



# Annual Report 2022



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## Chairperson Report

WHEN I FIRST TOOK UP THIS ROLE, THE PASSIONATE FEW WHO SELFLESSLY DEDICATED THEIR TIME AND ENERGY TO THE NZTF CAUSE WERE DEPLETED AND WARY. IT IS EASY TO FORGET THAT AS VOLUNTEERS OUR EFFORTS STACK ON TOP OF WORK AND EVERYDAY LIFE, A WEIGHT MADE HEAVIER DURING THE DIFFICULT TIMES OF LATE.



It takes very special people to work voluntarily towards goals for the common good. I encourage us all to take a moment and acknowledge the enormous voluntary efforts made to date by the hunting communities passionate few, and to reflect on the privileges that their efforts have provided us.

Hunters fought gallantly for consultation following the conservation minister's announcement to roll out the gunships on tahr in 2018 and were successful! We now not only have improved consultation for the management of tahr but also for deer and other game species. Consultation doesn't mean we get what we want all the time, rather that our positions and values are taken into consideration when making management decisions. There is still a long journey ahead to achieve sensible tahr management untainted by preservationist idealism. The Foundation is committed to this journey and little bit by little bit is moving towards achieving this goal.

Throughout the 2022-year, the NZTF's role extended past advocacy into active management, shifting gears to become proactive rather than reactive. An exciting time to be involved with the NZTF, with new projects in development, new ideas coming to light, new roles being established and new contributors coming onboard. While I am sure that some hunters would like to see the NZTF stay squarely in the space of advocacy and continue to battle with the Department of Conservation

*Dealing with DOC is a challenge wrought with red tape, opposing views, and tainted by past and current grievances. However, as the manager of NZ public conservation land and the responsible agency for administering the HTCP 1993, it is necessary.*

(DOC) over its failings, we must accept that there are times when great battles serve us best and there are times where we are better served by diplomacy.

Dealing with DOC is a challenge wrought with red tape, opposing views, and tainted by past and current grievances. However, as the manager of NZ public conservation land and the responsible agency for administering the HTCP 1993, it is necessary. What the Foundations relationship with DOC will look like in the long run remains to be seen, but it will need to be constructive to enable the NZTF to achieve its objectives for hunters. Since we began to transition into a space where the NZTF can function as tahr managers and be accepted by DOC to do so, some whispers of mistrust by hunters over our intentions have arisen. Past experiences have left NZ hunters with an underlying scepticism that may never leave. The NZTF is run by NZ hunters and so we too are haunted by this scepticism, but we have chosen to wield it as wisdom.



To achieve sensible tahr management, the NZTF is required to work with groups or organisations that hunters may not trust or who hold opposing views. To do this, we must hold firmly to our core positions but remain flexible in the path taken to achieve our long-term mission. The NZTF team has embraced this reality and through consultation and active management, endeavored to provide direct, well considered and solutions focused advice for improving tahr management. Our approach puts emphasis on achieving the goals we can collectively agree on and searching for pragmatic solutions to identified problems or any goals where there is opposition.

While we continue to fight to be allowed a sustainable tahr hunting resource, we are now facing down the barrel of a progressively reducing one, and this will begin to have an impact on hunters. The different hunting sectors will be forced to either compete or to work together. If we can achieve the latter, then we can prevent history repeating itself and secure our valued

game resources for generations to come. This challenge is reflected in our focus for this year's AGM; "improving interorganisational cooperation and the Foundations functional capacity to enable active management of tahr for hunting and the environment."

In the coming year we hope to see our shift from a reactive to proactive space really take hold and the activities of the NZTF grow exponentially. Our motto for the oncoming year is "Don't just have a position, make a proposition." Basically, if you have an opinion that something should be done or done better than we are currently managing to do, come to us with a proposal to do it or improve it. We are a small few doing a lot for the many, we are only volunteers, and we need all the help we can get.

*Yours Sincerely, Kaylyn Pinney, Chairperson 2021-2022*

**CONTACT THE TEAM** Email: [admin@nztf.org.nz](mailto:admin@nztf.org.nz)  
[www.facebook.com/nztahrfoundation](https://www.facebook.com/nztahrfoundation).

## Commercial Sector Update

RECENT OBSERVATIONS SUGGEST NUMEROUS TROPHY BULLS COMPETING FOR A SIGNIFICANTLY REDUCED NANNY POPULATION AND THAT CURRENT BULL NUMBERS ARE HIGH IN PLACES.

The NZTF is acutely aware of the growing gap in the number of bull tahr reaching maturity after 3-4 years of intense aerial control measures by DOC. It is fair to assume that around 50% of juvenile tahr shot are males, this represents a huge number of animals that will NOT be available in the coming years. International hunters have been unable to access New Zealand until May-June 2022. However, ground guides and AATH operators now have a Covid related backlog of clients wanting trophy animals. This is a serious area of concern as the hunting sector deals with a progressively depleting bull resource.

The NZTF is advising DOC that the emphasis on control needs to move from not shooting identifiable bulls, to only shooting identifiable breeding age nannies. The science tells us the best way to control population growth is by targeting the breeders, i.e. mature nannies, and the best way to support recreational and commercial opportunities is to avoid shooting bulls. In addition, the NZTF is engaging with both ground guides and AATH operators to glean as much information as possible to aid in any supply issues (trophy animals) in the coming year, and to remind ground guides and AATH operators that their current DOC concession agreements have set conditions that need to be complied with.

The tremendous progress that the NZTF has made over the past 4 years has its roots in the building of working understandings with key stakeholders including, commercial Heli operators, be they AATH, Waro or both, ground hunting guides and recreational hunters. It has become clear that hunters understand the value of tahr as a hunting resource, regardless of which part of the sector they are engaged with, and this understanding needs to hold firm as we head into changing times. With two, maybe three years of good bull numbers ahead of

us we must do all we can collectively to ensure that in 5-10 years the tahr resource is protected and enhanced as far as is possible for the benefit both commercial and recreational hunting. This will be a huge challenge and put the hunting sector to its ultimate test, can we work effectively together to reach a long-term common goal?

The NZTF believes that the answer is yes. The key lies in keeping communications open and engaged between all stakeholders. The NZTF and tahr hunting community have faced some significant challenges over the past 4 years and despite these challenges, much progress has been made. We need to build on this progress and continue to find solutions to challenges, be they internal or external, by building on our common ground and slowly resolving our historic differences and grievances.

Whatever the outcomes, we need them to be hunter lead and science based, and we need to find them together.

*Written by Gerald Telford and Snow Hewetson*



# Recreational Hunting Sector Update

OVER THE LAST COUPLE OF YEARS THE RECREATIONAL SECTOR HAS ENJOYED ALMOST EXCLUSIVE ACCESS TO THE TAHR RESOURCE AS THE COMMERCIAL SECTOR HAS BEEN ALMOST SHUT DOWN DUE TO COVID. THIS IS GOING TO CHANGE NEXT YEAR, AND UNFORTUNATELY THE POTENTIAL FOR CONFLICT IS ALL BUT GUARANTEED.



The NZTF is working hard to ease the impact of a progressively reducing bull population on all hunting sectors. However, to be successful we need everyone from all sectors to get on board, engage, and work constructively. With a significantly reduced tahr population there will be little room for/no tolerance of selfish rogues and this applies to both the commercial and recreational sectors.

We are often quick to point fingers at other sectors, but some in the recreational sector are just as guilty of taking more than their fair share and harvesting young bulls - you don't have to look too hard on you tube to see this is true. A reduced resource means the recreational sector must start to select quality over quantity and show restraint if there is to be any hope of there being any big bulls kicking around in 5-10 years' time. Self-regulation is always preferable, but it depends on every single one of us promoting and encouraging everyone we know, meet, or engage with online to do what is

needed to secure a sustainable tahr resource. The excuse "someone else will shoot it if I don't" will not cut the mustard any longer for our valued big game animals.

The recreational sector is the largest user of the tahr hunting resource and so has a huge influence on the state of the herd. To date the sector's contributions to tahr control/management have not counted, and only been mentioned in passing. The NZTF have set out to change this, starting with the creation of the tahr app. If it isn't logged it doesn't count, so we need absolutely everyone to start using it. This information comes directly to the NZTF, and is not to help DOC bomb up your favourite hunting spot. It is to enable us to manage tahr and their habitat properly, as without a healthy habitat we won't have a healthy tahr hunting resource.

Get on board with hunter led tahr management, whether it is with the currently being worked through Management Unit one (Rangitata and Rakaia catchments) or other management activities, e.g. management hunts in specific areas of the tahr range with high vegetation impacts, and play your part in securing the future of the tahr herd. Take pride in doing the right thing and hold onto integrity no matter who you observe not towing the line. An ethical hunter is one who does the right thing even when they think no one is watching. Don't hold back from trying to educate those who are not doing the right thing. Peer pressure is the only way we are going to get the selfish few to change their ways.

Recreational hunters must play by the best practice game management rules or we lose the high moral ground when it comes to dealing with the ratbags in other sectors. The NZTF is committing a huge amount of volunteer time to education of tahr hunters in the coming year and we ask everyone to do their part. By uniting to do the right thing we truly believe a sustainable future for tahr hunting is achievable.

*Written by Greg Duley, David Keen and Tony Pidgeon*

## Minutes

### ANNUAL GENERAL MEETING

9.00am, 15th October 2021

Rydges Hotel, 30 Latimer Square, Christchurch.

#### 1. Welcome

Chairperson, Snow Hewetson, welcomed all to the meeting and thanked all for their attendance and expressed his thanks to the Management Committee for their individual efforts during the past year.

#### 2. Attendance

Snow Hewetson, Terry Pierson, Sheene Ottmann, James Cagney, Brent Hollow, Chris McCarthy, Simon Guild, Dave Keen, Marcus Pinney, Kaylyn Pinney, Geoff Kerr, Richard Burden

#### 3. Apologies

Garry Ottmann, Greg Duley, Luke Care, Tony Pidgeon.

**Moved: Marcus Pinney/ Dave Keen. That Apologies be accepted. Carried.**

#### 4. The printed New Zealand Tahr Foundation Annual Report was provided to all in attendance.

The Annual Report contains the final version of all Reports:

- a. Chairpersons Annual Report
- b. Minutes of the 2020 AGM
- c. Treasurers Report
- d. Sub Committee Reports .

Moved: Kaylyn Pinney / James Cagney: That the Annual Report be adopted. Carried.

The Chair, Snow Hewetson, commented on the difficulties of getting the Report printed from the usual printer and was extremely pleased that the new printer in Blenheim was able to produce the Report almost while waiting and a very reasonable cost to the Foundation.

He also expressed thanks to all who had provided photos for this Annual Report.

#### 5. Election of Officers:

Nominations Received:

Chairperson: Kaylyn Pinney

Vice Chairperson: David Keen

Secretary: Terry Pierson

Treasurer: Sheene Ottmann

**Moved: Simon Guild / Geoff Kerr. That the nominations for the listed positions be accepted. Carried.**

Snow Hewetson thanked Kaylyn Pinney for agreeing to stand as Chairperson and advised that he felt that she was very capable of continuing her excellent performance she had demonstrated to date as part of the Management Committee.

#### Management Committee:

Snow Hewetson

Tony Pidgeon

Gerald Telford

**Moved: Dave Keen / Marcus Pinney. That the Management Committee nominations be accepted. Carried.**

Management Committee may consider the following as co-options for special duties: Joseph Peter, Willie Duley and any other person they may wish to co-opt.



## 6. General Business.

### a. Constitutional Alterations

Kaylyn outlined the discussions she had with DOC in respect to the alteration of the Constitution to shift the following currently listed as members to a new position of Advisors. This list is: Department of Conservation, Game Animal Council, Aoraki- Canterbury Conservation Board, West Coast Conservation Board.

A Special General Meeting will be required to alter the Constitution and following an advice of final change is made, and required notice of meeting, the Constitution may be altered to reflect these changes.

### b. Sika Sow – Duke of Bedford Award.

Due to the postponement of the Sika Show from November 20,

2021 due specifically to the COVID 19 breakout, the new date is set for February 26, 2022. It was agreed that the NZTF would also postpone their presentation of the Duke of Bedford Award until the Sika Show takes place.

Snow Hewetson advised that Badges and Medals, Blenheim were currently working on an alternate Award of a stainless-steel silhouette of the DoB award for presentation to the winners of the trophy. The original bronze statue would be engraved with the winners name but stored on an annual basis as the NZDA Museum in Wellington.

Discussion on suitable measurer's and agreed that both recognised NZDA and SCI Measurer's would be capable of measuring Tahr for the Award.

Discussion on allowing non-resident entries was discussed and agreed that we saw no issue accepting their entries. Believed that as the emphasis was on age and maturity that it could appeal to non-residents as well.

Suggestion that all entries be recorded in a NZTF Record Book and that those who's entries be accepted, receive a certificate recognising their acceptance to the Record book.

### c. Helicopter Access.

Marcus Pinney commented that currently DoC was allowing access to a number of areas by helicopter that were normally closed to helicopter access. He believed we should be using this example to improve the access to areas within the Tahr range that was usually closed so that better access could be provided to all hunters.

### d. Conflict Mitigation.

Believed that there was a place for the NZTF to act in assisting co-operation between persons or groups who were in conflict as the NZTF was representing all possible parties. For future discussion.

## 7. Acknowledgment.

Kaylyn addressed the meeting and acknowledged Snow Hewetson's efforts as Chairperson over the past three years and the personal time he had dedicated to the Foundation over that time.

## 8. Closure

Meeting closed at 9.45am.

*Kaylyn Pinney / Chairperson*

*Terry Pierson / Secretary*







# The New Zealand Tahr Foundation Incorporated Financial Statements

FOR THE YEAR ENDED 31ST JULY 2022

## Elected Committee

Kaylyn Pinney / Chair

David Keen / Vice Chair

Terry Pierson / Secretary (Retired)

Gerald Telford / Secretary (Appointed)

Sheene Ottmann / Treasurer

Snow Hewetson

Tony Pidgeon

Gerald Telford

## Co-Opted subsequent to AGM

Luke Care

Greg Duley

Incorporation Number: 2655152

Date of Incorporation: 3 November 2016

Address: c/- 2763 State Highway 63, RD 1,

Blenheim 7271

Bankers: Westpac

IRD Number: 123 960 801

The accompanying notes form part of these financial statements. These financial statements have not been subject to audit or review.

## STATEMENT OF FINANCIAL PERFORMANCE

FOR THE YEAR ENDED 31ST JULY 2022

	Note	2022 (\$)	2021 (\$)
<b>Revenue</b>			
Donations Received		1,005	4,794
Grants Received	6	17,565	10,400
Interest Received		46	707
<b>Total Income</b>		<b>18,616</b>	<b>15,901</b>
<b>Less Expenses</b>			
Advertising and PR			675
Bank Charges			1
Legal Expenses			
Meeting Expenses - TLG			204
Printing, Stamps & Stationery		3,055	2,443
Rent - Meeting venue		435	304
Research and Monitoring	6	6,886	
Travel - National		1,134	477
Website			420
<b>Total Expenses</b>		<b>11,510</b>	<b>4,524</b>
<b>Surplus/(Deficit) Before Tax</b>		<b>7,106</b>	<b>11,377</b>
Income Tax Expense			
Transfer Grant Income		9,179	
Surplus to future period -			
<b>Net Surplus/(Deficit)</b>		<b>\$(2,073)</b>	<b>\$11,377</b>

**STATEMENT OF MOVEMENTS IN EQUITY**  
FOR THE YEAR ENDED 31ST JULY 2022

	Note	2022 (\$)	2021 (\$)
<b>Equity at Start of Year</b>		<b>60,358</b>	<b>48,981</b>
Surplus & Revaluations			
Net Surplus/(Deficit) for the Period		(2,073)	11,377
Total Recognised Revenues & Expenses		(2,073)	11,377
<b>Other Movements</b>			
<b>Equity at End of Year</b>		<b>\$58,285</b>	<b>\$60,358</b>

**STATEMENT OF FINANCIAL POSITION**  
AS AT 31ST JULY 2022

	Note	2022 (\$)	2021 (\$)
<b>Current Assets</b>			
Bank - Cheque Account		27,497	22,311
Bank - Savings account		27,400	27,386
Prepayments		1,738	
GST refund due		416	63
Taxation refund due	5	13	198
<b>Total Current Assets</b>		<b>57,064</b>	<b>49,958</b>
<b>Non-Current Assets</b>			
Other Assets	4	10,400	10,400
<b>Total Assets</b>		<b>67,464</b>	<b>60,358</b>
<b>Current Liabilities</b>			
Grant Funds	6	9,179	
<b>Total Liabilities</b>			
<b>Net Assets</b>		<b>\$58,285</b>	<b>\$60,358</b>
Represented by;			
<b>Equity</b>		<b>\$58,285</b>	<b>\$60,358</b>

**STATEMENT OF CASH MOVEMENTS**  
FOR THE YEAR ENDED 31ST JULY 2022

	Note	2022 (\$)	2021 (\$)
<b>Opening Balances</b>			
Bank Accounts		49,697	166,535
<b>Cash From Operating Activities</b>			
Funds from (applied to) Operating Activities		5,200	(106,438)
		54,897	(106,438)
<b>Net Cash From (Applied to) Operating Activities</b>		<b>54,897</b>	<b>38,654</b>
<b>Cash Applied to Investing Activities</b>			
Cash Payments -			10,400
<b>Net Cash Applied to Investing Activities</b>			<b>(10,400)</b>
<b>Closing Cash Balances</b>		<b>\$54,897</b>	<b>\$49,697</b>

**NOTES TO THE FINANCIAL STATEMENTS**  
FOR THE YEAR ENDED 31ST JULY 2022

**1. Statement of Account Policies**

The financial statements presented here are for The New Zealand Tahr Foundation Incorporated, an incorporated society. The financial statements of The New Zealand Tahr Foundation Incorporated have been prepared in accordance with Special Purpose Framework for use by For-Profit Entities (SPFR for FPEs) published by Chartered Accountants of Australia and New Zealand, and are for members use and income tax compilation only.

The accounting principles recognised as appropriate for the measurement and reporting of earnings and financial position on an historical cost basis have been used, with the exception of certain items for which specific accounting policies have been identified.

**Specific Accounting Policies**

In the preparation of these financial statements, the specific accounting policies are as follows:

## a. Goods & Services Tax

These financial statements have been prepared on a GST exclusive basis with the exception of accounts receivable and accounts payable which are shown inclusive of GST.

## b. Taxation

Income tax is accounted for using the taxes payable method. The income tax expense charged to the Statement of Financial Performance is the estimated tax payable in the current year, adjusted for any differences between the estimated and actual tax payable in prior years.

## c. Donations and Grants

Donations and Grants received are included in operating revenue. If particular conditions are attached to a donation or a grant that would require it to be repaid if these conditions are not met, then the donation is recorded as a liability until the conditions are satisfied.

Donated goods or services (other than donated assets) are not recognised.

## 2. Audit

These financial statements have not been audited.

## 3. Contingent liabilities

At balance date there are no known contingent liabilities (2021:\$0). The New Zealand Tahr Foundation Incorporated has not granted any securities in respect of liabilities payable by any other party whatsoever.

## 4. Other assets

	Note	2022 (\$)	2021 (\$)
Bronze Trophy Tahr Sculpture 350mm High with Rimu Base. At cost		10,400	10,400
		10,400	10,400
<b>Total Other Assets</b>		<b>10,400</b>	<b>10,400</b>

## 5. Taxation

	Note	2022 (\$)	2021 (\$)
<b>Tax Payable</b>			
Interest Income		46	707
Less tax exemption		1,000	1,000
<b>Taxable Income</b>			
<b>The Taxation Charge is Represented by</b>			
Current year tax			
<b>Tax Payable</b>			
RWT credits		13	198
<b>Total Tax to be Refunded</b>		<b>\$13</b>	<b>\$198</b>

## 6. Grants

Project	Tahr App	Ground Harvest
Grant received	12,174	5,391
Less Costs incurred	2,995	3,891
Less Surplus Grant carried forward	9,179	
<b>Net Surplus(Deficit) on R&amp;M Projects</b>		<b>\$1,500</b>
	2022 (\$)	2021 (\$)
<b>Research and Monitoring</b>		
Grants received	17,565	
Less Costs incurred	6,886	
	10,679	
Less Surplus Grant carried forward	9,179	
<b>Net Research and Development</b>	<b>\$1,500</b>	



# Tahr Control Operational Plan

1 JULY 2022–30 JUNE 2023

To detail an annual plan of work that moves towards achieving the objectives of the Himalayan Tahr Control Policy 1991 and Himalayan Tahr Control Plan 1993 (HTCP), within the context of the statutes for which lands are administered.

## CONTEXT

The Department of Conservation (DOC) and Ngāi Tahu continue to work in partnership to implement the Treaty in relation to implementing the HTCP. This plan has been informed by the results of prior tahr control operational plans<sup>1</sup>, results of monitoring of tahr populations in selected management units, and contributions from members of the Tahr Plan Implementation Liaison Group (TPILG). While our

understanding of tahr in the landscape has developed substantially in recent years, the complexity of managing that system has also become more apparent. Within that complexity we are now in a position to begin to implement the adaptive approach to management envisaged in the HTCP. This will require a transition over several years and a collaborative commitment to working flexibly within uncertainty. In 2022/2023 the programme can build on substantial learnings from 2021/22, including:

- > Data on tahr populations in Management Units 1 and 3 enabling
- > Management unit-level population modeling and targeting
- > Preparation and trialling of rapid browse impact-assessment protocols
- > Development of hunter-led management in Management Unit 1
- > Successful ground-based control trials (DOC and hunter-led)
- > Strategic planning for tahr control outside the feral range.

Over the coming year the TPILG will continue to provide for effective collaboration amongst parties with interests in the implementation of HTCP. This will include advising DOC and working together to enhance contributions to HTCP implementation. Work this year will focus on scoping longer-term strategies. This will include optimising contributions from recreational hunting, hunter-led management activities, commercial tahr recovery and Aerial Assisted Trophy Hunting (AATH) as opportunities allow.

It seems probable that ongoing effects of COVID-19 will remain in play for the 2022/23 year. The commitment of all parties to effective management of tahr remains strong, and Government commitment to the tahr programme has not changed.

## SCOPE

**Included:** This document covers management of tahr from 1 July 2022 to 30 June 2023, including:

- > Control of tahr on Public Conservation Land (PCL)
- > Contributions from recreational and concession hunting, including hunter led management activities, guiding, commercial tahr recovery and AATH
- > Contributions to implementing the HTCP on land tenures other than PCL
- > Research and monitoring relating to tahr.

**Excluded:** This document does not deal with:

- > Management of tahr control beyond 30 June 2023
- > Tahr farming.

## CONTRIBUTIONS TO CONTROL

A suite of contributors will deliver measures to control tahr populations as required to move towards the goals of the HTCP.

- > Recreational hunting contributes within the feral range; though there remain places where recreational hunting will have a limited impact on tahr populations. Hunting will be encouraged by ballots, proactive communication with recreational hunting permit holders, and the provision of information on observations of tahr.
- > Guided hunting will contribute in areas permitted by concessions.

- > Hunter-led management is expected to commence in Management Unit 1 and contribute additional control during this TCOP period; the parameters and timing are currently under development by the Game Animal Council in partnership with Te Rūnanga o Arowhenua.
- > Additional structured recreational hunting opportunities to contribute to implementation of the HTCP will be investigated where appropriate within the Feral Range.
- > AATH environmental offset control may contribute as directed by DOC in areas across the feral range.
- > Commercial tahr recovery may contribute over the year as allowed on non-PCL and under the conditions of concessions to be applied for and issued for PCL.
- > Official control funded by DOC will continue in national parks and where required throughout the management units and feral range and also beyond the feral range. While targets for specific places and methods are set in this operational plan, the quantity and type of effort may be adjusted to respond to areas where information indicates need for control or opportunities for operational efficiency.
- > DOC is committed to exploring additional opportunities for other parties to contribute to control.

## RESEARCH AND MONITORING

Implementation of the HTCP requires continued research and monitoring. In 2022/23 this work will include DOC's own planned programme, collaborative programmes, and facilitating the work of others to:

- > Conclude a 3-year programme to remeasure historic vegetation plots
- > Continue development of a programme for assessment of tahr browse impacts on plant communities across the management units, including elements of mātauranga Māori
- > Analyse spatial data on tahr, hunting and ecological values
- > Utilise and build on existing information on tahr populations to inform future management action (eg population modeling)
- > Improve understanding of recreational hunting's contribution to tahr control.



## OPERATIONAL SPECIFICATIONS

### Total effort on Public Conservation Land

Acknowledging that an adaptive management approach may require flexibility in operational decisions, the total planned official control effort for 2022/23 is 290 hours of aerial search and control or equivalent official effort via other delivery methods. This effort will be made up of the components outlined below.

Outside the feral range there will be a total of approximately 100 hours of search and control. In addition to helicopter control effort, DOC will also look at the potential of searches and/or control utilising other methods, including alternative aerial and ground-based surveillance and control. Where possible, opportunistic tahr control outside the feral range will be integrated with other DOC control operations (eg wallaby/goat/pig control); this will represent additional effort to the 100 hours.

A total of approximately 170 hours of control effort in the management units for 2022/23 was determined based on available resources, data and observations from prior operational plans and contributions from DOC staff and TPILG members.

Control will be focused where population densities are high and/or in areas inaccessible to hunting and/or where tahr are identified as threatening particular special places (eg national parks and wilderness areas). A particular focus will be further developing targeted ground-based control in West Coast forest ecosystems where browsing impacts are concerning and tahr are difficult to control via recreational hunting and traditional helicopter control.

Approximately 20 hours of control effort will be provided within the feral range but outside the management units defined in the HTCP. These hours will be targeted to reduce the risk of breeding populations spreading beyond the feral range and may be used flexibly along management unit boundaries where those boundaries are close to the feral range boundary and/or exclusion zones.

## TARGETING

General provisions for targeting in official control are given below. These will be refined during operations planning, drawing on expertise from within and outside of DOC.

- > Tahr that could extend the feral range will be targeted as a high priority (eg in areas within the feral range but outside the management units) as they may contribute to source populations outside the feral range.
- > All tahr (including identifiable males) encountered will be controlled in the national park management unit (Management Unit 4), and outside the feral range.
- > Identifiable males will not be controlled in operations undertaken in Management Units 1, 2, 3, 5, 6 and 7, nor outside the management units but inside the feral range.
- > Within management units, stakeholder knowledge will be applied to target areas of highest tahr abundance and/or impacts, with an emphasis on areas inaccessible to hunting and recovery operations.

*A particular focus will be further developing targeted ground-based control in West Coast forest ecosystems where browsing impacts are concerning and tahr are difficult to control via recreational hunting and traditional helicopter control.*

## LEARNING AS WE GO

DOC, in collaboration with the TPILG members, is committed to learning as we go using available information, including consideration of stakeholder knowledge. This approach will be enhanced over coming years as better data become available and longer-term strategies are enabled.

Approximately halfway through the official control hours period, or by the end of August (whichever comes first), a review will be carried out to ensure optimal use of the remaining control effort. This review will involve the Game Animal Council.

Control of tahr by DOC to date has focused on PCL but it is recognised that substantial tahr populations exist on other tenure in some areas. The HTCP 1993 applies across tenures; understanding the accountability of other land managers to control tahr populations will assist tahr control outcomes across and outside the feral range.

To enhance opportunities for collaborative learning and advance understanding on key issues of common concern, DOC intends to:

- > Continue working with the Game Animal Council and Te Rūnanga o Arowhenua to support the development and implementation of hunter-led management in Management Unit 1
- > Work with the TPILG to establish longer term strategies for implementation of the HTCP (monitoring, research and control)
- > Encourage and support other agencies and land managers to contribute to improving landscape-scale tahr control outcomes.

## PRIORITIES FOR CONTROL FOR 2022/23

Priorities for this year are to:

- > Apply a strategic approach to maximising efficiency and long-term outcomes in tahr control outside the feral range
- > Prevent spread from the feral range by removing tahr in the exclusion zones (all tahr) and areas within the feral range outside the management units near the feral range boundary (identifiable males will not be targeted)
- > Take the Aoraki/Mount Cook and Westland Tai Poutini national parks to the lowest practicable tahr density (noting that control investment will be adaptively managed taking into account observations on tahr abundance and encounter rates per hour of aerial control)
- > Bring the tahr population towards intervention levels in the HTCP; focusing the control in management units outside the national parks on localised areas of high tahr density and on hard-to-access/hunt areas (eg wilderness areas). Stakeholders have provided valuable information to assist with identifying focus areas.
- > Continue to reduce tahr populations on the West Coast while resuming control in some East Coast locations based on emerging knowledge regarding tahr population levels.

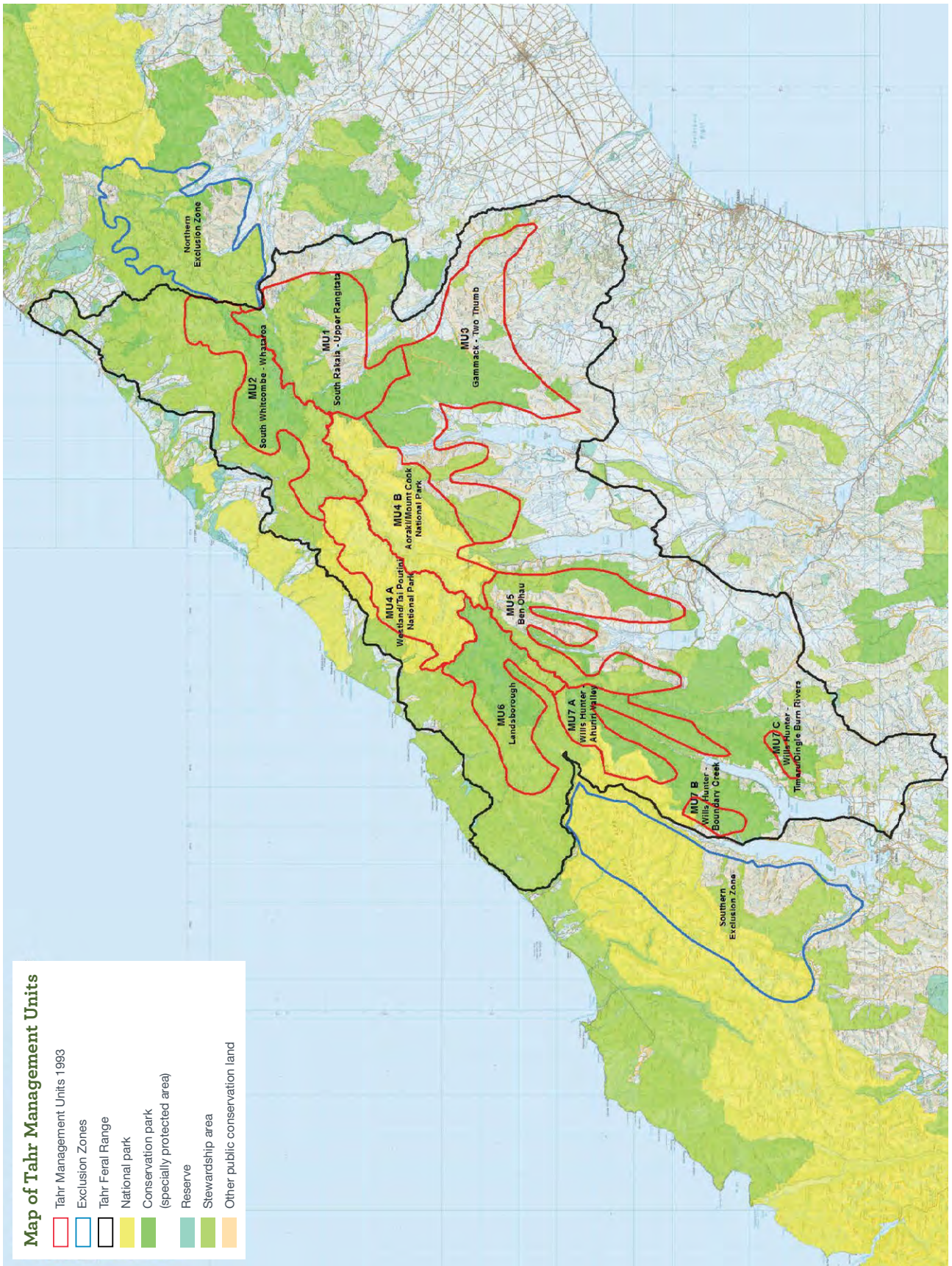
**Note:** As a principle, DOC will continue to enable reduction of tahr populations as required by the HTCP utilising a variety of available control methods. In particular in 2022/23 we will:

- > Increase investment in official ground-based hunting where the circumstances suggest this is an efficient method (eg forest ecosystems)

- > Increase variety (temporal, spatial and technological) in aerial control to explore and improve efficiency and reduce animal habituation to control methods
- > Explore options to foster the efficacy of population reduction through recreational hunting with 'data confidence' through structured hunting contributions (eg hunter led management in Management Unit 1, tahr ballots and targeted management hunts)
- > Work with guided hunting and commercial recovery operators to encourage and facilitate opportunities for commercial control
- > Work to understand and improve recreational hunter participation and effectiveness (this will include the provision of information on maps of known high-density areas, identifiable male sightings, easy-to-access areas with high numbers, and communication with hunting permit holders).

## CONTROL WORK IN THE FERAL RANGE

- > All operations shall record data in a standardised way and meet DOC's minimum requirements for tahr control.
- > Control data shall be made publicly available once verified (as per previous years).
- > Where practicable, official aerial control within the feral range will be concentrated between 1 July and 15 November 2022 to avoid kid-drop and peak recreational use periods. Ground-based control may occur at other times. No official control will be carried out in ballot areas until 16 July 2022 to avoid conflict with the ballot period.
- > Official control will give priority to less-accessible areas. Control activities will give consideration to recreational users, including hut users and/or hunters/trampers/climbers etc. If recreational users are sighted, control shall move to another location.
- > No official control work shall be undertaken over a public holiday weekend.
- > Official control will primarily be focused on weekdays to avoid recreational user-conflicts; however, weather windows and operational requirements may require weekend operations.
- > DOC will advise when official control has been completed for the year in a management unit.





## Tahr Control Operational Plan: 1 July 2022-30 June 2023

Priority order of management unit in Himalayan Thar Control Plan 1993	Intervention levels of tahr/km <sup>2</sup> and population size in Himalayan Thar Control Plan 1993	Control parameters in Himalayan Thar Control Plan 1993	Control priority in meeting Himalayan Thar Control Plan 1993 targets	Approach:	Recreational hunting	Guided hunting	Commercial tahr recovery (conducted according to permit conditions)	Official control, including contract aerial control, represented by allocated aerial control hours (or equivalent investment in alternative methods)
Outside feral range	Eliminate spread.	Control all tahr.	Official control incorporating ground surveillance in critical areas.	<ul style="list-style-type: none"> <li>Recreational hunting will contribute throughout the feral range.</li> <li>Commercial tahr recovery will be focused on national parks and areas with the highest tahr density.</li> <li>Official control gives priority to preventing spread beyond the feral range, reducing toward zero density in national parks, and targeting populations of higher density and/or where substantial impacts are observed.</li> <li>Landowners with feral tahr will be encouraged to reduce densities to HTCP targets.</li> </ul>	Recreational hunting	Guided hunting	Commercial tahr recovery (conducted according to permit conditions)	Official control, including contract aerial control, represented by allocated aerial control hours (or equivalent investment in alternative methods)
Inside feral range but outside the management units	No current target	Intent is to constrain breeding population and prevent migration to outside feral range.	Official control incorporating ground surveillance in critical areas.	Encourage reporting of sightings and tahr controlled-consider mechanisms to improve this function, including through partnerships with stakeholders.	Encourage hunters to look for, shoot and report tahr.	Ground hunting throughout period. ATH per dates and locations in concessions.	1 July 2022-23 March 2023 <sup>2</sup> .	Approximately 100 hours of search and control <sup>1</sup> . All tahr encountered will be controlled.
1. Wills/Makarora Hunter (Management Unit 7)	<1/km <sup>2</sup> and population of <100		Encourage recreational hunting and commercial hunting first. Official control as required.	Encourage hunters to look for, shoot and report tahr.	Ground hunting throughout period. ATH per dates and locations in concession.	Ground hunting throughout period. ATH per dates and locations in concessions.	1 July 2022-23 March 2023 <sup>2</sup> . Carcass recovery to target nannies and juveniles only.	No official control. Information on tahr abundance will be gathered from observation flights coordinated with other local work.
2. Landsborough (Management Unit 6)	1.5/km <sup>2</sup> and population of 900		Encourage increased recreational hunting, guided hunting, and commercial hunting. Official control as required.	Encourage hunters to look for, shoot and report tahr. Ballots in wilderness area.	Ground hunting throughout period. ATH per dates and locations in concession.	Ground hunting throughout period. ATH per dates and locations in concessions.	16 July 2022-23 March 2023 <sup>2</sup> . Carcass recovery to target nannies and juveniles only. No commercial recovery during ballot period within ballot areas.	Approximately 30-35 hours of search and control <sup>1</sup> targeting all female and juvenile tahr encountered, with a focus on particular catchments where forest impacts are highest. Identifiable males will not be targeted.
3. Aoraki/Mt Cook and Westland/Tai Poutini National Parks (Management Unit 4)	<1/km <sup>2</sup> and population of <500		Recreational hunting, guided hunting, and commercial hunting, official control as required to reduce to zero density targeting all tahr.	Explore additional opportunities for hunters to look for, shoot, and report tahr.	Ground hunting throughout period. ATH per dates and locations in concession.	Ground hunting throughout period. ATH per dates and locations in concessions.	1 July 2022-23 March 2023 <sup>2</sup> .	Approximately 90 hours of search and control <sup>1</sup> with a focus on reducing tahr numbers to as close to zero density as practicable. As per the 2021/22 TCOP, control targets all tahr, with the majority of effort focused on Westland/Tai Poutini national park.
4. South Whitcombe/Wanganui/Whareroa (Management Unit 2)	2/km <sup>2</sup> and population of 1500		Encourage increased recreational hunting and guided hunting, then commercial recovery. Official control as required.	Encourage hunters to look for, shoot and report tahr. Ballots in wilderness area.	Ground hunting throughout period. ATH per dates and locations in concession.	Ground hunting throughout period. ATH per dates and locations in concessions.	16 July 2022-23 March 2023 <sup>2</sup> . Carcass recovery to target nannies and juveniles only. No Commercial Recovery during ballot period within ballot areas.	Approximately 15 hours of search and control <sup>1</sup> targeting all female and juvenile tahr encountered. Identifiable males will not be targeted.
5. Ben Ohau (Management Unit 5)	2.5/km <sup>2</sup> and population of 1800		Encourage increased landowner control and recreational hunting and guided hunting first, then commercial recovery. Official control as required.	Encourage hunters to look for, shoot and report tahr.	Ground hunting throughout period. ATH per dates and locations in concession.	Ground hunting throughout period. ATH per dates and locations in concessions.	1 July 2022-23 March 2023 <sup>2</sup> . Carcass recovery to target nannies and juveniles only.	Approximately 5-10 hours of search and control <sup>1</sup> targeting all female and juvenile tahr encountered, with a focus on preventing dispersal into the National Park, parts of the area where tahr numbers remain high and where recreational hunters have limited effect due to difficult access. Identifiable males will not be targeted.
6. South Rakaia/Rangitata (Management Unit 1)	2.5/km <sup>2</sup> and population of 2000		Encourage recreational hunting first, then guided hunting, then commercial recovery. Official control as required.	Encourage hunters to look for, shoot, and report tahr through hunter-led management	Ground hunting throughout period. ATH per dates and locations in concession. Activities to be integrated with hunter-led management where possible.	Ground hunting throughout period. ATH per dates and locations in concessions.	Potential for integration with hunter-led management to be explored.	10-20 hours of search and control to be integrated with hunter-led management if practicable. Identifiable males will not be targeted.
7. Gammack/Two Thumb (Management Unit 3)	2/km <sup>2</sup> and population of 3000		Encourage landowner control, increased recreational hunting and guided hunting first, then commercial recovery. Official control as required.	Encourage hunters to look for, shoot and report tahr.	Ground hunting throughout period. ATH as per dates and locations in concession.	Ground hunting throughout period. ATH per dates and locations in concessions.	1 July 2022-23 March 2023 <sup>2</sup> . Carcass recovery to target nannies and juveniles only.	Approximately 10 hours of search and control <sup>1</sup> targeting all female and juvenile tahr encountered, with a focus on the parts of the area where tahr numbers remain high, preventing dispersal into National Parks and where recreational hunters have limited effect due to difficult access. Identifiable males will not be targeted.

<sup>1</sup>operational effort is specified in terms of hours of helicopter-based aerial hunting as this is the primary historic method for tahr control. However, the allocated effort may be delivered under this plan as a comparable investment in alternative methods (eg ground-based control)

<sup>2</sup>specific place and/or date-based exclusions may apply within this time period

# Tahr Control Operational Plan 2022/23

ADVICE TO THE DEPARTMENT OF CONSERVATION

## PRIORITIES FOR CONTROL OPERATIONS

### Priority 1: Tahr outside the Feral Range and Exclusion Zones

The NZTF position is that controlling tahr outside the feral range should always remain top priority for TCOP development to prevent new populations of tahr establishing.

The NZTF advises the Department to re-examine the current Northern and Southern Exclusion Zones to ascertain if they are still appropriate for containing the spread of tahr North and South of the feral range. Consider establishing an additional exclusion corridor to prevent the spread of tahr east across the Lindis Pass Road. Continue with the Judas tahr program in these zones.

### Priority 2: Tahr Inside the feral range but outside the management units.

The priority focus is around preventing tahr moving from inside to outside the feral range. The targeted control of female populations is most appropriate to prevent spread. Male tahr in these areas are generally accessible to hunting and pose no threat in establishment of populations outside the feral range.

The Foundation advises the Department to focus on control of all female tahr populations which threaten to extend the feral range.

A secondary focus is around managing the tahr population bordering management units. Some of the boundaries of management units are impractical to defend and as such require adjustment. Establishing new practically defensible boundaries will require some work prior to any review of the HTCP.

The NZTF offers its assistance in devising a strategy to investigate the practicalities of various boundary options for improved management and advises the Department to make provision for this work in this year's TCOP.

In the meantime, the Foundation advises the Department to reduce female groups to under 10 animals in areas which are near the management unit boundaries but pose no threat to expansion of the feral range,

with no identifiable males to be culled. Many bulls will be transient wanderers and will not establish any new populations outside the feral range. In addition, many of these areas have high recreational value and easy access, hunters will continue to reduce bull populations throughout the year.

### Priority 3: Tahr inside the management units

The Foundation advises the following items are considered in deciding if and where control operations are required:

#### > The population in terms of demographic and spatial distribution.

A shift in female: male ratios is apparent. This will create long term changes to the population, as is the intention. The Foundations does not believe that the shift to date has put the population at risk of collapse overall. However, continued pressure in areas with low numbers of female tahr may cause localised collapse.

The Foundation recommends changing the focus from broad scale control to localised control where female numbers are high and the risk to vegetative health is greatest and offers its assistance in identifying these areas.

#### > Vegetation as the focus of management

The invent of the vegetation monitoring system will be extremely helpful here, however, it may take some time to be informative for management decisions.

The NZTF offers its assistance in the development of a sustainable and quick process for identifying locations where there are identifiable effects from tahr and significant tahr populations. The Foundation advises the Department to provide provision for this work in this years TCOP.

#### > Management tool options across the range

The NZTF prefers, in all circumstances, that when possible tahr are used rather than shot to waste. The intense use of helicopters has altered the behaviour of tahr in some areas and as a result is not always an effective tool. In addition, commitment to intensive

official control is unlikely to be financially sustainable in the long-term.

The NZTF suggests that an accessibility map and detailed protocol for application of control method is created through a collaborative project between the NZTF (with input from its member organisations), the GAC and the Department alongside iwi partners, to help inform management decisions around the appropriate tools to use for different areas at different times. Such a management tool would serve to reduce user conflict and maximise harvest using mechanisms which save costs, carbon outputs and reduce resource wastage. The Foundation advises the Department to make provisions for this work to begin in this year's TCOP.

In the meantime the Foundation suggests considering subsidised Waro / temporary increases to Waro permissions for areas identified as a problem to reduce costs and resource wastage as a partial alternate to official control.

> **No identifiable males to be culled inside the management units**

The hunting sector members still agree that there is no evidence to support the culling of identifiable male tahr

in any management unit, including in National Parks, for the protection of any indigenous species. Increased hunter access would allow for bull populations to be reduced without shooting to waste.

The NZTF advises the Department to include provisions for the development of improved access plans to increase the effectiveness of hunter effort in managing male tahr numbers in huntable areas, including within Westland National Park. The NZTF offers to assist the Department in this process.

## CONTROL WITHIN MANAGEMENT UNITS LISTED IN ORDER OF PRIORITY

The Foundation has provided maps for the West Coast in this submission.

Please note, the NZTF advises the Department to instruct operators to use their allocated time to only cull these locations. The reason being many of the areas identified will require multiple trips for effective tahr control. The NZTF is happy to provide shape files for use in machines if required.

The Foundation has provided location information for the East Coast (which can be translated into maps later if required).





### Management Unit 6 – Landsborough

Feedback suggests that vegetative impacts may be resulting from tahr populations in this management unit. However, until DOC ground culling has been completed, the NZTF is unable to give specific advice other than areas outlined on the maps. The Foundation expects that some provision for considerable helicopter hours and possible ground control may be required in the coming TCOP. The development of the accessibility map and more structured management processes proposed earlier may be of value here.

The NZTF is willing to assist the Department in managing nanny numbers in pockets that have been identified as exhibiting identifiable tahr effects and which have high nanny tahr concentrations within this

*Feedback indicates that some tahr in this MU are living in the bush and alpine scrub zones, so may be more difficult to control by helicopter. Again, the development of an accessibility map and more structured management processes proposed earlier may be of value here.*

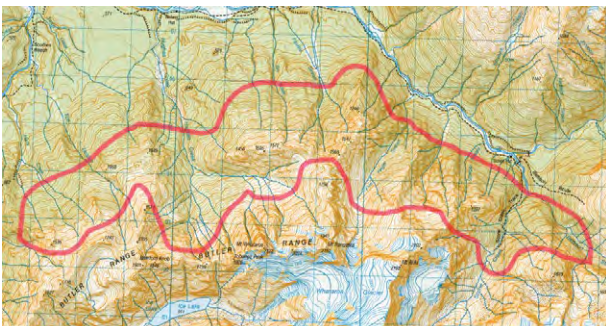
management unit. A ground trial is about to be undertaken by the NZTF to this effect. The Foundation advises a pre-emptive provision to support this activity by hunters within this management unit within the TCOP. Further information can be provided to the Department upon completion of the trial, as per the community agreement.

### Management Unit 4a – Westland, Tai Poutini National Park

Feedback indicates that some tahr in this MU are living in the bush and alpine scrub zones, so may be more difficult to control by helicopter. Again, the development of an accessibility map and more structured management processes proposed earlier may be of value here. The Department withholding aerial access for hunting to this area is likely a significant factor as to why tahr numbers are still in high concentrations within parts of Westland National Park.

The NZTF would like to work with the Department and Stakeholders to resolve this issue and ensure positive conservation outcomes going forward. Please note: the hunting sector in no way supports the official control of male tahr in MU4a. However, the hunting sector will participate in the harvesting of bulls within this management unit recreationally or commercially so far as the Department permits or facilitates.





## **Management Unit 2 – South Whitcombe, Wanganui, Whataroa**

Feedback indicates that some tahr in this MU are living in the bush and alpine scrub zones, so may be more difficult to control by helicopter. Again, the development of the accessibility map and more structured management processes proposed earlier may be of value here.

The Foundation suggests a targeted approach to control in this management unit and the application of tools other than official control be applied where practical. The NZTF advises the Department to provide provision to support other tools, particularly those that minimise resource wastage.

## **Management Unit 4b – Mount Cook, Aoraki National Park**

Feedback suggests that tahr concentrations are below what is considered to cause irrevocable damage to vegetation. Most of the terrain is accessible to hunters. Therefore, the hunting sector advises that a “nannies only” culling policy is sufficient for this MU moving forward. Control of bulls would still occur by hunters. This format poses no risk of tahr densities in the MU increasing, rather continues to work towards lower tahr densities at lower cost and with higher buy-in.

The NZTF has developed an app to facilitate measuring recreational effort that may help the

Department to develop a protocol to allow movement towards this arrangement. The Foundation advises the Department to make provision for this collaboration in the TCOP.

Location information - Murchison above the terminal lake, Rutherford Pass, High Altitude elevations above the True left of the Gorilla

## **Management Unit 3 – Gammack, Two Thumb**

Feedback suggests that there are pockets of concentrated tahr which may be impacting vegetation.

The Foundation suggests a targeted approach to control in this management unit and the application of tools other than official control be applied where practical. The NZTF advises the Department to provide provision to support other tools, particularly those that minimise resource wastage. The NZTF will undertake an East Coast ground control trial in these areas this coming spring. The Foundation requests an allowance of hours to support this work be included in the TCOP.

Location information - Areas identified as having high numbers during DOC population surveys including Bush Stream and Forest Creek.

## **Management Unit 5 – Ben Ohau**

A large percentage of MU5 is private land. However, much of it is accessible to hunters. Again, the development of the accessibility map and more structured management processes proposed earlier may be of value here.

The NZTF advises the Department to continue to reduce nanny groups on PCL to 10, where possible utilising tools other than official control which reduce wastage.

## **Management Unit 1- South Rakaia, Rangitata**

Management unit 1 is moving towards hunter led management.

The Foundation advises the Department to make provisions for allocating helicopter hours to be directed under this framework.

## **Management Unit 7 – Wills, Makarora, Hunter**

The tahr population is unlikely to be causing irrevocable damage to vegetation in this MU.

The Foundation advises that no action, other than the support of sustainable vegetative monitoring to support management as proposed earlier, is required.

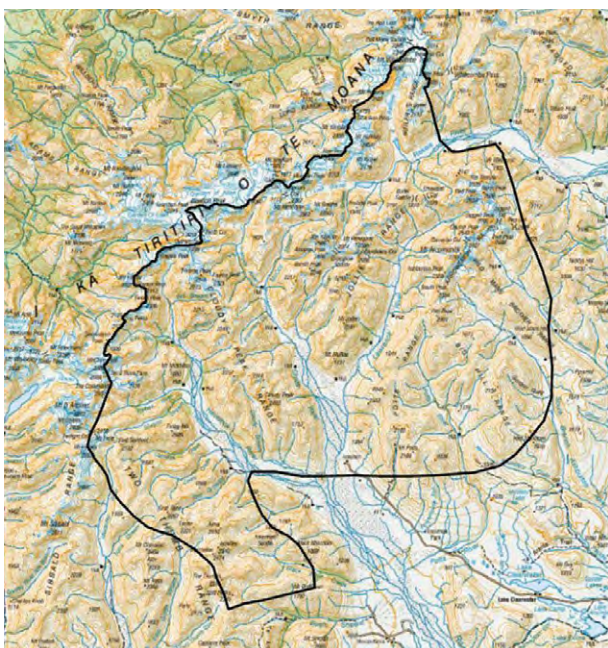
# Establishing the Hunter-Led management program for Management Unit 1 (MU1)

## SOUTH RAKAIA/UPPER RANGITATA OF THE HIMALAYAN THAR(SIC) CONTROL PLAN 1993(HTCP)

**H**unter-led management is enabled through the HTCP and the Tahr Control Operational Plan 2022-2023 (TCOP). It provides a mechanism for the community to collaborate in designing and implementing tahr management. MU1 has been chosen as it is close to large population centres, has relatively easy foot and vehicle access, and is a highly used hunting area. It has also been the site of some of the early tahr research programs and encompasses both public and private land.

A Steering Group that includes representatives from DOC, Te Rūnanga o Arowhenua and the GAC has been established to have oversight of the project.

Isaac Russell (Te Rūnanga o Arowhenua), Ben Hodgson (Te Rūnanga o Ngāi Tahu), Garry Ottmann and Geoff Kerr (GAC) make up the project team leading the design and implementation of the hunter-led management program or MU1. The project team is supported by DOC.



Hui and discussions have been very productive and provided an opportunity for the project team to develop a collective understanding of the cultural and social aspects and aspirations for MU1 together with the current legislative status and scientific knowledge. The project team have taken this information and formulated some draft objectives and a Te Whakatakanga (Mission Statement). The Te Whakatakanga and objectives have been provided to the Steering Group for their feedback.

The next stage is to translate those objectives into management actions within an adaptive management framework including actions for the 2022-2023 operational year. No Official control was undertaken in 2021-2022 operational year and 2022-2023 TCOP includes provision for 10–20 hours of search and control to be integrated with hunter-led management if practicable. acknowledging that particularly in its early stages, a hunter-led management project may require some operational input from DOC to progress tahr management outcomes. There will be further engagement during this process.

The intention is to formalise the Hunter-led management program for MU1 via a community agreement with the Department of Conservation during the 2022- 23 Tahr Control Operational Plan operative period.

**MU1 Project Team**

# Organised Recreational Hunting Contributions to Tahr Management

SUSTAINABLE GAME MANAGEMENT IS ONLY ACHIEVABLE IF WE ALL WORK TOGETHER, HUNT RESPONSIBLY AND OUR REPORTING IS STANDARDISED.

To date, no standardised reporting system has been developed and no guidelines have been set to ensure that we are all working to head in the same direction. This document aims to begin filling this gap by outlining a standardised reporting system and guidelines for organised hunts run by NZTF member organisations. Efforts reported using this system will be recognised as contributions to tahr population and habitat management.

## REPORTING

### Harvest and Observations

Hunter harvest includes all species killed during the hunt, recording both location and sex. Observations include all species observed during the hunt, recording group sizes, location, and sex. Observations of vegetative state are also encouraged.

Harvest and observations can be reported using the NZTF App (search Tahr Foundation on your app store to download, also remember to download the map while in cell range to retain functionality out of cell range).

When reporting on the App, add to notes: the name of your organisation, e.g. NZDA or SCI etc, for your first recording. At the end of the hunt when you get back into cell range press end my hunt. This information will automatically be sent to the NZTF.

### Effort and coverage

Hunter effort is reported as hours actively hunting (this does not include rest periods and being back at camp, but it does include glassing). Coverage is reported as distance travelled during active hunting hours. Distance travelled is recorded by using the log track function on your GPS.

By recording both hunting hours and distance travelled, the Foundation can calculate and map out the intensity of hunter effort across landscapes. This is useful

because it graphically depicts your organisations effort contribution to tahr management. In addition, when this information is combined with tahr observations and harvest totals, it allows the Foundation to build a picture of hunter accessibility and tahr population status across the landscape.

GPX tracks and corresponding hunting hours should be labeled to match using each hunter's email address (the email address that is also used for the NZTF App so we can match harvest and observation data). Labeled tracks and hours should be put into a single folder and shared with [admin@nztf.org.nz](mailto:admin@nztf.org.nz) for map processing.

## GUIDELINES

The Foundation is working towards achieving a sustainable tahr resource in balance with the environment, for improving the quality of tahr trophies and for reducing tahr impacts on biodiversity. To support this goal, the Foundation has developed a set of guidelines to support responsible harvest by hunters, including hunting for management purposes. These guidelines are set out below:

- > Load your harvest and observations on the NZTF App and follow reporting guidelines so your effort can be counted as a contribution to tahr management.
- > Only harvest mature bulls and nannies
- > Do not shoot juveniles or young bulls.
- > Avoid harvesting nannies while young kids are afoot.
- > Only harvest nannies from groups with more than five mature nannies observed or when several smaller groups are observed in close proximity.
- > Only take a bull if it really is the one you are after.
- > Avoid taking more than one bull per person per trip.
- > Avoid harvesting bulls for capes, if you want a winter cape, hunt in the Winter.
- > Collect as much meat as possible, female tahr meat is delicious.

IF YOU HAVE ANY QUESTIONS  
please contact the NZTF at [admin@nztf.org.nz](mailto:admin@nztf.org.nz)



# TAHR APP

## INTRODUCING THE NEW TAHR APP

**Important - Your personal information will be held in confidence and information you provide will only be used to support improved management of tahr by the Foundation**

Harvest and observation information will only be shared in generalised formats, e.g. in reports to:

- keep hunters up to date on management and overall hunter contributions to management
- advocate for improved access or more appropriate management objectives
- support the revision of the Himalayan Tahr Control Plan (HTCP)
- achieve Herd Of Special Interest (HOSI) status for tahr
- assist hunter education
- assist stakeholder coordination

Links to reports which your submissions contribute to will be shared with you by email. Photos may be used by the Foundation to describe problems or successes in reports or in the media. Photos with identifiable people will not be shared without permission from the submitter.

Logged bulls harvested 8 years and older are eligible for entry into the **Duke of Bedford Award**, details coming soon.

Logged nannies harvested for meat (pic must display taking of meat from nanny) go into draw to win a **meat processing prize**.

All photos submitted are automatically included in an **annual prize draw**, details coming soon.

## BACKGROUND

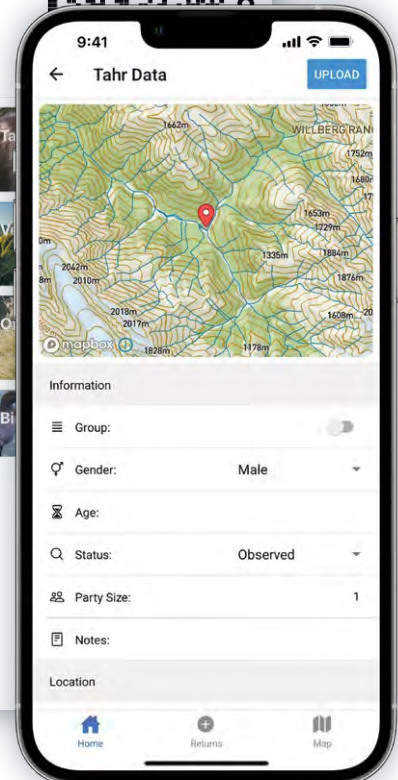
For too long recreational hunters' contribution to tahr management has been a glossed-over add on to the Department's Tahr Control Operational Plan (TCOP).

Providing observations of tahr, tahr harvest and the state of the vegetation gives the Foundation the information it needs to manage the tahr population to support hunting. We can work towards improving access, trophy potential and apply management to minimise official control and wastage. Observations of vegetation through time can show where we need to focus hunter management efforts and where hunter efforts are making a difference. We can tell a story of hunter management and success in the years to come.

The Himalayan Tahr Control Plan 1993 specifies populations far below what the Foundation considers a huntable population of tahr, but we need your help to prove it. If we know what hunters take now, we can run models to show what we need to support a huntable population, even down to a regional scale. We can't change the HTCP until we have a process that is better than what is currently in place.

If all hunters use this tool to report in the tahr range, we will collectively eclipse all other forms of monitoring. It's hard to argue against hunting if it is the biggest contributor to conservation in the area. It's hard to argue about having a huntable resource if you need hunters to support conservation initiatives and sustainable tahr management.

But we need a facility to make hunter harvest and hunter observations valuable and count, enter the Tahr App.



**KEEP UP TO DATE WITH THE TAHR FOUNDATION ON FACEBOOK**



# The Duke of Bedford Award

THE TAHR FOUNDATION WOULD LIKE TO ANNOUNCE THE CREATION OF A NEW TROPHY.

The New Zealand Tahr Foundation Duke of Bedford award is named in honour of the then Duke Herbrand Arthur Russell who in 1904 graciously hand selected and presented the original tahr to New Zealand from his herd at Woburn Abbey, Bedfordshire in England.

The award is open to bulls 8+ years of age and aims to encourage hunters to pursue and harvest bull tahr in a way that supports a sustainable and improving tahr trophy resource.

We had intended to run this competition for the first time in 2020 but due to the Covid lock downs and resulting Sika Show cancellations we were unable to. To make up for lost time, this year the competition is open to trophies taken within the past three years, a separate trophy will be awarded for each year.

The trophy itself was commissioned by the

Foundation and sculptured by Murray Matuschka in the same style as the Tahr statue at Lake Pukaki, also the work of Murray Matuschka. The bronze trophy will be on display at the Sika show and in the NZDA club rooms on the 17th of September, winners will receive a smaller trophy featuring the Tahr Foundation logo that they can keep. All entries which meet the 8 years of age requirement will receive a certificate of acknowledgment.

This award has been established to honour the past and to support the future of our valuable tahr resource.

Our primary objective has always been to have tahr managed under a game animal management regime, a Herd of Special Interest. Such a management regime would aim to produce the type of bull we all aspire to see in our mountains, and this is the type of bull that will be rewarded under our new competition rules.

**THE DUKE OF BEDFORD AWARD**  
A NEW GENERATION OF SCORING THAT REWARDS AGE AND MASS  
FOR ENTRY DETAILS GO TO [WWW.NZTAHRFOUNDATION.ORG.NZ](http://WWW.NZTAHRFOUNDATION.ORG.NZ)

With our currently reduced nanny population, there are progressively less and less mature bulls to go around. To allow young bulls to reach maturity and their trophy potential, the Foundation is asking hunters to shift from a quantity to quality harvest. To encourage this shift, we developed this new competition to celebrate the harvest of older bulls, where tahr horns are scored for horn mass rather than just length of horn. The development of horn mass comes with age and an abundance of forage from a healthy environment.

Horns are measured for length and girth at base, the length is then divided by 4 and girth is measured at each quarter, the total is the sum of all measurements. Bulls with broken or broomed tips are not disadvantaged, a shorter tip will push the measurement at the quarters back into the thicker part of the horn, a bull of age will regain score by having a greater mass.

The tahr is a world class alpine game animal, we are both privileged and fortunate to have them and be able to hunt them here today over 100 years since they were introduced. We encourage hunters to respect both the tahr resource and the freedom we enjoy being able to hunt them.

If we can all become more selective in our harvest decisions, in the future we will all have more mature bulls to select from.

### DUKE OF BEDFORD TROPHY ENTRY FORM

The intent of the Award is to encourage hunters to take only the most mature Bulls.

Entries must be 8 year of age or older and taken as a 'Free Range'. Entries will be measured for horn growth by measuring for horn mass. Horn mass will be determined by measuring the length of horn then dividing the length into quarters and measuring the girth at each quarter. The total will be the sum of the length and girth at each quarter for both horns. The entered trophy may be skull and horns, European mount, or a fully mounted trophy.

A photo taken at the time of securing the entry is to be provided. Scores in Inches.

Trophy must have been taken after Jan 1, 2020 and after that on an annual basis from presentation date.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

### HOW TO ENTER

The Tahr Foundation encourages anyone who has taken an old bull trophy in over the last 3 years to come along and enter your trophy. Entry fees are \$30 per trophy and all proceeds go to the New Zealand Tahr Foundation. Winners announced at the completion of judging on the Sunday at the Sika Show.

Entry details for those attending the Sika Show are on their website: [www.sikashow.co.nz](http://www.sikashow.co.nz)

Or entry for those not attending the Sika Show is at North Canterbury NZDA club rooms, Saturday morning on the 17th of September.

599 McLeans Island Road, McLeans Island, Christchurch 8051

If you are intending to turn up, a heads up to the team would be appreciated. Alternatively, if you can't attend and but wish to enter, there are several locations across the South Island where trophies can be dropped in advance.

Please email [admin@nztf.org.nz](mailto:admin@nztf.org.nz) with your name, number of entries and attendance or region for drop off.

City: \_\_\_\_\_

Phone: \_\_\_\_\_

Email Address: \_\_\_\_\_

Date Taken: \_\_\_\_\_

Place Taken: \_\_\_\_\_

I declare the above information is true and correct:

Signed: \_\_\_\_\_

### SCORE SHEET

I. Length of Horn L \_\_\_\_\_ /8 R \_\_\_\_\_ /8.

II. Circumference of Horn B (At base) L \_\_\_\_\_ /8 R \_\_\_\_\_ /8

III. (At 1st quarter) L \_\_\_\_\_ /8 R \_\_\_\_\_ /8 C-1

IV. (At 2nd quarter) L \_\_\_\_\_ /8 R \_\_\_\_\_ /8 C-2

V. (At 3rd quarter) L \_\_\_\_\_ /8 R \_\_\_\_\_ /8 C3

VI. Total Score \_\_\_\_\_ /8 II. Age of Bull \_\_\_\_\_

Measured by: \_\_\_\_\_ Date: \_\_\_\_\_

## Management Series: Part One

OUR OBSERVATIONS AND REPORTS FROM OTHER HUNTERS SUGGEST THAT TAHR NUMBERS MAY BE LOW OVER LARGE PARTS OF THE TAHR RANGE.

As hunters continue to harvest the residual bull population, there will progressively be less and less bulls to go round. You may still see a few bulls in one area as they mob up in the Spring, but they may be the only group for miles. So we ask everyone to think very carefully about what tahr they choose to harvest from this point forward.

### BASIC HUNTER HARVEST PRINCIPLES IN A REDUCED TAHR POPULATION

- > Only take a bull if it really is the one you are after.
- > Avoid taking more than one bull per person per trip.
- > Avoid harvesting bulls for capes, if you want a winter cape, hunt in the Winter.
- > Only harvest mature bulls and nannies.
- > Only harvest nannies from groups with more than five mature nannies.
- > Avoid harvesting nannies while kids are afoot.
- > Load your harvest and observations onto the NZTF App so they can be counted as a contribution to tahr management.

### BULLS WITH WEAK TIPS.

Try to evaluate Bulls carefully, preferably with a spotting scope, and leave the 1 to 6-year-olds with good tips, as these guys have the potential to become something special. Taking instead an older bull or a middle-aged bull with weak tips that will never grow into a monster will support a quality tahr resource. Horn growth in the first year (called the lamb tips) is far and away the largest proportion of total horn growth contributed by each year. It is only grown once and sets the bulls trophy potential for life. If a bull is stunted in the first year and only grows short tips, his trophy potential is limited.

In some areas there are good numbers of bulls with weak tips. This may be due to either or a combination of stunted growth because of being orphaned as a young bull, lack of feed due to over population, poor genetics, or physical damage. Harvesting these animals leaves



more feed for the next generation who have yet to grow their lamb tips and set their trophy potential.

To evaluate a bull's potential from its first year's growth you must view the bull from the side. Poor tips are only as long as the width of the base. Great tips are twice as long as the width of the base. The bull in this picture conveniently has one of each! The near side is poor, and the far side is actually pretty good. He may well have damaged his near side tip in earlier life.

While bulls like this can be great trophies for many, the extent of their trophy potential is limited. To improve and maintain trophy availability for all hunters, particularly with a reduced tahr resource, requires conscientious harvest selection by hunters, i.e. that hunters support the trophy-based values of other hunters, not just their own values. As such, those hunters seeking the famous 14" and overs would appreciate if those with shorter horn length aspirations select bulls with weaker tips like this one, rather than a younger bull the same length but with great tips and loads of potential! Conversely, those seeking the famous 14" and overs should pass over this bull, leaving him for a hunter who will appreciate him, and leave the young one until he has reached his potential. By setting our often-competitive natures aside and celebrating the decisions we make to increase the chances of fellow hunters achieving their trophy aspirations, we also contribute to our own chance of success.

# Pink Eye Project

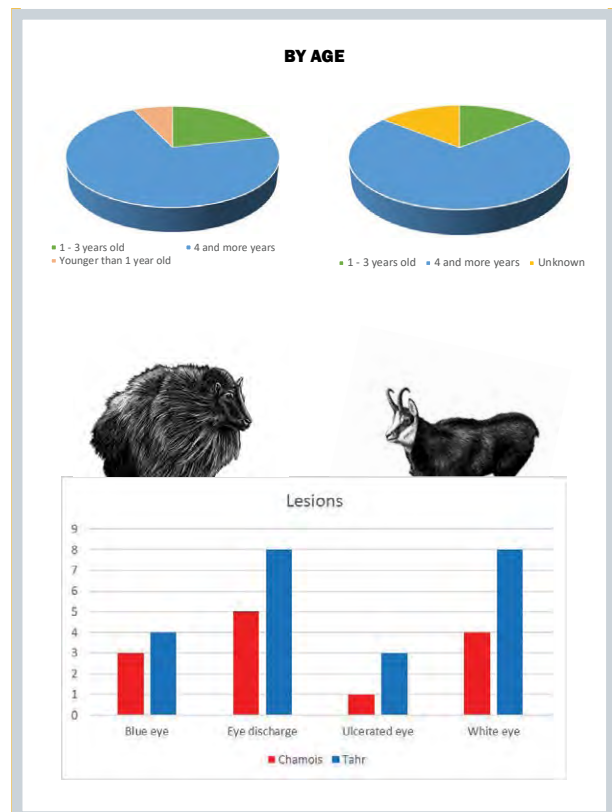
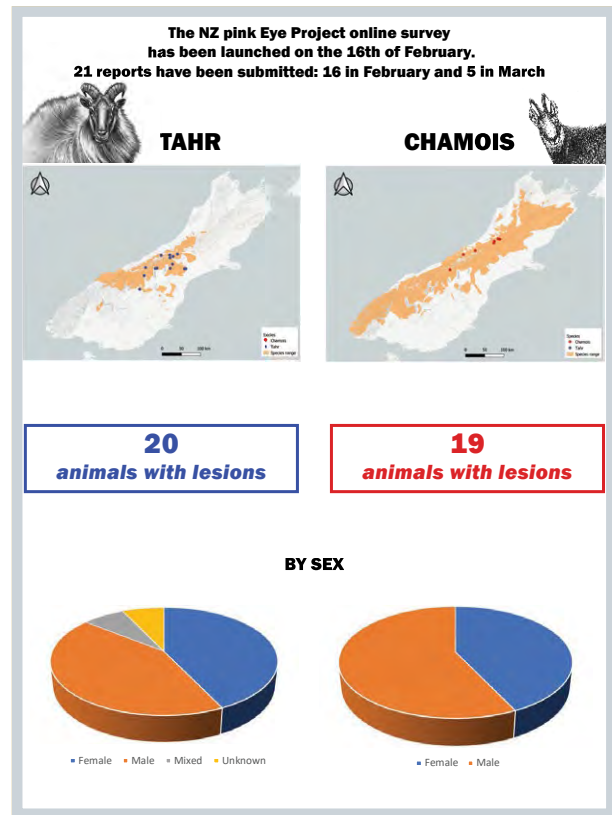
THE OBJECTIVE OF THIS RESEARCH IS TO STUDY THE SANITARY STATUS OF WILD CAPRINAE (TAHR AND CHAMOIS) IN NEW ZEALAND, WITH A SPECIAL FOCUS ON THE OCCURRENCE AND DYNAMICS OF INFECTIOUS KERATOCONJUNCTIVITIS (IKC) OR PINKEYE, AN OUTBREAK DISEASE WITH A SCENIC CLINICAL PRESENTATION.

Although chamois and tahr are abundant in New Zealand and been subject to hunting and population control plans since their introduction in the early 1900's, they have only occasionally been the object of study as far as transmissible diseases are concerned. The information available in the official literature is currently very scarce and rather dated. In Europe, IKC has been the subject of numerous field and laboratory investigations that, over time, have clarified its clinical, epidemiology and etiology, as well as its impact at the population level. Outside Europe, the knowledge on IKC in native mountain ungulates is as scarce as it is in NZ.

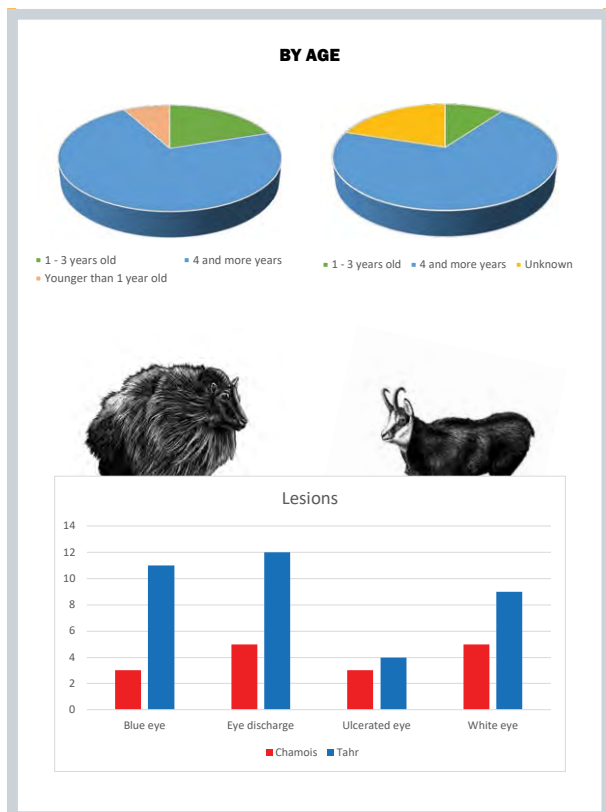
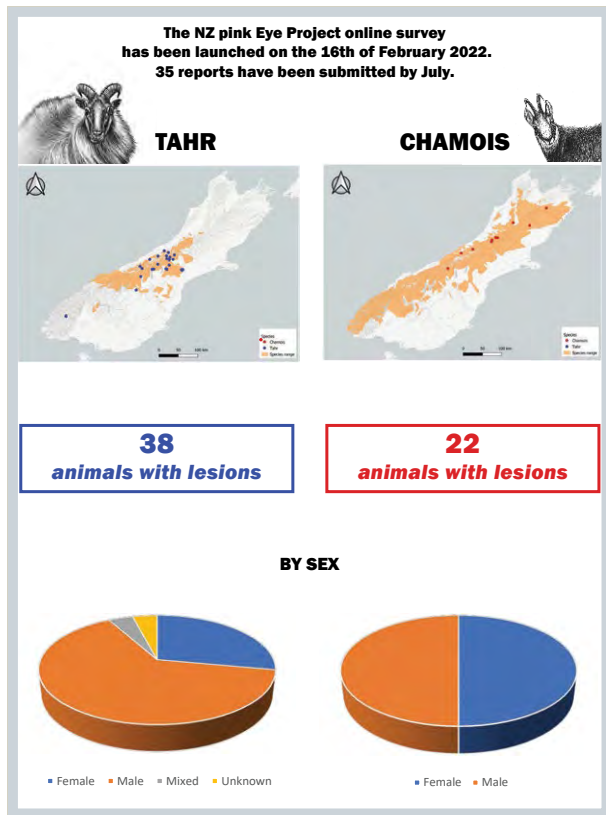
"Citizen Science" is well suited to rectifying this situation. While there are very few citizen science projects reporting abnormal mortality episodes in wild animals due to limitations such as appeal of the topic for the average citizen, a large body of evidence shows that interest groups can be useful for collecting this type of information. In this case, local hunters will represent the foundation of research development. Through their experience and time spent in the field in direct connection with wildlife, we could work with exhaustive information to better understand the existence and the dynamics of possible outbreak diseases.

A survey will be used to collect information on individual cases and/or outbreaks of IKC observed in chamois and tahr in New Zealand since the year 2000. A dashboard of data and graphics will be regularly updated and available for contributors to track research evolution and record ongoing results. Survey respondents will be asked to fill out a digital form and to contribute, where possible, photos and videos.

## UPDATE 1



## UPDATE 2



This study has been submitted and accepted for the 8th World Conference on Wild Ungulates. A great milestone to have a research project with kiwi contributors recognized internationally. The poster will be shared following the conference.

The success of hunter participation and quality of submissions encourages us to continue this research and investigate further with the help of the contributors on other pathologies of tahr and chamois. All materials collected will be used to create a didactical brochure that will be uploaded on the NZTF website.

In this way, hunters who have never observed or harvested animals with “pink eye” will understand and learn about its disease traits and dynamics.

This citizen science project could represent a good strategy to involve hunters, and even outdoors enthusiasts into programmes of monitoring the sanitary situation of the wild ungulate population: A successful way to collect data fast, to identify possible disease outbreaks in the territory.

**\*All material will be validated by a panel of four veterinarians with expertise in IKC in mountain ungulates.**



## Tahr Ballot Kea Sightings Project

THIS YEAR, THE KEA CONSERVATION TRUST (KCT) INVITED THE NZTF TO PRESENT AT ITS ANNUAL CONFERENCE. TIM GALE, GENERAL MANAGER OF THE GAME ANIMAL COUNCIL, PRESENTED A POWER POINT ON BEHALF OF THE NZTF. THE PRESENTATION WAS WELL RECEIVED BY THE ATTENDEES.



This project was initiated by the NZ Tahr Foundation as part of its education objectives.

The Game Animal Council (GAC) as a statutory body facilitated the project by liaising between the Kea Conservation Trust, NZTF and assisting with admin and comms. We were also pleased to have the support of Ngāi Tahu for this initiative.

Kea can be both a delight to alpine tahr hunters and their worst nightmare. By educating hunters about kea behaviour and helping to resolve conflicts between kea and hunters the NZTF and GAC believed we could significantly increase hunter participation in kea conservation.

To support this effort, we first needed to identify current hunter willingness to participate, their ability to distinguish between kea population demographics and to identify hunter-kea conflicts.

In 2021, we asked hunters to fill out a kea survey while participating in the ballot. We asked hunters

for as much detailed information as possible to see what they would report. We provided information on kea life stages and physiology to assist reporting. We also provided a prize as an incentive to encourage participation. Helicopter pilots and ground crews assisted in getting the forms to the hunters and were essential facilitators for both access into the Tahr Ballot and the success of the 2021 Kea project, so we would like to extend a big thankyou to the operators involved.

Some hunters filled out forms well, others not so well. Results suggest a basic approach should be taken generally, but that detailed monitoring could be made by individual hunters that sign up for it and where supportive training is provided. Overall, we confirmed that hunters care about kea, however, there were serious concerns raised about the health and safety risk kea pose to hunters when they harm essential gear like tents. We postulate that by providing a resolution to this conflict, hunter participation in kea conservation would increase.

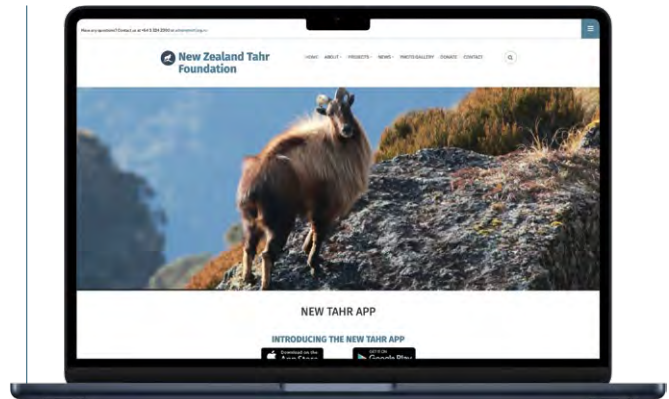
A total of 86 forms were filled out and returned. This was a huge level of engagement compared to what the KCT had received previously (0 returns by ballot holders over the previous 3 years). However, there were still many hunting parties that did not fill in the forms. Without access to ballot holder or permit holder contact details, held by DOC, improving participation is challenging. In addition, paper forms are expensive to produce and the data we need from hunters to effectively manage tahr competes with hunters providing kea data. We need a way to do it all, in one place and something all hunters can access.

The newly created NZTF App is a solution to this problem. It will require some work to get hunters used to using it, to increase participation and ensure that the data being collected is exactly the data needed to support kea conservation. The NZTF will be working on these challenges over the coming years.

## AN IMPORTANT CONCERN RAISED AT THE KCT CONFERENCE - THE USE OF LEAD BY HUNTERS

It was noted that of the kea carcasses autopsied to date, 15% of deaths were attributable to lead poisoning. The KCT raised concerns over kea lead poisoning potentially occurring from hunter bullet fragmentation. Given how attracted kea are to tahr carcasses, this is a legitimate concern. In addition, research to identify lead isotopes from poisoned kea is currently underway with the goal of identifying the type of lead causing the problem.

The NZTF identified lead from fragmentation or buck shot as a potential issue for kea some time ago and successfully advocated along with the wider hunting sector for DOC to use non-toxic ammunition during their culling. Similarly, the NZTF "targeted harvest" management hunts use non-toxic ammunition. However, non-toxic ammunition, while certainly capable of killing tahr, has its limitations. These limitations pose a problem when it comes to promoting its use by everyday hunters to reduce risks to kea. Nonetheless, this is an issue we must tackle as conscientious users of NZ's wild places and the NZTF believes that hunters are better served driving a change away from lead ammunition in kea areas themselves, rather than waiting to be forced.



## Website Upgrade

Creating a website on a new platform, with the work done by professionals, has been deemed too costly for the Foundation at this point. I met with the current volunteer designer, Chris Lord, in June to discuss what we could do with the existing website. This is set up on a platform called 'Drupal'. It appears to be a capable platform, Forest and Bird use it for theirs. Chris has agreed to volunteer his time for upgrading the website if I help and try to assume some of the work.

### AS A RESULT OF THAT MEETING OUR PLAN IS IN THREE STAGES;

1. Redesign the home page to be more visually appealing. Planned to begin on August 5th.
2. Build a framework behind the homepage of a list of categories and topics suggested by the chair.
3. Assign people to collect content for respective pages, populate them, and activate them for the public as we complete them. This is an open-ended project as it could take years of volunteer work to chip away at the plan put forward.

We will also implement a quarterly review of the website, ideally timed to coincide with TF meetings to discuss what was observed and what needs updating.

We will also be investigating options for a membership portal, and the facilities for accepting payments for any services we may offer in the future such as balloting or merchandise.

*Luke Care, Co-opted*

# Ground-Based Targeted Harvest Trial 2022

THIS REPORT REVIEWS THE RESULTS FROM AN NZTF-ORGANISED TRIAL OF GROUND-BASED HUNTING FOR CONTROL OF FEMALE TAHR IN THE JACOBS CATCHMENT, SOUTH WESTLAND, IN AUTUMN 2022.

The purpose of the trial was to assess effectiveness of tahr population management using volunteers to organise and carry out, ground-based “targeted harvest,” of female Himalayan tahr (*Hemitragus jemlahicus*) in suitable areas.

## OUTCOMES

The intended outcomes of the ground-based “targeted harvest” trial 2022 were to:

- > Establish another management tool as a viable alternative to aerial culling, that can be used for managing tahr populations when required.
- > Develop good-practice and standard operating procedures for this management tool.
- > Identify non-participating hunter perceptions regarding the NZTF performing this type of management.
- > Assess suitability of the NZTF App for recording volunteer management.
- > Identify ways for hunters to add value to conservation generally while undertaking management activities.
- > Increase recognition of other ways recreational hunters can contribute to tahr population management while maintaining the recreational value of the resource.

## BACKGROUND

The management of tahr in New Zealand is overseen by the Department of Conservation (DOC), as directed by the statutory document: “Himalayan Tahr Control Plan 1993” (HTCP). The HTCP was designed to apply adaptive management; adaptive management is a process whereby researchers hypothesise how ecosystems work, managers define objectives based on these hypotheses

and implement actions to achieve them, results are monitored and compared to expectations; objectives and management actions are modified based on the resulting improved understanding of ecological processes (Lancia et al. 1996). However, much of the adaptive management contemplated in the HTCP in 1993 was not implemented. In 2018, an aerial survey found tahr numbers greatly exceeded the maximum population stipulated in the HTCP for the tahr feral range (Ramsey and Forsyth 2019). In response, DOC has annually committed significant resources to a large-scale aerial culling program and further tahr population monitoring, with the objective of moving the tahr population towards the intervention density limits set in the HTCP.

Tahr intervention densities and a maximum population of 10,000 outlined in the HTCP were set conservatively based on hypotheses of tahr densities for which impacts would not be observable (pers. comm., Prof. Ken Hughey, 2020). However, insufficient research has been undertaken to confirm whether these intervention density limits are necessary for achieving an acceptable vegetative state. Since the HTCP was established attitudes to valued introduced species have changed considerably. This can be seen in the recent *Te Mana o te Taiao*, the Aotearoa New Zealand Biodiversity Strategy 2020 (ANZBS) (DOC 2020) where the intent to design and implement management plans that reduce pressures on indigenous biodiversity and maintain cultural and recreational values for valued introduced species are outlined as objectives.

The New Zealand Tahr Foundation (NZTF) is a not-for-profit organisation established in 2016 with the purposes: education, co-ordination among stakeholders, to manage Himalayan tahr and acquire “Herd of special interest” (HOSI) status for the tahr herd as provided for by the Game Animal Council Act 2013. “HOSI” designation enables the management of game animal populations, subject to adequate environmental protection, for the purposes of hunting. However, the NZTF’s key undertaking since 2018 has been to minimise the adverse impacts on the hunting sector of DOC’s tahr population reduction efforts by advocating for effort to be directed and coordinated so that cultural and recreational values are maintained as far as possible. To achieve this goal and to reduce pressures on biodiversity, as outlined by the ANZBS, effective tahr population management tools



must be applied based on landscape attributes, animal behaviours and resource values at place.

In January 2021, the NZTF identified pockets within the HTCP Management Unit 6 - Landsborough, specifically the Makawhio / Jacobs Valley, West Coast, where tahr browse impacts to thick vegetation and high female tahr densities were observable. This area had been targeted by aerial control within the previous three years. An application was made to DOC on 01/02/2021 to trial a volunteer led ground-based operation in the Makawhio / Jacobs Valley in March 2021. However, the application was unable to be processed by the Department in time to undertake the operation. A second application was submitted to DOC on 09/12/2021 for the NZTF to trial a volunteer led ground-based operation in the Makawhio / Jacobs Valley in March 2022. This application was approved following the signing of a community agreement between the NZTF and the South Westland District Office, of the Department of Conservation<sup>1</sup>. The trial was to target mature nannies only, as far as possible.

Official aerial control and wild animal recovery operations (WARO), are effective at reducing populations of tahr in open landscapes, but are ineffective in areas with thick vegetation (Parkes 2006). The continued use of low efficacy aerial control in areas containing or adjoining thick vegetation is likely to be detrimental to local biodiversity by encouraging tahr to increasingly populate, and consequently impact, these areas as a means of concealment or escape. Other ungulates have been found to alter habitat use and behaviours following stressful events, such as capture (Becciolini et al. 2019) and hunting pressure (Brown et al. 2020), and for predator avoidance (Pierce et al. 2015). Consequently, ground-based management tools may be more appropriate than aerial tools for managing tahr populations in areas with or adjoining thick vegetation and reducing tahr impacts on biodiversity. Furthermore, DOC's official control in management units except MU4 (Aoraki Mt Cook and Westland Tai Poutini National Parks) currently targets all tahr that are not identifiable bulls. The reason being that tahr in New Zealand are primarily a trophy-based resource, with recreational hunters placing the highest value on harvesting mature bulls (Kerr 2019), with guided hunters almost exclusively targeting mature bulls. In addition, breeding age females

are the most important demographic to manage for controlling population size as they are the reproductive potential of a population. Bulls under three years of age can be difficult to distinguish from nannies during high-speed helicopter pursuit. However, continuing to target all tahr that are not identifiable males will result in an increasingly diminished mature bull resource, detrimentally affecting the value of the herd. On the ground, hunters have more time to distinguish between age and sex classes, allowing for a more targeted approach, i.e. harvesting only identifiable females, thereby reducing the population while mitigating adverse impacts on the herd's primary recreational and cultural value.

Based on examination of certificates of exports, an average of 5500 game animal trophies were exported from NZ in the years 2014-2016, 20% of which were tahr, equating to approximately 1100 tahr per annum (likely to be almost exclusively mature males). Given the total population of 10,000 tahr as set out in the HTCP, even if they are optimally managed for trophy production, ~200 trophy aged bulls would be available for harvest each year (pers. comm, Prof. Geoff Kerr, 2022). This would provide for less than 20% of the annual commercial trophy harvest and does not account for any recreational harvest. It is vital therefore to maximise the recruitment of trophy bulls into whatever population exists.

## COMMUNITY AGREEMENT

The community agreement was established to:

- > Facilitate timely consideration/approval of NZTF management operations in the Westland district.
- > Provide a standardised reporting system so that aerial and ground contributions of effort to tahr management are comparable.
- > Provide the Department confidence that management activities are being undertaken in a professional and safe manner.
- > Provide the Foundation confidence that investing in this tool is worthwhile, e.g. training volunteers to undertake the role and to develop future method improvements.
- > Provide participating hunters with liability cover when participating in these operations.

- > Establish a template for future agreements with other District Offices of the Department of Conservation to enable this tool to be applied more broadly across the tahr range.
- > Develop closer relationships with district management to facilitate hunter-led management generally.

### OPERATIONAL PLANNING

Two landing sites were selected within the Makawhio/Jacobs valley. These sites are within the Hooker/Landsborough Wilderness Area and as such require special landing permission. Landing permission for this activity was provided by the Department following the acceptance of the community agreement.



Top: Operational area for Jacobs Lower. Bottom: Operational area for Jacobs Upper. Blue circle: Landing sites.

### DATES

The targeted harvest operations were to be conducted over two 3–5-day periods at each site between February 19 and March 20, 2022, with a period of respite to allow for animals to settle between operations at each site. Dates were weather dependent and the second operation at each site was dependent on observations from the first operation. The period selected was considered early enough so as not to disturb ballot holder hunting, but late enough to minimise any potential impact on juvenile survival and horn development.

### NZTF FOLLOWER PERCEPTIONS

Members of the public which follow the NZTF Facebook page were informed that the NZTF was running a targeted harvest operation, and the reasons for doing so, via a post on the NZTF Facebook page. The purpose of informing the NZTF Facebook followers was to identify their reaction to the NZTF undertaking this type of management activity. The NZTF Facebook page was used because this is the platform that has primarily been used to communicate NZTF activities to date. The location of the operation was not disclosed as this may have influenced ballot holder responses. This area is subject to an annual hunting ballot from end of April to mid-July. Ballot hunters' perceptions of tahr numbers were collected as they exited the area by the local helicopter pilot who primarily services the transport in and out of this ballot block. In addition, the NZTF Facebook page and other hunting pages were monitored by the NZTF for any comments or posts relating to this ballot area.

### EQUIPMENT AND VOLUNTEERS

The NZTF covered the costs of this trial including access to and from operational sites, the ammunition was provided by DOC. For this trial volunteers were hand-picked based on experience hunting tahr in the locations specified and targeting female tahr, fitness, known integrity and availability. Volunteers were not compensated for their time.

**Note:** It is the intention of the Foundation that the development of ground-based targeted harvest volunteer applications / training will follow on from this trial. The volunteers used in this trial will remain anonymous for their privacy.

Participating volunteers were required to sign a volunteer form and adhere to all harvest rules and health and safety procedures. Failure to do so may have resulted in rejection from future positions, voluntary or otherwise, with the NZTF. Three teams of volunteer hunters were used in the trial, made up from a total of five individuals.

At least one individual present on the first operation at each site was to be present on the second operation at the same site to subjectively assess the benefits of repeat targeting. Each operation had a designated observer who was either a hunter, undertook only opportunistic hunting or did not hunt.

## HARVEST RULES

1. Non-toxic (lead free) ammunition was to be used (to ensure no lead is ingested by kea that scavenge tahr carcasses).
2. Only identifiable female tahr were to be targeted. Hunters were to preferentially kill adult female tahr because of the risk of shooting immature males if juveniles were targeted.
3. Track logs were to be recorded during hunting.
4. Loading the locations and numbers of tahr harvested onto the NZTF App harvest map was compulsory. Where possible photographic confirmation was to be taken.
5. All tahr, chamois, red deer and indigenous bird species observed must be recorded on the NZTF App.
6. Vegetation assessments were to be conducted using the NZTF App as per provided instructions.
7. All loadings on the NZTF App were to be copied into a notebook diary, provided as a backup in case of app failure.
8. Volunteers were encouraged to collect meat from accessible harvested tahr.

## REPORTING EXPECTATIONS

Immediately after returning from each trip volunteers were required to report to the operational lead and confirm their safe return. The operational lead then advised DOC that everyone had safely returned (or status of emergency response).

Post-trip interviews were conducted by the NZTF operational manager immediately following each hunt to reduce recall bias. These interviews and information provided through the reporting system (NZTF App)

were used to formulate this report and to facilitate the development of standard operational procedures. This report will be made available to the public and provided to the Department of Conservation.

## HUNTER REPORTING

Tahr kills and other observation data were to be recorded in a notebook and then loaded onto the NZTF App either immediately or once a photograph could be taken, or when reasonable to do so. Hunters were required to provide GPS track logs.

Hunters' returns were to include:

1. The number of nanny tahr killed from a given position, or their site of death. A photograph of each animal killed should be loaded, where reasonable to do so.
2. The number of nanny tahr observed but not killed
3. The number of juvenile tahr observed
4. The number of bull tahr observed
5. The location and number of chamois (*R. rupicapra*) or red deer (*C. elaphus*) observed (These species were not to be harvested during the trial).

## OTHER OBSERVATIONS

In post hunt interviews, hunters were asked to describe:

- > Their preferred hunting technique.
- > What was easy, difficult, or impossible,
- > Limitations of terrain,
- > Limitations of rifles or ammunition and technology,
- > What problems might arise for less experienced hunters
- > How they would improve the operation
- > Whether they thought the second operation was warranted, and
- > Anything else that came to mind.

## OBSERVER REPORTING

### Vegetation

The observer was asked to rate the vegetation subjectively and take photographs from each of the following locations.

- > Campsite on arrival, before unpacking gear.
- > Tussock – if common across the landscape, then pick one spot per watershed traversed.
- > Scrub – if common across the landscape, then pick one spot per watershed traversed.

- > Forest – if common across the landscape, then pick one spot per watershed traversed.
- > Campsite on departure – ensure gear is packed and all rubbish is picked up for this photo to confirm the condition the campsite was left in.

#### Kea (*Nestor notabilis*) observations

The observer was also asked to undertake the Kea Survey, following DOC instructions.

#### Spotter and thermal tests

Each team was asked to utilise the observer as a tahr spotter on at least one occasion, if possible, to determine whether there is benefit from doing so. In this scenario the observer is located on a high point away from any risk of being in the firing line and communicates tahr sighting locations via radio to assist hunters. The observer was to take note of what the limiting factors in this procedure were. One of the teams was also asked to assess whether thermal optical equipment was useful for locating groups of tahr.

#### Data Analysis

Track logs were loaded onto ArcGIS Pro which enabled calculation of distances (km) hunters travelled. Total hours hunted were calculated after removing periods of inactivity (e.g. midday lull) reported in hunter diaries. Effort measured in hunter days was calculated by dividing the total hours hunted by nine. Average tahr killed per hunter, per hour, and per km travelled were calculated, enabling comparison between operations and locations.

#### RESULTS

##### Hunter reporting

Hunter kills for the Lower Jacobs Operation were similar for both hunters. However, there were fewer tahr killed per hour hunted, and per km travelled than for the Upper Jacobs 1 and Upper Jacobs 2 Operations (Table 1). Hunter C was the observer.

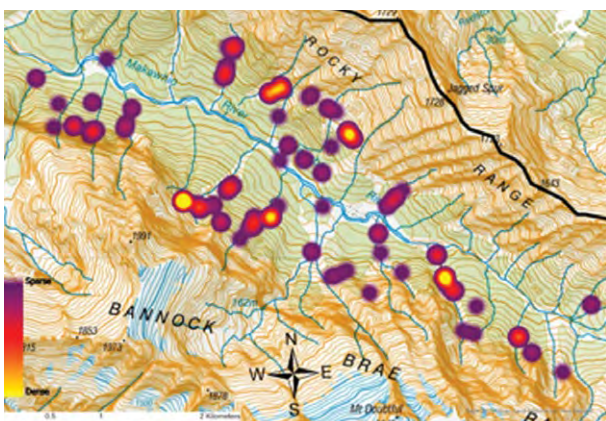
**TABLE 1 RESULTS OF NZTF TARGETED HARVEST TRIAL 2022** # Same hunter, ^ Same hunter, \* Same hunter

Operation	#Hunters	#Hours	#Hunter Days	Distance travelled km	Tahr killed			
					Total	Av. Per Hunter	Av. Per Hour	Av. Per km travelled
Lower Jacobs (dates)	A#	28	3.1	13.1	6		0.2	0.5
	C^ (Obs)	28	3.1	19.6	15		0.5	0.8
	All	56	6.2	32.7	21	10.5	0.4	0.6
Upper Jacobs 1 (dates)	B (Obs)	7.8	0.9	15.3	15		1.9	1.0
	D	17	1.9	23.4	18		1.1	0.8
	E*	24	2.7	19.1	35		1.5	1.8
	All	48.8	5.4	58.2	68	22.7	1.4	1.2
Upper Jacobs 2 (dates)	A#	14	1.6	14.8	25		1.8	1.7
	E*	15	1.7	14.9	32		2.1	2.1
	C^	14.5	1.6	21.7	34		2.3	1.6
	Obs	0	0	0	0		0	0
	All	43.5	4.8	51.4	93	31	2.1	1.8
Total Upper		92.3	10.3	84.1	161	26.8	1.7	1.9
Total All		148.3	16.5	116.8	182	22.8	1.2	1.6

During the Upper Jacobs 1 Operation weather was patchy, with periods of rain and fog. The fog primarily impacted the lower valley where Hunter A was concentrating. This reduced both available hunting hours and visibility whilst hunting. Hunter B primarily was the observer, i.e. did not actively hunt, but did kill tahr opportunistically from the bottom of the valley.

Total tahr killed and kill rates for the Upper Jacobs 2 Operation were higher than for the Upper Jacobs 1 Operation for all measured parameters. Weather during the Upper Jacobs 2 Operation was fine. Hunter 3 suffered from equipment failure and lost their GPS log. Instead, the known area traversed was added retrospectively using Arc GIS and harvest points were added directly from the App and confirmed using notebook recordings, along with time hunted. The observer did not kill tahr.

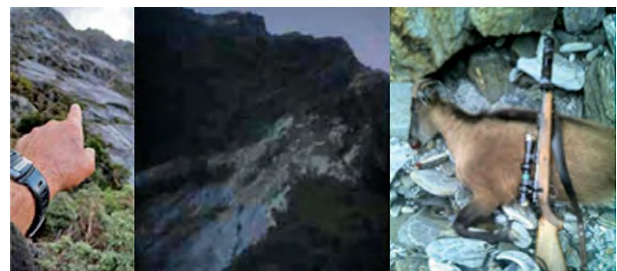
## Valley Coverage



Top: Tracklogs and waypoints of tahr harvested across all three operations. Bottom: Heat map depicting concentration of tahr harvested throughout the valley.

## Photographic confirmation

A total of 84 killed tahr were photographed at their site of death. A further 98 tahr were visually confirmed as killed in cases where it was not possible to take a photograph, or through hunter confidence of fatal shot placement (see page 25 of the Community Agreement) in cases where tahr were not observed to have died. Of the 98 dead tahr unable to be photographed, 27 were unable to be reached due to terrain, 17 were unable to be reached due to thickness of vegetation, 19 were unable to be photographed due to fading light, and 35 tahr were unable to be accessed without disturbing the site and reducing hunter effectiveness. All tahr shot where hunters were not confident of a kill were excluded from the kill records.



Left: Terrain too dangerous to photograph dead tahr. Middle: Fading light preventative of photographing dead tahr. Right: Able to reach and photograph dead tahr without disturbing the site.

## Other observations by hunters

In the Lower Jacobs Operation hunters worked as a team to flush tahr out of the bush using wind direction and landscape structure. Hunters suggested that if they repeated the operation, they would be able to improve hunting effectiveness by limiting their scent dispersion, e.g. remaining stationary in strategic positions while applying flushing techniques, or by using hunting dogs. Photographing dead tahr is not recommended when using this technique because it increases site disturbance. A second operation in the Lower Jacobs was not recommended based on the number of tahr observed relative to the number of tahr shot, i.e. the hunters estimated that they killed 60% of tahr observed, and because of small female group sizes.



View of thick bush cover in lower operational area.

In both Upper Jacobs Operations hunters worked individually in pre-allocated sections of the valley. Wind direction, topography and best coverage were accounted for when deciding on the hunting routes. The presence of the hunter/ observer remaining in the lower valley was regarded as beneficial. Identifying tahr usage hotspots and remaining stationary but within range of these hotspots was determined to improve harvest success. However, this approach reduced hunter ability to photograph harvested tahr and to collect meat. Hunters noted high female tahr numbers and large group sizes during the Upper Jacobs 1 Operation. In addition, the Upper Jacobs 1 Operation had been limited by fog and hunters were unable to cover the entire area effectively. Consequently, a second operation was conducted in the Upper Jacobs. Hunters in the Upper Jacobs 2 Operation reported that knowledge from hunting in the earlier operation improved their ability to cover the valley. Hunters recommended that at least two of three hunters should have prior knowledge of the area or recent management activities to increase effectiveness.



View of a landscape structure in upper operational area: thick bush with scree watersheds, open patches, and tops.

It was noted that inexperienced hunters would struggle to effectively undertake targeted harvest operations in this area. The reasons being due to the complexities of factors that can affect hunter success e.g. understanding

tahr activity and habitat use within this landscape during different times of the year or day and in various weather. Hunters recommended that the hunting strategy be refined by site, based on weather patterns and animal behaviours, and that new hunters undergo structured training to ensure they have the knowledge required to apply effective hunting strategies and to alter hunting strategy as necessary.

All the hunters participating in this trial became interested in longer term management of tahr in this valley. They suggested the formation of management teams, who would be involved in the design of population management strategies and would manage tahr populations within designated valleys, with management in adjoining valleys coordinated between teams to ensure consistency across larger landscape scales.

Identifying young bulls was possible but was challenging when multiple tahr were to be targeted from one group because all the tahr were moving after the first shot. Despite this challenge, only four young bulls were accidentally killed over the course of the three operations.



Group of nannies and juveniles taken from a vantage point, Upper Jacobs Targeted harvest operation March 2022

Some of the young afoot were deemed by hunters to be too young to survive should their mothers be killed. As such, not all mature nannies observed could be killed, and on a few occasions, juveniles had to be killed to prevent their inhumane death. The hunters recommended moving the operation into the Spring if possible, or late March, to avoid mismothering underdeveloped kids. Because the first year of horn growth is crucial to trophy development this timing would minimise adverse effects of targeted ground control on future trophy availability.



Young kid with nanny, Upper Jacobs Targeted harvest operation March 2022

Gorilla Ammunition .308 WIN 145gr Lehigh controlled chaos was deemed ineffective for achieving a humane death during the Upper Jacobs 1 Operation and was not used in the other two operations. Hornady 7mm REM Mag 139gr GMX Full Boar was deemed effective out to 600m. Hornady.223 REM 55 gr GMX monolithic copper ammunition was deemed to be effective for chest and shoulder shots out to 300m. However, tahr ran further than would be expected using lead-based ammunition and this increased the difficulties of obtaining a photo of the kill and harvesting meat.

Hunters suggested that video recording of shot placement to confirm kills using scope cameras may be better than photographs as it would reduce site disturbance and increase harvest efficacy. However, specialised equipment would need to be provided to do this.

Three days was considered sufficient to target each of these areas because prolonged effort resulted in reduced success due to disturbance. In addition, three full days was not too long for volunteers to commit to. For operational coordination, experienced hunter availability and flexibility within weather windows was the biggest challenge.

Hunters who used the NZTF App found it easy to report tahr killed but struggled to also report tahr observed because this required multiple data submissions. Hunters recommended a management version of the App be created so that harvest and non-harvest from groups could be recorded together to save time. Not all hunters were tech savvy, and a paper data collection sheet was sufficient to record information in these circumstances. However, this created double handling of the data.

## OBSERVER REPORTING

### Vegetation

The Lower Jacobs operational area vegetation was described as having high levels of tahr browsing on the true left, but not on the true right of the river, i.e. browsing impacts were less and were patchy in occurrence on the true right.

In the Upper Jacobs operational area, towards the head of the valley the vegetation was thicker with less observable tahr impact than lower down the valley. Tahr impacts on vegetation was patchy under scrub canopy, i.e. some areas displaying browsing impacts were directly adjacent to areas with no observable browsing impact. Tahr browsing impacts were higher on the true left than the true right of the river.



Tahr impacts on true left under canopy and on the flats, Lower operation.



Left: Patchy tahr impacts observed in Upper Operation 1, Targeted harvest operation 2022. Right: No observable browse

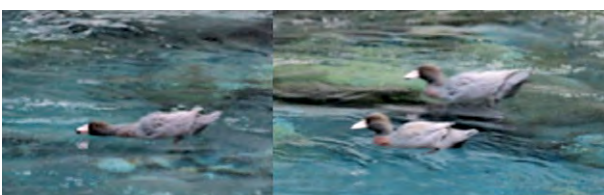


Patchy tahr impacts in Upper Jacobs Operation 2, March 2022. Top left: regeneration on the flats. Middle left: tahr browse on the nearest fern but none for ferns in the distance. Bottom left: Tahr browse largely absent from ferns. Right: High degree of tahr browsing impact over a small area

### Kea observations

The observers found the Kea Survey easy to complete following the instructions provided by DOC, in part because kea were heard or observed every hour of the surveys. However, the paper form created double handling of data and hunters suggested it would be easier to just have it all on the App. Kea observed were predominantly juveniles, with a maximum of 20 kea counted at one time. Kea progressively became bolder and more destructive to gear, particularly gear with bright colours. Kea damage to hunter equipment was noted as a serious health and safety risk and work to mitigate these risks was considered as urgent.

A pair of whio (*H. malacorhynchos*) were also observed.



Whio (*H. malacorhynchos*) pair, Lower Jacobs march 2022



Kea (*N. notabilis*) at camp, Upper Jacobs March 2022

### Spotter and thermal scope test

The use of a human spotter was helpful in some areas, e.g. when the hunter was on one side of the valley and the spotter was on the opposite side. However, hunters were unanimous that all individuals hunting was more effective than one being delegated to spotting.

Thermal optical equipment was tested in the first Upper Jacobs Operation and was found to be useful for relocating killed tahr, especially those which were unable to be located due to fading light. However, its use was limited for locating live tahr due to the residual heat of the rock faces. Hunters suggested that thermal optical equipment may be more useful in colder months.

### NZTF FOLLOWER PERCEPTIONS

When the operation was disclosed on the Facebook page engagement was high (compared to past engagement on other topics) and immediate, with many reacting in a defensive manner, questioning the validity of the issue, e.g. vegetation damage couldn't be caused by tahr, the photographs were not taken in the same place, and numerous other questioning assertions. The most common constructive comments were for photo points to be aligned and scaled exactly, and to disclose the location.

The helicopter operator who primarily transported hunters out of the ballot block after the trial reported that hunter comments were similar between parties, i.e. there were fewer female tahr than they had observed in previous years, but that there were still enough to attract the bulls, and they indicated there was no impact on their hunting experience. No comments were made regarding the discovery of dead female tahr. In addition, no comments were discovered on the NZTF Facebook page, or other Facebook based hunting pages, that specifically discussed the Jacobs ballot area.



## COSTS

The total cost of the operation was NZ\$4295. This does not include the cost of ammunition, provided by DOC at no charge. This is equivalent to (i) 2.4-2.7 helicopter hours of culling, or (ii) \$23.60 per tahr killed. This operation removed 1.8-2 times as many tahr per unit of cost as recent helicopter culling in the same Management Unit, so is highly cost-effective. In 2021-22, DOC aerial operations within MU6 (Landsborough), within which the Makawhio / Jacobs catchment is located, removed an average of 37 tahr per hour (pers. comm. Tom Brookman, DOC, 2022). However, in heavily vegetated areas helicopter culling is less successful, and the expected kill rate in the vegetated areas of the Jacobs is likely substantially less than 30 tahr per hour. Therefore, the cost-effectiveness ratio, while unknown, would be even higher compared to helicopter culling if only the more vegetated environment focused on in this trial was considered.

Volunteers contributed 64 hours setting up the operation, including communication, procedure development, health and safety development, and hunter inductions. It is anticipated that the next operation would require considerably less volunteer time to establish because the documentation has been developed and the community agreement is in place.

Volunteer hunter commitment during the operations totalled 28 days across all three operations.



Some of the meat collected during target harvest operations, Jabods Valley, March 2022

*The helicopter operator who primarily transported hunters out of the ballot block after the trial reported that hunter comments were similar between parties, i.e. there were fewer female tahr than they had observed in previous years, but that there were still enough to attract the bulls, and they indicated there was no impact on their hunting experience.*

## REDUCING WASTAGE

Hunters collected as much meat as possible, totalling more than 60 kg. Most of the meat collected, 40 kg, is being used to explore options that minimise wastage from management operations and that support financially sustainable management. The remainder was kept by participating hunters for personal consumption.

## CONCLUSIONS

Overall, the objectives for this trial were achieved. The trial confirmed that volunteer led ground-based “targeted harvest,” is both a practical and financially effective tool for managing female tahr populations in areas suitable for ground-based hunting. Furthermore, the value of this management tool to conservation in heavily bush covered landscapes, such as the Jacobs Valley, may be higher than for aerial management because it successfully reduces the concentration of breeding aged females and encourages tahr to use altitude, rather than bush cover, as a means of escape.

The focus on killing identifiable females was successful at minimising the removal of young bulls. However, some of the juveniles observed during the trial were still quite young and either may not survive winter without their mothers or may suffer reduced horn growth if they do survive. Alternatively, “targeted harvest” operations could be undertaken in spring before young are born. However, weather can be unsettled in spring making operational planning challenging. As such, research investigating the impact population management during Autumn or Spring on survival and horn growth of bulls would be informative for improving management practices that maintaining recreational value.



Some hunting techniques worked in some areas but not others, largely due to the high level of landscape variability, suggesting that ground-based “targeted harvest” will require localised hunting procedures to ensure consistent population management effectiveness. In addition, harvest operations may benefit from establishing ongoing, area-specific harvest teams, to capitalise on increased hunter understanding of tahr habits across the landscape during repeat visits. All participating hunters established a vested interest in the management of tahr in this valley, i.e. ensuring that this operation was not just a one off, and that long term positive outcomes were achieved both for hunters and for conservation. Therefore, if management were applied by valley or valley group, each with its own management team, long term, consistent and sustainable management of tahr may be achievable across the tahr range. However, significant thought is required to determine how hunters should be selected for these teams, how hunters should be trained, the process for team succession, and how teams would be administered and coordinated.

The newly developed Tahr Foundation App performed well. However, some alterations could be made to reduce the time for harvest and other observations to be logged. The use of paper recording by those hunters less savvy

with technology created some double handling of data, so training of regular volunteer hunters on how to use the App, and providing them with a device to use, if necessary, should be considered for future operations.

There are multiple opportunities to increase hunter contributions to conservation while undertaking tahr management activities. The monitoring of kea and other native bird species is easy to conduct while hunting but using the App for data collection would likely increase both hunter participation and the consistency of information obtained. In addition, hunters photographically surveying vegetation would be an easy way to visually depict vegetative changes through time across large landscapes. However, for photographs to be informative to tahr management, permanent photographic plots would need to be established and scientific evaluations of vegetative and tahr population trends would need to be conducted in parallel.

The patchy vegetation impacts observed suggests tahr browsing behaviour is not evenly distributed. Therefore, research to understand tahr habitat utilisation and the effects of applying different management tools on tahr habitat selection, may provide for more effective application of management tools for reducing impacts on biodiversity.

## RECOMMENDATIONS

The following recommendations are made based on the results of this trial for the NZTF to undertake, facilitate or advocate for, as it sees fit.

## OPERATIONS

- > Ground-based “targeted harvest” operations be the preferential management tool in areas suitable for ground-based hunting where female tahr are observed in high densities.
- > Ground-based ‘targeted harvest’ operations be conducted in spring, when possible, or in late March to reduce the potential impacts of orphaning juveniles on trophy potential and winter survival.
- > Explore the use of video recorded kill shot confirmation rather than photographic confirmation of tahr death for confirming numbers of tahr killed.
- > Alter the Tahr Foundation App to reduce time for reporting and provide for monitoring of other species and habitat health.

## RESEARCH

- > Investigate the impact of Autumn or Spring population management on survival and horn growth of bulls.
- > Conduct research to understand female tahr habitat utilisation and the effects of different population management techniques on tahr habitat selection.
- > Establish feasible scientifically based local evaluations of vegetation and tahr population trends.

## MANAGEMENT

- > Explore the establishment of single-valley or valley-group management teams for efficient, consistent, and sustainable management of tahr.
- > Establish permanent photographic plots to monitor visual changes to vegetation through time and implement scientifically based evaluations of vegetation and tahr population trends in parallel.

## DOCUMENTATION

Community agreement (Doc- 6920217)

## FUNDING

The Tahr Trust provided the funding to undertake this trial.

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## REFERENCES

- Becciolini, V., F. Lanini, and M. P. Ponzetta. 2019. Impact of capture and chemical immobilization on the spatial behaviour of red deer *Cervus elaphus* hinds. *Wildlife Biology* 1:1-8.
- Brown, C. L., J. B. Smith, M. J. Wisdom, M. M. Rowland, D. B. Spitz, and D. A. Clark. 2020. Evaluating Indirect Effects of Hunting on Mule Deer Spatial Behavior. *Journal of Wildlife Management* 84:1246-1255.
- DOC. 2020. Te Mana o Te Taiao - Aotearoa New Zealand Biodiversity Strategy 2020. In D. o. Conservation, editor., <https://www.doc.govt.nz/globalassets/documents/conservation/biodiversity/anzbs-2020.pdf>.
- Kerr, G. 2019. Himalayan tahr (*Hemitragus jemlahicus*) recreational hunting values. *Wildlife Research* 46:114-126.
- Lancia, R. A., C. E. Braun, M. W. Collopy, R. D. Dueser, J. G. Kie, C. J. Martinka, J. D. Nichols, T. D. Nudds, W. R. Porath, and N. G. Tilghman. 1996. ARM! For the future: adaptive resource management in the wildlife profession. *Wildlife Society Bulletin* 24:436-442.
- Parkes, J. 2006. Does commercial harvesting of introduced wild mammals contribute to their management as conservation pests? Pages 407-420 *Biological Invasions in New Zealand*. Springer.
- Pierce, J. L. B., S. A. Dalinsky, A. A. Chenaille, L. M. Lolya, J. L. Maguder, C. Mattilio, G. V. Mayhew, E. Regan, and D. A. Patrick. 2015. Scale-dependent Effects of Coyote-predation Risk on Patterns of White-tailed Deer Browsing Along Linear Forest Edges. *Northeastern Naturalist* 22:262-272.
- Ramsey, D. S. L., and D. M. Forsyth. 2019. Estimates of Himalayan Tahr (*Hemitragus jemlahicus*) abundance in New Zealand: Results from aerial surveys. Pages 1-17 Client report for New Zealand Department of Conservation Arthur Rylah Institute for Environmental Research.



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