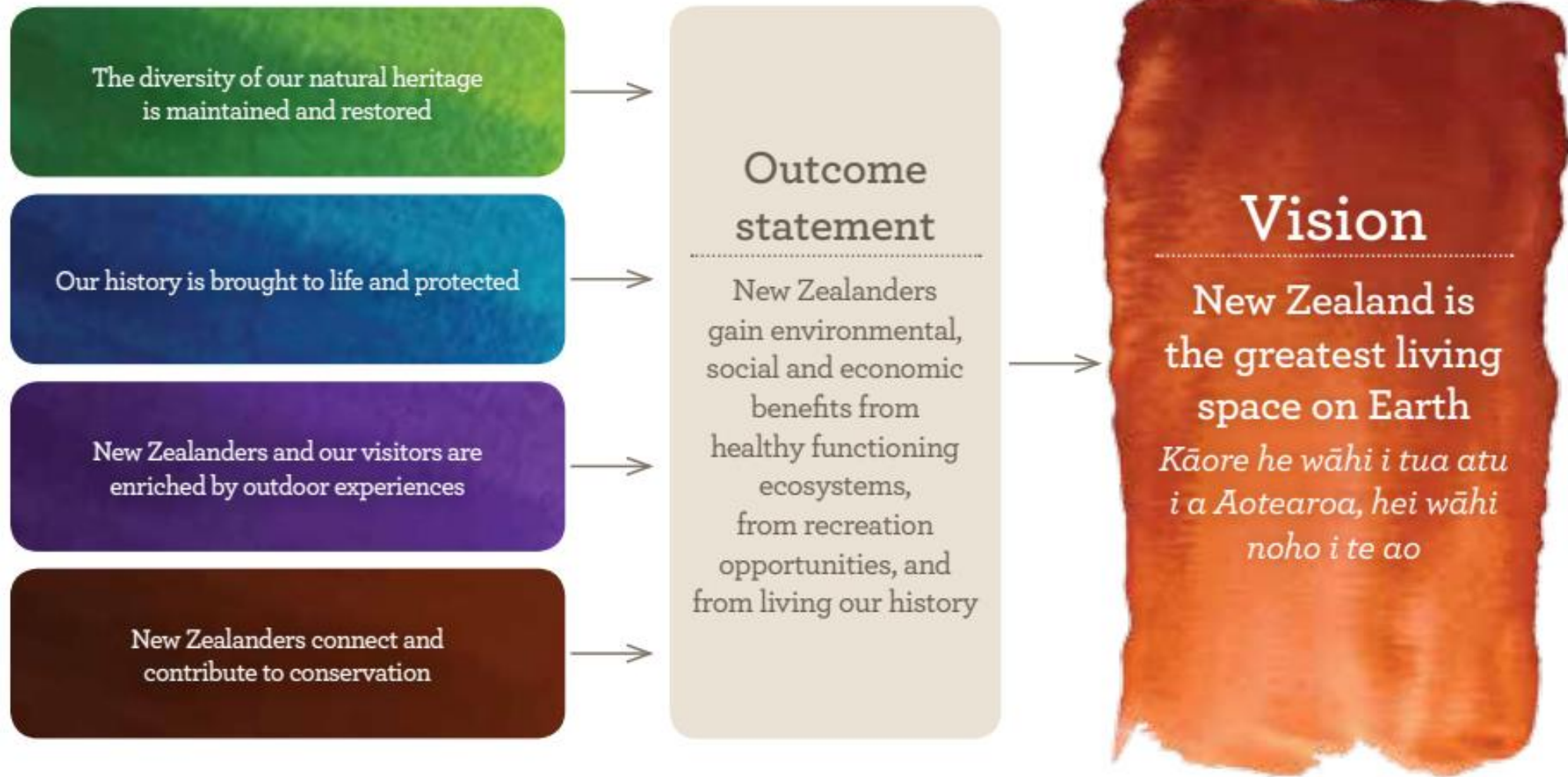


DOC submission:  
APP203875: to import and  
release 2 wasp parasitoids

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# DOC outcomes (Statement of Intent 2016-20)



# DOC's goals for biodiversity

DOC's high-level biodiversity goals, from the 2018 Annual Report:

- Indigenous dominance – ecological processes are natural
- Species occupancy – the species present are the ones you would expect naturally
- Ecosystem representation – the full range of ecosystems is protected somewhere





# Wasp impacts

- *Vespula* wasps invade both native and human-influenced ecosystems
- Interfere with indigenous dominance and species occupancy, and with natural processes (food webs; nutrient cycling)
- They severely impact native ecosystems by:
  - Preying on native invertebrates and small vertebrates
  - Depleting nectar and honeydew resources
  - Outcompeting native insectivores and nectar feeders

# Biodiversity impacts (cont.)

- These impacts are particularly severe in the honeydew beech forests of the northern South Island, but also occur elsewhere
- In beech forests densities reached are so high that the standing crop of invertebrate prey is completely removed, and for example, no caterpillars reach maturity at the height of the wasp season

# DOC's non-biological intermediate outcomes

- Our history is brought to life and protected
- New Zealanders and our visitors are enriched by outdoor experiences
- New Zealanders connect and contribute to conservation



# Human impacts on conservation land

Wasps hinder achievement of all DOC's intermediate outcomes:

- Wasp stings can be life threatening to visitors with allergies
- High-density wasp populations interfere with outdoor recreation and engagement, repel visitors
- Interfere with enjoyment of tourists at natural sites; at worst exclude tourists from the sites

# Benefits of parasitoids

- Weaken or kill wasp nests by the predation of larvae on wasp larvae and pupae
- Reduce abundance and therefore impact
- Reduce investment of surviving nests in reproduction, therefore have multi-year impact
- Self-replicating and self-spreading, unlike highly labour-intensive chemical control
- Don't wait until wasps are already at high abundance and causing damage to have effect (unlike fiprinol-based chemical control)

# Extremely low risk

- DOC would normally request intensive host testing on NZ species related to target host (and did so in the early stages of this study when a wider range of parasitoid species was considered)
- However, in this case this is not necessary because:
  - No native species are closely related to the target
  - No native species have similar social structure and nesting behaviour (closest are native ants)
  - No native species produce wood-pulp-based nests
  - *Polistes* paper wasps do produce wood-pulp-based nests, but are also an invasive pest, so not of concern
  - Studies in the native range show both parasitoids are extremely host specific even with other similar wasps and hornets available

DOC is therefore strongly supportive of this application