Report on the Himalayan Tahr Control Programme 2021/2022

A mob of nanny and juvenile tahr in Te Kahui Kaupeka Conservation Area, Canterbury.

Context

The management of Himalayan tahr (tahr) on Public Conservation Land (PCL) is guided by the Himalayan Thar Control Plan (HTCP) 1993. The HTCP 1993 sets a maximum population of 10,000 tahr across lands of all tenure throughout the feral range, as well as individual maximum tahr population densities for each of seven designated Management Units (MU), based on factors including location, vegetation, and recreational use. It also outlines expectations for monitoring tahr populations and vegetation condition to inform future tahr management.

The HTCP 1993 is implemented through annual operational plans that identify management actions for each MU. As the Department's (DOC) Himalayan tahr management work is led as a national programme, one annual operational plan is prepared for the entirety of the programme, and a single annual report provided to the New Zealand Conservation Authority (the Authority).

2021/2022 Programme Highlights

Delivery of the Tahr Control Operational Plan (TCOP) 2021/22

The TCOP 2021/22 was developed in partnership with Ngāi Tahu and through engagement with the Tahr Plan Implementation Liaison Group (TPILG). Table 1 below outlines the number of tahr controlled over the full 2021/22 year within the management units and across each control type. This excludes some aspects of recreational hunting where no data is available.

Table 1: Number of tahr controlled within Management Units

Year 1 July – 30 June	DOC	AATH trophies	AATH 'environmental offsets'	Ballot hunters	Tahr Carcass Recovery	Organised recreational hunters	Other	Total
2018/19	168	264	0	619	400	63	244[1]	1758
2019/20	7238[1]	8	2936[2]	726	421	0	60[3]	11389
2020/21	7481[1]	17	0	889	0	0	60[3]	8447
2021/22	5750[1]	43[4]	0	843	0	182	144[3]	6962

1 Includes contracted control**;** 2 Includes control not undertaken in 2018/19; **3** Zero Invasive Predators programme; 4 at the time of writing, not all 2021/22 returns were complete – data from completed returns are reported here and the final total will be updated in the 2022/23 report to the NZCA.

Tahr control outside the feral range and inside the feral range, outside management units

Control of tahr numbers outside the identified feral range is key to reducing range expansion and minimising the creation of new populations. To assist in optimising control outside the feral range, the Department commissioned an external review of control outside the feral range; the primary findings from this review were that more consistent data recording alongside more intensive effort was required to effectively assess control efficiency through time. The former issue was addressed through the programme's information management systems (see below) and the latter was taken into consideration in the latter stages of delivery of the 2021/22 TCOP and the development of the 2022/23 TCOP.

A total of 449 tahr were controlled outside the feral range over the period 1 July 2021 to 30 June 2022. Appendix 1 provides a map with details on the number of tahr controlled in specific areas outside the feral range over this time period.

In addition to controlling tahr outside the feral range, the 2021/22 TCOP included the first official control targeted at tahr inside the feral range but outside the management units. 196 tahr were removed from inside the feral range, outside the management units.

Game Animal Council control mid-point meeting

Continuing the operating and consultation rhythm established in 2020, the Department met with representatives of the Game Animal Council on 20 September 2021 to discuss operational details of the first half of official tahr control for 2021/22. DOC considered the Council's advice in determining the operational detail of work for the remaining control effort.

COVID-19

The COVID-19 pandemic continued to restrict access for international visitors in 2021/22, meaning relatively few trophy animals were taken by the commercial sector compared with pre-COVID levels (see Table 1). DOC had anticipated this outcome, and that commercial tahr carcass

recovery contributions would also be negligible (see Table 1). These factors were taken into consideration when setting the level of official control for 2021/22.

The COVID-19 pandemic also influenced the delivery of official control: the two-week lockdown of the South Island in 2021 occurred during peak aerial operational season, including some good operational weather windows. Additionally, staff and contractor operational availability was, at various times throughout the season, impacted by isolation requirements. Ultimately, through flexible scheduling and contingency planning, control was completed. However, in some areas this was later in the season than ideal (e.g. snow conditions were no longer optimal for control).

Relationships and Engagement

Relationship with Te Rūnanga o Ngāi Tahu

During 2021/22, DOC and Ngāi Tahu continued their commitment to developing the Treaty partnership in relation to tahr management. This included facilitating the partnership between Te Rūnanga o Ngāi Tahu, local papatipu Rūnanga (Te Rūnanga o Arowhenua) and the Game Animal Council to begin development of a proposal for hunter-led management of Management Unit 1 (South Rakaia/Upper Rangitata, see below).

Tahr Plan Implementation Liaison Group

Stakeholder engagement for 2021/22 centred around the TPILG, which includes representatives from Te Rūnanga o Ngāi Tahu, statutory boards and authorities (including the Authority), the recreational and commercial hunting sector, farming bodies, outdoor recreation groups and Forest & Bird.

Engagement with the TPILG on development of the TCOP 2022/23 occurred over a period of five months, including two TPILG meetings held on 3 December 2021 and 11 March 2022. At the December 2021 meeting, members were provided with contextual material regarding tahr populations in order to inform any written submissions they wished to make to the Department prior to drafting of the TCOP; those submissions were due by 18 February 2022 (4 submissions were received). The draft plan was then circulated to the TPILG on 28 February to facilitate feedback on the draft at the March 2022 meeting. Members had until the 31 of March to provide additional written feedback on the draft after the meeting (5 submissions were received). Feedback from these meetings and written submissions helped to refine the 2022/23 plan, with the final TCOP 2022/23 being released on 3 June 2022.

Hunter-led Management of Management Unit 1 (South Rakaia/Upper Rangitata)

The 2021/22 TCOP included a commitment to exploring the option of hunter-led management of Management Unit 1 (MU1). Management of tahr populations by hunters is specifically contemplated in section 5 of the HTCP 1993. MU1 is mentioned specifically as one of the most popular with recreational hunters; it is also the closest to the South Island's major population Centre (Christchurch).

Subsequent to a workshop session within the TPILG, the Game Animal Council (GAC) undertook to play the lead role in hunter-led management for the hunting sector. Facilitated by the Department, representatives of the GAC met with representatives of Te Rūnanga o Ngāi Tahu and the local papatipu Rūnanga (Te Rūnanga o Arowhenua). A project team comprised of members from those three bodies, assisted by DOC staff, developed a Te Whakatakanga (mission statement); development continued into 2022/23 with the intention for potential

implementation to occur under a Community Agreement with the Department. Any proposal approved for implementation must contribute to working towards the goals of the HTCP 1993.

Information Management

Electronic verification tool and Tablet Data System

In the 2021/22 year the tahr programme continued utilising its electronic verification tool for remote monitoring of control operations, with digital cameras fitted to the rear step of helicopters used for aerial control to take a series of high speed still photographs with geo-referencing each time a firearm is discharged. The programme's tablet-based data recording system also continued in 2021/22, allowing control effort data to be electronically recorded as it occurs and enabling generation of detailed maps of operational results , including publicly available maps on the Department's website (examples of these maps were included in the 2020/21 tahr programme report to the NZCA).

App for recreational hunters

In the 2020/21 year the Tahr Returns smartphone app designed by DOC with the Game Animal Council, New Zealand Deerstalkers Association, and New Zealand Tahr Foundation had low uptake by recreational hunters, with many of the reported numbers also reflecting tahr taken outside the management units. As a result, after discussion with the TPILG, the decision was made in 2021/22 to remove the app. Since the removal of the Tahr Returns app, the New Zealand Deerstalkers Association and New Zealand Tahr Foundation have independently developed and released apps that include the facility for hunters to report tahr kills.

Updates to Hunting Stakeholders

In 2021/22 DOC continued providing tahr programme updates regularly through its website to encourage and enable recreational hunters to contribute to tahr control. This includes providing information on where identifiable male tahr have been seen during official control operations to assist hunters to plan, locate and shoot identifiable male tahr. Updates are also provided during the season when official control work in each area is complete to give hunters certainty on areas they can hunt tahr knowing Departmental control for the year is complete.

Email updates to current hunting permit holders also continued in 2021/22 (having commenced in 2020/21). These emails connect hunting stakeholders with new tahr programme information as it becomes available, including provision of direct links to the website content outlined above. In the 2021/22 year, email updates to current hunting permit holders were provided on:

- 11 August 2021
- 29 October 2021
- 22 December 2021
- 3 June 2022

Summary of Control Operations

Under the 2021/22 TCOP, the equivalent of 283 hours of aerial tahr control were delivered. Control was delivered through a variety of methods, including staff-based aerial control, contract aerial control, ground-based control and the deployment of satellite collars for 'judas' programmes. The resulting number of tahr removed by official Departmental control in each Management Unit, inside the feral range but outside the management units, and outside the feral range are detailed in the 2021/22 row of Table 2 below.

Table 2 - Tahr removed by Official Departmental Control

Year 1 July – 30 June	MU 1	MU 2	MU 3	MU 4	MU 5	MU 6	MU 7	INSIDE FERAL RANGE, OUTSIDE UNITS	OUTSIDE FERAL RANGE	TOTAL
2018/19	168	0	0	0	0	0	0	NA	387	555
2019/20	2113	246	1603	3675	1278	1332	58	NA	517	10822
2020/21	555	1038	641	3299	241	1697	10	NA	265	7746
2021/22	0	873	187	3007	111	1572	0	196	449	6395

List of Management Units: MU 1 Rakaia / Rangitata; MU 2 South Whitcombe / Whataroa; MU 3 Gammack / Two Thumb; MU 4 Westland Tai Poutini NP/ Aoraki Mt Cook NP; MU 5 Ben Ohau; MU 6 Landsborough; MU 7 Hunter / Wills. Outside Feral Range is inclusive of tahr removed in the Northern and Southern Exclusion Zones.

Note: The numbers of tahr removed across all management units for these three years are sourced through DOC-led control made up of a mixture of contract control, AATH environmental contributions and DOC control. Not recorded on this table are tahr across all management units that have been removed by AATH trophy concessions, ballots, tahr carcass recovery, Zero Invasive Predators programmes and organised hunts (see Table 1).

Comparison with prior years

The total number of tahr removed in 2021/22 was lower than in 2019/20 and 2020/21. This reduction can be attributed to a number of factors:

- The largest difference is the lack of AATH environmental offsets in 2020/21 and 2021/22 (these offsets contributed 2936 (27%) of the 2019/20 control total).
- Changes in operational focus between years:
  - in 2021/22 a higher proportion of control effort (33%, compared with 23% in 2020/21) was dedicated to control outside the feral range, where tahr densities (and therefore control numbers) are low.
  - Correspondingly, as the control investment within National Parks was maintained in 2021/22, fewer hours of control were conducted in Management Units that had previously yielded higher numbers of tahr per hour of control (e.g. MU1 and MU3).
- Changes in operational effort: the overall level of effort (in equivalent hours of aerial control) reduced from approximately 309 hours in 2020/21 to approximately 283 hours in 2021/22, reflecting a number of factors including increased helicopter operation costs.

Ground control trial

In response to observations of tahr utilising forest and sub-alpine scrub habitats on the West Coast, which reduced the effectiveness of traditional aerial control, the Department conducted a ground-based control trial aimed in MU6 (Landsborough). A total of 284 female and juvenile tahr were removed at a comparable cost per animal to traditional aerial control, with the additional benefits of:

- Targeting many animals that may not have been sighted during aerial control;
- Targeting animals in a different way, reducing the potential for learned evasion behaviours (e.g. moving into cover to avoid helicopters) to be effective;

The development of ground-based control techniques will continue under the 2022/23 TCOP.

Status of Management Units (MUs)

Population estimate

The total population of tahr on PCL was estimated through aerial surveys undertaken during 2016 – 2019, compiled in Ramsey and Forsyth's September 2019 report: *Estimates of Himalayan Tahr (Hemitragus jemlahicus) Abundance in New Zealand: Results from Aerial Surveys*. These estimates were summarised in DOC's 2019/2020 report to the Authority on the Himalayan Tahr Control Programme.

As reported in the Department's 2021/21 report to the Authority, further aerial surveys were conducted in the South Rakaia/Upper Rangitata (MU1) and Gammack/Two Thumb (MU3) management units during February – May 2021. The results of these surveys were analysed and published during the 2021/22 year: *Abundance of Himalayan Tahr in the South Rakaia/Upper Rangitata and Gammack/Two Thumb Management Units*. The report shows that despite official control in 2019/20 and 2020/21, tahr populations in MU1 and MU3 exceed the limits outlined in the HTCP.

The approaches used in Ramsey and Forsyth 2019 and Ramsey and Forsyth 2021, while similar, used sampling strategies optimised to address different questions; the 2016-2019 surveys (reported in 2019) were designed to assess the overall population through surveys aggregated across the feral range over 3 years. The 2021 surveys were designed to provide Management Unit-level information at a point in time (2021). As such, while the 2019 population estimates for Management Units do provide some broad context for tahr abundance, they should not be used for direct comparison with the 2021 estimates to infer whether populations have gone up/down/stayed the same in those places between 2019 and 2021.

The results of these surveys were presented to the TPILG and formed part of the internal (Departmental) and external consultation regarding allocation of control resources within the 2022/23 TCOP.

As outlined below, DOC has developed a research and monitoring strategy to inform the future of tahr management, including through future estate condition monitoring.

Liaison with contributors to management

Recreational Hunters

DOC seeks to encourage hunters to shoot tahr. In 2021/22 DOC continued to work with the recreational hunting sector to improve the availability of information on both control activity and observations of tahr. This included posting maps of control effort and the locations of observed identifiable males to DOC's website and by providing email updates to current hunting permit holders (see above).

Following the effects of COVID-19 on tahr hunting opportunities in 2019/20 and 2020/21, the West Coast tahr ballot period for the 2021/22 year was extended to 12 weeks. This also included roll-over of ballots affected by COVID-19 in the 2020/21 year.

The Department worked with the New Zealand Tahr Foundation to facilitate the Foundation's delivery of an organised recreational hunt in the Jacobs/Makaawhio River Valley in South Westland in March 2022. The operation removed 182 mature females from that area, focusing on forest and scrub habitat where aerial control is less effective than in the alpine environment.

The potential for scaling up this community-based effort, while maintaining high standards of data collection, is being explored through the 2022/23 TCOP.

Operators

In consideration of the impacts of COVID-19 on helicopter operator businesses, DOC worked to spread planned tahr control hours across the Department's group of operators, with the aim of supporting continuity of these businesses and associated operator capacity for future years.

Research Updates

Research and Monitoring Strategy

In the 2020/21 year, a research and monitoring strategy for tahr was completed to support the implementation of the HTCP 1993 and based around six research themes:

- Tahr population dynamics and ecology
- Environmental impacts of tahr
- Hunting and control
- Socio/economic considerations of values and costs
- Site based management, i.e. tahr and other introduced mammals in alpine ecosystems
- Research with no direct implication for tahr management

Under the research and monitoring strategy, in 2020/21 historic grassland plot remeasurements commenced, as did population surveys in MUs 1 and 3; as reported above, those population surveys were analysed and reported on in 2021/22 and, as reported below, grassland plot remeasurement continues. In 2021/22 an additional component of the research and monitoring strategy was implemented, focusing on assessing tahr browsing impacts (see below).

Estate condition trend

Ongoing monitoring of estate condition in the tahr feral range occurs through the national monitoring system (Tier 1), along with additional longer-term monitoring of grassland plots. A range of reports examining the impacts of tahr were provided in the 2019/20 report to the Authority.

In the 2021/22 year, the second third of the historic grassland plots, which represent the longest running vegetation survey in the tahr feral range, were re-measured. The remainder are scheduled for remeasurement in summer 2022/23; it is expected that analysis of the compiled results will be undertaken early in 2023/24.

Tahr browse - rapid impact assessment method

In 2021/22, drawing on a number of the themes identified in the research and monitoring strategy (outlined above), work began to develop and trial a rapid impact assessment method for tahr browse. The over-arching aim was to provide information regarding tahr impacts on a time-scale that could inform annual or inter-annual management actions (as opposed to the more comprehensive but less responsive longer term estate condition trend monitoring provided by Tier 1 and historic grassland plots).

During 2021/22 various workshops with internal and external stakeholders were undertaken, including the formation of a technical advisory group for the project. Three small-scale field pilots were undertaken across a range of landscapes to prototype the development of the rapid impact assessment method. A draft methodology was developed, and field work completed in

March 2022 generated preliminary data for consideration by the technical advisory group in late June 2022. Further development and a larger-scale pilot are scheduled to occur in 2022/23.

Understanding tahr populations

In addition to the population estimates completed for Management Units 1 and 3 (see above), the Department sought preliminary advice from Manaaki Whenua Landcare Research on optimising the effectiveness of tahr control. A key component of understanding whether control is effective is evaluating its impact on population. Consequently, the advice provided included some early, developmental tahr population modelling work based on population survey data from 2019 and 2021. Noting that this is very much a tool still in development stages, the preliminary modelling showed as a means of understanding of tahr populations, as well as for informing effective control strategies.

Physically surveying tahr populations is resource intensive, so desktop tools that augment field surveys may prove valuable; this is particularly so given the current limited understanding of tahr populations on other tenures (e.g. Crown Pastoral Lease).

Outlook and Plans for Next Year

TPILG discussions

Two streams of work identified in the TCOP 2021/22 and previewed in the 2020/21 report to the NZCA have commenced and are reported above: scoping hunter-led management for Management Unit 1 and optimising tahr control outside the feral range.

A third work-stream, focusing on longer-term tahr programme operational planning was originally planned to progress; after further consideration, members of the TPILG re-framed the desired conversation to focus on a strategic, rather than operational, level. That conversation, in a facilitated format, is planned to continue in 2022/23.

COVID-19

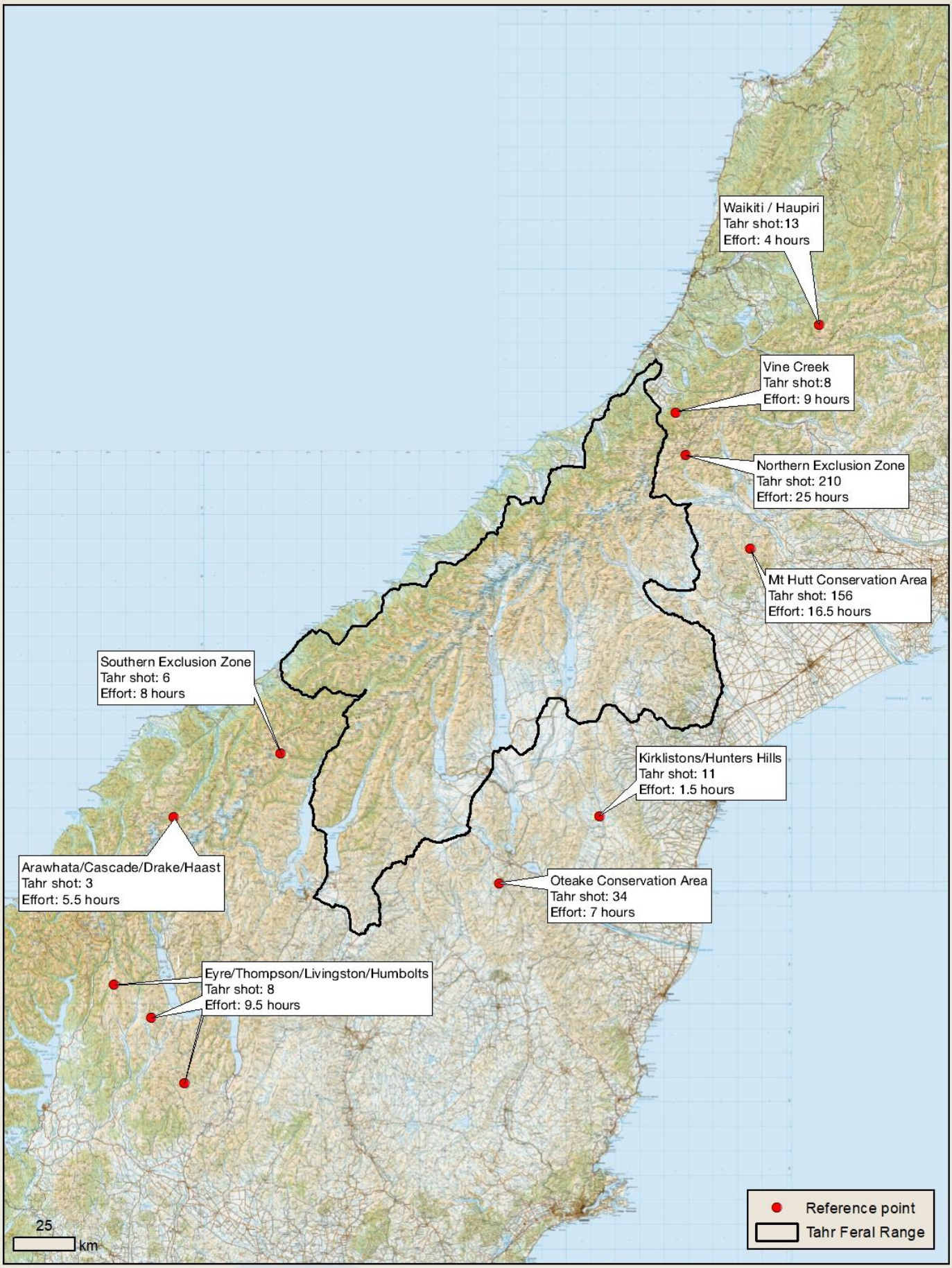
Flow-on effects of COVID-19 on the commercial hunting industry may cause ongoing management challenges; many AATH operators are booked to capacity in 2023 (and in to 2024) meaning the demand for trophy-class bull tahr from PCL for these operators will be high. This may cause conflict with recreational users of PCL (including hunters). It will also mean the return of AATH offsets as a substantial tahr control mechanism during the 2023/34 TCOP period; this may alter the approach taken to planning or delivering official control under the TCOP which has largely been planned and delivered in the absence of AATH offsets between 2020 and 2022.

It is anticipated that official tahr control operations in 2022/23 will be less impacted by COVID-19 than in 2020/21 and 2021/22, although future impacts/outbreaks cannot be discounted.

Financial Summary (1 July 2020 to 30 June 2021)

Operational costs for the 2021/22 financial year were approximately $830,000.

Appendix 1. Department of Conservation tahr control outside the feral range 2021/22



Department of Conservation
Te Papa Atawhai

New Zealand Government

Department of Conservation Tahr Control
Outside Tahr Feral Range
(1st July 2021 to 30th June 2022)

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