Appendix 8-1

OANRP Diphacinone-50 Hand Broadcast Study

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EXECUTIVE SUMMARY

The Army is required to stabilize populations of endangered species and their habitat as per Biological Opinions issued by the U.S. Fish and Wildlife Service. Introduced rats (*Rattus* spp.)_are one of the largest threats to endangered plants, snails and birds. Oahu Army Natural Resources Program (OANRP) has been engaged in rodent control since 1995 using various techniques including snap traps, automatic traps, rodenticide applied in bait stations and physical barriers. Since 2012, OANRP halted rodenticide use because of a change in the Special Local Needs (SLN) label that makes bait-station application unfeasible in the steep, rugged terrain where the work is conducted. Relying solely on traps has not been effective in keeping populations below the targeted 10% tracking in monitoring tunnels, particularly during the period of peak rat abundance (typically Fall/Winter). In attempt to combat this problem in Hawaiian habitats, OANRP would like to determine the effectiveness of a "one-time" two-application hand-broadcast (applications spaced approximately 5-7 days apart) and canopy baiting of rodenticide bait (Diphacinone-50) during a period of high rat abundance within Kahanahaiki Management Unit (a fenced Unit where ungulates are excluded) in the Waianae Mountains. Hand broadcast application will involve OANRP staff walking a grid of trails while evenly distributing rodenticide bait; canopy baiting involves placing bait, held in small cloth bags, into trees within the grid. These application methods comply within the Diphacinone-50 label (EPA Registration No. 56228-35). Hand broadcast method of rat control was assessed in the Programmatic Environmental Assessment for the Final Implementation Plan for Oahu Training Areas, March 2010, FNSI June 2010. USDA National Wildlife Research Center (NWRC) will provide the monitoring associated with this study (e.g., bait application according to label, efficacy of this rat-reduction method, and non-target impacts).

1. INTRODUCTION to Project Plan

This is the project plan to study a hand broadcast and canopy baiting application of Diaphacinone-50 for control of *Rattus* spp. at Kahanahaiki Management Unit, northern Waianae Mountains, Oahu. The project plan includes two parts: 1) the operational plan, and 2) the monitoring plan (inserted as an Appendix to this document; NWRC Study Protocol QA-2523). This project plan was written collaboratively by Oahu Army Natural Resources Program (OANRP), with funding from the Army, and the USDA APHIS Wildlife Services (WS), and USDA APHIS WS National Wildlife Research Center (NWRC). The OANRP will lead in the operation, particularly bait application, whereas WS/NWRC will provide project oversight and will lead in the monitoring of this study.

2. GOAL, OBJECTIVES and OUTCOMES

2.1. Goal

The goal of this project is:

"To study if a hand broadcast and canopy baiting application of Diphacinone-50 in combination with a grid of mechanical traps (already in operation) has a seasonal knockdown effect on the rat population at Kahanahaiki (ideally <10% tracking activity through the winter)."

2.2. Objectives and Outcomes

Objectives	Outcomes
1. To determine if a 2-application hand broadcast of Diphacinone-50 is an effective method for seasonal knockdown of *Rattus* spp. at Kahanahaiki	1.1 Reduction of rat activity (ideally <10% measured by tracking tunnels, corriflute tabs and GoodNature chew cards), and >80% local mortality of rats (using fates of rats with radio collars).
2. Study non-target effects	2.1 Gain information on non-target effects (carcasses searches, tests of diphacinone residues through food web)
3. Use results to make management decisions and develop protocols for other MU's	3.1 Determine if seasonal hand broadcast is a safe and effective option for seasonal control of rats.
	3.2 Staff will have skills and knowledge to undertake other hand broadcast operations at other Management Units (MUs).

3. THE SITE, TARGET SPECIES, and NEED for SUPPLEMENTAL RAT CONTROL USING SEASONAL BAIT APPLICATION

3.1. The Site and Rat Management History

The Kahanahaiki Management Unit (MU) is located at 500-660 m elevation in the Waianae mountain range (21° 32' N, 158° 11' W), within the Makua Military Reservation (MMR), on Oahu, Hawaii (Figure 1). The rat control area within the MU is approximately 70 acres and is fenced to exclude ungulates. Overall, the north and east aspects are relatively native while the south and west exposures are dominated by weeds. Kahanahaiki is home to many rare taxa, including plants and snails; 12 plant species and two animals are listed as endangered (Joe and Daehler 2008). Non-native rodents are ubiquitous at Kahanahaiki, including black rats (*Rattus rattus*), Pacific rats (*R. exulans*), and house mice (*Mus musculus*); black rats are numerically dominant, outnumbering Pacific rats by >10-fold (Shiels 2010). Negative impacts of each of these three rodent species at Kahanahaiki has been reported to span native plants, insects, snails, and birds (Meyer and Shiels 2009; Shiels et al. 2013). One endangered plant, *Cyanea superba*, is highly vulnerable to black rat predation, and large-scale and intensive snap-trapping at Kahanahaiki reduced seed predation by rats from 47% to just 4% in one season (Pender et al. 2013). Several additional native plants receive high predation by black rats at Kahanahaiki (Shiels and Drake 2011), implying that these native forests may potentially experience a shift in species composition attributable to invasive rats (particularly black rats).

The U.S. Army is required to stabilize populations of endangered species and their habitat as per Biological Opinions issued by the U.S. Fish and Wildlife Service. Due to the large negative effects of introduced rats on natural resources at Kahanahaiki, Oahu Army Natural Resources Program (OANRP) has been engaged in rodent control since 1995 using various techniques including snap traps, automatic traps, rodenticide applied in bait stations and physical barriers. Due to the high habitat quality and small size of the Kahanahaiki, a large scale Victor Snap grid of 402 traps was installed in May 2009 for Kahanahaiki-wide protection (Figure 1). In general, these traps were re-baited twice per month. After a general knock-down in the rat population in 2009, much fluctuation had occurred and the targeted levels of rat suppression were not always being met with the large-scale snap-trapping (Pender et al. 2013); this resulted in noticeable losses of native and endangered seeds and predation of native snails by rats.

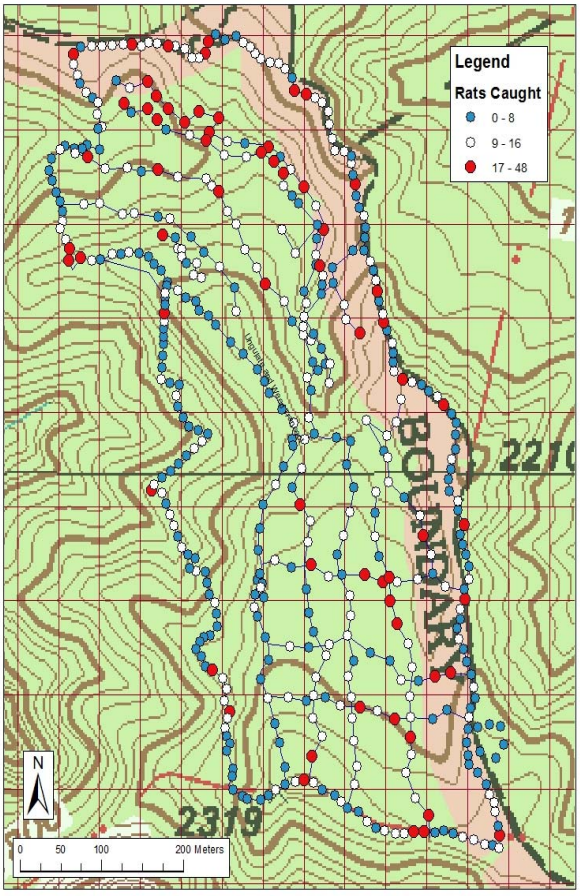

Figure 1. Map of Kahanahaiki snap-trap grid displaying total rat catches (2009-2014).

OANRP rat-control tools became more limited in 2012, which was when OANRP halted rodenticide use because of a change in the Special Local Needs (SLN) label that made bait-station application unfeasible in the steep, rugged terrain where the work (at the MU and elsewhere) is conducted. During a trial in 2012 and 2013, Goodnature A24 rat + stoat traps (Goodnature Limited, Wellington, NZ), which are self-resetting traps that can fire 24 times with one CO_2 cartridge, were shown to be effective in controlling rat activity at a nearby site, Pahole gulch. Because of these results a grid of A24s was installed at Kahanahaiki and snap-traps were discontinued. In July 2014, 83 Goodnature A24s were installed on existing trails at a spacing of approximately 50 x 100 meters. In December 2014, an additional 36 A24s were installed within the gulch area to achieve a device spacing of 25 x 100meters (Figure 2).

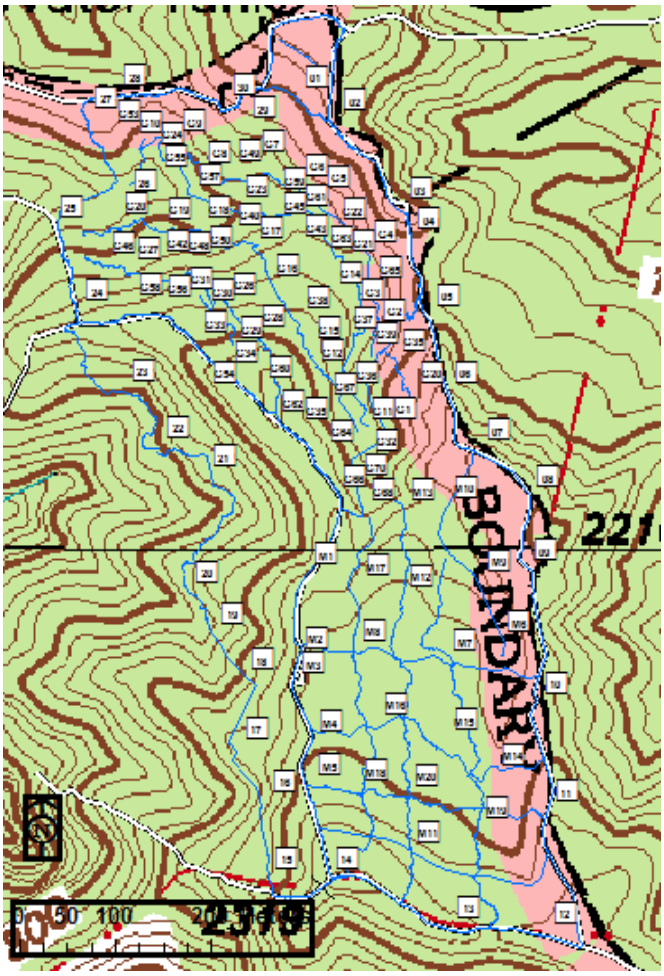

Figure 2. Map of Kahanahaiki Goodnature A-24 trap grid.

Monitoring of rat activity at Kahanahaiki as well as a control site via tracking tunnels was implemented to determine efficacy of trapping devices. The management objectives for this MU articulate that there should be less than 10% activity levels in rat tracking tunnels. An acceptable level of rat activity, which promotes stable or increasing native/endangered snail (*Achatinella mustelina*) and plant (*Cyanea. superba* subsp. *superba*) populations, has not been clearly identified. It could be very low, less than 2%, or very high, 40%; in New Zealand, studies have shown that rat activity levels of 10% are low enough to maintain certain rare bird populations (Innes et al. 1999). A 10% activity level may also be the most achievable level using a large scale trapping grid. Results of the past six years of monitoring of the snap-trap grid (May 2009-April 2014) and the subsequent A-24 grid (May 2014 to present) show seasonal winter spikes of rat activity up to 78.4% (Figure 3). Thererfore, relying solely on traps (snap-traps or A24s) has not been effective in keeping populations below the targeted 10% tracking in monitoring tunnels, particularly during the period of peak rat abundance (typically Fall/Winter; Figure 3). The goal of this project will be to reduce the rat population (and therefore tracking) at Kahanahaiki during the seasonal peaks (roughly November-February; Figure 3).

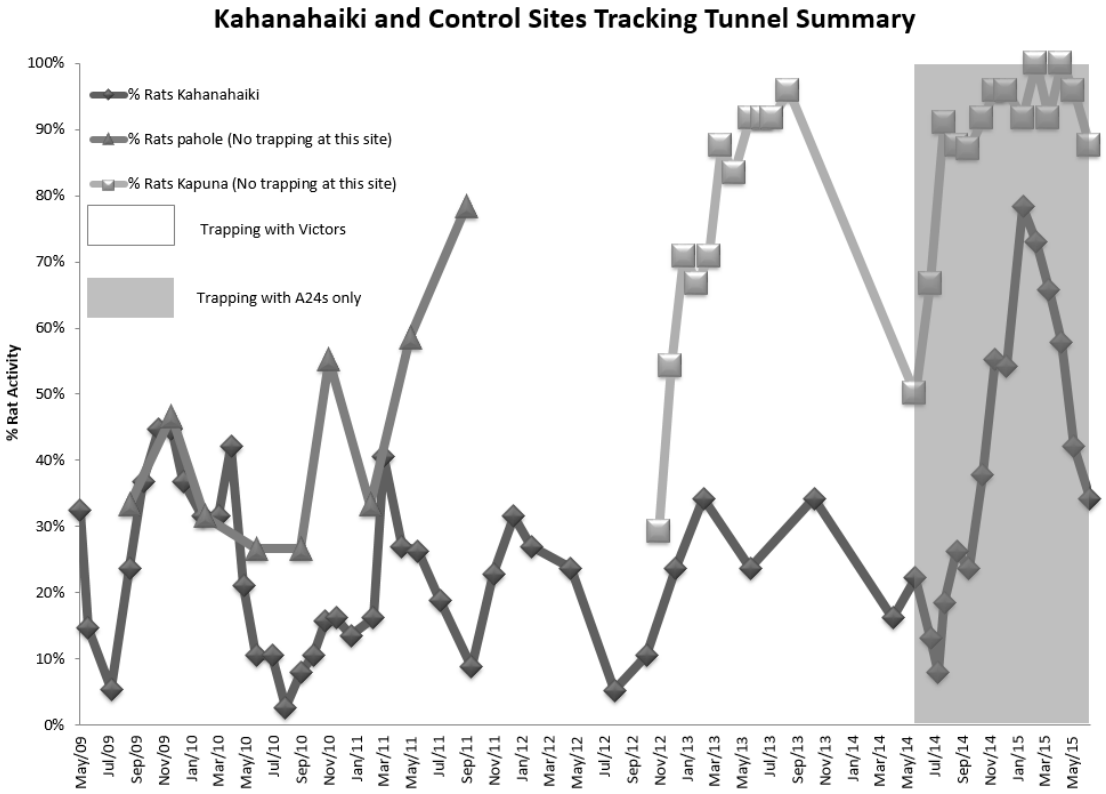

Figure 3. Percent rat activity (based on tracking tunnels) at Kahanahaiki (the rat-trapping site), and two sites where no rat trapping occurs (Pahole and Kapuna). The shaded area from May 2014-May 2015 is when only A24 traps were used at the rat-trapping site; whereas the non-shaded (May 2009-April 2014) was when only Victor snap-traps were used at the rat-trapping site.

Upon recent assessment of OANRP rat control at Kahanahaiki, and the conclusion that it is not meeting targeted rat suppression (i.e., tracking tunnels are rarely <10%), three rat control techniques were considered at Kahanahaiki:

1. A seasonal Hand Broadcast and Canopy Baiting Application of Diphacinone-50 over the Kahanahaiki along a pre-established grid of trails, with the continuation of mechanical trapping.
2. Continuous bait stations filled with Ramik rodenticide, and set in accordance with the SLN.
3. Exclusive use of mechanical traps placed along a grid of trails.

- **Technique 1 – Hand Broadcast and Canopy Baiting Application:** This method may be considered the most appropriate option and be the most efficient and effective way of adequately controlling the seasonal spike in rat activity within the MU. This method allows for greater bait interaction than bait boxes (bait boxes deter some individauls from entry; Recht 1988), thus potentially a better control method for suppressing rat populations. In addition to the hand broadcast, we will also be employing canopy bags to increase our effectiveness in targeting any rats that favor the arboreal habitat. Through several tracking methods, Shiels (2010) found that rats at Kahanahaiki frequent the arboreal, ground, and underground (burrowing) habitats. Mechanical traps would be used prior to, during, and after the broadcast to provide year round control. In addition, traps would only be required to be

deployed at densities adequate to control moderate to low levels of rats as the combination approach will be used during the high spikes.

- **Technique 2 – Use of Bait Stations of Ramik:** This technique has been considered but it has been determined that it is not possible to adhere to the 225m buffer requirement in the SLN given the location of resources to be protected and the surrounding cliffs and steep terrain.
- **Technique 3 – Exclusive Use of Mechanical Traps:** This has been the only method used at this site for the past six years. Tracking tunnel data shows that this method alone is not adequate to meet management goals at the current trap density.

4. Methods for the Hand Broadcast and Canopy Bait Application

Establishment of baiting transects

Trails that have already been established at Kahanahaiki for snap-trapping (Figure 1) and A24s (Figure 2) will be used as baiting transects in this study. These trails (transects) are generally <50 meters apart. Spreading bait along and adjacent to these transects will generally leave <30 meters between baits, which should minimize chances that a given rat will not interact with bait based on rat home range sizes at Kahanahaiki (average of 4 ha for black rats, and 1.8 ha for Pacific rats; Shiels 2010), as well as linear distance moved in a night from point of capture (black rat: mean 20 m, maximum 30 m; Pacific rats: mean 25 m, maximum 40 m; Shiels 2010). Installing additional trails for this two-bait application study is not warranted given the significant disturbance to the fragile habitat and native/rare species that is caused by installing trails.

Applicator training

All OANRP staff (~40 personnel) are certified for applying diphacinone rodenticide (i.e., a license to "purchase and use restricted pesticides" issued as the "State of Hawaii, Dept. of Agriculture, Division of Plant Industry, CERTIFICATION FOR COMMERCIAL APPLICATORS OF RESTRICTED PESTICIDES"). There are 7-10 OANRP personnel anticipated to be applying the bait for this study. In addition to each of the personnel being licensed to apply/use restricted pesticides, they will get additional training in advance of the applications that will clarify methodological details specific to application and bait distribution pattern (see below) within Kahanahaiki forest. Included in this training will be throwing dog-food pellets (a surrogate to Diphacinone-50 bait) on flat ground that has markings out to 10 m; such calibration for each personnel will help ensure even spread of bait in the field at the proper application rate (i.e., according to the Diphacinone-50 label; see below).

Bait staging

Once bait arrives in Hawaii, it will be stored according to the label and in a cool dry place. Because of the difficulty of navigating the terrain at Kahanahaiki, bait caches will be established prior to the beginning of the study. Bait will be flown by helicopter on-site ~1-7 days prior to the initial hand broadcast application. These bait caches (stockpile locations) will consist of metal trash cans with locking lids filled with the bait in original closed container, providing tamper resistant storage. Locations will be selected to allow the applicators to carry 13.8 kg of bait before arriving at the next station. We estimate approximately 14 stations will be needed. GIS will be used to identify the areas to place bait stockpile locations.

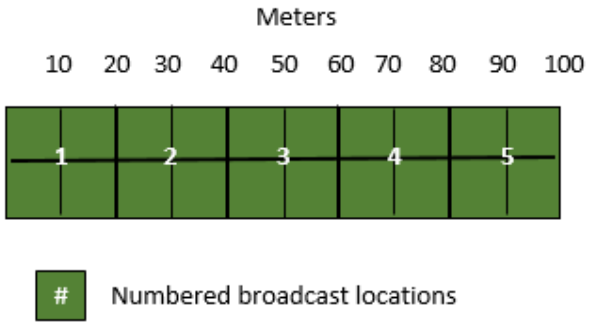

Figure 4. Example of how bait will be stockpiled in "broadcast locations". At each broadcast station, bait will be distributed in all directions within a 20 meter square (530 g of bait at odd numbered stations and 439 g of bait for even numbered stations).

Bait application

All application amounts will be according to the label (Diphacinone 50: Conservation, EPA Reg. No.: 56228-35, State of Hawaii Lic. No. 8600.1). For ground broadcast the rate is 11.1 to 13.8 kg bait/ha per treatment for the first treatment, and no more than 13.8 kg/ha for the second treatment. At Kahanahaiki, bait will be spread 10 meters in all directions at "broadcast locations", every 20 meters along the trails (Figure 4). This will make for continuous baiting in a 10 m distance from each side of the trail throughout the trail system (Figure 5). At all "broadcast locations" 495 g of bait will be distributed equally in all directions within a 20 meter square, making the application rate to the ground for all locations 12.375 kg/ha. To ensure equal amounts of bait being distributed at each broadcast location, staff will have a plastic container/scoop that measures out the appropriate amount to be broadcasted. Staff will then reach into the container with a gloved hand and hand broadcast the bait as equally as possible throughout the area.

At all even numbered "broadcast locations" a canopy bag containing 113 g of bait will tied onto a tree (see below). Thus, the application rate of bait at even stations to the ground (12.375 kg/ha) is combined with canopy (1.356 kg/ha) is 13.731kg/ha (i.e., under the maximum "Aerial and Ground Broadcast" rate according to label).

Using the 10 meter buffer this will equal 25 broadcast locations or 500 meters of trail per/ha. The total area of the trails with a 10 meter buffer on each side equals 14.16 ha. For this area we will be broadcasting to the ground at a rate of 12.375 kg/ha for a total of 175.23 kg, and hanging canopy bags at every other broadcast location (the evens) for a total of 19.20 kg.

In some areas there are cliffs and terrain that do not allow for the addition of trails, however because of the steepness it is possible for applicators to broadcast much farther than 10 meters from the already established trails. This area is in green (Figure 5) and contributes 6.11 ha. Special instructions on how much additional bait to broadcast in the green areas will be provided to the staff that will apply the bait. In these areas canopy bags will not be used so the application rate will be the label maximum of 13.8 kg/ha for a total of 84.32 kg.

We will also be using 22 g of bait at 90 bait availability monitoring plots for a total of 1.98 kg.

Although the entire fenced unit of Kahanahaiki is approximately 36 ha, the total area to be broadcasted equals 20.27 ha. When all methods are combined a total amount of 280.73 kg of bait will be needed per broadcast. Because two broadcasts will occur, 561.46kg or 1237.81lbs of total bait will be needed.

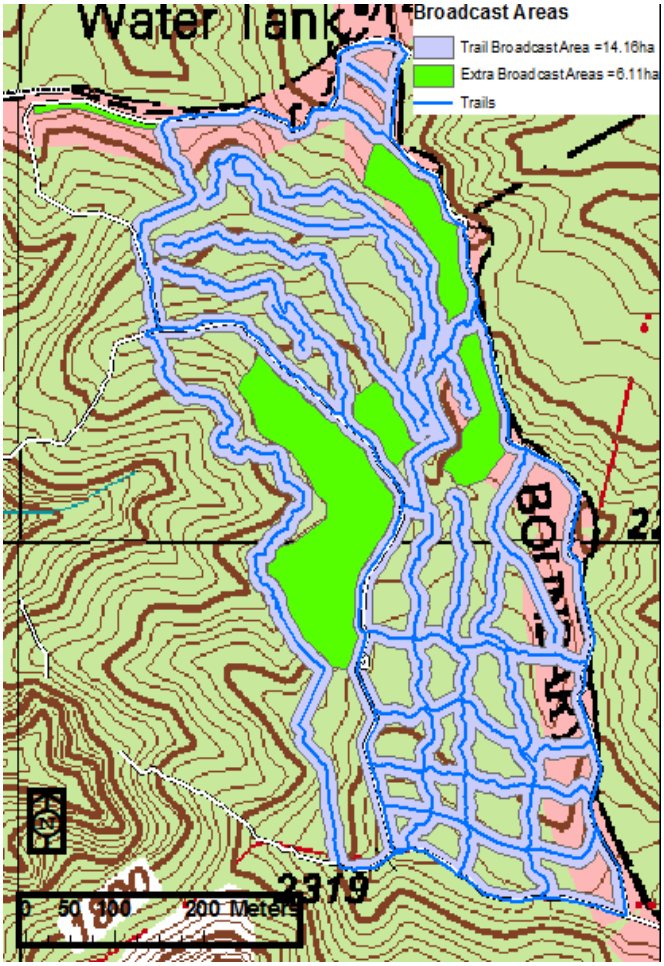

Figure 5. Map of Kahanahaiki with 10 meter buffers (light blue) associated with trails (dark blue) and extra broadcast areas (green). Although the entire fenced unit of Kahanahaiki is approximately 36 ha, the total area to be broadcasted (blue+green) equals 20.27 ha.

The label recommends the addition of canopy baiting in areas where sufficient food and cover are available to harbour populations of rodents in canopies of trees and shrubs. According to the label 113 g to 200 g of bait should be placed in each cloth bag (Figure 6). At all even numbered "broadcast locations" (Figure 6) a canopy bag containing 113 g of bait will be placed in the canopy. This amount and spacing is according to the label; the label states that canopy bags should be placed at intervals of 50 m or less. The bags will be tied to the trees at < 3 m height (target of 2-3 m height, based on Shiels (2010) average black rat activity above ground of 2.8 m, Pacific rat is 0.3 m).

Figure 6. Example of cloth canopy bags that will be used for canopy baiting.

Timing of Operation

We plan to conduct broadcast applications in October 2015. This timing coincides with the disappearance of strawberry guava (*Psidium cattleianum*) fruit, which is one of the major food sources for rats at Kahanahaiki (Shiels 2010; Shiels and Drake 2011). Strawberry guava fruiting normally occurs June-September (peaking in July/August), and September/October is generally the beginning of increased rodent activity measured in the tracking tunnels (Figure 3).

Signage

Warning signs will be posted along the fence line and on the trail leading to Kahanahaiki (Figure 7). Signs will include the date of the broadcast and they will remain on site for 2 months following the first bait application.

CAUTION

THIS AREA HAS BEEN BAITED WITH DIPHACINONE POISION TO CONTROL RODENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

IF YOU HAVE QUESTIONS
PLEASE CONTACT THE ARMY'S
ENVIRONMENTAL DIVISION AT (808) 655-9191

Figure 7. Warning sign that will be posted along the trails leading to Kahanahaiki, and the fence line that surrounds Kahanahaiki.

5.Monitoring Efforts

As stated in the Introduction, OANRP will be conducting (taking lead on) the operational aspects of this study that are outlined above, whereas WS/NWRC will lead in the monitoring of this study. For objectivity and best practice procedures, the agency leading the operational aspects of the study should be different than those leading in the monitoring (Pitt et al. 2015). A detailed Monitoring Plan can be found in Appendix 1, which also constitutes the WS/NWRC study protocol (QA-2523). A summary of the main aspects of the Monitoring Plan are briefly listed below, but refer to the full monitoring plan in Appendix 1 for full details.

Monitoring for this study will include the following:

1) Abidance by the Diphacinone-50 label's application rate. NWRC/WS staff will measure bait densities in established plots throughout Kahanahaiki to ensure bait was applied to the site at a rate of no greater than 13.8 kg/ha per application.
2) Bait fate will be monitored by revisiting plots at set intervals after each bait application and bait densities will be measured. Motion cameras will also monitor subsets of bait to determine the types of animals consuming or removing bait.
3) Rodent monitoring will occur before, during, and after hand broadcast by use of rodent tracking tunnels (ink cards baited and inserted into tunnels to establish rodent activity based on foot-tracks), as well as chew cards and tabs. Such monitoring will occur at Kahanahaiki, and a nearby site (Kapuna) that does not have any rodent control. OANRP staff will help collect the tracking and chew cards and tabs and give them to NWRC/WS at the end of the day for NWRC/WS analysis. These monitoring techniques will help to assess the efficacy of the rodenticide application on the rat population.
4) Rodent fates will be assessed by attaching radio-collars to a subset of rats and mice captured prior to the bait application. These individuals will be followed in the subsequent days/weeks following the bait applications in order to assess the proportion of collared rodents in the study area that did not survive the effects of rodenticide baiting. Rodent carcass searches will also be conducted before, during, and after bait application.
5) Non-target effects. As will any project that uses toxicant bait, we expect that there will be some negative effects to non-target organisms (see Pitt et al. 2015). Justification for proceeding with such a control tool that harms some non-target species is that the longer-term effects of a reduced rat population will provide greater benefit to the native species and habitat that goes beyond the number (and types) of non-target mortalities. There are no expected negative impacts to threatened or endangered species as a result of this hand broadcast. There are expected non-target impacts and this study will monitor those (see monitoring section for more information; Appendix 1). These impacts would include some species being affected by eating the bait directly or consuming any animal that has consumed the toxicant. Briefly, in our non-target monitoring at Kahanahaiki, we will: 1) conduct carcass searches before, during, and after bait application, and 2) assess the levels of diphacinone

residue in the food web by sampling (pre- and post-bait application), game birds, lizards, and invertebrates (slugs and insects).

Rodent monitoring

Three monitoring methods will be used to track the % change of rodent activity before, during, and after the hand broadcast (Figure 8). Chew cards and corriflute chew tabs will be left out for 3 nights while tracking tunnel cards will be left out for 1 night.

Figure 8. Tracking tunnel, GoodNature Chew card, and Corriflute chew tab.

At Kahanahaiki we will use 42 tracking tunnels, 38 GoodNature Chew cards, and 38 corriflute chew tabs (Figure 9). 38 Tracking tunnels are currently being monitored on site however for this project an additional four will be added to cover the Unit II line.

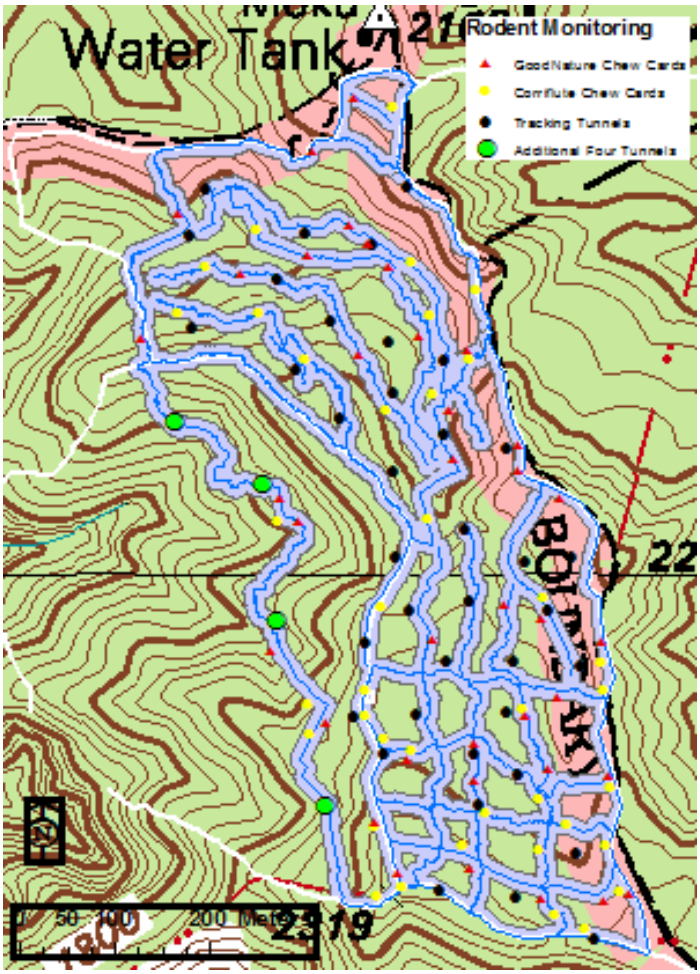

Figure 9. Locations of three rodent monitoring methods at Kahanahaiki.

Monitoring at a control site will also be conducted on the same schedule as the study site. The control site will include 24 tracking tunnels, 24 Good Nature Chew cards, and 24 corriflute chew tabs (Figure 10).

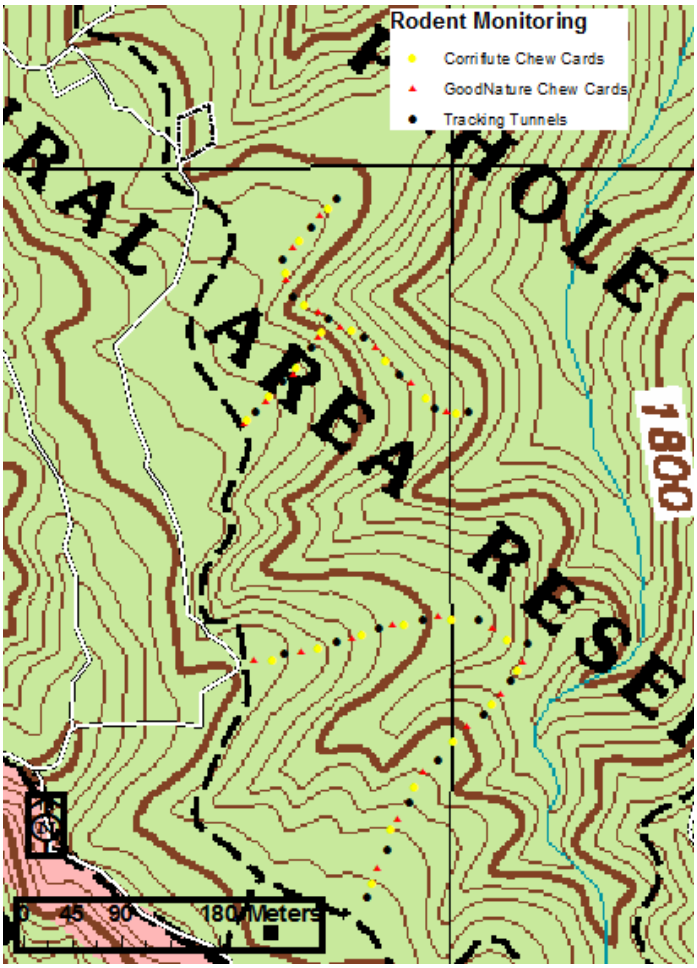

Figure 10. Rodent monitoring device locations at the control site Kapuna.

All three rodent monitoring methods will be initiated one month before the 1st hand broadcast and be used for the duration of the project. Rodent monitoring will be done on the following schedule:

1. 1 month prior to the 1st broadcast
2. The day before the 1st broadcast
3. The day before the 2nd broadcast
4. 7 days after the 2nd broadcast
5. 21 days after the 2nd broadcast
6. 7 weeks after the 2nd broadcast
7. Monthly thereafter with the method deemed most sensitive

Bait availability monitoring

Bait availability monitoring will be initiated on the day of the 1st hand broadcast and continue for 14 days. We don't have plans of doing pre broadcast bait availability monitoring with a non-toxic bait as we will be applying the recommended amount on the label 11.1 to 13.8kg/ha. We have

established 90, 1-meter square monitoring plots within the broadcast area using ArcGIS random point generator (Figure 11).

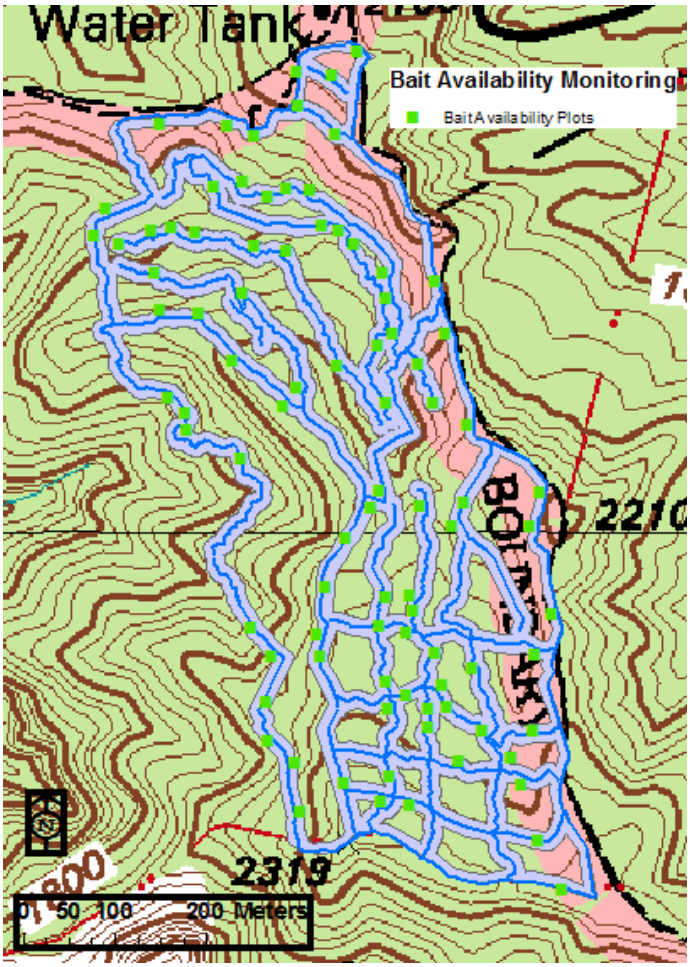

Figure 11. Bait availability monitoring plot locations.

Plots will be denoted with pin flags at each corner. Due to the low amount of bait that could be hand broadcasted into a 1meter plot, assuming that a completely equal distribution of pellets will result in ~2.5 pellets per monitoring plot, twenty pellets (.022kg) will be manually placed in a regular pattern within each plot (Figure 12).

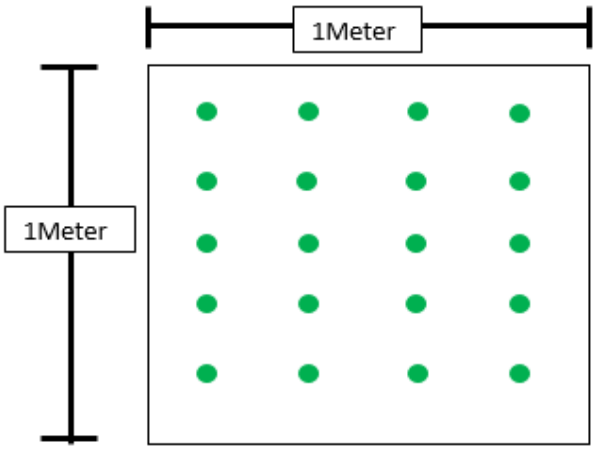

Figure 12. Example of distribution of baits within bait availability monitoring plot.

This bait will be subtracted from the bait broadcasted from the odd numbered locations. Any bait from the hand broadcast that is found in the plots before the twenty baits are manually placed will be broadcasted out of the plot. These procedures will be followed for the 2nd broadcast as well.

During the monitoring period all bait within the plots will be counted and recorded, any partial pellet will be recorded to the nearest 25%. Any pellets that appear to be wet or mouldy will be recorded and noted (Figure 13). Monitoring will begin on the first day soon after the pellets have been broadcasted to obtain an accurate baseline. Plots will then be read daily for 14 days from the first broadcast.

Bait availability monitoring form

Date:

Observer:

Plot #	# Of Good Bait (to nearest .25)	# Of Wet/Moldy Bait	Comments
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Figure 13. Example of Bait availability monitoring form

The monitoring team will also be visually inspecting the canopy bags for signs of take. All canopy bags will be checked daily for 14 days from the first broadcast. An approximation of % bait remaining will be recorded as well as any signs of take or disturbance (Figure 14).

Canopy Bag monitoring form

Date:

Observer:

Bag #	~% Bait Remaining	Comments
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Figure 14. Example of Canopy monitoring form.

Monitoring the area for dead animals

The label states that "For all methods of baiting, monitor the baited area periodically and, using gloves, collect and dispose of any dead animals and spilled bait properly. Dead animals and spilled bait may be buried on site if the depth of burial makes excavation by non-target animals extremely unlikely." The crew responsible for bait availability monitoring will also be responsible for searching all trails for any dead animals and will dispose them according to the label. A gps point, species, sex and condition will be recorded for all carcasses found. Training will be given to staff on properly identifying and recording this information.

Issues with the proposed method

There are no expected negative impacts to threatened or endangered species as a result of this hand broadcast. There are expected non-target impacts and this study will monitor those, see monitoring section for more info. These impacts would include some species being affected by eating the bait directly or consuming any animal that has consumed the toxin.

6. PROJECT TIMELINE

Table 1. Project Milestones

Milestone	Date	Responsible

Operational Planning Stage		
Site Visit	5/14/15	OANRP/USDA
Complete Project Plan	July/August	OANRP/USDA
Order bait	August	USDA
Implementation Stage - pre-operation phase		
Trails and pickup stations	August	OANRP
Establish bait availability plots	August	OANRP/USDA
Conduct pre-broadcast non-target monitoring	September	OANRP/USDA
Attach radio collars to a subset of rats and mice	September	USDA
Conduct pre-broadcast %rat activity monitoring	September	OANRP/USDA
Implementation Stage – Operational phase		
Conduct Hand Broadcast	October	OANRP
Conduct associated monitoring activities including non-target effects	October	USDA
Sustaining the Project Stage		

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