



NZDA

New Zealand Deerstalkers Association

**Department of Conservation – Land
Information New Zealand: Long-Term
Insights Briefing Consultation**

16 January 2023

**Written submission to the Department of Conservation
and Land Information New Zealand**

To: Department of Conservation and Land Information NZ

Attention: Long Term Insights Brief

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Date: 16 January 2023

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BACKGROUND

1. This submission is made on behalf of over 10,000 members of the New Zealand Deerstalkers Association, our 28,000 supporters and the estimated 85,000 recreational big-game hunters in New Zealand.
2. As New Zealand's representative body for deerstalking and big game hunting NZDA have a particular interest in conservation matters and any policies which may have an impact on public access, particularly for recreational activities such as hunting.
3. We firmly believe in sound and reasonable conservation policies that support New Zealander's rights to freely access and enjoy the outdoors. The NZDA and its members are strong advocates for the recreational value of our conservation land.

4. The NZDA recognises the need to protect conservation land and all flora and fauna that is culturally, environmentally, historically and recreationally valuable to New Zealanders. It and its members are actively involved in protecting and managing our conservation land, whether big game animal management, ongoing regional conservation projects such as pest eradication and native tree planting, or hut and track restoration/management.
5. We affirm our right to recreationally enjoy nature.
6. We support a Long Term Insights Brief (LTIB) that facilitates strong conservation outcomes, provides open-source data and information for the benefit of public use, encourages debate on methods to reverse the biodiversity crisis, enhances public recreational pursuits, and ensures future rights to recreationally enjoy the area are not compromised by commercial exploitation or reduced public access.

INTRODUCTION

7. NZDA has considered the guiding questions listed on page 35 of the discussion document and have used these to inform our submissions below.
8. This submission is broken down by category (information technology and biotechnology) and provides NZDA's views on how these tools can be used to promote biodiversity, be integrated into community-led conservation, be linked with international precedent, as well as be used to demonstrate New Zealand leadership.
9. We have also considered the issues of social licence and community trust, in addition to the role that government, iwi and community groups should respectively play in the adoption of new technologies, the importance of

engagement with communities and community leadership, and funding and resourcing issues.

10. Generally, NZDA is supportive of innovation and the adoption of better technologies that can foster strong conservation outcomes and that allow for continued recreational access to the New Zealand conservation estate. We are strong advocates for community-led conservation and public engagement on all issues relating to conservation management. We support the three topics but note our concerns that are outlined below in relation to funding and support for community groups, the use of biotechnologies for conservation management and the importance of equitable access to and input into data systems that will be used to inform conservation policy and activities.

INFORMATION TECHNOLOGY

BACKGROUND

11. NZDA is supportive of developing innovative and data driven solutions to the biodiversity crisis. We note the documented issues facing management of our biodiversity, for example, particularly the challenges that we face in protecting our endemic species such as the kea on a cost effective and landscape scale, or managing the Himalayan tahr herd in the Southern Alps in accordance with the relevant plan.

12. Publicly accessible scientific databases will assist community-led conservation efforts by allowing community groups such as NZDA branches to make their conservation efforts more efficient. LINZ' public topographical maps data are a good example.

13. However, we note our concerns regarding oversight, transparency and costs. We also note the importance of using robust, reliable and valid methods to

gather data and that all methods must be available for criticism and comment by the public.

14. NZDA also recommends that any data gathering activities, particularly where it relates to individuals must be done in a way that ensures privacy rights are respected.

USE OF SATELLITE AND DRONE IMAGERY FOR GAME ANIMAL MANAGEMENT

15. We submit that satellite and drone imagery could be particularly useful for game animal management and in allowing for more hunter-led management.

16. The current framework for the management of wild game animals is Te Ara Ki Mua which lists pigs, deer, tahr and chamois as valued introduced species for management whereas goats fall under the Wild Animal Control Act as a wild animal and are to be controlled.

17. A key opportunity for hunter and government collaboration in the management of wild animals is through supporting hunter-led management across public land. A core issue with hunter-led management programmes is ensuring the efficient use of resources and targeting the appropriate animals for management.

18. Satellite and drone imagery provide an opportunity for the Department of Conservation and LINZ to gather information on the location, demographics and characteristics of wild animal herds which could be leveraged by, and shared with, local hunting groups such as the NZDA to lead hunter-led programmes in their surrounding backcountry.

19. There is already a strong basis for the use of aerial imagery in game animal management and pest control. For example, see the successful use of drone

technology in the targeting of possums by Taranki Mounga.¹ Further examples of international applications include the recent project run in New Caledonia reported on by Romain et al.²

20. NZDA is supportive of the use of aerial imagery to support hunter-led game animal management across New Zealand. Potential opportunities for use include in the surveying of Tahr, Sika and Wapiti populations, in conjunction with the Tahr, Sika and Fiordland Wapiti Foundations. Furthermore, research projects such as that undertaken by NZDA and Boffa Miskel in the Rakaia catchment area could benefit from the use of innovative aerial and satellite imagery tools.³

21. Despite our support, we note that these tools cannot be seen as a replacement for other management methods such as ground-based surveying and should be used to support on-going nature and human based conservation efforts.

22. NZDA firmly supports the place for recreation on the conservation estate. Technological innovation must not be used as a vehicle to reduce public access or enjoyment of the backcountry. In other words, we see these tools as a means of improving the efficiency and reach of community-led conservation (such as hunter management) and do not support any other purpose.

¹ Shaskey, Tara. 2019. "Drone and Infrared Technologies 'shifts the Game' in Taranaki Possum Eradication." Stuff NZ, May 7, 2019. <https://www.stuff.co.nz/taranaki-daily-news/news/112519807/drone-and-infrared-technologies-shifts-the-game-in-taranaki-possum-eradication>.

² Romain Alliod, Nasseur Cherif, Stanislaw Pagacz, and Julia Witczuk. 2022. "Étude de Faisabilité d'un Indice Aérien d'abondance Cerfs Par Drone Avec Capteur Thermique." PROTEGE, June. <https://protege.spc.int/en/news/invasive-species/study-automatic-detection-and-counting-deer-drone-night-thermal-sensor>

³ "Rakaia Management Project DEC 22 - MAY 23." 2022. *New Zealand Deerstalkers Association Incorporated* (blog). Winter 12, 2022. https://www.deerstalkers.org.nz/about-us/our-organisation/research-fund/rakaia-management-project-dec-22-may-23?bx_sender_conversion_id=27684383&utm_source=newsletter&utm_medium=mail&utm_campaign=nzda_treasurers_template_message.

ARTIFICIAL INTELLIGENCE AND GAME ANIMAL MANAGEMENT

23. NZDA is cautiously supportive of the use of artificial intelligence and data-driven science to support biodiversity protection. We see there may be benefits of artificial intelligence in the field of game animal management.
24. Key issues for efficient game animal management programmes include cost-management, accurately predicting the location of certain species, accessing challenging terrain and ensuring that the quality of animal herds is protected whilst still maintaining sustainable populations. NZDA is aware of the lack of data and insights held by DOC in respect to data of this nature and a solution is necessary.
25. NZDA strongly advocates for greater use of hunter-led management initiatives. Successful examples include the Lake Sumner RHA Deer Management Project led by the Game Animal Council in collaboration with the Department of Conservation and which NZDA was a stakeholder.⁴
26. Emerging technologies, particularly AI and data-solutions present a clear opportunity for making hunter-led conservation more effective and efficient and therefore allowing for hunter-led management to play a greater role in the total basket of tools used by the Game Animal Council and the Department of Conservation.
27. NZDA is not aware of any current uses of AI to support recreational hunting in New Zealand or overseas. However, software used in applications such as *plantnet* could be altered to support the identification of appropriate animals for management programmes allowing for adequate population management

⁴ "Lake Sumner RHA Deer Management Project." 2022. Game Animal Council. May 2022. <https://nzgameanimalcouncil.org.nz/lake-sumner-rha-deer-management-project/>.

whilst also promoting better quality herds.⁵ For example, using AI to analyse an image against the Game Animal Council's Red Stag Ageing Guide to inform a user about the age and characteristics of a particular animal will allow for better conservation outcomes while promoting better herd quality.

28. Furthermore, AI software that can analyse and sort images submitted by the public to assist in the surveying of animal populations will promote citizen-science, supporting both better data gathering and greater public engagement with the backcountry.

GENETIC BIOTECHNOLOGY

29. We do acknowledge that genetic biotechnology is currently at the forefront of natural sciences. The emerging possibilities of its application to conservation science are still in their nascent stage. NZDA is only aware of few projects that use genetic biotechnologies to assist game animal management or wild large mammal control; those focusing on the identification of animal species based on environmental DNA samples.⁶

30. We are generally supportive of innovative tools to promote conservation outcomes, however, due to the relatively few practical examples of genetic technologies being used to assist game animal management we cannot provide extensive comments on their viability.

31. Our concerns are significant with the use of these technologies, particularly the potential consequences of using 'weaponised' gene-editing on a widespread

⁵ "PlantNet." 2015. 2015. <https://identify.plantnet.org/>.

⁶ For example, see (1) Ramón-Laca A, Gleeson D, Yockney I, Perry M, Nugent G, Forsyth DM (2014) Reliable Discrimination of 10 Ungulate Species Using High Resolution Melting Analysis of Faecal DNA. PLoS ONE 9(3): e92043. <https://doi.org/10.1371/journal.pone.0092043>; and (2) Gault, Amy. 2022. "Fishing for Goats around Te Papakura o Taranaki." Wilderlab. Winter 1, 2022. <https://www.wilderlab.co.nz/blog/fishing-for-goats-around-te-papakura-o-taranaki>.

and largely uncontrollable scale. While gene-editing provides a potential new avenue to support pest control operations for animals such as wasps, possums and rats, we strongly submit that the methods must be carefully reviewed and trialled in small and controlled areas before any possibility of widespread use is considered. The government has a long history of making intervention decisions that had long term detrimental and un-intended consequences. Solutions can become a problem.

32. Furthermore, the decision-making process for the use of gene-editing must be centred on community and iwi engagement. As with all technologies discussed, the emphasis must be placed on supporting local and community-led conservation initiatives and technology should only be used as a means of facilitating more efficient and effective initiatives as opposed to replacing those already under way.

33. Despite this, NZDA would be interested in how genetic technologies could be used to replace or limit the use of toxins such as 1080. We note that 1080 is particularly harmful to the recreational hunting community as it can decimate game animal herds and prevents hunters from providing food for their families and communities, and also limited any commercial use of meat products for long periods of time. The potential for genomics to support the design of more effective deer repellent and the possible use of gene-editing to support the eradication of pests such as possums means NZDA is open to engaging in debate on the issue.

34. Notwithstanding, we categorically oppose the use of gene-editing in relation to valued introduced species, namely deer, tahr, chamois and wild pigs. It is not socially or culturally compatible for gene-editing to be used for game animal species.

OTHER MATTERS

ARE THERE WAYS YOU COULD USE THESE TOOLS AT AN IWI OR COMMUNITY LEVEL?

35. As described above, NZDA could use these tools, particularly drone imagery or updated satellite imagery, to better lead hunter-led management programmes. The operation would have to be supported by DOC, either financially or practically by facilitating access to drones and drone-imagery to inform NZDA branches' management approach in different areas.

36. NZDA can also see potential avenues for the use of AI to be used to support citizen science in the hunting community. Applications that can use photos to identify species by footprint/tracks, droppings or images of an animal could be used to support more effective game animal management.

WHAT AREAS OF BIODIVERSITY COULD AOTEAROA NEW ZEALAND PROVIDE GLOBAL LEADERSHIP IN?

37. New Zealand has one of the most unique natural environments with a range of ecosystems condensed into a relatively small area. New Zealand also hosts some of the most diverse and unique endemic fauna and flora. Moreover, Kiwis have the privilege of having access to approximately 30% of the country's total land area through the conservation estate. Public conservation land is one of the greatest treasures valued by Kiwis for its great recreation value, this is particularly true for the hunting community who also rely on public conservation land for food, and cultural and heritage purposes in addition to general recreation.

38. New Zealand has the opportunity to demonstrate global leadership in its management of the conservation estate for the benefit of public and country as a whole. Global leadership in the use of modern technology such as satellite and drone imagery will allow New Zealand to demonstrate how innovation can be used to improve how we co-exist and thrive within our natural world.
39. Hunter-led management facilitated by remote sensing will allow more New Zealanders to get involved with hunting will provide for more efficient use of resources allocated to game animal management and will allow us to provide a precedent-setting framework for other countries to use for their own game animal management needs.

BUILDING SOCIAL LICENCE, CULTURAL LICENCE AND TRUST TO SUPPORT THE SAFE AND EFFECTIVE USE OF EMERGING TECHNOLOGIES

40. The key to building social and cultural licence and trust with the use of emerging technologies is to ensure there is continuous iwi and community engagement and that decision-making on the uses of the technology are not vested solely in central government.
41. Furthermore, it is essential to ensuring communities such as the recreational hunting sector are engaged with and that technologies are developed and implemented to support initiatives they are undertaking as opposed to intervening with community-led work.
42. For example, use(s) of emerging technologies that are likely to damage trust and go against any social licence include the use of satellite imagery and remote sensing to target potential trophy animals in valued hunting areas, and the use of genomic editing to alter native species or introduced species (even if there are potential benefits such as improved immunity to toxins used in pest

control operations). The main issues are that they will, or have the potential to, significantly alter the ways in which the community and iwi engage with the natural world and conservation land.

43. Therefore, NZDA submits that the government must be careful to ensure continuous and effective engagement with community groups and iwi, that decision-making power is vested in the local community and users of land, and that emerging technologies are used to enhance the public experience of nature through supporting community-led conservation efforts as opposed to altering, restricting or imposing on the ways in which the public engage with the natural world.

GOVERNMENT, COMMUNITY GROUPS AND IWI IN BIODIVERSITY PROTECTION

44. As we have emphasised throughout this submission, NZDA wants to see community-led conservation management. Whilst government has a responsibility to provide oversight, support and funding, the responsibility and decision-making power should be vested with the local community and users of the conservation estate. This is particularly important where proposals could result in restrictions to recreational and public access.

45. We strongly submit that biodiversity across New Zealand must be viewed in the context of current activities on public land and should aim to foster a sustainable cycle where recreational and cultural uses are in balance with natural processes. This also links directly with our above submission on building community trust and social licence to develop innovative solutions to the biodiversity crisis – i.e. that the government’s role is to facilitate and support the public’s place within the conservation estate and the public’s role in reversing the biodiversity crisis.

CONCLUSION

46. NZDA is tentatively supportive of using emerging technologies to improve conservation outcomes. Our members are some of the most passionate and frequent users of the conservation estate and have deep recreational, cultural and social links with the flora and fauna native to New Zealand.
47. We support the general question and topics for the LTIB and look forward to collaborating with the Department, the Game Animal Council and others on finding ways to improve biodiversity outcomes while protecting public access to conservation land.
48. Our chief concerns in relation to the use of information technologies are that databases must be open access, methodologies must be robust, reliable and valid, and privacy rights must be respected. We also emphasise the need for data-solutions to be designed with the user's needs in mind. In other words, data-solutions must support and facilitate community and iwi-led conservation initiatives and not replace them with government-led ones.
49. Our chief concerns in relation to genetic biotechnology centre on the lack of scientific basis for the wide-spread use of gene-editing or other tools in a conservation setting. The risk of unintended consequences is great. Any technologies must be tested thoroughly, open to criticism and comment by the public and decision-making about the use of the technologies must be vested with the community.
50. In summary, we are hopeful that further debate around the use of emerging technologies for the purpose of reversing the biodiversity crisis will lead to more efficient and effective community-led conservation management initiatives, a more sustainable and healthier natural environment and therefore

even better cultural, recreational and social opportunities for kiwis across public land.

51. We note NZDA would like to attend any further workshops on this topic.