CHAPTER 8: RODENT MANAGEMENT

OANRP has managed MIP and OIP species that are subject to rodent predation with various strategies since 1997. This chapter discusses rodent control methods utilized over the past reporting year and highlights recent changes. Specifically, this chapter has five main sections: Section 8.1 provides an overview of the current rodent control program and discusses recent changes; Section 8.2 introduces tracking tunnel results from large scale grids; Section 8.3 describes transition to A24 traps; Section 8.4 discusses a trial to be conducted with ContraPest; and Section 8.5 lays out future plans for rat control.

8.1 OANRP RODENT CONTROL PROGRAM SUMMARY

OANRP manages rats seasonally or year-round, depending on rare taxa protection needs. For example, *Chasiempis ibidis* (Oahu Elepaio) are only protected during the nesting season, while *Achatinella mustelina* are protected from predation year-round. Other grids are 'rapid response' to address threats to endangered plant resources. The methods of rodent control that OANRP currently utilizes include: kill-traps (Victor snap traps, Woodstream Corporation, Lititz, PA; Ka Mate Ltd. traps, Nelson, New Zealand; and Goodnature Ltd. A24 traps, Wellington, New Zealand), Diphacinone bait used for trials, ContraPest birth control used for trials and predator-proof fences. OANRP has 31 rat control areas (Table 1).

Rat control in 2017 consisted of deploying small Victor snap traps and Goodnature A24 trap grids around select resources, installing and maintaining large-scale trapping grids consisting of Victor, Ka Mate, and/or Goodnature A24 traps in some management units.

In October 2015, a new predator control contract was awarded to Pono Pacific for a five year period. At this time, we are not going to exercise the next year's option of the contract. Each year we can decide if we are going to fund it in the following year. We are discontinuing the contract because we are transitioning to all A24 traps at all elepaio sites and will conduct the control with OANRP labor as labor inputs should significantly decrease with the use of these self-resetting traps. As funds become available we will continue to transition to A24s at non-elepaio sites.

Table 1. Rat control strategies in 2016-2017.

MU/Area	Primary Spp. Protected	Description	Deployment	Check Interval	Trap Type	# Traps
East Makaleha	*A. mustelina*	Two small grids	Year-round	6 weeks	Victors	40
					A24s	20
Ekahanui	*A. mustelina*	Many small grids	Year-round	2 weeks	Victors	47
					A24s	30
Ekahanui	*C. ibidis*	Large-scale grid	In Season: Dec-June	2 weeks	Victors	674
Ekahanui	*A. mustelina, Cyanea grimesiana, Schiedea kaalae, Delissea waianaeensis*	Large-scale grid	Off Season: July-Nov	2 weeks	Victors	200
Kaala	*Labordia cyrtandrae*	One small grid	Rapid Response	6 per year	Victors	35
					Kamates	35
Kahanahaiki	*A. mustelina, Cyanea superba*	Large-scale grid	Year-round	4 weeks	A24s	120
				6 per year	Victors	37

MU/Area	Primary Spp. Protected	Description	Deployment	Check Interval	Trap Type	# Traps
Kaluaa	*D. waianaeensis, C. grimesiana*	One small grid	Rapid Response		Kamates	38
Kamaohanui	*A. mustelina*	One small grid	Year-round	6 weeks	Ka Mates	47
					A24s	10
Kapuna/ Keawapilau	*Hesperomannia oahuensis*	One small grid	Rapid Response	6 per year	Victors	23
					A24s	5
Kapuna/ Keawapilau	*Schiedea nuttallii*	One small grid	Rapid Response	6 per year	Victors	13
					A24s	4
Makaha Unit I	*A. mustelina, H. oahuensis, C. superba*	Large-scale grid	Year-round	4 weeks	A24s	111
Makaha Unit I	*H. oahuensis*	One small grid	Rapid Response	6 per year	Victors	14
					A24s	6
Makaha Unit II	*C. grimesiana, Cyanea longiflora, H. oahuensis, S. nuttallii*	Many small grids	Year-round	6 weeks	A24s	47
Makaha Unit II	*C. grimesiana*	One small grid	Rapid Response	6 per year	Victors	12
Makaha Unit II	*H. oahuensis*	One small grid	Rapid Response	6 per year	Victors	12
Manuwai	*D. waianaeensis*	One small grid	Rapid Response	6 per year	Victors	14
					Ka Mate	12
					A24s	8
Moanalua	*C. ibidis*	Many small grids*	Annual: Dec-June	2 weeks	Victors	180
Ohikilolo	*A. mustelina, Pritchardia kaalae*	Many small grids	Year-round	6 weeks	Victors	133
					A24s	53
Opaeula Lower	*Cyrtandra dentata*	One small grid	Year-round	6 weeks	Victors	24
Palehua	*C. ibidis*	Large-scale grid	Annual: Dec-June	2 weeks	Victors	200
Palikea	*A. mustelina*	Large-scale grid	Year-round	2 weeks	Ka Mate	250
Pualii	*H. oahuensis*	One small grid	Rapid Response	6 per year	Victors	24
					A24s	4
Lihue (Banana)	*C. ibidis*	Many small grids*	Annual: Dec-June	4 weeks†	Victors	111
Lihue (Haleauau)	*C. ibidis*	Many small grids*	Annual: Dec-June	4 weeks†	Victors	166
Lihue (Haleauau)	*A. mustelina*	Two small grids	Year-round	6 weeks	Victors	24
Lihue (Haleauau)	*H. oahuensis*	One small grid	Rapid Response	6 per year	Victors	12
					A24s	3

MU/Area	Primary Spp. Protected	Description	Deployment	Check Interval	Trap Type	# Traps
Lihue (Mohiakea)	*C. ibidis*	Many small grids*	Annual: Dec-June	4 weeks†	Victors	165
Lihue (Mohiakea)	*D. waianaeensis*	One small grid	Rapid Response	6 per year	Victors	7
Makaleha West	*C. grimesiana*	One small grid	Year-round	6 weeks	Victors	29
Kaluaa and Waieli	*A. mustelina*	One small grid	Year-round	6 weeks	Victors	25
Kahanahaiki	*A. mustelina*	Predator-proof fence	Constructed 1998			
Waieli-Hapapa	*A. mustelina*	Predator-proof fence	Constructed 2011			
Palikea	*A. mustelina*	Predator-proof fence	Constructed 2012			

* *Each managed Elepaio (C. ibidis) territory has 12-15 traps installed ~12 m apart.*

† *Due to limited range access traps are baited twice during one week once a month.*

8.2 TRACKING TUNNEL RESULTS FROM LARGE-SCALE GRIDS

For this report and future reports, a graph of tracking tunnel results will be provided for all of our large-scale grids (Kahanahaiki, Ekahanui, Makaha, Ohikilolo, and Palikea) (see Figures 1-5). In general, these graphs should be used to look at the differences between years or between control and treatment sites. Small changes of ~20% or less between or within grids cannot be assessed accurately. At Kahanahaiki, there is an associated control site at Kapuna MU where no rodent control is being conducted. At other grids we collected control data for one year after the grid was installed. At Makaha MU there are monitoring tunnels within the A24 grid and we compare these to tunnels that are outside of the trapping grid. The goal of OANRP rat control is to keep tracking levels at 10% or less though out the year. This number is based on goals developed in New Zealand.

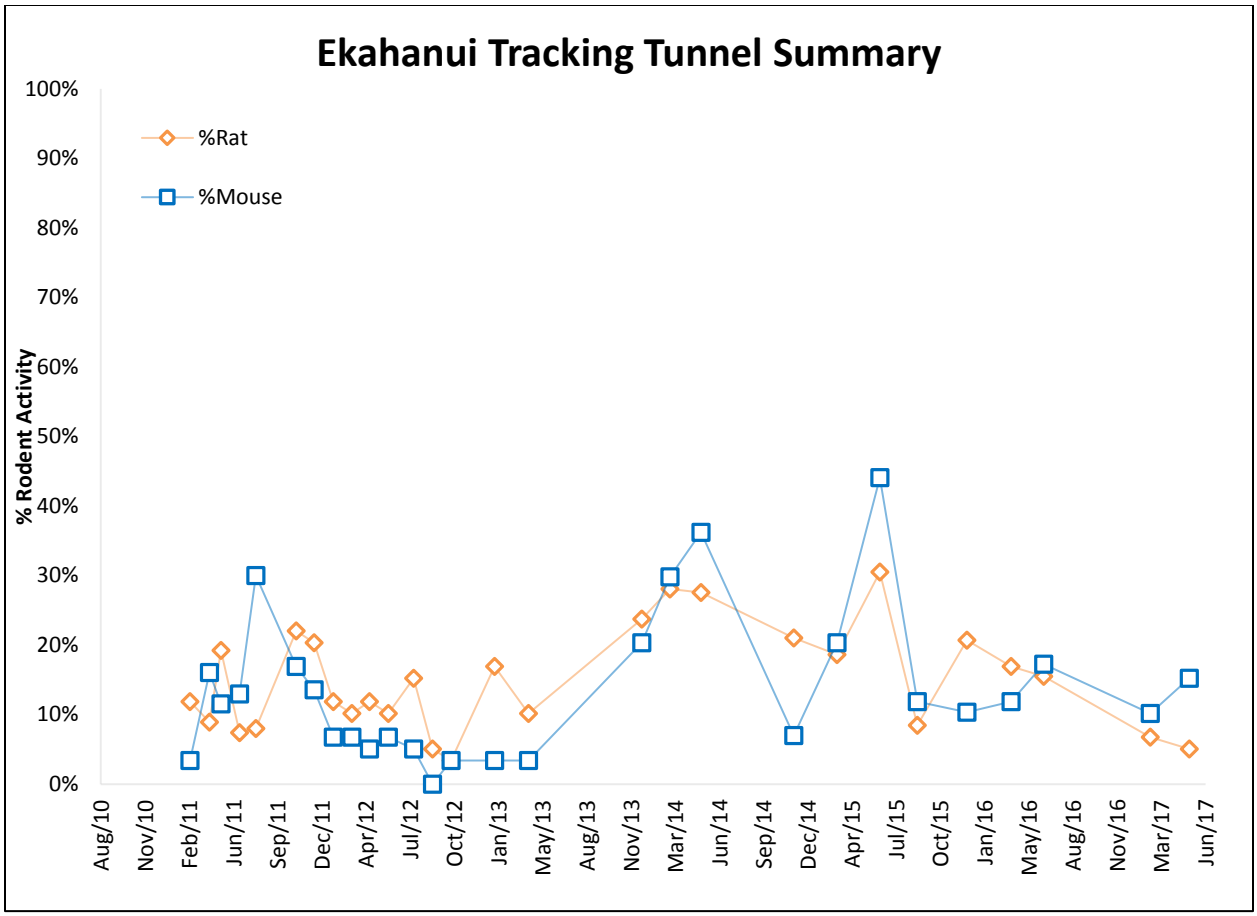

Figure 1. Percent of rodent activity at Ekahanui.

The Ekahanui grid is predominantly Victors with a few A24s installed around snail areas. Tracking has a relatively stable trend with a high of 30% in June of 2015. Most tracking events show rates around the 10% goal (Figure 1). OANRP look forward to seeing the effect of the installation of the full A24 grid in fall 2017.

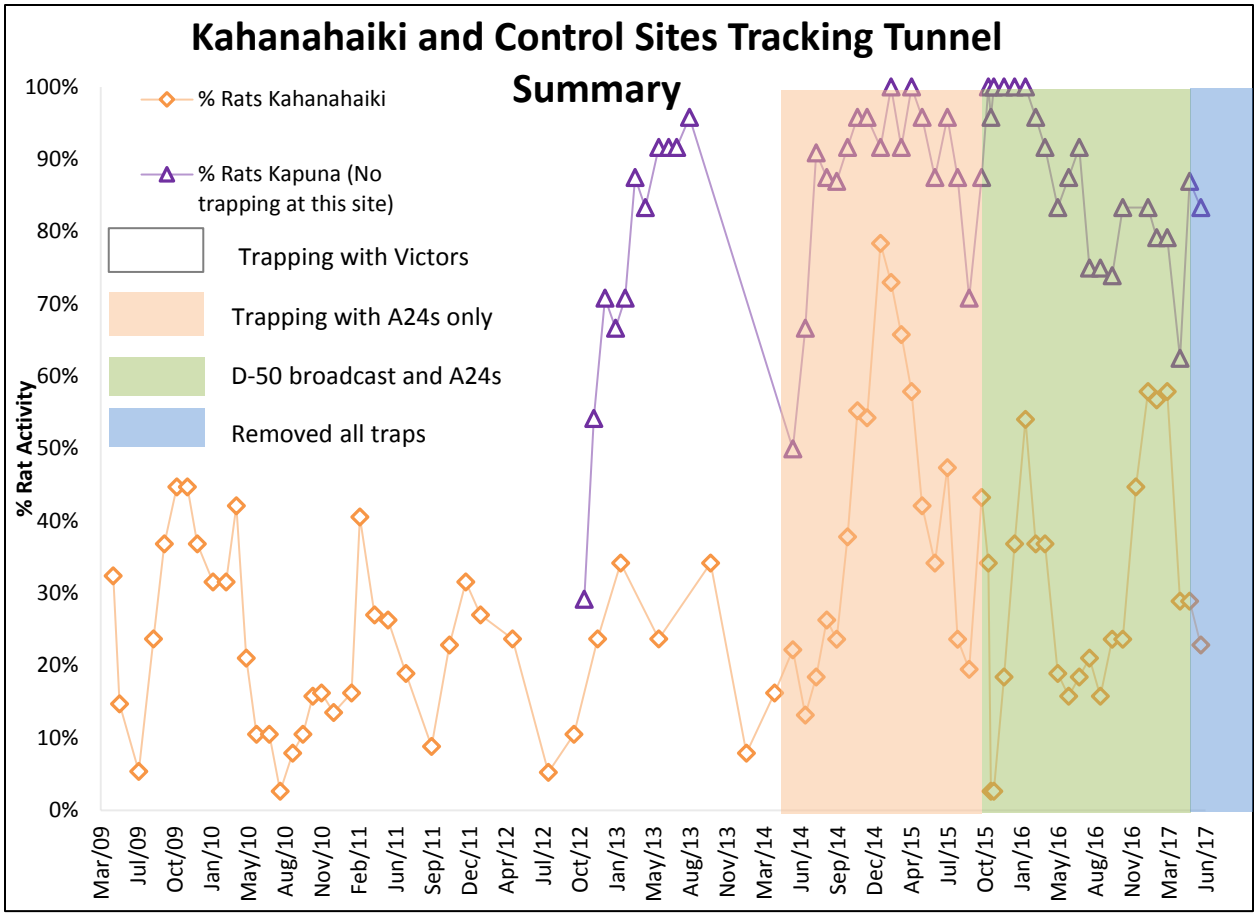

Figure 2. Percent of rat activity at Kahanahaiki and Kapuna.

Kahanahaiki has been one of the most difficult areas to maintain low tracking rates. Over the years OANRP has employed various methods (Figure 2). Lowest rates of tracking were seen in 2015 following the hand broadcast (OANRP 2016). Currently there are no traps deployed as we are experimenting with Contra-pest birth control. Results will be reported next year. Mouse tracking data is omitted for simplicity.

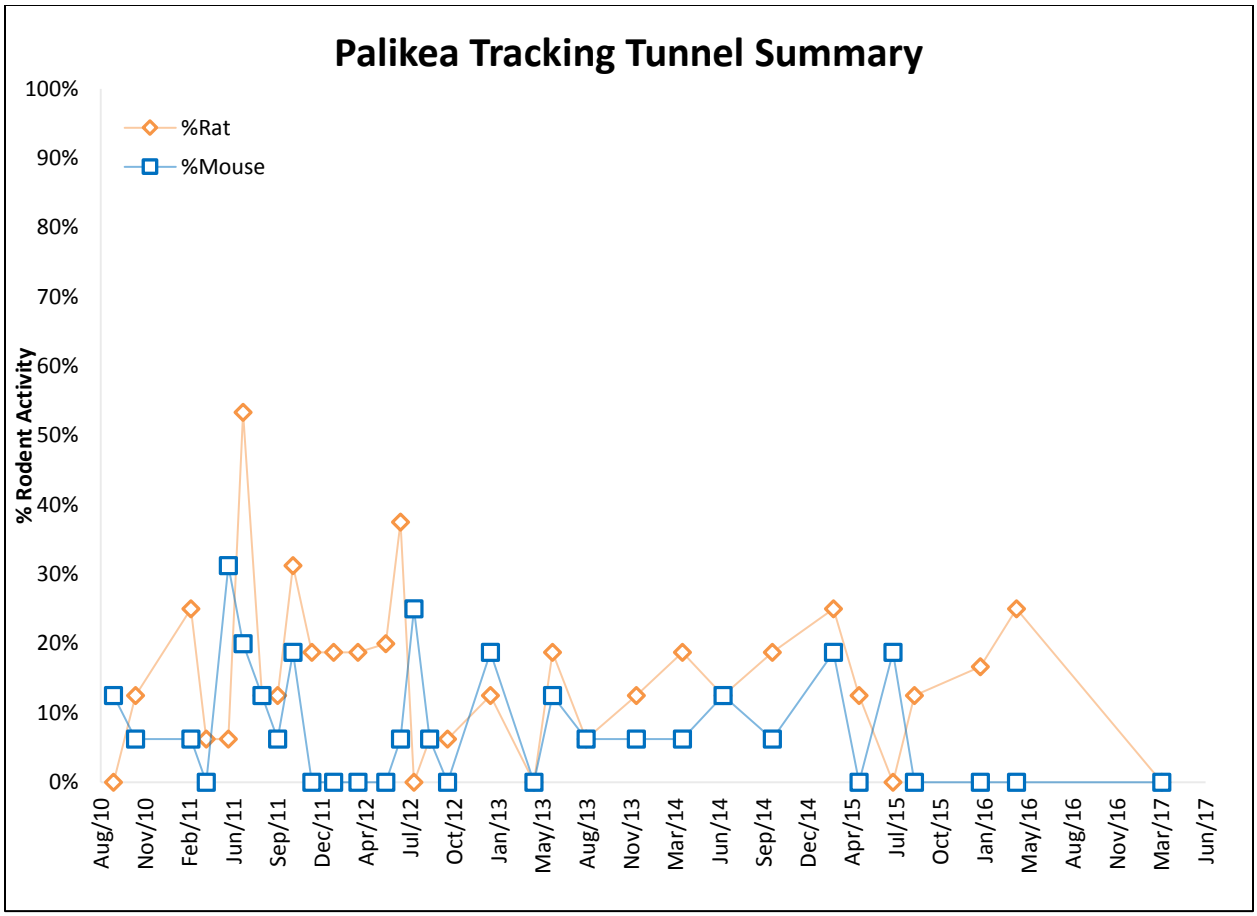

Figure 3. Percent of rodent activity at Palikea.

The Palikea grid is Ka Mate traps. Tracking has a relatively stable trend with a high of 53% in June of 2011. Most tracking events show rates around the 10-20% level (Figure 3). OANRP look forward to seeing the effect of the installation of the full A24 grid in fall 2017.

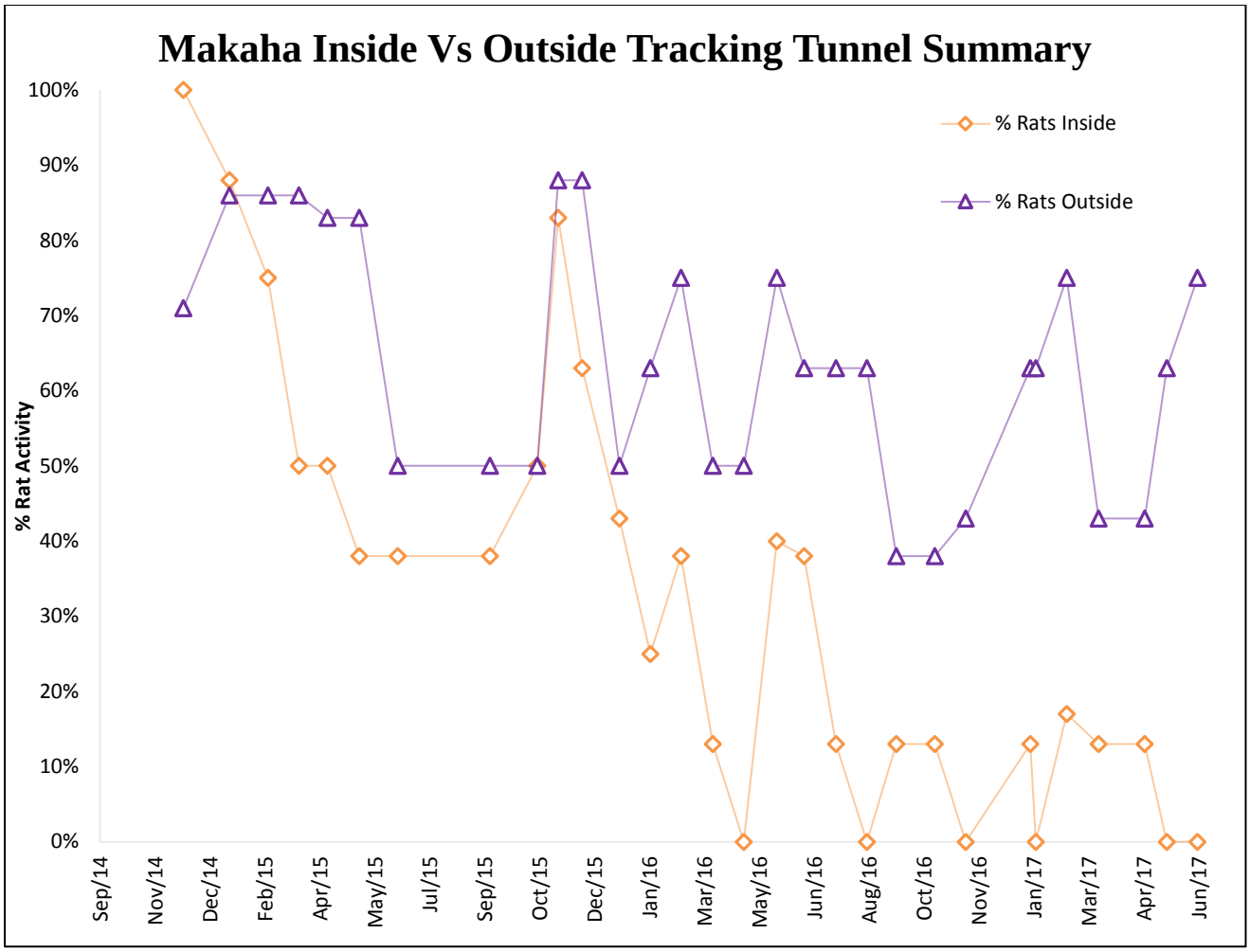

Figure 4. Percent of rodent activity at Makaha inside and outside of the A24 grid.

The Makaha grid is all A24s with auto lure pumps (ALPs). Tracking is very impressive with six 0% tracking events in 2016 and all other events close to the 10% goal (Figure 4). These results have motivated the transitions of the other grids to A24 with ALPs.

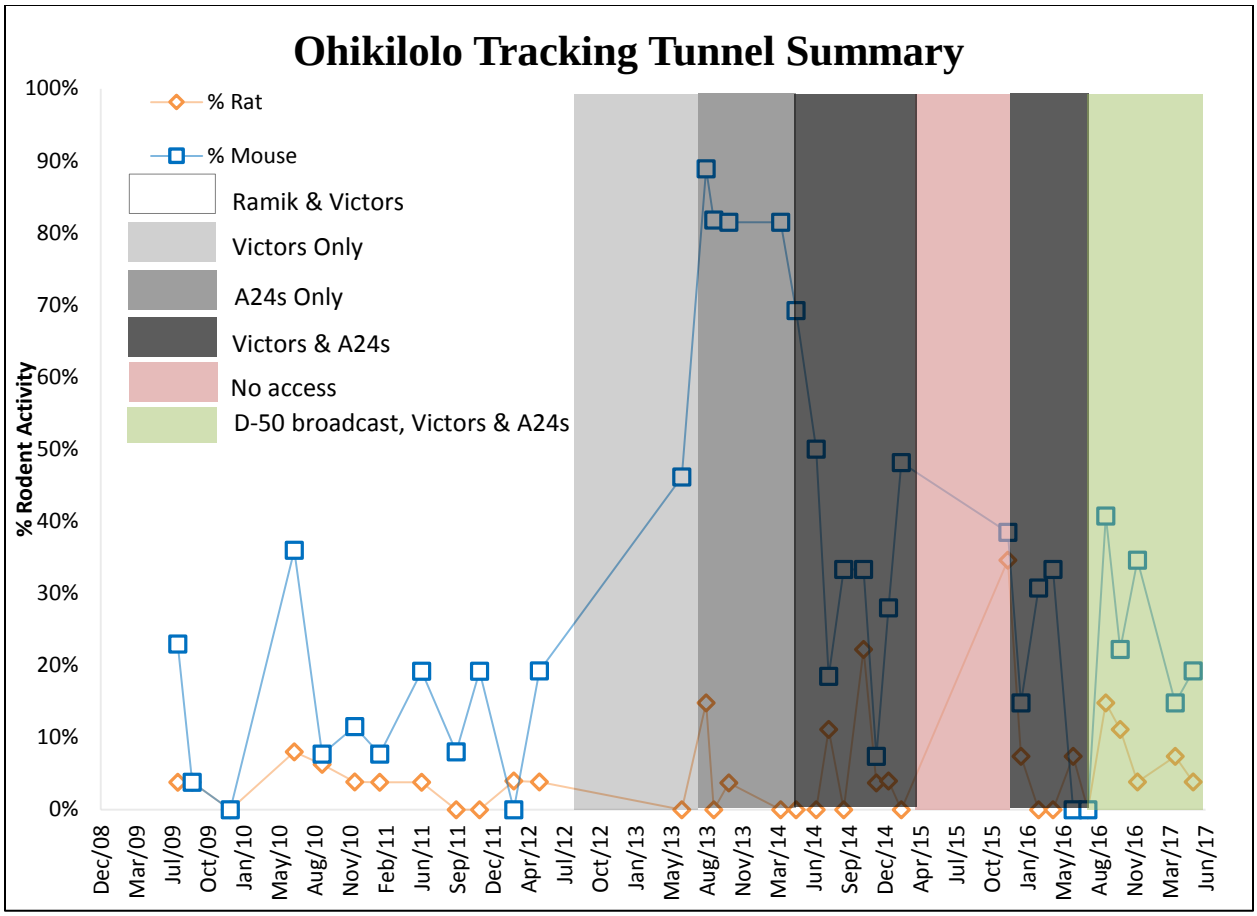

Figure 5. Percent of rodent activity at Ohikilolo.

The Ohikilolo grid is A24s with ALPs and Victors. The tracking trends looks good over the past year with all events under 10% (Figure 5).

8.3 TRANSITION TO A24S

Our program has been using A24s since 2013 at several MUs and has conducted numerous trials of the traps and bait. There have been some mechanical issues involving leaking seals and gaskets that have reduced the efficacy of these traps. GoodNature has addressed these malfunctions and now produces a trap that has very few issues.

Bait longevity and attractiveness are also key to trapping success. Several reasons for decreased longevity/attractiveness include mold, ants, and slugs. It is not uncommon to see slugs remove all of the bait within weeks of placement (see Figure 6). The old bait system used a “static” lure that would only last from one to four weeks at our MUs. We have also been working to optimize trap spacing. Currently we are deploying at 100x50m grids but will continue to investigate this factor.

Figure 6. Static lure being consumed by a slug.

Goodnature has now developed a new bait delivery system called the Automatic Lure Pump (ALP) (see Figure 7). This system is designed to deliver a constant supply of bait to the opening of the unit therefore increasing attractiveness. We have trialed several hundred ALPs and find that they generally last around 4 months at most of our MUs. Because of the constant flow we find that very little mold develops on the bait. Slugs are the biggest consumer of bait and still can access this system. We have demonstrated that by adding 5% citric acid to the Goodnature rat lure we can decrease consumption by slugs (Section 9.3). Plans are to trial this addition in the ALPs to stop slug consumption.

Figure 7. ALP on left fully consumed by slug. ALP on right is an example of an ALP in good working order.

Because of the advances in trap design as well as the introduction of the ALP, we are confident that the A24 will be more effective and less labor intensive than current and past methods. This method has the added benefit of being more humane than other traps and rodenticides. Beginning in the fall of 2017 we will be transitioning all Oahu Elepaio Victor snap trap grids to A24s. We plan on using one A24 for every two victor traps and these will be checked every four months, year around. If the addition of citric acid prolongs the bait longevity to 6 months we will change our checking interval accordingly. We will continue to monitor the tracking tunnels at MUs on a quarterly basis to determine the effectiveness of this approach on tracking rates. Hopefully we will be able to maintain tracking to the 10% target level.

8.4 CONTRAPEST TRIAL

We will be entering into a cooperative agreement with SenesTech inc. to conduct a trial with their rodent birth control product ContraPest. Tracking tunnel monitoring data at several sites has shown that rodent activity typically spikes in Dec-Feb despite the use of mechanical traps. In an attempt to reduce seasonal spikes and maintain low-levels of rodent activity year-round, we have received an Experimental Use Permit (EUP) to trial ContraPest in a forest environment at Kahanahaiki MU. The treatment site will be a 4 ha area within the gulch and an associated 4 ha reference site in the Maile Flats (Appendix 8-1). We have removed all traps from the MU and will run this trial without any traps. We may install localized control around certain plant populations in the MU that do not fall within the trial grids.

8.5 FUTURE PLANS

We will continue to work with the A24 trap and bait to maximize its full potential. Now that the checking interval is every 4-6 months we may be able to expand protection to more areas for less cost. It would be worth evaluating if MU grids should be installed at some sites that have isolated or territory based grids.

We may investigate an alternative to our current monitoring methods using tracking tunnels. It is becoming difficult to purchase the tracking cards that are designed for our environment and the current method requires two consecutive days of labor. Motion triggered game cameras may be an option that could cut labor in half. Camera locations would be baited and the cameras would be set to take pictures for one day. We would not return to retrieve the pictures until the next monitoring period thus saving labor. The only downside would be the loss of real time data as we would be seeing the activity three months after it was collected. A trial would need to be conducted to see how results from cameras compares to results from tracking tunnels. Finding a cheap reliable game camera may also be key, as equipment costs could be high for this type of project.