

South Georgia Habitat Restoration Project, Phase 4

**Environmental Impact Assessment for
the use of rodent detection dogs on
South Georgia**

South Georgia Heritage Trust

December 2016



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1 INTRODUCTION

1.1 General overview of the South Georgia Habitat Restoration Project, Phase 4

The South Georgia Habitat Restoration (SGHR) Project aims to remove rodents from South Georgia. During phases 1, 2 and 3 of the operation in 2011, 2013 and 2015, respectively, bait was distributed over all rodent-infested areas.

Having attempted the eradication of rodents in Phases 1-3, it is important to determine if eradication was indeed achieved. With no rodent sign for more than two years after baiting, despite vigilance, the Phase 1 area was declared rodent free in June 2013. Considerable search effort has been invested in the very large Phase 2 area since baiting was concluded, including a one-month survey expedition in 2014, one year after treatment. No rodent presence has been discovered to date, but many Phase 2 areas have yet to be inspected thoroughly. No systematic search for surviving rodents in the Phase 3 area, baited in early 2015, has yet been attempted.

Phase 4 of the project is to be a comprehensive survey of all Phase 2 and Phase 3 areas, a combined area of 940 km², with the objective of determining whether the eradication operation was a partial or complete success. To achieve the survey's objective, the team must have access to all parts of the baited areas and must search all habitats, focussing especially on those that would be most attractive to any surviving rodents.

International best practice dictates that attempts to detect surviving rodents after an eradication effort should employ the use of a variety of detection methods, including trained dogs (see Appendix 1). Expertise in the training and deployment of rodent dogs on sub-Antarctic islands does not exist in the UK. The New Zealand Department of Conservation has run the world's largest Conservation Dogs programme for many years. Dogs and handlers certified by this programme are trained specifically to avoid environmental impact while carrying out their work, and they have an exceptional track record in this regard, with no damaging wildlife impacts reported during any operation. SGHT invited bids for the Phase 4 dog work from a number of handlers trained and certified under this programme, and selected two of the most experienced (Appendix 2).

A team of six to eight staff, including two dog handlers with three dogs, will undertake the Phase 4 survey. They will travel to and from South Georgia aboard the MV *Hans Hansson* and work from this platform for some six weeks, visiting all areas treated during Phases 2 and 3. Further logistical details are given in the SGHT HR Project survey expedition 2017/18 Operational Plan (SGHT, 2016)

1.2 Use of dogs for detecting rodents

Dogs have been used for more than a century within conservation and eradication projects. Properly trained and professionally handled dogs are usually highly effective in detecting and locating target species. The target may be threatened birds such as Kiwi or Kakapo, for conservation projects, or invasive species such as rats or rabbits for eradication work.

Certified rodent dogs are trained to locate sign or scent of live or dead rodents. They detect, but do not kill, the target animals. They can be used during or after an eradication programme,

as part of biosecurity surveillance and equipment checking, and as a measure following a suspected invasion or reinvasion.

Rodent detecting dogs are now routinely used for biosecurity and monitoring for invasives programmes, especially in Australasia. Their deployment is viewed as part of best practice by, for example, the IEAG (Island Eradication Advisory Group); Appendix 1. Trained dogs have been successfully used in a number of sub-Antarctic situations. Recently, as part of the Macquarie Island Pest Eradication Programme, 12 dogs spent 24 months on the island to determine whether rodents and rabbits had been eradicated (Appendix 3). The relevant environmental impact assessment of that operation is section 5.3.3 (Pp 57-58) of DPIPWE (2009), reproduced below as Appendix 4.

1.3 Govt. of South George and South Sandwich Islands (GSGSSI) legislation and permitting

The Wildlife and Protected Areas Ordinance 2011 (as amended, 2013) gives comprehensive protection to the flora and fauna of South Georgia including wild birds, native invertebrates, native plants and their habitats. The introduction of non-native species or intentional or reckless transfer within the Territory of non-native species is prohibited.

As dogs are non-native and have the potential to cause impacts on fauna and flora, it is a requirement that a permit is obtained from the Commissioner for their deployment.

1.4 Aim and scope of the assessment

The aim of this assessment is to identify the potential risks to the South Georgia environment of using rodent detection dogs on South Georgia and set out practical measures for eliminating or minimising these risks.

This assessment does not cover environmental evaluation of other operational activities during the Phase 4 monitoring expedition. GSGSSI has stated that no other activities during the expedition require an EIA because they are the same as practices as were already permitted in earlier work by SGHT.

2 OPERATIONAL CONSIDERATIONS

2.1 Dog and handler background and training

Two experienced dog handlers and three rodent detection dogs will be used during Phase 4 of the SGHR project to complement the deployment of static detection devices such as wax tags, chew boards, gnaw sticks and camera traps (SGHT, 2016).

Each handler will be responsible for their own dog(s) and has a relationship built up throughout their dog's life. The dogs are selected for their calm temperament and are trained to ignore non-target species.

The New Zealand Department of Conservation's (DOC) dedicated Conservation Dogs Programme provides dog and handler training advice and certification, systems development

and improvement and a breeding programme and operational support for predator detection dogs.

The handlers and dogs used during Phase 4 monitoring will hold certificates under the NZ DOC system and will follow the DOC Conservation Dog/Handler Team Standard Operating Procedure, where appropriate. The certification evaluates dog obedience, handler skills, non-target aversion (including avian aversion, toxins & traps) and target specificity (DOC, 2013).

The handlers will also be trained to run each other's dogs in order to allow for some flexibility in case of illness or injury.

2.2 Animal health

DOC certification includes requirements for dog welfare and etiquette and dog health. Vaccination requirements are as follows:

- Canine parvovirus type 2 virus;
- Canine distemper virus;
- Canine adenovirus type 2;
- Canine parainfluenza;
- *Leptospira interrogans* vars *icterohaemorrhagiae*; *copenhageni*; *pomona* and *hardjo*
- Bordetella bronchiseptica

Dogs are also treated for endoparasites, roundworm (nematode) and tapeworm (cestode) at 3-monthly intervals. Ectoparasites including fleas, ticks and ear mites are treated as necessary according to product instructions.

The dogs will also meet any additional vaccination and health requirements for travel and transit en route to South Georgia.

A veterinary record card is kept for each dog with details of all examinations, vaccinations and treatment. One of the dog handlers has worked as a veterinary nurse and therefore has experience of caring for and administering treatment to dogs.

2.3 Transport and accommodation

The handlers and dogs will fly from New Zealand via Chile to the Falkland Islands, where they will embark on the *Hans Hansson*.

The dogs will require pet passports and will need to have results of clinical examination by a veterinarian within 10 days prior to boarding to indicate no clinical signs of infectious or parasitic diseases as well as proof of de-worming treatments and either proof of rabies vaccination or a valuation analysis of neutralizing antibodies against rabies virus. The dogs will travel in cages compliant with International Air Transport Association (IATA) regulations. New Zealand has, incidentally, always been free of rabies.

All quarantine requirements en route, and for entering the Falklands Islands and onward travel to South Georgia, will be met.

At the end of the survey expedition the dogs will be transported back to New Zealand via the Falklands, again in compliance with quarantine regulations.

2.4 Field procedures

General field procedures, including emergency procedures, will be as described in the Operational Plan. Emergency dog food (processed, not raw) and medication will be taken ashore in secure containers at each site.

The dogs and handlers will be transported ashore using inflatables. Dogs will be restrained by their handlers. The dogs always wear a muzzle while working in any area that may contain ground-dwelling birds or any other species of concern and will always be within the vicinity of a handler when on South Georgia. Dogs are trained to be absolutely obedient to their handlers.

At the first shore landing, initial familiarisation training procedures will take place. This will include the deployment of target scents for the dogs to find. The target scent will originate from thawed laboratory rodents which will be transported in frozen form aboard the *Hans Hansson* and thawed one-by-one as necessary. Laboratory rats are bred in clean conditions specifically as food for pets and pose no disease risk.

The handlers will follow planned routes at each site, focussing on areas of preferred rat habitat, as explained in the OP.

Each handler will carry a GPS unit, and their dog(s) will work in close proximity. Each dog has a way of indicating to its handler whether it has found something relating to the target species (for example, scratching on the ground). If a dog indicates a scent, then the handler will investigate.

In order to maintain the interest of the dogs during the searches, handlers will periodically deploy a target scent so that the dog is able to find it.

It is unlikely, but certainly possible, that a dog will detect 'old' scent - odour from carcasses or faeces two or more years after the rodent died. Detecting the scent of long-dead rodents provides positive reinforcement for the dogs and lets the handler know that the dogs are on task. The handler should be able to establish that it is just old scent relatively easily as it would normally be locatable to the source.

2.4.1 Whaling stations

Whaling stations represent preferred rodent habitat and must be thoroughly inspected. The stations are dilapidated and represent a H&S risk due to the state of the buildings and the presence of asbestos. The risk of picking up the propagules of invasive plants is unusually high in these areas, so special care must be taken to check dog fur and paws for contaminants after such visits (see below). A Government permit will be required for the necessary access, and appropriate PPE will be worn by people entering the restricted areas.

The dogs and handlers have experience of working in and around old buildings.

3 ENVIRONMENTAL IMPACTS AND PROPOSED MANAGEMENT

These are assessed, by topic, using the criteria below. The effect of mitigation measures, i.e. the impact of the activity after mitigation measures have been implemented, is gauged from analogous experience elsewhere, especially Macquarie Island (Appendices 1&2).

	Remotely possible	Possible	Likely	Highly probable	Virtual Certainty
Trivial, ephemeral impact	1	2	3	4	5
Minor, ephemeral impact in limited area	2	4	6	8	10
Moderate, recoverable impact	3	6	9	12	15
Major, recoverable impact	4	8	12	16	20
Major, permanent impact	5	16	24	32	40

Rating	Risk	Action
1-5	Negligible	No further action
6-8	Low	Further action as circumstances allow
9-12	Medium	Requires action; set timetable for improvements
13-16	High	Priority action; control as soon as possible
17-40	Unacceptable	Stop activity until risk reduced

3.1 Introduction or transfer of non-native species

What are Hazards?	What harm could occur <i>with no controls</i> ? What is the risk?	What control measures will be used? What is the residual risk (<i>with controls</i>)?
<p>Dogs have the capacity to transfer non-native plant or animal species to South Georgia via their paws, coats or faeces. These species may be able to establish themselves on the island and have impacts on native biodiversity.</p> <p>Around 40 non-native plant and 15 non-native invertebrates are already present on South Georgia. Dog handlers and dogs may be vectors for spreading seeds of introduced plants within South Georgia.</p>	<ul style="list-style-type: none"> Non-native plant species introduced or spread Non-native microfauna/disease introduced or spread <p>Risk factor = 16 High. Priority action.</p>	<ul style="list-style-type: none"> Dogs de-wormed prior to arrival in South Georgia Dogs treated for external parasites Dogs thoroughly inspected and washed between landings All field staff to be briefed on the need for checking and cleaning of clothing, equipment and dog coats and paws prior to arrival on South Georgia and between each landing. Government Biosecurity Protocols will be followed. Dogs will be handled during their journey and transit in the Falklands in a way which prevents them from eating any items (e.g. containing plant seeds) which could remain in their gut and be released to the environment once they are on South Georgia. Dogs will be washed with antibacterial, antifungal shampoo & brushed prior to landing on SG. Their coats will be inspected for any seeds etc. Dogs will be cleaned thoroughly between landings. Residual risk: subject to the above management actions, the risk is reduced to score 5: negligible.

This assessment comprises low likelihood of transfer through high certainty of managing this risk and of minimal potential adverse effects should any items elude the treatments, especially compared to the other natural and anthropogenic sources of immigrant propagules.

3.2 Introduction of parasites or disease

What are Hazards?	What harm could occur <i>with no controls</i> ? What is the risk?	What control measures will be used? What is the residual risk (<i>with controls</i>)?
Dog diseases such as distemper and leptospirosis can be transferred to wildlife as well as hookworm and external parasites.	<ul style="list-style-type: none"> Native fauna are infected with novel diseases and parasites <p>Risk factor = 16 High. Priority action.</p>	<ul style="list-style-type: none"> Dogs will be vaccinated prior to travel for parvovirus, distemper, adenovirus, parainfluenza, <i>Leptospira interrogans</i> vars. <i>icterohaemorrhagiae</i>; <i>copenhageni</i>; <i>pomona</i> and <i>hardjo</i> and Bordetella bronchiseptica Dogs will be treated for endo- and ectoparasites <p>Residual risk: subject to the above management actions, the risk is reduced to score 5; negligible.</p>

This assessment comprises low likelihood of faeces containing transmissible parasites/disease, very low likelihood of transmission to native wildlife (especially compared with other natural and anthropogenic sources and vectors) and as high certainty as is possible with limited analogue examples.

3.3 Vegetation and soil

What are Hazards?	What harm could occur <i>with no controls</i> ? What is the risk?	What control measures will be used? What is the residual risk (<i>with controls</i>)?
Dog handlers and dogs will need to have free access to areas of preferred rodent habitat. This may cause some trampling of vegetation. They may also indicate scent in rat burrows, or on rare occasions in bird burrows. This could result in some disturbance of the soil/scree surface as the handler may need to excavate some of the substrate to investigate.	<ul style="list-style-type: none"> Damage to sensitive vegetation Minor damage to soils <p>Risk factor = 10. Medium. Requires action.</p>	<p>The handlers and dogs are very experienced at working in areas with fragile vegetation and are aware of the need to reduce impacts on the environment. They will use measures to minimise damage to vegetation, soils and scree whilst searching for rodents including:</p> <ul style="list-style-type: none"> careful walking techniques avoidance of fragile vegetation where possible special care in densely burrowed areas to minimise burrow collapse if areas need investigating, soil/scree/vegetation will be removed carefully and replaced afterwards to the extent possible <p>Residual risk: Impacts will be very low and not significant, especially in the context of damage caused by fur seals. Residual score = 4; negligible.</p>

This assessment concludes high confidence in the improbability of any impact on plants, animals or substrates of any consequence at population, process or habitat levels.

3.4 Wildlife disturbance

What are Hazards?	What harm could occur <i>with no controls</i> ? What is the risk?	What control measures will be used? What is the residual risk (<i>with controls</i>)?
<p>Dog handlers will need to travel through or near seal and penguin colonies and may cause temporary disturbance. They may also cause some temporary disturbance to colonies of other seabirds. However, as the Manager of the Macquarie Island Pest Eradication Project indicates (see Appendix 3) there were never any adverse interactions when dogs were taken through penguin or seal colonies during that project.</p> <p>Dog handlers and dogs may work in areas of burrowing bird habitat, leading to an increased risk of burrow collapse. Occasionally, a dog may find rodent scent in a bird burrow as rats have been known to cohabit with burrowing birds although such scent is very unlikely to be detectable after two or more years. If this is the case, then the burrow would need to be investigated, which may result in the disturbance of individual birds.</p>	<ul style="list-style-type: none"> Native fauna is disturbed, possibly with losses in extreme circumstances <p>Risk factor = 6. Low. Further action as circumstances allow.</p>	<p>Rodent detection dogs are trained to ignore all non-target species and undergo continuous training and gain experience through their work. Two of the contracted dogs have previously worked around fur seals (and the third one will have done by the time of this trip). The dogs ignore the seals and if the seals charge the dog will just move away and return to its handler.</p> <ul style="list-style-type: none"> Minimise trampling around burrowing petrel colonies Ensure that dog handlers are aware of the location of vulnerable nesting areas and how to work in those areas to minimise impacts Where possible, check for rodents at a spot where a seal is situated without closely approaching the seal, just by walking the dog past on the downwind side - so not compromising on thoroughness of search (except where the seals are densely packed and there is no possible safe access). No certified rodent dog has ever caused damage to wildlife by breaking away from its handler, and none has ever been lost. However, in the extremely unlikely event that a dog breaks away and is not quickly located, all field staff will be summoned by radio to join the search until the animal is found. The Standard Operating Procedures of Conservation Dog/Handler teams is available from the NZ Govt Dept of Conservation website (DOC, 2013). Certificates for the dogs will be available for inspection at any time during fieldwork. <p>Residual risk: The experience of the dog handlers and training standards for these dogs as well as the management actions above should ensure that wildlife disturbance is kept to a minimum and that the risk of harm to native fauna is extremely low. Residual score =3; negligible.</p>

Even in potential worst-case scenarios, it is inconceivable (with high confidence) that a single trained dog could cause disturbance to wildlife that was more than transitory and certainly completely insignificant at population levels. Thus likelihood is low and severity very low. Some uncertainty may remain over interactions with fur seals, given their much high densities at South Georgia compared with other analogue sites but the low risks (in both frequency and intensity/severity) are likely greater for the dogs (and handlers) than for the wildlife.

4 MONITORING AND REPORTING

During the monitoring trip, progress will be reported to GSGSSI as required.

The dog handlers will prepare a report which will be included in the SGHT field report and will include information about all areas checked by the dogs, any incidents and recommendations.

5 SUMMARY CONCLUSIONS

It is clearly of crucial importance to identify any remaining rodents on South Georgia so that there is a possibility of eliminating them before they become irrevocably re-established and have the potential for further spread. The deployment of trained, certified rodent dogs greatly increases the probability that any surviving rodents will be detected during the SGHT survey expedition in the 2017/18 season.

Fortunately, the deployment of dogs in these circumstances is standard practice in New Zealand and Australia, and is monitored and advised upon by the world-renowned IEAG, whose advice has been sought and followed by SGHT throughout the South Georgia Habitat Restoration Project. Any negative impacts of deploying dogs in this survey will be minimised by the use of highly experienced dog handlers and well-trained dogs, and by following all biosecurity protocols and measures recommended in the current document.

The benefits of determining that the eradication of rodents from South Georgia has been successful will far outweigh any potential negative impacts of rodent detection dogs and their handlers. The research and consultation exercise carried out in preparation for this EIA demonstrates that any such impacts will be negligible.

SGHT believes it to be essential that the assessment of risk and environmental impact should be evidence based. There is a large body of expertise from post eradication projects using dogs, including many on islands, and involving extremely rare and vulnerable species. The closest analogue against which to judge risk and environmental impact on South Georgia is that provided by sub-Antarctic Macquarie Island. The comprehensive operation carried out by the Tasmanian and Australian Governments there indicated that there were no adverse interactions between trained dogs and wildlife, including the use of dogs in dense penguin and seal colonies. The time and effort spent using dogs on Macquarie is quantitatively set out in the letter attached at Appendix 3. In summary, all the evidence to date points to the fact that likely environmental impact, if it occurs at all, will be negligible.

6 REFERENCES

DOC, 2013. Department of Conservation, New Zealand Conservation Dog/Handler Team Standard Operating Procedure. <http://www.doc.govt.nz/Documents/science-and-technical/sops/dog-handlers/sop-conservation-doghandler-team.pdf> (last accessed 1 Sept 2016).

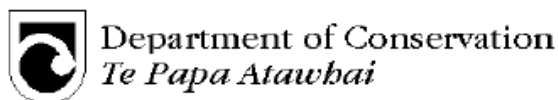
DPIPWE, 2009. Macquarie Island Pest Eradication Plan, Part C: Environmental Impact Statement. Dept Primary Industries, Parks, Water and Environment, Tasmania Government, Hobart.

GSGSSI, 2016. South Georgia Non-Native Plant Management Strategy (2016 – 2020). Government of South Georgia and the South Sandwich Islands. <http://www.gov.gs/docsarchive/environment/#tab-5>

SGHT, 2014. Environmental Impact Assessment for the eradication of rodents from the island of South Georgia.

SGHT, 2016. SGHT HR Project post-baiting survey expedition 2017/18; Operational Plan.

APPENDIX 1. MEMO FROM THE IEAG CHAIR (KEITH BROOME)



memo

To: Mike Richardson, South Georgia Heritage Trust
Cc.:
From: Island Eradication Advisory Group (IEAG)
Date: 24 August 2016

Subject: **RODENT DETECTION DOGS ON SOUTH GEORGIA**

Dear Mike,

You asked me to review the plan the SGHT has for deploying trained detector dogs on South Georgia as part of Phase 4 of the project. I have read the May 2016 document 'Environmental Impact Assessment for the use of rodent detection dogs on South Georgia' and compared it with the practices and protocols we use here in New Zealand on our SubAntarctic Islands, plus those I'm aware of in Australia which were applied to the Macquarie Island project.

I was both a member of the Steering Committee for the Macquarie Island eradication project and an Eradication Advisor on island during the aerial baiting and early rabbit hunting phase of that project. I also play a role on the advisory group for our Conservation Dogs programme which uses trained dogs for invasive predator detection, threatened wildlife management and an increasing range of island related biosecurity tasks. I note that you draw many of your protocols for this SG project from our conservation dog programme. So, in addition to my Island Eradication Advisory Group role, I am well familiar with the dog programme and have worked with the two handlers being contracted for this project for many years.

Post eradication monitoring is an important aspect of any eradication project including rodent eradications. I applaud the effort the SGHT is making to determine the true outcome of the project and the methods you propose to deploy are very consistent with what we would do ourselves in the same situation.

The use of trained dogs is a vital component of this work as they represent active searching for rodent scent in the most likely habitats, whereas the other methods deployed are purely passive and rely on a rodent interacting with them. We have always used a variety of complementary methods such as this in our own projects.

The other big advantage of dogs is that they enable the searching of important rodent habitat such as penguin colonies where other detection devices would be rendered useless from interference by the native wildlife. Dogs meeting our certification criteria have an excellent track record of posing no risk to non-target species and I have every confidence in the two handlers you have chosen for this work. They are both experts in their field and eminently capable of undertaking this work to the highest standard, provided they are empowered to work the dogs in all parts of the landscape that they deem necessary to have confidence in their findings.

The biosecurity precautions outlined in the EIA to prevent the dogs transmitting disease or spreading weeds or parasites is in keeping with our best practice and again I foresee no issues for concern as I know that both dog handlers are keenly aware of biosecurity risks and how to manage them.

I wish the team all the best in this work and hope they don't find anything!

Yours sincerely



Keith Broome
Chair, Island Eradication Advisory Group
Department of Conservation
New Zealand

APPENDIX 2. PROFILES OF CONTRACTED HANDLERS AND DOGS

Miriam Ritchie and Jane Tansell were among the first handlers to join New Zealand Department of Conservation's (DOC) predator detection dog program. They collectively have over 26 years' experience working with predator detector dogs, alongside native and endangered species. They have also worked directly with endangered species and therefore have an excellent understanding of the need for, and ways to achieve, avoidance of stress to native species.

Each of the dog handlers has over 10 years' experience with detection dogs. The dogs have been bred and trained by the handlers and by the time of the Phase 4 project, will have 1.5 (Ahu), 2.5 (Wai) and 3 (Will) years of experience in rodent detection.

Jane Tansell

Jane was one of the first dog handlers to join the New Zealand Department of Conservation's (DOC) predator dog program and has a range of dog experience including pest detector dog handler, protected species dog handler, training her own dogs, running dogs trained by others, dog team leader, dog certification.

She was employed by DOC for 10 years working with dogs in a range of remote locations, offshore islands and mountainous regions including islands and mainland areas and islands in Fiordland, islands in Marlborough Sounds and mainland South Westland (Haast Range).

During 2011-13, Jane worked on Macquarie Island as rabbit dog handler and then dog team leader (responsible for 5 handlers and 12 rabbit dogs) for the Tasmanian Parks and Wildlife Service.

More recently, Jane has worked on a self-employed basis as a rodent and mustelid dog handler and Fiordland dog certification officer. She has worked on Islands in the Wellington area and Marlborough Sounds detecting mustelids and on islands in Fordland detecting rodents. Work on Secretary Island require ascent of over 1000+ vertical metres per day.

Jane has also undertaken rodent monitoring with static devices (tracking tunnels, wax tags, chew cards, bait stations) throughout the past 16 years, including permanent tracking tunnel network establishment.

Jane trained and worked for a year as a veterinary nurse and would therefore be very comfortable administering any treatment the dogs may need under direction from a vet. Whilst working for two years on Macquarie she dealt with issues with phone / e-mail advice from a vet, assistance from the resident doctor and on one occasion vets visiting on a cruise ship.

- Other relevant training/certification:
- Current First Aid Certificate
- Day skipper certificate and small boat operation
- Avalanche 1 & Backcountry Avalanche Awareness Certificates & alpine experience
- Roped rescue training

Jane will work with her rodent dog Wai on South Georgia.

Wai



Wai is a young dog who has completed a season of fieldwork since he obtained full certification. In November 2017 he will be four years old, in the prime of life, with two and a half years work experience.

Wai was bred from Jane's mustelid detector dog bitch from a working farm dog and selected from the litter for his calm temperament and quietness around birds. His brother Will was selected for Miriam based on his quiet temperament. They were the softest two dogs in the litter – with good curiosity but easily commanded. Both pups grew up around free ranging poultry.

Wai has worked around burrowing seabirds, penguins and seals and shows no interest in them. He is also qualified to work around kakapo – of which there are only around 120 left. In his field test a kakapo ran directly at Wai and Wai remained completely steady. Wai has a strong drive to find rodents and is easily kept focused at home in between trips with finding rodents that try to cadge a free dinner from poultry and horse feed.

Wai has previously worked based on a boat during annual surveillance trips to the Fiordland Islands: Anchor, Chalky, Indian, Breaksea, Secretary, Bauza. Wai has also worked on incursion response trips to Indian and Breaksea Islands, accessing the islands by helicopter. Non-target species on these islands include burrowing seabirds, penguins, seals, kakapo, kiwi.

Miriam Ritchie

Miriam has worked as a dog handler since 2003, training and working at least 11 dogs during the past 13 years. She has 2 certified rodent dogs, a certified mustelid dog and a rodent dog in training who will be certified this winter. She has worked on most of New Zealand's rodent-free off-shore islands in post-eradication monitoring, annual surveillance or contingency work. She has worked on all the major rodent eradication projects in New Zealand since 2004.

She carries out annual rodent and mustelid surveillance and contingency work with her dogs around New Zealand. This includes rodent indexing, poisoning and trapping on island and mainland sites in post-eradication monitoring, surveillance and on-going control work using a wide array of monitoring techniques, toxins and traps.

Miriam advises on best practise methods of detection, prevention, and control of rodent invasion and mentors and assists other predator dog handlers nationally and internationally. She has been managing a team of 10 - 20+ predator and wild animal control (WAC) dogs plus pups for 10 years, as well as the DOC predator dog breeding programme (including dog husbandry, pup selection and early training) and certifying dog teams and handlers, conducting rodent dog efficacy trials and rat vs mouse detection identification trials.

Miriam has extensive experience working, keeping and conditioning dogs in remote places and extreme environments - off track, on islands, and on steep and unstable terrain, working from boats and helicopters. She has worked on sub-Antarctic Campbell Island carrying out rodent surveillance with a dog, tracking tunnels and traps. She has experience with dogs on the open ocean in both large and small vessels.

She has strong field/navigation and backcountry skills, basic rope work training and experience, outdoor First Aid Certificate, Boatmaster's Certificate, Marine Mammal Rescue training and experience. She is used to living and working in small teams in isolated environments from countless island work trips and is also comfortable working alone on remote and isolated islands.

Miriam has also worked on off-shore island restoration and weed control and mainland weed control, using both physical and chemical methods and in extreme terrain and also monitoring propagation and restorative planting.

Will

Will is a 2.5yrs old 7/8 fox terrier 1/8 border terrier, whose mother is a fully certified mustelid dog. His maternal grandparents and great grandparents were also good predator detection dogs and his father is a working farm dog. Will has been fully certified for a year and been to multiple islands of the Hen and Chickens group, Poor Knights, Sail Rock, 3 Kings Islands, Tiritiri Matangi, Mokoia, Hauturu Little Barrier. He has loads of big and small boat, helicopter and plane experience. Will has worked around burrowing seabirds, penguins and seals as well as endangered land birds such as takahe and kiwi and like all fully certified predator detection dogs is required to wear a muzzle as standard operating procedure. He would be 4 years old at the time of the South Georgia trip, with 3 years' work experience.



Ahu



Ahu is currently 1 year old, $\frac{3}{4}$ border terrier $\frac{1}{4}$ fox terrier and is the son of fully certified rodent dog Moss. Moss is an excellent rodent dog and Miriam has no doubt Ahu will be as good as his dad; his paternal grandparents are also good working dogs. Ahu is working towards full certification and showing great potential. He will be fully certified this winter (2016). Ahu would be 3 years old at the time of the trip to South Georgia, with a year and a half of work experience, including working around burrowing seabirds, seals and penguins.

APPENDIX 3. LETTER FROM THE MANAGER OF THE MACQUARIE ISLAND PEST ERADICATION PROJECT (KEITH SPRINGER)

16 Rinaldi Avenue
The Pines Beach
North Canterbury 7630
New Zealand

August 28th 2016

Subject: Use of pest detection dogs on Macquarie Island

Dear Tony,

In response to your enquiry about the use of pest detection dogs on Macquarie Island during the pest eradication project there, I can advise that we used 15 dogs in total over the course of the project, with dogs being used in the field continuously for about three years. The most dogs we had in operation on the island at one time was 11, a number that operated for about half of the 3-year project. The lowest number of dogs operating concurrently was eight, for a period of less than a year.

Dogs, with their handlers, spent 4-week periods in the field year-round, with 4-5 day breaks at the end of each month back at the station.

A large part of the dog training and certification assessments were focused on non-target aversion, as the island is a Tasmanian Nature Reserve and wildlife are fully protected, so we needed to ensure that native wildlife - seals, penguins and seabirds - were not at risk from the dogs during the course of the pest eradication fieldwork, during which time the dogs covered every accessible inch of the island numerous times. We used three breeds of dog - springer spaniels, labrador retrievers as rabbit detection dogs and terriers (fox and border cross) as rodent detection dogs. The rabbit detection dogs were trained to our own standards and owned by Tasmanian Parks and Wildlife Service, while the rodent detection dogs were trained to DOC certification standards and provided by their contracted handlers. Tas PWS accepted that the DOC certification met our requirements for rodent detection dogs, of which three were used on Macquarie Island for a full year (i.e. three dog-years on the island).

It was a testament to the training standards of the dogs, the certification process and the competence of the handlers that we had such a successful use of the dogs on Macquarie over a sustained and intensive 3-year project. Handlers were able to take their dogs through seal and penguin colonies and we had no issues with dogs interacting with these species. Initially the dogs wore muzzles, mostly to prevent any chance of eating bait or poisoned pest carcasses in the weeks and months following the bait drop, but it also gave time to gain confidence with the dogs' behaviour around dense wildlife colonies.

The emphasis on obedience and non-target aversion in the training period was purely because we recognised that the dogs provided us with by far the best detection

measures for any surviving pests and they were critical in our confidence in declaring eradication successful. To gain that confidence, it was imperative that the dogs access all areas of the island, and especially coastal areas where rabbit and rat densities had been highest. Coastal areas were also often convenient travel routes so received more hunter and dog activity than the adjacent coastal slopes

I strongly believe that if you could only use one monitoring tool then it would be dogs as being far and away more effective than passive monitoring techniques such as tracking tunnels and wax tags/chew sticks, as they are far more active as a monitoring system and can pick up on scent that may not be that fresh. In addition, dogs can be used over wide areas and taken to high-risk locations, whereas any surviving rodents must come to and interact with a passive monitoring tool to have any chance of being detected.

To give some idea of coverage, during the three years of hunting and monitoring on Macquarie Island, hunters logged some 94,000 km of search effort via GPSs. The dogs would have covered probably 10 times what each hunter did, so without counting exactly how many dog-months were worked, it would have been close to a million kilometres.

Sincerely,

Keith Springer

APPENDIX 4. EXTRACT FROM THE MACQUARIE ISLAND PEST ERADICATION PROJECT EIA (DPIPWE, 2009): SECTION 5.3.3 (ON THE USE OF DOGS)

5.3.3 Potential adverse effects on birds of hunting with dogs

Dogs have been under training from July 2008 for deployment to Macquarie Island in late winter of 2010. A significant part of the training, in terms of both duration and cost, is the training for aversion to non-target species. Dogs are trained to be absolutely obedient and to be averse to the scents of any animals other than rabbits. The dogs undergo two levels of assessment based on criteria developed specifically for this project, and are certified by the Project Dog Training Coordinator before they are considered to be at the standard required for use on the island. The training standards for these dogs should ensure that impacts of dogs on native wildlife are minimal. Dogs trained to hunt cats were used on Macquarie Island from 2000 - 2003. These highly trained dogs were not responsible for any impacts on native birds, and their dog handlers considered that dogs did not interact with or have a disturbing effect on native wildlife (S. Robinson, S. King pers. comm.2008). The need for hunters to travel through or near penguin colonies may cause temporary disturbance, but these impacts are expected to be minimal, based on previous experience on Macquarie Island.

The standards for dog training developed for the current proposed operation are more stringent than those applied for the use of dogs from 2000, and include aversion to birds. With no observed impacts from the use of dogs during 2000 - 2003, these more stringent dog training standards are likewise anticipated to result in no disturbance to native wildlife. Hunters and dogs will potentially put extra pressure on burrowing bird habitat with increased foot traffic through some areas and the potential for burrow collapse. The benefits arising from the eradication of rabbits and rodents are likely to far outweigh these potential negative impacts, which will be limited through education of hunting teams; identification of burrowing petrel colonies; adoption of appropriate techniques for working in those areas and briefings on sensitive wildlife areas. Hunters will be required to work their dogs in a manner that avoids undue disturbance to wildlife.