



Proposal for a Sika Research and Adaptive Management Model Kaimanawa & Kaweka Forest Parks

Preamble

This Proposal, prepared by the Central North Island Sika Foundation (the "Foundation") and supported in principle by the organisations listed on page 2, outlines a conceptual approach for developing a collaborative, science-based research and adaptive management model for Kaimanawa and Kaweka Forest Parks that will address some of the unwanted sika impacts, currently evident at a number of sites. It will also significantly contribute to the complex, wider issue of managing wild ungulates (many of which are highly valued as game animals) and their impacts across New Zealand.

The Proposal is designed to generate discussion among a wide range of stakeholders including: DOC staff, Conservation Boards, Mana Whenua, other statutory agencies, hunters, non-governmental organisations, related science providers and business organisations. Through such discussion, it is hoped that strong and inclusive stakeholder support will result in positive action to help develop agreed management intervention that ensures the forests of the central North Island high country remain sustainable and thrive into the future.

Introduction

Mature beech forest in the central North Island periodically dies off for natural reasons. Significant prehistoric climatic events notwithstanding, these forests have regenerated after die-offs and canopy closure has been restored. In recent decades, beech forests in some areas have not been regenerating after die-offs, or regeneration has become patchy. The reasons for this are complex and often the result of multiple factors. However, evidence clearly shows that introduced deer, initially red deer and then sika deer, have negatively affected the regeneration of beech in some areas. The cumulative effects of fire, possums, rats eating beech seeds, and the loss of marine nutrients caused by introduced predators wiping out historic seabird breeding colonies, have undoubtedly also been important. Nevertheless, deer browsing on beech seedlings/saplings is a key process affecting regeneration at some sites.

It should be noted that this is not the case at all sites and that for many parts of the central North Island, where hunting has adequately restricted sika deer density, beech forests are regenerating. Sika in such areas are in good condition and have strong antler development. However, sika in impacted forests are currently smaller and skinnier than the average size of sika in the central North Island, indicating the limited nutrients they can get from the vegetation available to them. These deer are of limited value for hunting, as they are poor eating and males often have poor antler development. Such sites represent a lose–lose for conservation and hunting. They urgently need to be managed.

The Department of Conservation (DOC), in consultation with other stakeholders, is currently identifying national and regional management and research needs for deer, a project known as 'Te Ara Ki Mua – The Path Ahead – Deer in Aotearoa'. There are many management and research needs related to New Zealand's deer species and the ecosystems they occupy. It is, however, impractical and unaffordable to conduct research and adaptive management in all systems. Given the available

historic data from the central North Island sika–beech forest system and the urgent need for deer management, it would make an excellent case study for how to better manage deer overabundance and deer impact, both there and elsewhere.

A workshop was held at the Napier DOC Office on 18 November 2020 to discuss how such a case study might be developed based on the Kaweka/Kaimanawa sika–beech system and the historic knowledge obtained from the Kaweka Mountain Beech Project (KMPB) between 1996 and 2016. Attendees at the workshop represented the following organisations:

- DOC (Turangi, Taupo, Napier and 'Te Ara Ki Mua' Project staff)
- Game Animal Council
- Central North Island Sika Foundation
- New Zealand Deerstalkers Association
- Kaweka Liaison Group
- Manaaki Whenua – Landcare Research Ltd

Background

Recreational hunters value sika highly as an iconic New Zealand game animal. Sika hunting is one of the most significant recreational uses of Kaweka and Kaimanawa Forest Parks. These areas have the highest number of hunting permits issued each year, of any public conservation land in the country.

The Foundation was formed in 2015 with the vision of achieving:

"A healthy Sika hunting resource, living in resilient natural habitats, valued by stakeholders"

Only healthy, sustainable habitat will support sustainable hunting outcomes and allow for the realisation of this vision. The Foundation accepts that some stakeholders may not agree with this vision, but it hopes that all can agree that managing unwanted Sika impacts on natural habitats is a key goal for all stakeholders.

Since 2015, the Foundation has been working closely with DOC, Manaaki Whenua – Landcare Research, and OSPRI in an attempt to better understand sika and help mitigate their impacts in the central North Island high-country beech forests. Through a combination of formal "management hunts"; collaborative culling-to-waste and social (as opposed to commercial) venison recovery operations; extensive deer necropsy; and increasing research and monitoring; the Foundation have identified a number of places where sika densities need to be significantly lowered to improve both conservation and hunting outcomes. In the process, the Foundation has also contributed to other conservation outcomes such as predator trapping, threatened species survey and management, and the maintenance of huts and tracks. It has also developed strong relationships with other stakeholders, which puts it in good stead to help initiate research and management that will mitigate localised sika overabundance and associated impacts on central North Island beech forests.

As a voluntary, not-for-profit organisation, the Foundation understands it will need to work collaboratively with a range of organisations to achieve a coordinated programme to reduce sika overabundance and impact in parts of the Kaimanawa and Kaweka Forest Parks. The KMBP that ran from 1996 to 2016 provides a useful base from which to learn and move forward towards an expanded programme that provides wider geographical coverage across the central North Island public conservation land within sika range.

Such a programme will need to be adequately resourced but until there is acceptance among key stakeholders as to what the programme might look like, it is hard to assess budget requirements.

However, such an approach would be based on some key principles that will need to be agreed by stakeholders.

Proposed Key Principles

Goal: The goal of this proposal is to set in place a collaborative, science-based research and adaptive management programme for sika in the central North Island that:

1. seeks to mitigate localised sika overabundance and the impact that high deer numbers have on beech canopy regeneration;
2. develops a viable, high-quality, lower-density sika hunting resource that permits beech canopy regeneration in those areas that have been impacted by high deer numbers;
3. has wide stakeholder support.

Collaborative: The Foundation understands that different stakeholders have different perspectives based on differing values for deer. Available control tools and their costs currently preclude eradication as a strategic management option for sika (or other introduced mammals) in such large areas. Moreover, eradication is not compatible with the proposed goal of a viable, high-quality, lower-density hunting resource that permits beech canopy regeneration. Therefore, this document is premised on the belief that sika need to be actively managed and stakeholders with disparate views must find some acceptable middle ground to set up the opportunity for successful collaboration for mitigating sika overabundance and impact. The Foundation believes this is where potential win-win outcomes start to occur. If stakeholders can work in good faith in an open and transparent way, greater progress can be made than in situations where opposing parties fight entrenched, polarised debates over differing value judgements.

Science-based: This is where the science – including social science – becomes critical and why the involvement of credible scientific organisations, like Manaaki Whenua – Landcare Research Ltd, is so important. Good science is the foundation upon which sound, achievable management decisions are made.

The current knowledge gaps that will need scientific support within the proposed programme will need to focus on, but not be limited to:

- Identifying an agreed 'state' for the beech forest conservation assets of the Central North Island that can be practicably protected,
- Identifying the geographic locations where that 'state' is most at risk from sika impact,
- Determining what densities (absolute or indices) of sika are required to deliver the identified 'state' of those asset(s), i.e., density-impact functions,
- Determining the most suitable strategic and tactical options for reducing sika density;
- Identifying robust and affordable survey methods for monitoring changes in sika numbers and the responses of the asset(s) to changes in sika numbers,
- Implementing effective adaptive management programmes, as needed, that learn from earlier management intervention.

There are already data relating to some of these key questions from both the KMBP and the Foundation's own research and monitoring work. These include:

- Annual and seasonal home range and habitat use by sika,
- Efficacy of helicopter-based shooting to reduce sika density to levels that allow for mountain beech regeneration at sites that have experienced natural canopy collapse,

- A comparison between camera trap surveys and faecal pellet counts for indexing the abundance of sika,
- Changes in the demographics and dynamics of the sika herd as a result of various deer harvest regimes.

Adaptive Approach: We acknowledge a level of uncertainty related to managing sika overabundance and impact, although we note the KMBP provides valuable information to build on. An 'adaptive management' approach will allow for further learning and ongoing improvement to reduce current uncertainty. As the proposed programme grows, it is anticipated that a better understanding of current sika-beech systems will allow management refinements, which may include research on additional density–impact relationships and better prioritisation of areas in need of management in parts of the Kaimanawa and Kaweka Forest Parks. Robust adaptive management will help the programme achieve the best possible outcomes for both conservation and hunting and contribute substantially to the management of deer impacts elsewhere in New Zealand.

Initially, it is envisaged that such an adaptive approach will focus on the protection of the beech forest canopy at key sites where canopy regeneration failure has been identified. This is anticipated to be an initial priority for three reasons:

- Firstly, ensuring regeneration of beech forest following natural canopy collapse is a key component of ecosystem integrity in central North Island forests.
- Secondly, the impact of sika on mountain beech regeneration has been comparatively well-studied in the Kaweka Ranges, where mountain beech regeneration was achieved at many sites.
- Thirdly, data from the KMBP suggest it is achievable to reduce sika numbers to a level that permits both regeneration of mountain beech and a healthy, viable hunting resource.

Ideally, beech canopy closure should occur within a few decades of natural canopy collapse across both Forest Parks – although this could be affected by unforeseen natural processes, such as those related to climate. Knowledge and experience gained from the KMBP suggest that regeneration of mountain beech can be achieved at about six sika/km² in the Kaweka Ranges. This relationship may not hold for all areas, especially where silver beech - which is more palatable to sika deer - is the dominant canopy species. However, it provides a starting point for an adaptive management programme. It will be important to test this relationship at other geographic locations and for other beech species. For example, the Waipakihi Valley in western Kaimanawa Forest Park where red/silver beech forest has recently died from what is believed to be drought stress (although this needs to be assessed as part of the research programme), and in the Rangitikei Remote Experience Zone of Kaimanawa Forest Park where mountain beech collapse has also started. Sika in the Rangitikei are some of the oldest (in terms of average age), smallest (in terms of carcass weights) and poorest condition deer in the central North Island.

Other floristic components of beech forest such as broadleaf, fuchsia, large-leaved *Coprosma* and five-finger, while still present at sites out of the browse tier (epiphytes, bluffs, steep stream banks) across the central North Island, are virtually absent in the wider forest understory. Whether these assets can form an increasing component of central North Island beech forests in the future; whether sika densities can be reduced and maintained to the necessary levels to achieve that; and whether those sika densities would provide a viable hunting resource are more complex, longer-term challenges that will need to be investigated. Such outcomes would likely also involve managing other factors such as possums, introduced mammalian predators, and understanding nutrient availability.

Such outcomes, therefore, are unlikely to be achievable, affordable or acceptable at a landscape scale, so intensive localised management at high value sites may need to be explored (for example, at Balls Clearing Reserve in Eastern Kaweka).

Strategies and Tools

As mentioned, eradication is currently not achievable with available tools and funding but also due to a lack of buy-in by many stakeholders. It also does not allow for the vision of the Foundation - *“a healthy sika hunting resource, living in resilient natural habitats, valued by stakeholders”*. Therefore, the Foundation does not consider eradication as a viable strategy in this proposal. Another strategy is to ‘do nothing’. The Foundation considers this strategy unacceptable based on the impacts of localised sika overabundance on conservation assets and for animal welfare and ethical reasons. In the Foundation’s opinion, the only viable management strategy for mitigating unacceptable impacts of sika is ongoing, sustained input, with subsequent adaptive management, as required.

In assessing and developing management regimes to reduce (and maintain) sika (and potentially other introduced mammal) densities below thresholds at which they cause unacceptable damage to defined conservation assets, the programme will need to be mindful of social license to operate, as well as the effectiveness, technical and economic implications of tool selection.

Consistent with the KMBP, the Foundation proposes a range of management tools, which it believes will be acceptable to the widest range of stakeholders. These are listed in priority order:

- Enhanced recreational hunter access for harvest of meat animals, especially incentivising female harvest, by opening up access to remote sites where hunting pressure has been very low (e.g., Rangitikei Remote Experience Zone). The Foundation acknowledges that the sika herd may require initial knockdown at some sites - especially of females - using other methods before recreational hunters can contribute effectively to the management of sika densities. It also acknowledges that the poor body condition of sika females in some areas may negate recreational hunters as a viable control method until sika body condition, and therefore the quality of their meat, improves.
- Professional ground-based hunters with indicating dogs. This will generally be culling-to-waste in those areas with the highest deer densities. It should be noted that targeting female sika will have the most impact on overabundance, while still allowing recreational hunters access to male sika, especially during the rut period when most stags are shot. It should be noted that the more nomadic lifestyles of male sika means males often retain better body condition than the more sedentary female sika.
- Helicopter-based culling-to-waste. Recovery of venison from culled animals is always preferred where this is possible, however this is unlikely to be economically viable for sika due to their small body size and the dense habitats they generally occupy. The recovery of some better conditioned sika carcasses might be possible under some 'social' arrangement with welfare agencies to feed needy families (as has been done by the Fiordland Wapiti Foundation), or for supply to marae, but this would need heavy subsidisation.

It should be noted that the use of Commercial Wild Animal Recovery Operations (WARO) is not a favoured approach. WARO is unlikely to be a viable tool as the required strategy must be ongoing, sustained input, rather than relying on the boom-and-bust cycles of a commodity price

and international exchange rate driven industry. WARO would also primarily target males for their higher body weights and seasonal velvet, reducing its value in managing overabundance and putting this method in greater conflict with recreational hunting.

Should the approaches listed above not achieve desired outcomes, the programme will be reviewed, tools adapted and/or other potential options investigated at that time.

Priority Areas

A number of locations have been identified as requiring significant sika density reductions, based on forest data collected by DOC and/or herd demographic/deer condition monitoring undertaken by the Foundation. These include:

- Rangitikei Remote Experience Zone, Kaimanawa Forest Park;
- Upper Waipakihi Valley, Kaimanawa Forest Park;
- Upper Oamaru River, Kaimanawa Forest Park;
- Still to be assessed parts of Kaweka Forest Park.

Closing Comments

The Foundation is confident that such a Proposal will achieve wide support from hunting groups. Hunting groups are also prepared to contribute to resourcing such a programme, in terms of highly-skilled, back-country labour, local knowledge and funding. This will allow the programme to be implemented with reduced political conflict compared to that experienced from similar programmes, e.g., managing Tahr in the Southern Alps.

Hunters need healthy, sustainable forests to have healthy deer and sustainable hunting. While healthy deer reflect habitat condition that provides for their needs, that is not to say healthy deer will not still have some impact on the habitat they occupy. The relationship between natural habitats and introduced game animals in New Zealand is highly complex. Deer impacts are not only spatial (in terms of location) but temporal (incremental, or changing seasonally and/or annually) reflecting both present deer density and the history of various agents of ecological change (including deer, possums, rats and stoats) at specific sites.

There will always be impacts associated with deer presence in 'natural' and production landscapes, irrespective of their density. However, impacts must be measurable in relation to defined assets and deer then managed to a level where their impact is considered acceptable. This will always result in the need for some form of compromise between stakeholders with disparate views and values towards introduced deer on public conservation land. DOC have already invested in deer management in some areas. However, for a large proportion of public conservation land, there has been no investment under DOC's current Deer Policy Statement. In some places, the status quo that has resulted from that lack of investment is now critical. The Foundation argues that a well-planned and adaptive management programme allows an opportunity for stakeholders to explore win-win outcomes in an informed way, to change the status quo in places like the Kaimanawa and Kaweka Forest Parks. Given the current trend of increasing deer numbers across New Zealand it is critical that a pragmatic solution is found to this problem as soon as possible.

Timeframe

Consultation over this conceptual proposal will occur from February to June 2021. Following feedback from stakeholders, a more detailed operational plan will be developed that will allow implementation, in concert with the "Te Ara Ki Mua – The Path Ahead - Deer in Aotearoa" Project.

DRAFT for Consultation