

Summary of non-target species mitigation methods to be implemented for the 2011 Macquarie Island Pest Eradication Project (MIPEP) aerial baiting operation

A review into the mortality of non-target species during the 2010 aerial baiting operation on Macquarie Island was commissioned by the Commonwealth Government in September and reported in November 2010. This review found that the baiting operation was generally undertaken in accordance with relevant permits and approvals, and provided guidance on a number of additional mitigation measures to further reduce non-target species mortality. A key finding of the review was that the positive impacts of a successful modified aerial baiting operation was highly likely to outweigh any short term negative impacts resulting from the aerial baiting operation.

The report outlined a number of suggestions to mitigate non-target mortality. Subsequent consultation has been undertaken with staff from the Biodiversity Conservation Branch (BCB), Department of Primary Industries, Parks, Water and the Environment (DPIPWE) and Australian Antarctic Division (AAD) to assess how effective these might be, and whether practical to implement. In addition, some suggestions were anticipated and were put to the Department of Conservation's Island Eradication Advisory Group (IEAG) meeting in New Zealand on October 1st 2010.

Recommendations from the review panel report

Recommendation from review panel	Steering committee consideration	Proposed MIPEP action
<p>A Bird Technical Advisory Group (BTAG) could be established.</p>	<p>Staff from the Threatened Species Unit and the Marine Conservation Program of the Biodiversity Conservation Branch, DPIWPE have responsibility for Tasmanian threatened species legislation and have experience in management of seabirds. A core group comprising Mike Pemberton (Manager - Biodiversity Conservation Branch), Phil Bell (Section Head - Threatened Species), Rachael Alderman, and Rosemary Gales (both from and Marine Conservation program) will form the core of a group to advise the steering committee on mitigation measures. Expertise from commonwealth agencies (e.g. Graham Robertson and Ian Hay from AAD) and international colleagues (e.g. Richard Phillips from BAS) will be sought for contributions and peer review.</p>	<p>Work with marine/threatened species staff from Biodiversity Conservation Branch DPIWPE to discuss and implement agreed measures.</p> <p>Four meetings of this group with Noel Carmichael (MI Exec Officer), Ashley Rushton (Southern Regional Manager) have already been held and possible measures proposed and discussed. These meetings have informed the steering committee consideration of the review panel report.</p>
<p><i>Establish a plan for bird mortality monitoring and mitigation including clear contingency planning</i></p>	<p>Project team discussions prior to the review panel being initiated, plus subsequent discussions with BCB staff have progressed this to a considerable degree.</p>	<p>Continue working with BCB to develop a mitigation and monitoring plan, based on and developing from the meetings already held.</p>
<p><i>Toxicity of carcasses</i></p>	<p>IEAG advice was sought regarding the implications of reducing bait application rates for Drop 2, to try and reduce the amount of bait consumed by target species and thus toxicity of carcasses. IEAG response was that bait application rates were already lower than they had</p>	<p>Leave bait application rates as currently stated in Operational Plan. Given the quantity of bait already on Macquarie Island and the need to take additional bait to replace spoiled bait, this advice is</p>

	<p>originally recommended and they were uncomfortable with the prospect of further reductions, particularly in light of increased risk of failure to eradicate mice. They also considered that reduction in bait application rates would not materially reduce non-target mortality (because the toxicity of carcasses is based on how much they can and do eat, not the amount that is spread). It is also noted that individual gulls will either eat the bait, or not; and the amount of bait available is a relatively less important factor in mortality.</p>	<p>considered prudent and MIPEP accept the advice not to reduce bait application rates.</p>
<p><i>Availability of carcasses</i></p>	<p>This approach can be achieved and is a feasible method to try and reduce non-target mortality, although it is untried and unproven elsewhere and should thus be considered an experimental approach. The Australian Antarctic Division has advised that the station facilities cannot be extended to cater for more than 41 people to the required standard before next April when the eradication team returns. Overall team size in the search effort is limited by field hut accommodation available on Macquarie. This will be expanded by commissioning of 5 temporary huts prior to operations commencing.</p>	<p>Employ an expanded eradication team of 27 people for winter 2011 (up from 19 in 2010), and manage non-target mitigation as a specific component of the project, tasked with the management of wandering albatross nests, king penguin colony monitoring and carcass search and removal. A person will be delegated to manage this team and coordinate search efforts, arrange rosters and allocate task assignment to team members. They will also coordinate and disseminate results. Search effort will be influenced by baiting progress, known time to death of target species and field accommodation resources. Carcass search and removal is established as a core function of the team and team members will be rostered onto that task. The statement of duties for these positions includes this. Team size with supplementary members when not baiting</p>

		(i.e. most of the time) to average 10 people over period. Carcass search and removal functions will be taken over by hunting team when the aerial baiting team returns to Tasmania.
<i>Use of dogs to search for dead rabbits</i>	Advice received from IEAG was strongly against this measure due to the potential reduction in effectiveness of the dogs when they commence their main role of detecting live rabbits following aerial baiting. It is important to retain the key focus of pest eradication and preserve aspects that may contribute to this goal.	Not to use dogs for carcass searching.
<i>Presence and behaviour of birds</i>	After considerable discussion with a range of viewpoints, the project steering committee considered the extensive resources required to implement this measure to be a high risk of diversion of those resources from other mitigation measures. Concern also relates to the possible impact on rodent eradication if a food source alternative to the baits is provided. In addition, there was not clear agreement that this measure would deliver any benefits to minimise non-target mortality if only limited feeding could be undertaken, as birds could still forage normally for the rest of the winter. The harvesting of male elephant seals (which could provide a significant winter-long food source for scavenging birds) is untenable due to the threatened status of this species. The Options paper from BCB further informs this measure.	After considerable discussion and investigation of options this recommendation appears unlikely to deliver significant benefits whilst diverting resources from other measures. Investigations will continue and if a demonstrable benefit in feeding birds appears likely, then the project steering committee may re-consider whether this option should be adopted.
<i>The addition of vitamin K (an antidote to brodifacoum) to alternative food sources including its</i>	The dosage required for providing an effective antidote to brodifacoum poisoning is large, on-going and requires specific and measured dosage over time. It is considered impractical to achieve this on an individual	Not a practical mitigation method.

<p>administration through hand feeding to avoid access by rats and ensure its availability to non-dominant birds could also be considered.</p> <p>Agencies should consider whether changes to existing approvals and permits are required.</p>	<p>basis in a large wild bird population without captive management, in which case birds would not be poisoned in the first place.</p>	
<p>Any future baiting operations and the proposed carcass collection operation should report on an agreed and regular basis to the Steering</p>	<p>The Approvals and Wildlife Branch (DSEWPaC) have changed the 'not a controlled action' decision under the EPBC Act and replaced it with a 'controlled action' decision, and will specify actions that DSEWPaC requires to be implemented in respect to the eradication project.</p> <p>DPIPWE will need to consider issuing an additional permit for the taking of protected wildlife including threatened species.</p> <p>Further changes to permits may also be forthcoming although no others have yet been advised.</p> <p>Additional state permits are required for the release of RHDV (and have been issued).</p> <p>APVMA have suspended the permit to aerially distribute bait pending further advice regarding mitigation of non-target species.</p> <p>The steering committee has requested weekly updates of baiting progress and non-target mortality.</p>	<p>Work with Wildlife and Approvals Branch of DSEWPaC, DPIPWE and the APVMA to obtain revised permits and approvals.</p> <p>The existing database will be maintained and a summary sent to the steering committee and bird technical advisory group on a weekly basis. The bird technical advisory group have been informed that they can request more frequent information</p>

Committee and governments		if they consider it warranted, and this can be provided up to daily if required.
All efforts should be made to complete aerial baiting in one season to avoid additional deaths from subsequent baiting.	As per Operational Plan. This is still reliant on factors outside the project's control including shipping, weather and helicopter serviceability.	As per Operational Plan.

Other proposed mitigation measures

Rabbit Haemorrhagic Disease Virus

Release of Rabbit Haemorrhagic Disease Virus (RHDV) was suggested by the Island Eradication Advisory Group as a possible means of reducing non-target mortality, rather than a core component of the eradication operational plan (which had been suggested pre-2006.) The concept relies on release of the virus in late summer to allow transmission across the island and for rabbit deaths to occur (and consequent scavenging of carcasses) well before the commencement of aerial baiting (which may occur from late April). The goal is to reduce the rabbit population by a significant degree so that there are fewer rabbits to die from bait consumption, thus fewer toxic carcasses to find and remove, and fewer toxic carcasses for scavenging birds to locate and consume. This measure could potentially have a far greater effect on reducing non-target mortality than all the other suggested measures put together. Following the IEAG suggestion, further advice was sought from experts in the use and transmission of the virus. The advice received showed that the suggestion warranted further consideration, so a scoping document was prepared. The recommendation to release the virus has been approved by the MIPEP steering committee. A Parks & Wildlife Service (PWS) Reserve Activity Assessment (environmental assessment process) has been prepared.

Aerial search

Additional fuel and helicopter time is proposed to allow three aerial search circuits of the island after each of the two main bait drops. This will complement ground searches and provide additional coverage for carcass searches. The aerial perspective may allow sighting of carcasses missed by ground teams, especially in more rugged parts of the island. In general, few rabbit carcasses are expected to be found with this technique, but kelp gull carcasses stand out well when viewed from the air and their removal should assist in reduction of scavenging by other species.

Baiting timeframe

Currently the project team intend deploying on the AAD's Voyage 5, scheduled for mid-April. With baiting preparation (positioning equipment, commissioning huts, deploying replacement bait etc) occurring concurrently with the station resupply, the team should be able to take advantage of suitable baiting weather from about the end of April. This would extend the window of baiting opportunity by about 6 weeks compared with 2010, and importantly there would be slightly longer daylight hours available over that period. This was the initial intent for 2010 but was delayed due to lack of available shipping. Commencement of baiting in this timeframe is considered to have some non-target species impacts different to those experienced in 2010. Skua are likely to be still present on the island in some numbers. These birds are likely to out-compete giant petrels for rabbit carcasses and thus suffer a higher degree of mortality. On the other hand, the majority of dead rabbits should have had several weeks longer to decompose before skua return in the spring, so there may be less spring mortality than in 2010, when the majority of rabbit carcasses were available from early July. By baiting in May, giant petrels will not be in preliminary breeding mode as they were in July 2010 when rabbits were available. The need to forage intensively in July, prior to spending long periods on the nest incubating eggs, may have exacerbated giant petrel mortality in 2010. It is possible that

the availability of rabbits in May instead of July may reduce such scavenging.

Captive management

Captive management of some birds was raised as a means of protecting a limited number of individuals. Consideration of this method (a reasonably common means of dealing with non-target species issues on island pest eradications) presented issues with logistics, development of facilities, animal welfare approvals and capacity (i.e. how many birds could be kept and the increasing size of facility required as numbers increased), to the point where the timeframe to achieve these prior to April 2011 was considered insufficient for implementation.

Deterrent

A deterrent has been suggested as a means of discouraging birds from scavenging carcasses. This approach would need a number of rabbit carcasses to be presented on an on-going basis prior to bait drops, to habituate scavenging birds not to eat the carcasses. Should RHDV be released a supply of rabbit carcasses may be available for this purpose around the island, however no product is known to deter the scavenging bird species and trials are likely to take longer than the time available to implement them.