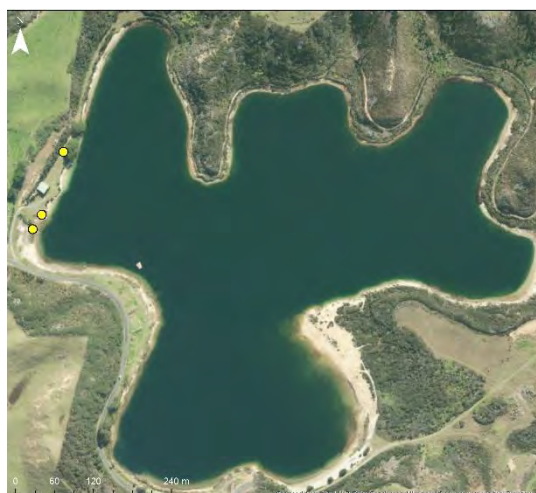


Figure 2. Location of activity stations (yellow dots)

Station 1 – Native and invasive plants

Students learned about the importance of riparian planting for lake management. A bingo game was developed by Brooke Hartigan (NRC) and students were taken on a brief walk along the lake edge where retired Enviroschools facilitator, Julie Holt, taught them about the various plants in the game and why they were either 'good' or 'bad' for the habitat surrounding the lake.



Figure 3. Julie Holt (right) leads the native and invasive plant activity at Lake Waikare

Station 2 – Water quality

Using an adapted SHMAK (stream health monitoring assessment kit), students investigated the water quality of Lake Waikare and what might be influencing it. Susan Karels (NRC Enviroschools Facilitator) led the station which integrated students' observations and senses with real time water quality tests such as pH, temperature and water clarity.

The students found the lake had an average of >1m water clarity, 7.3pH and temperatures that varied throughout the day.



Figure 4. Enviroschools coordinator Susan Karels (near centre) introduces the SHMAK activity



Figure 5. Students use a clarity tube to investigate water clarity

Station 3 – What lives in the lake?

Students were introduced to some of the native and invasive species found inhabiting the lake. NRC staff set 6 Gee minnow traps the night prior to the event to catch fish for students to identify. Using fish ID flip charts developed by NRC and a bingo game developed by Eden Hakaraia (NRC EnviroSchools facilitator), students measured and identified fish caught in the traps (gambusia and common bullies).



Figure 6. Students use nets to search for macroinvertebrates

The importance of not releasing unwanted pests like goldfish and turtles into lakes was discussed. Students also learned about macroinvertebrates, why they are important, and what we can tell about the health of a lake by identifying them.



Figure 7. Brooke Hartigan demonstrates how to search for macroinvertebrates in the lake

5.2 Financial report for the period ended 30 June 2019

Financial Services Manager 4702.24.02.01

Recommendation

That the Taharoa Domain Governance Committee receives the Financial Services Manager's report 'Financial report for the period ended 31 March 2019'.

Taharoa Domain

Financial Summary Report for the period ended 30 June 2019

Revenue	Kai Iwi Camp	Taharoa Domain	ACTUAL	BUDGET
			12 months to 31.06.2019	12 months to 30.06.2019
			\$	\$
Camping fees	481,152	-	481,152	434,500
Other Income	-	65,000	65,000	-
TOTAL	481,152	65,000	546,152	434,500

Expenditure	Kai Iwi Camp	Taharoa Domain	ACTUAL	BUDGET
			12 months to 31.06.2019	12 months to 30.06.2019
Description			\$	\$
Transport costs	2,520	11,761	14,281	17,856
Resource Consents	-	472	472	840
Grounds maintenance	24,850	101,738	126,588	167,000
Building maintenance	27,087	26,373	53,460	60,500
Professional service	59,077	2,099	61,177	51,416
Advertising and promotion	174	2,237	2,411	1,584
Staff salaries and employee costs	183,624	59,629	243,253	211,785
Insurance	822	1,786	2,608	4,381
Power and water costs	18,140	3,228	21,368	12,384
Refuse disposal	15,868	-	15,868	30,000
Sundry	25,556	-	25,556	40,491
TOTAL	357,717	209,324	567,041	598,237

Capital Expenditure	Kai Iwi Camp	Taharoa Domain	ACTUAL	BUDGET
			12 months to 31.06.2019	12 months to 30.06.2019
			\$	\$
10087 Kai Iwi facilities			46,288	180,000
10705 Public Toilets - Lake Waikare			20,015	40,000
10706 Taharoa Domain RMP			14,958	34,000
11019 Implement Reserve Management Plan			94,538	100,000
TOTAL			175,799	354,000

Kai Iwi Lakes Dune Lakes Galaxias Working Group update

Meeting: Taharoa Domain Governance Committee
Date of meeting: 19 August 2019
Reporting officer: Mark Schreurs, Policy Analyst

Purpose/Ngā whāinga

To update the Taharoa Domain Governance Committee (the Committee) on the work of the Kai Iwi Lakes Dune Lakes Galaxias Working Group (the Working Group).

Executive summary/Whakarāpopototanga

The Working Group last met on 12 June 2019. Notes from that meeting are presented with this report as **Attachment A**. This report provides a summary of the key matters discussed at the 12 June 2019 meeting and an update on the Working Group's key projects.

The Working Group's key projects are focused on better understanding food webs in the lakes, and the lifecycle and population structure of the Dune Lakes Galaxias (DLG). A report giving an update on some of this research is included with this report as **Attachment B**.

In addition, the Working Group also considered the concerns raised by Mana Whenua over the effects of growing visitor pressures on the wider Taharoa Domain environment. The Working Group agreed that a report should be prepared taking stock of the different monitoring programmes being undertaken in the Taharoa Domain. This will be undertaken by Council staff and discussed by the Working Group at their next meeting.

Concluding the 12 June 2019 meeting, the Working Group discussed whether their research projects were sufficient to answer questions around management actions or should new experiments be designed. The Working Group considered that at this stage their current research initiatives are sufficient for DLG management purposes.

The findings of the Working Group's food web investigations will be available by the end of 2019 though they may not be formally written up and presented to the Committee until early 2020.

Recommendation/Ngā tūtohunga

That the Taharoa Domain Governance Committee:

- a) notes the 'Kai Iwi Lakes Dune Lakes Galaxias Working Group update' report on the work of the Kai Iwi Lakes Dune Lakes Galaxias Working Group, and Attachment A and Attachment B to the report.

Context/Horopaki

The DLG (Galaxias sp.) is a small native fish found only in the Kai Iwi Lakes and there are fears its population is declining. In response to this problem, Te Roroa, Te Kuihi, Kaipara District Council (KDC), Northland Fish and Game Council (Fish and Game), Northland Regional Council (NRC), NorthTec and the Department of Conservation (DOC) have formed the Kai Iwi Lakes Dune Lakes Galaxias Working Group (the Working Group). The members of this Working Group are making a co-ordinated effort to better understand the DLG, its ecology, interactions with other species and what management actions will be successful in promoting its survival.

Discussion/Ngā kōrerorero

The Working Group last met on 12 June 2019. The meeting notes from this meeting are included with this report as **Attachment A**.

The following is a summary of matters discussed at the 12 June 2019 including research progress.

DLG spotlight monitoring

The Department of Conservation (DOC) has been monitoring the DLG population for more than 10 years using a spotlighting method. This involves surveying a number of shallow open sandy sites at night with a spotlight. During monitoring, each site is surveyed twice to reduce variability.

No clear increasing or declining population trend can be seen over the length of the data set. Rather, the data shows the number of fish recorded from one year to the next varies considerably. This may be because the DLG's population fluctuates greatly from year to year or because the monitoring method has a high margin of error. DOC considers the method is only semi-quantitative. This means it can be used to confirm that the DLG are present and present in reasonable numbers, however it is not sufficient to monitor if the population is increasing or decreasing in response to a given management action.

DOC has been re-evaluating this method to see if its accuracy can be improved. A statistical analysis of the data has revealed that surveying each site twice does not add any real value. DOC is therefore intending to only monitor each site once and instead add some additional sites. This would result in more sites being monitored for similar effort. The additional sites chosen are intended to be vegetated sites to compliment the current open sandy sites.

It should be noted that the fish collection work being undertaken by NorthTec and Fish and Game for the otolith study is also contributing to an understanding of DLG population size.

Dune Lakes Galaxias otolith study

NorthTec is progressing with their study that will use otoliths (a bony structure in the ear/gill of the fish) to determine the age of the fish. This is intended to offer new insights into the age structure of the population, size at which sexual maturity is reached, spawning time etcetera. Preliminary findings show the fish are reaching sexual maturity at a much smaller size than previously thought.

This study is also being expanded to include analysis of the fishes' gonads and organs. This does not require the taking of any additional samples.

In addition, NorthTec has also undertaken fyke netting and relative abundance (spotlighting) of small fish and tuna (eels). This assists to understand what prey species (and in the case of tuna, other predators) are present in the Lakes at different times of the year.

A brief report giving an update on this research is included with this report as Attachment B. Since this update, NorthTec has undertaken a further round of DLG sample collection and has been able to successfully extract the otoliths from fish smaller than 10mm. The next sample collection is intended to be in September 2019.

Trout diet and food web study

Fish and Game is continuing with their study into how trout diet varies throughout the year. This study is being run in close co-ordination to the otolith study. Collectively, these studies should provide a much more detailed understanding of the food web interactions in the Lakes.

The study involves taking a sample of trout from the Lakes at regular intervals throughout the year and analysing their gut contents. In addition, the trout's heads are being used for radio isotope analysis. The latter analysis is able to show what prey species make up what proportion of the trout's bodies.

Furthermore, the study has been expanded to include collecting macroinvertebrate samples to determine the relative abundance of other small creatures in the Lakes. This will assist with understanding the availability of prey to fish species at different times of the year.

The NorthTec student undertaking the gut sample analysis for this project will have prepared and completed her report by the end of 2019.

Discussion on research gaps

The Working Group considered if their current research projects will be sufficient to either:

- a) Answer the questions around what management actions are needed to protect the DLG; or
- b) Inform the design of future experiments or research that will answer these questions.

The Working Group was satisfied with their current projects. More will be known when the results of the otolith and food web studies become available around the end of the year.

The Working Group also considered Mana Whenua's concerns over the effects of growing visitor numbers on the wider Taharoa Domain environment.

The Working Group requested a report be prepared taking stock of the different monitoring programmes currently being undertaken in the Taharoa Domain. This is being progressed by Council staff and will be taken to a future Working Group meeting. This will allow the Working Group to consider if the current monitoring work is sufficient or if further work is needed.

If further work is needed and this becomes a major project, the Working Group may consider extending the scope of its mandate or a further working group could be established. This is not required at this stage. The Committee will be kept informed as this matter progresses.

Significance and engagement/Hirahira me ngā whakapāpā

These matters do not trigger Council's Significance and Engagement Policy.

Next steps/E whaiake nei

The Working Group will continue to meet as required to discuss progress on these projects, opportunities for collaboration and to reprioritise where needed. The findings of the Working Group's studies will be reported to the Committee as they become available via regular updates following each meeting of the Working Group.

Attachments/Ngā tapiritanga

	Title
A	12 June 2019 Kai Iwi Lakes Dune Lakes Galaxias Working Group Meeting Notes
B	Update for DLG otolith research, May 2019

Mark Schreurs, 25 July 2019

Meeting Notes

Kai Iwi Lakes Dune Lake Galaxias Working Group

Date : Wednesday 12 June 2019
Time : 1:30 pm start, concluded at 3.50pm
Venue : Dargaville Town Hall, Hokianga Road, Dargaville

Attendance

Tom Drinan	Department of Conservation
Matthew Calder	Department of Conservation
Ric Parore	Te Kūihi
Mark Schreurs	Kaipara District Council
Pamela Henare	Kaipara District Council
Tanya Cook	NorthTech
Rudi Hoetjes	Northland Fish and Game Council
Taoho Patuawa	Te Roroa

Opening

Mark welcomed everyone.
Meeting opened with Karakia by Ric.

Apologies

Andrew Knock (DOC), Kathie Fletcher (KDC) Will Trusewich (NRC)

Education programmes targeted at building the capacity of children and youth, particularly young Maori, to be good environmental stewards

Taoho suggested this item be addressed at a different time in order to get through some of the other agenda items.

Shared calendar of when research will be undertaken

The Working Group had previously identified the need to create a shared calendar so all members could be aware of when research activities would be undertaken. It was agreed that the simplest method to achieve this would be for those co-ordinating a research activity to enter this into their Outlook/e-mail calendar and invite the other group members to attend i.e. send them a meeting request. On receiving this meeting request, the other members of the group would be able to choose if they wanted to accept the request and therefore have it included in their e-mail calendar for easy reference or, if they did not consider it relevant to them, decline the request. It was noted that Working Group members could mark such meeting requests as “free” or “tentative” if they wanted to have them recorded in their calendars but did not actually wish to assist with the activity.

Action: All Working Group members are to send out a calendar meeting request to all other Working Groups members for each of the research actions they have planned.

Update from DOC on the review of their spotlight monitoring

Tom presented a PowerPoint presentation on the DLG spotlighting data collected from 2006 – 2016.

A statistical analysis of the data had found that the current method of spotlighting each site twice was not necessary as the second pass did not add anything to the data. Going forward, DOC is proposing to undertake just one pass of the current monitoring sites and include a number of additional sites. They hope this will give them a more robust snapshot of the DLG’s population.

It was suggested that the size classes should be reviewed. The magnification of the water distorts perceptions of how big the fish are. NorthTec recommends adding a fourth size category, noting that fish over 30mm often have eggs. It was further suggested that the method could be made more accurate by focusing on adults rather than all size classes.

On the whole, it was acknowledged that the spotlighting method is only semi-quantitative. More data would be required to track any trends over time. There was some discussion on other methods of monitoring and how the Working Group can get an understanding of if the DLG population is increasing or declining, however no conclusion was reached. Though only semi-quantitative, spotlighting remains the best monitoring method identified to date.

Action: Mark to e-mail Tom's presentation to all Working Group members.

Update on the DLG otolith project

Tanya explained how the project to collect a sample of DLG otoliths and analyse them has been progressing. She expects the project will be able to offer new insights into the age structure of the population, size at which sexual maturity is reached, spawning time etcetera. Preliminary findings show the fish are reaching sexual maturity at a much smaller size than expected.

Tanya asked if the Working Group would agree for the removal, preservation and analysis of the fish gonads and organs. She noted that no additional fish would need to be taken for this, rather it is an additional piece of analysis that can be undertaken on the samples they are already collecting. **The consensus was yes.**

In addition, NorthTec has also undertaken fyke netting and relative abundance (spotlighting) of small fish and tuna (eels). This assists them to understand what prey species (and in the case of tuna, other predators) are present in the Lakes at different times of the year. NorthTec is also recording the number of fish seen at each site when they collect DLG samples.

The next round of sample collection is scheduled for around 6 and 7 July 2019. Working Group members and other interested persons are welcome to assist.

This study is intended to run for a year and then be reassessed.

Action: Mark to check if the Taharoa Domain Governance Committee resolution which gives permission for this project, requires NorthTec to report to the Governance Committee after six months [secretarial note: this resolution does not require six monthly reporting].

Update on the trout diet and food web studies

This study is being run in close co-ordination with the otolith study. It involves taking a sample of trout from the Lakes at regular intervals throughout the year and analysing their gut contents. In addition, the trout's heads are being used for radio isotope analysis. These studies aim to show how trout diet varies throughout the year and what prey species make up what proportion of their bodies.

The study is also being expanded to include collecting macroinvertebrate samples to start determining the relative abundance of the biota in the Lakes. This will assist with understanding the availability of prey to fish species at different times of the year. This information will give a more complete picture of the food web in the Lakes.

Rudi has engaged a NorthTec student (Claire Heyns) to assist with this study, including analysing the gut samples. Isotope analysis will be undertaken by the University of Waikato. Any DLG found in gut samples will be sent to Tanya for the otolith study.

Claire will have prepared and completed her report by the end of 2019.

Update on working with the Cawthorn Institute

No update was available at this time.

Possibility of translocating DLG to another lake

The Working Group considered it may be premature to investigate establishing an additional population given there is still no suitably quantitative method for monitoring DLG abundance. In the absence of a reliable monitoring method, it would not be possible to monitor if the new population was thriving or declining. While the Working Group will continue to consider this problem, no further investigation into translocation will be undertaken for the time being.

Discussion on research gaps

The Working Group concluded with a discussion on if these projects will collectively provide the information needed to either answer the questions around management actions or to advise the design of an experiment that will. The Working Group considered if there were any gaps and if there are any other research projects that should be initiated.

There was some discussion on koura. There are concerns their numbers are declining, possibly due to over-harvesting by campers and day visitors, however there is no data available to support or refute this. This requires further investigation.

Taoho raised concerns about the overall health of the Taharoa Domain ecosystem as a whole. Given the sustained growth in visitor numbers, Mana Whenua are eager to monitor the ecosystem as a whole in order to identify any negative effects early.

Mark noted that a range of different monitoring initiatives were already in place, being carried out by different organisations. In particular, NRC undertake regular water quality monitoring and engage NIWA to prepare reports on the overall health of the lakes.

Action: NRC to share their water quality data with the Working Group members.

The Working Group identified there is a need to prepare a report taking stock of the different monitoring programmes currently being undertaken in the Taharoa Domain. This should include looking at what management plans exist for the Lakes/Domain, comparing what is currently being undertaken to examples of best practice (including the report card programme used for the Rotorua Lakes) and make recommendations for a monitoring programme for the Taharoa Domain Ecosystem. This is a significant undertaking that will require further discussion.

Action: Mark to prepare a report taking stock of the different monitoring programmes being undertaken in the Taharoa Domain. This can then be discussed further by the Working Group.

Meeting closure

Ric closed the meeting with a Karakia.

Update for DLG otolith research, May 2019

Fish collection

Dune lake galaxias (DLG) were collected on the 29th - 30th November 2018 and 16 - 19th March 2019. Pelagic sampling was also attempted on the 26th February 2019 in Lake Waikare to collect small larval DLG. The aim of this was to refine the otolith extraction for fish 10 mm or smaller in length, which has proven problematic to date (see *Next steps* below). However, only one DLG larger than 25 mm was collected, which was not taken.

A total of 93 DLG were collected in November 2018 (58 from Waikare, 35 from Taharoa), 50 of which were caught in the pelagic zones and 43 in the littoral. All the fish caught in the littoral zone were from Lake Waikare. Only one fish was seen in the littoral zone of Taharoa, so this was not taken. The fish collected ranged in length from 3.0 to 57.0 mm and in weight from 0.004 to 12.178 mg. The size of these smallest DLG compared to the size of a freshly hatched inanga, suggests they are likely to be less than a week old. The pelagic sampling is bias towards larval fish smaller than 25 mm (Figure 1). Several of the larger fish collected had advanced gonad development. If any larger fish are collected in future sampling, it is recommend that the gonads be extracted for further analysis, so they are not wasted (see *Next steps* below).

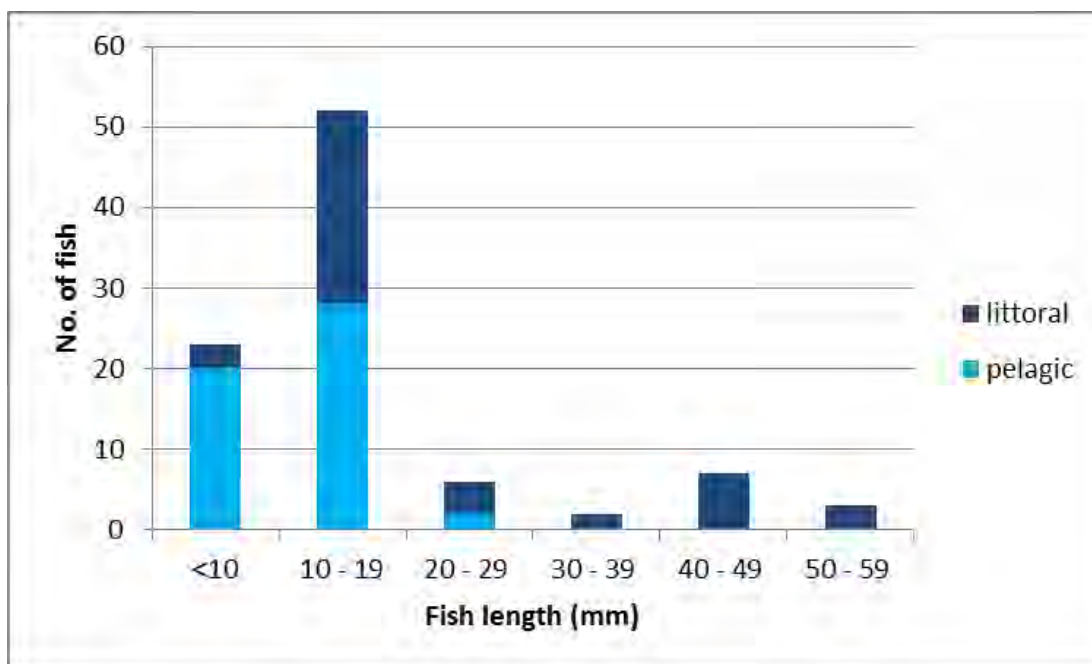


Figure 1: Dune lake galaxias collected from Lakes Taharoa and Waikare on 28th and 29th of November 2018

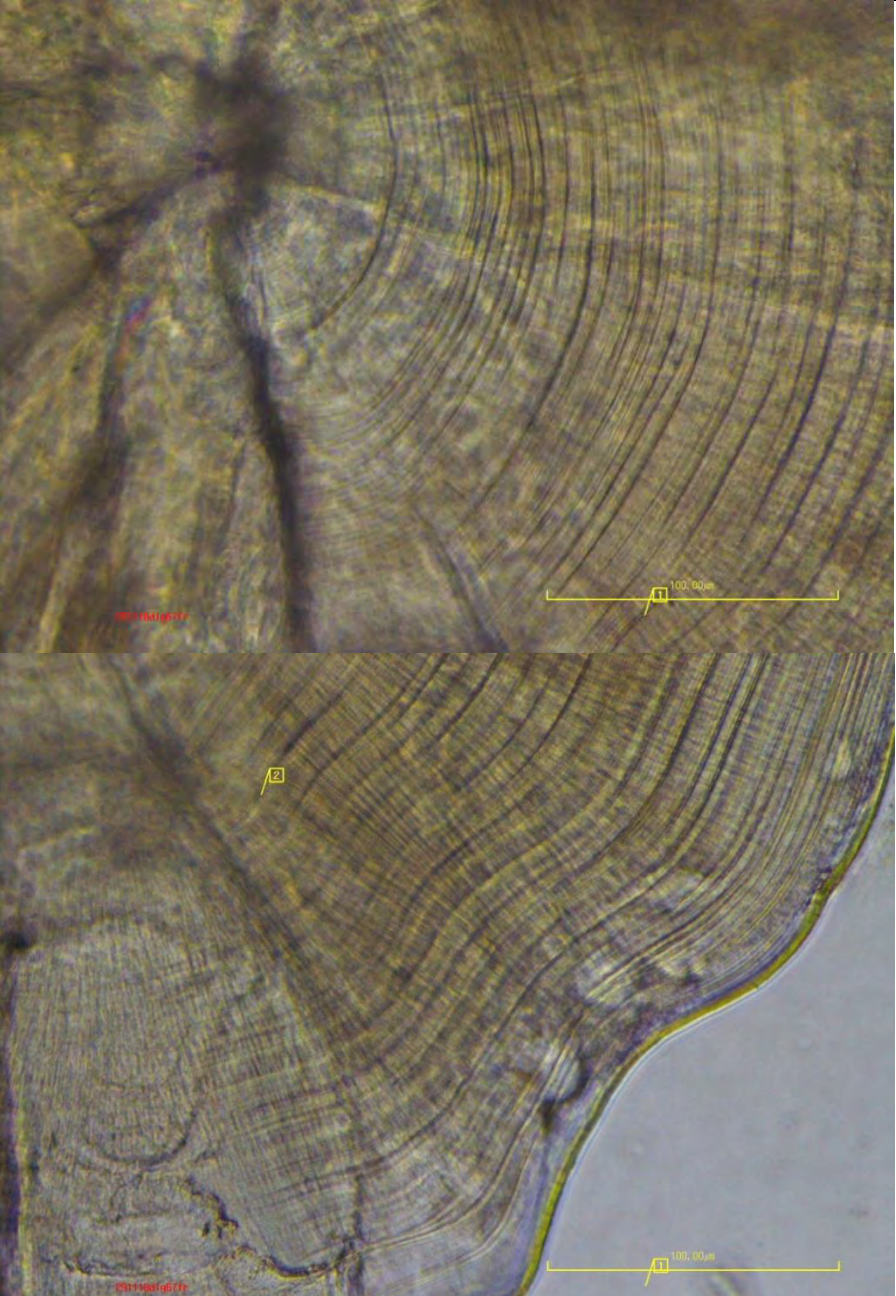
A total of 20 DLG were collected in March 2019 (16 from Waikare, 4 from Taharoa), all from the littoral zone. No larval fish were seen and no DLG were detected in the pelagic zone for both lakes. The fish collected ranged in length from 30.0 to 61.8 mm and in weight from 1.35 to 14.77 mg. The largest fish seen to date, measuring 73.3 mm, was caught and returned to Lake Waikare.

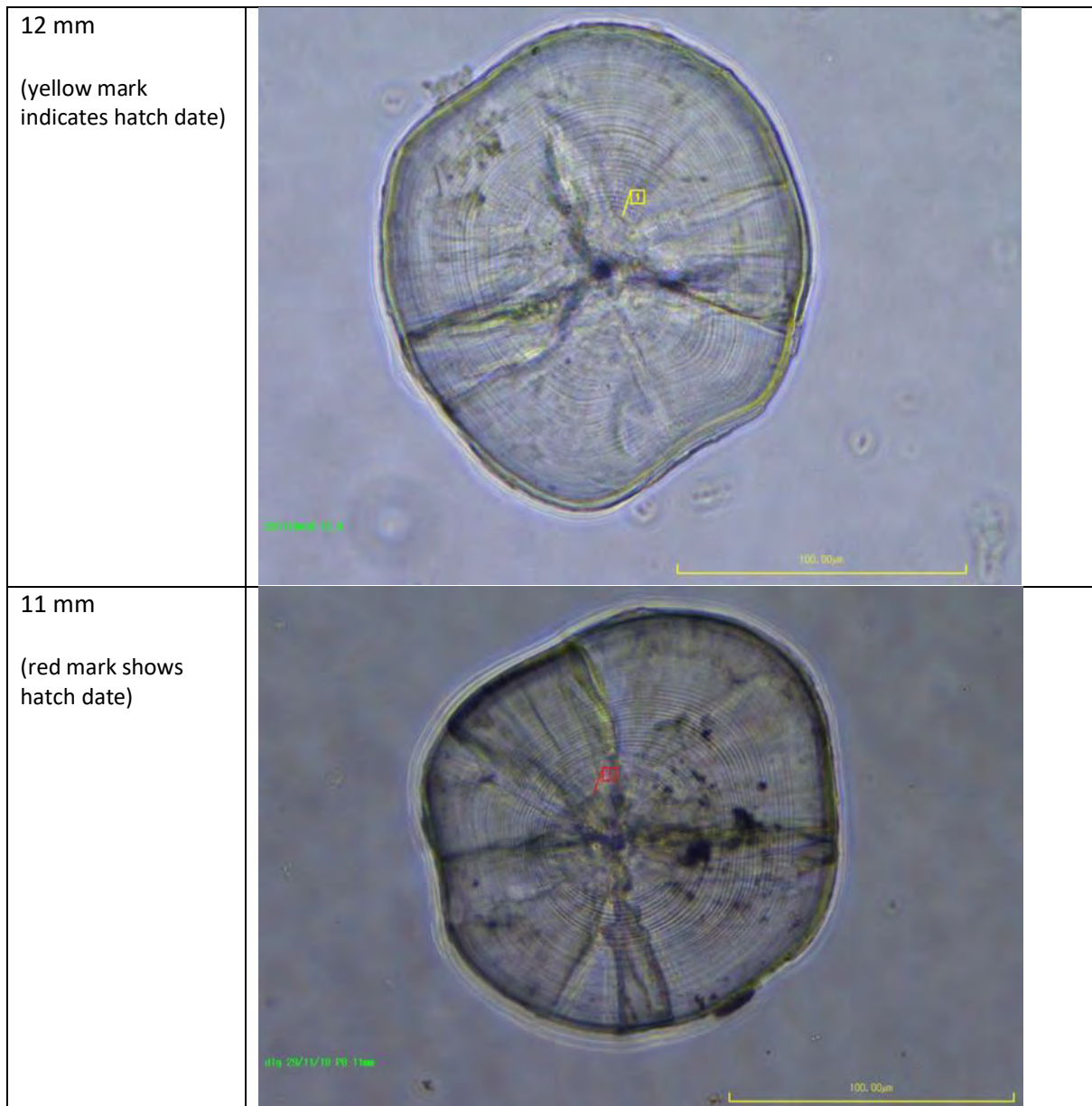
In addition, samples of DLG have also been collected from trout stomach contents that can be used for the otolith research. Further trout were collected in March for the trout diet study being led by Fish and Game, which will provide more DLG samples. At the same time, NorthTec carried out fish monitoring and collected macroinvertebrate samples to start determining the relative abundance of the biota in the lakes. This will be repeated in July, after which a report summarising the findings will be compiled.

Otolith training

Eimear Egan (NIWA) trained Alex Going (NorthTec research student and NRC staff), Brooke Hartigan (NRC staff) and Tanya Cook (NorthTec tutor) on the 17th – 20th February. The training covered all steps of the process, including otolith extraction and preparation, image collection and image processing in the software used to measure the otolith and count the rings. As part of this training, the best approach for different fish sizes was determined and the first images were collected (Table 1). Otoliths were successfully extracted and prepared from a range of fish sizes, including fish as small as 11 mm in length. The diameter of an otolith for a fish sized 11-12 mm is about 0.1 mm (Table 1). The tips of sewing needles under a dissecting microscope were used to extract these.

Table 1: Example raw images of otoliths taken from DLG collected in November. These images can be manipulated in the software to enhance the rings before counting.

Fish length	Example images
<p data-bbox="204 725 448 757">53.5 mm</p> <p data-bbox="204 797 443 1021">(two images for the same fish - the ring shown with mark 1 in the top image is the same ring shown as mark 2 in the bottom image)</p>	



Next steps

The method for extracting and plating the otolith from the small larval fish (10 mm or less in length) still needs to be refined. The attempts made to date to extract/prepare the otoliths from the small larval fish collected in November has been unsuccessful, as the fish smaller than 10 mm disintegrate too much in the freezing/thawing process. This was the purpose of the sampling in February. However, as said above, no larval fish were caught in February or March. The plan is to try plating these fish directly onto microscope slides at the lakes, while they are fresh. There is still some frozen samples of small larval fish to be processed, but these will not be attempted until this method is refined.

Weather permitting the next sample collection will be on the 26th - 27th of May (and 28th of May if needed). If anyone would like to assist with this sampling, please contact Tanya. Then the next trip will be in the first or second week of July around the trout fishing competition weekend.

If mature fish are caught in the future, to obtain as much information as possible from these fish the gonads, stomach and liver should be extracted from the fish at the lakes before the fish are frozen. These organs would then need to be weighed and measured, and any eggs counted, before being preserved in neutral buffered formalin for histology analysis. This cannot be done once the fish have been frozen. The Working Group needs to consider this and confirm if these organs can be extracted from these large fish and preserved appropriately for analysis in the future.

There has also been email discussions about sending a sample of a DLG for analysis to create an eDNA profile – this can be done using the remaining body of a DLG after the otolith has been extracted. We recommend that approval be given for samples to be sent to Cawthron for this to be done.

Alex and Tanya will be doing substantial hours processing samples in the laboratory over the coming months, so if anyone is interested in learning some of the otolith extraction and processing technique or would like to be involved in this process, please contact Tanya to arrange some dates that suit.

Acknowledgements

I would just like to say thanks to Rudi Hoetjes for providing the Fish and Game boat and giving up his time for the fish collection each trip. Also thank you to Will Trusewich (NRC) for obtaining the Envirolink funding to cover the training cost, Eimear Egan (NIWA) for providing the training and Claire Heyns (NorthTec student) and Graham Gallaghan (Fish and Game) for assisting with the fieldwork in March.

6 Public Excluded Taharoa Domain Governance Committee agenda items 19 August 2019

Recommended

That the public be excluded from the following part of the proceedings of this meeting namely:

- *Confirmation of Public Excluded Taharoa Domain Governance Committee minutes 14 May 2019.*

The general subject matter of each matter to be considered while the public is excluded, the reasons for passing this resolution in relation to each matter and the specific grounds under s48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:

General subject of each matter to be considered:	Reason for passing this Resolution	Ground(s) under Section 48(1) for the passing this resolution:
<i>Confirmation of Public Excluded Taharoa Domain Governance Committee minutes 14 May 2019</i>	<i>Part 1, Section 7(2)(f) maintain the effective conduct of public affairs through (ii) the protection of such members, officers, employees, and person from improper pressure or harassment.</i>	<i>S48(1) (a) That the public conduct of the whole or the relevant part of the proceedings of the meeting would be likely to result in the disclosure of information for which good reason for withholding would exist.</i>

7 Open Taharoa Domain Governance Committee agenda 19 August 2019

Closure

Kaipara District Council
Dargaville