

## CHAPTER 6: RARE VERTEBRATE MANAGEMENT

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OANRP manages or monitors three vertebrate species, Hawaiian Monarch Flycatcher (Oahu Elepaio), Hawaiian Goose (Nene), and the Hawaiian Hoary Bat (Opeapea). Results of our management and monitoring efforts are presented below.

### 6.1 OIP ELEPAIO MANAGEMENT 2016

#### 6.1.1 Background

In 2000, the U.S. Fish and Wildlife Service (USFWS) granted the Oahu Elepaio (*Chasiempis ibidis*) endangered species status under the Federal Endangered Species Act and designated critical habitat on Oahu for the Elepaio in 2001. Under the terms of the Biological Opinion for Routine Military Training and Transformation dated 2003, Oahu Army Natural Resources Program (OANRP) is required to manage a minimum of 75 Oahu Elepaio pairs. Management of a pair includes monitoring and rodent control during the breeding season. The OANRP is required to conduct on-site management at Schofield Barracks West Range (SBW) for as many of the 75 pairs as possible, with the remaining number managed at off-site locations with cooperating landowners. The OANRP has conducted rodent control and Elepaio monitoring at Schofield Barracks Military Reservation (SBMR) (1998-present), Ekahanui Gulch in the Honouliuli Forest Reserve (2005-present), Moanalua Valley (2005-present), Palehua (2007-present), Makaha Valley (2005-2009), and Waikane Valley (2007-2008). This chapter summarizes Elepaio reproduction results at each of the sites currently being managed, and provides recommendations for improving the Elepaio stabilization program. This section also lists and discusses the terms and conditions for the implementation of reasonable and prudent measures outlined in the 2003 Biological Opinion. A population growth analysis study is also included in this report as Appendix 6-1.

#### 6.1.2 Methods

##### *Monitoring*

Throughout the nesting season, from early January to late June, each managed Elepaio territory was visited at one or two-week intervals depending on breeding activity. Single male and paired territories where rodent control is not taking place are also monitored for breeding activity whenever possible, though their results are not included with that of managed pairs. The location and age of all birds observed and color band combination (explained below), if any, was noted on each visit. Nests were counted as successful if they fledged at least one chick. Nest success (successful nests/active nests) was calculated by the number of successful nests per the number of active nests. Active nests are nests known to have had eggs laid in them as determined by observations of incubation. Reproductive success (fledglings/managed pair) was measured as the average number of fledglings produced per managed pair. Some nests were abandoned for unknown reasons before eggs were laid. If a nest is abandoned after an egg is laid it is considered to have failed. To get a better sense of what happens at the nest during the night and why nests might be failing we installed motion sensor cameras at four nests in three management units that were built low to the ground. During the night, the black rat (*Rattus rattus*) is a serious threat to eggs, nestlings, and incubating female Elepaio. However, photographs taken from the cameras did not reveal any nest predation. This is the first year OANRP has conducted this type of monitoring. We hope to improve this monitoring technique and deploy more cameras into the field in future breeding seasons.

To facilitate demographic monitoring, Elepaio have been captured with mist-nets and marked with a standard aluminum bird band and a unique combination of three colored plastic bands. This is useful

because it allows individual birds to be distinguished through binoculars and provides important information about the demography of the population, such as survival and movement of birds within and between years. It also makes it easier to distinguish birds from neighboring territories, yielding a more accurate population estimate. In most cases, Elepaio vocal recordings were used to lure birds into a mist-net. Each bird was weighed, measured, inspected for molt, fat, overall health, and then released unharmed at the site of capture within 30 minutes.



**Figure 1:** A small number of cameras were deployed at nests built low to the ground to monitor activity at night.

### ***Rodent Control***

This breeding season OANRP again used a combination of small and large-scale trapping grids containing only Victor<sup>®</sup> rat snap traps baited with peanut butter. Small-scale grids, deployed throughout the territory of an Elepaio pair at SBW and Moanalua Valley, consisted of 12-15 snap traps tied to trees or rocks to prevent scavengers from removing them. Territories labeled as single or vacant may have also contained snap traps baited throughout the breeding season. These territories once contained an Elepaio pair, but one or both birds have not recently been observed. These territories continue to be baited to help

control rodents throughout the management area. Traps were counted as having caught a rodent if hair or tissue was found on the trap. Traps were cleaned with a wire brush after each capture so previous captures were not counted twice. Rodent control was conducted for the duration of the Elepaio nesting season. At Ekahanui, a large-scale rat trapping grid containing over 600 snap traps was deployed in 2011 for management of all Elepaio territories in the management unit. A second large-scale grid containing 170 snap traps was deployed in 2015 at Palehua to ensure rodent protection for all resident pairs. Another 22 traps were added this year at Palehua for a total of 192. Traps at all four sites were checked and re-baited every two weeks during the breeding season (December – June). Due to Army training at SBW we were allowed access only one week each month. Therefore, frequency of baiting was twice during that week of access to maximize the number of rodent kills. Pono Pacific was contracted to conduct rodent control at each of the four sites: Moanalua, SBW, Ekahanui and Palehua. OANRP conducted the monitoring of birds at each of these MUs.



**Figure 2:** Support Operations Office Associate, Kau'i Racette, with a molting adult Elepaio at Moanalua Valley.

### 6.1.3 Results

With 86 Elepaio pairs managed during the 2016 breeding season, the OANRP fulfilled the required 75 pairs for species management. The results of management conducted for each area during the 2016 breeding season are compiled below. The results from each area are presented in two ways. First, a map presents a compilation of all the known Elepaio territories within each Elepaio MU. The map denotes all of the territories that were baited. Second, the data is presented in tabular form with the number of territories that were single or contained pairs. The table also presents the number of paired territories in which rodent control was conducted, the number of active nests observed, total successful and failed

nests, how many fledglings were observed, and the ratio of fledglings per pair. Rodent control data and a summary of results are also presented.

In the past we have reported numbers of rats captured for each of our 4 Elepaio MUs, however due to a number of reasons we will no longer be reporting that information. We have conducted several quality control checks of the contractor responsible for baiting the traps and have determined that the data is not accurate enough to analyze. Additionally, heavy rains and scavengers such as cats and mongoose are capable of removing any evidence of a rodent capture. Due to these factors we believe the capture data does not accurately reflect the relative abundance of rodents due to the under-recording of captures per year at each MU. Until we can more accurately record the total catches it is of little use to report this information. Instead, we propose the use of tracking tunnels as a monitoring tool to estimate percent rat activity and monitor our rat control efforts. Of the 4 Elepaio units managed we currently conduct quarterly tracking tunnel monitoring only at Ekahanui (see Chapter 8, Section 8.2 of this document). However, we have recently installed tracking tunnels at SBW and will be monitoring these every other month for the next 2 years as part of a pilot project involving an aerial broadcast of Diphacinone-50. Currently there are no plans to conduct tracking tunnel monitoring at Moanalua, but this is recommended to better monitor our control efforts. This type of monitoring method does have some limitations and cannot be used accurately at sites that are too small such as Palehua.



**Figure 3:** A banded Elepaio comes in to feed small nestlings. A bird is identified by its band combination, which is read top to bottom, left leg first then right leg. In this case, it would be yellow/green, white/aluminum or YGWA.

*Schofield Barracks West Range***Schofield Barracks West Range Territory Occupancy Status and Rat Control 2016**

***Map removed to protect rare resources. Available upon request***

**Schofield Barracks West Range Site Demographic Data**

<b>SBW</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
<b>Singles</b>	16	16	17	18	16	15
<b>Pairs</b>	66	58	57	60	58	56
<b>Pairs with Rat Control</b>	28	26	22	29	28	31
<b>Active Nests<sup>1</sup></b>	14	14	16	18	23	34
<b>Successful Active Nests<sup>2</sup></b>	10/14=71%	8/14=57%	8/16=50%	9/18=50%	16/23=70%	22/34=65%
<b>Unknown Nest Outcome<sup>3</sup></b>	2	2	3	0	0	0
<b>Failed Active Nests</b>	4	4	5	9	7	12
<b>Family Groups Found<sup>4</sup></b>	7	5	8	15	11	11
<b>Fledglings Observed<sup>5</sup></b>	21	14	20	28	28	46
<b>Fledglings/Managed Pair<sup>6</sup></b>	0.75	0.54	0.91	0.97	1	1.48

<sup>1</sup> Nest containing eggs or nestlings.

<sup>2</sup>Percentage of successful active nests observed.

<sup>3</sup>Total number of active nests with unknown outcome (sufficient time gap between visits).

<sup>4</sup>Total number of occurrences where pairs were observed with fledglings in which no nests were found.

<sup>5</sup>Total number of fledglings observed from successful active nests and family groups.

<sup>6</sup>The ratio of fledglings per managed pair.

### Reproductive Results

Of the active nests monitored in SBW, 71% (10/14) were successful in producing 14 fledglings, while 29% (4/14) of the active nests failed. Two nests had unknown outcomes (nests with sufficient time gap between visits in which a nest could have fledged with no subsequent detection of a fledgling). Another 7 fledglings were found with seven managed pairs where no nesting had been observed (family groups). A total of 21 fledglings were observed in territories benefiting from rodent control management. Another 6 fledglings were observed in territories not protected from rats.

### Summary

Access in SBW was again limited to four or five days per month in 2016 due to weekly training by the Army. This allows for approximately one day per month of access for monitoring to each of the three managed gulches in SBW. This reduces the time available during the breeding season for the OANRP to detect active nests and fledglings. Despite the limited access, SBW recorded its highest number of resident pairs and 71% of active nests produced one or more fledglings. Twenty-one fledglings were observed in baited territories, making it the highest total since 2013. The resident population does include the South Haleauau drainage, which does not get monitored during the breeding season and was last surveyed in 2010. A follow-up survey to the one conducted six years ago is desperately needed to ensure an accurate population census of SBW.



**Figure 4:** “Elepaio have gigantic eyes. In fact, the only thing bigger than Elepaio’s eyes is his huge curiosity.” – Vince Mahoney, author

*Honouliuli Forest Reserve – Ekahanui***Ekahanui Territory Occupancy Status and Rat Control 2016**

**Map removed to protect rare resources. Available upon request**

**Ekahanui Site Demographic Data**

<b>EKA</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
<b>Singles</b>	2	0	5	1	11	14
<b>Pairs</b>	40	39	30	39	31	30
<b>Pairs with Rat Control</b>	37	37	28	36	29	30
<b>Active Nests<sup>1</sup></b>	12	23	14	26	21	15
<b>Successful Active Nests<sup>2</sup></b>	8/12=67%	13/23=56%	7/14=50%	17/26=65%	9/21=43%	8/15=53%
<b>Unknown Nest Outcome<sup>3</sup></b>	1	5	3	3	0	1
<b>Failed Active Nests</b>	4	6	6	9	12	6
<b>Family Groups Found<sup>4</sup></b>	22	6	12	8	6	15
<b>Fledglings Observed<sup>5</sup></b>	36	24	21	29	18	26
<b>Fledglings/Managed Pair<sup>6</sup></b>	0.97	0.65	0.75	0.81	0.62	0.87

<sup>1</sup> Nest containing eggs or nestlings.

<sup>2</sup>Percentage of successful active nests observed.

<sup>3</sup>Total number of active nests with unknown outcome (time gap between visits).

<sup>4</sup>Total number of occurrences where pairs were observed with fledglings in which no nests were found.

<sup>5</sup>Total number of fledglings observed from successful active nests and family groups.

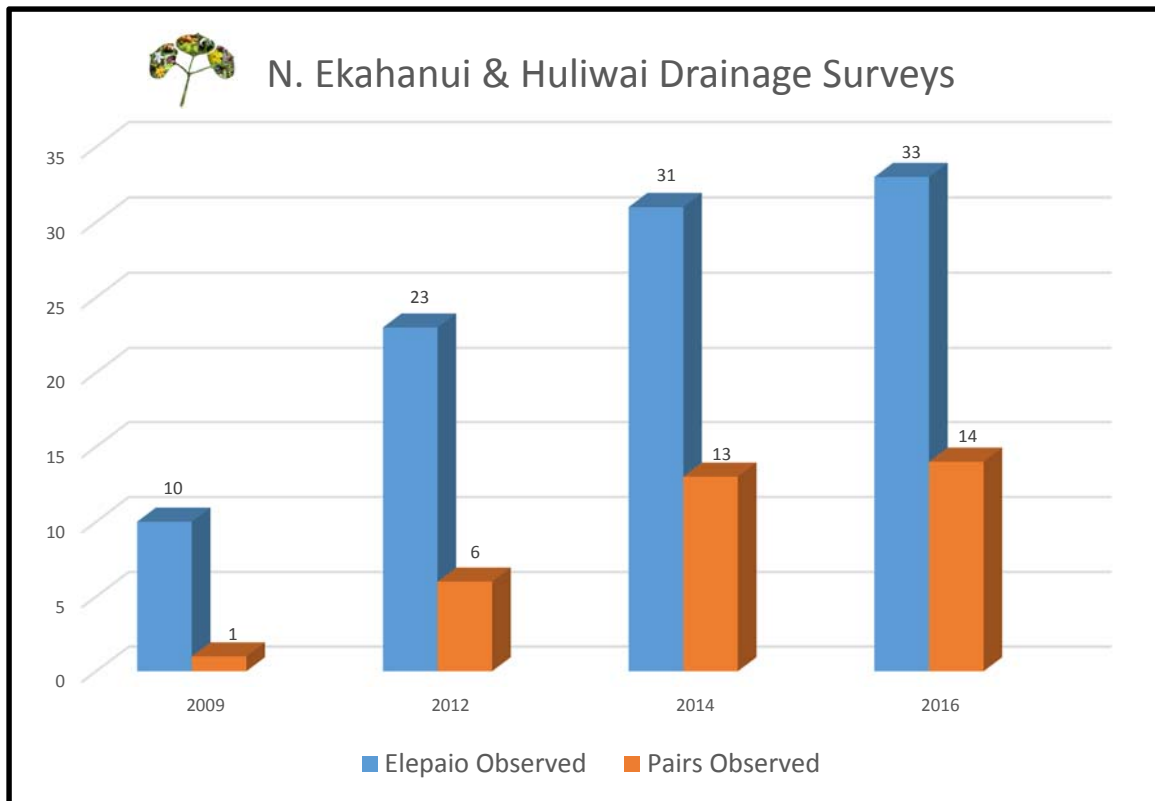
<sup>6</sup>The ratio of fledglings per managed pair.

### Reproductive Results

Of the active nests monitored, 67% (8/12) were successful, producing eleven fledglings, and 33% (4/12) of active nests failed. One nest had an unknown outcome (nest with sufficient time gap between visits in which a nest could have fledged with no subsequent detection of a fledgling). Twenty-five fledglings were found in twenty managed pairs where no nesting had been observed (family groups). A total of 36 fledglings were observed in territories benefiting from rodent control management. Another three fledglings were observed in territories not protected from rats.

### Summary

It was a very productive breeding season at Ekahanui this year. Thirty-six fledglings were found, most of them in family groups that were observed in late 2015. Seventeen pairs at Ekahanui produced twenty fledglings during the fall months of 2015, possibly due to favorable weather conditions in September-November. Breeding activity during these months is rare, especially involving such a significant number of pairs. Also, we continued with our biennial surveys of the two drainages north of the Ekahanui MU. After a 2-day survey it is encouraging to see that these populations have continued to remain stable since 2014, with just a slight increase in the number of birds and breeding pairs observed. It is our hope that successful rodent control at Ekahanui is helping to repopulate areas capable of sustaining breeding pairs of Elepaio.



**Figure 5:** Results of surveys conducted in non-managed drainages north of Ekahanui.



*Palehua***Palehua Territory Occupancy Status and Rat Control 2016**

***Map removed to protect rare resources. Available upon request***

**Palehua Site Demographic Data**

HUA	2016	2015	2014	2013	2012	2011
<b>Singles</b>	2	1	2	0	0	0
<b>Pairs</b>	11	15	11	17	16	17
<b>Pairs with Rat Control</b>	11	15	10	17	16	17
<b>Active Nests<sup>1</sup></b>	6	6	8	16	8	13
<b>Successful Active Nests<sup>2</sup></b>	2/6=33%	3/6=50%	4/8=50%	11/16=69%	3/8=38%	10/13=76%
<b>Unknown Nest Outcome<sup>3</sup></b>	0	0	0	0	0	2
<b>Failed Active Nests</b>	4	3	4	5	5	1
<b>Family Groups Found<sup>4</sup></b>	5	1	4	5	3	5
<b>Fledglings Observed<sup>5</sup></b>	8	5	10	21	6	16
<b>Fledglings/Managed Pair<sup>6</sup></b>	0.72	0.33	1	1.24	0.38	0.94

<sup>1</sup> Nest containing eggs or nestlings.

<sup>2</sup> Percentage of successful active nests observed.

<sup>3</sup> Total number of active nests with unknown outcome (time gap between visits).

<sup>4</sup> Total number of occurrences where pairs were observed with fledglings in which no nests were found.

<sup>5</sup> Total number of fledglings observed from successful active nests and family groups.

<sup>6</sup> The ratio of fledglings per managed pair.

### Reproductive Results

Of the active nests monitored, 33% (2/6) were successful in producing three fledglings, while 67% (4/6) of the nests failed. Five fledglings were found with four managed pairs where no nesting had been observed (family groups). A total of eight fledglings were observed in territories benefiting from rodent control management.

### Summary

Our smallest Elepaio population had another modest breeding season at Palehua. Number of pairs dropped back down to eleven, equaling the total for 2014. It's unclear if the drop in pairs is due to the death of one or both birds in a pair or if the birds decided to move to more attractive breeding areas. Fledglings are up from the previous year, though successful active nests was at its lowest since 2010. Five pairs began nesting early in September-October of 2015. They likely took advantage of favorable weather conditions in the fall. Five fledglings were found before the end of November, which is an unusual occurrence at our management units.



**Figure 6:** Processing an Elepaio includes collecting biometrics data such as tail and wing measurements.

*Moanalua Valley***Moanalua Territory Occupancy Status and Rat Control 2016**

**Map removed to protect rare resources. Available upon request**

**Moanalua Site Demographic Data**

MOA	2016	2015	2014	2013	2012	2011
<b>Singles</b>	6	6	7	14	19	10
<b>Pairs</b>	34	33	32	33	32	21
<b>Pairs with Rat Control</b>	12	19	22	23	24	16
<b>Active Nests<sup>1</sup></b>	3	7	16	17	15	13
<b>Successful Active Nests<sup>2</sup></b>	1/3=33%	3/7=43%	5/16=31%	14/17=82%	10/15=67%	5/13=38%
<b>Unknown Nest Outcome<sup>3</sup></b>	2	1	7	6	2	5
<b>Failed Active Nests</b>	2	3	6	3	5	3
<b>Family Groups Found<sup>4</sup></b>	2	4	4	2	2	3
<b>Fledglings Observed<sup>5</sup></b>	3	7	11	17	13	9
<b>Fledglings/Managed Pair<sup>6</sup></b>	0.25	0.37	0.5	0.74	0.54	0.56

<sup>1</sup> Nest containing eggs or nestlings.

<sup>2</sup> Percentage of successful active nests observed.

<sup>3</sup> Total number of active nests with unknown outcome (time gap between visits).

<sup>4</sup> Total number of occurrences where pairs were observed with fledglings in which no nests were found.

<sup>5</sup> Total number of fledglings observed from successful active nests and family groups.

<sup>6</sup> The ratio of fledglings per managed pair.

### Reproductive Results

Of the active nests monitored, 33% (1/3) were successful in producing one fledgling, and 67% (2/3) failed. Two nests had unknown outcomes (nests with sufficient time gap between visits in which a nest could have fledged with no subsequent detection of a fledgling). Two fledglings were found in four managed pairs where no nesting had been observed (family groups). A total of three fledglings were observed in territories benefiting from rodent control management. Another three fledglings were observed in territories not protected from rats.

### Summary

The breeding season in Moanalua Valley this year produced few active nests and a small number of fledglings. The resident population remains high, though just one nest was successful from only three that were active at 12 managed pairs. Unfavorable weather conditions with above average rainfall during the spring and summer months, especially April-July, likely played a role in the lack of breeding success at this MU. Monitoring also proved to be challenging this season due to the poor weather conditions and a deteriorating road that provides access to Elepaio territories scattered throughout this 1,300 acre management unit.



**Figure 7:** A very inquisitive juvenile Elepaio at Moanalua Valley.

### 6.1.4 OIP Summary

#### Management Action Highlights 2016

- Conducted rodent control in a total of 88 territories with pairs at four management sites.
- Completed a long-term species population growth analysis. See Appendix 6-1 for details.
- Completed the 4<sup>th</sup> survey since 2009 of the two drainages north of the Ekahanui MU. Since that time the Elepaio population north of Ekahanui has increased 303% with the number of breeding pairs increasing from 1 to 14.
- The table below summarizes the number of managed pairs and reproductive output since 2006.

#### Summary of Elepaio Management Table

Year	Managed Pairs	Success Active Nests	Family Groups	Fledglings	Fledglings/Managed Pair
2016 <sup>1</sup>	88	21	36	68	0.77
2015 <sup>1</sup>	97	27	20	50	0.52
2014 <sup>1</sup>	81	24	28	62	0.77
2013 <sup>1</sup>	105	51	38	95	0.90
2012 <sup>1</sup>	97	38	22	65	0.67
2011 <sup>1</sup>	94	47	34	96	1.02
2010 <sup>1</sup>	87	18	15	39	0.45
2009 <sup>2</sup>	81	29	24	60	0.74
2008 <sup>3</sup>	74	25	20	56	0.76
2007 <sup>3</sup>	78	18	26	46	0.59
2006 <sup>4</sup>	69	11	17	33	0.48

<sup>1</sup>SBW, Ekahanui, Moanalua, Palehua

<sup>2</sup>SBW, Ekahanui, Makaha, Moanalua, Palehua

<sup>3</sup>SBW, Ekahanui, Makaha, Moanalua, Waikane, Palehua

<sup>4</sup>SBW, Ekahanui, Makaha, Moanalua

#### Management Actions 2017

- Continue to mist-net and band all adult and juvenile Elepaio within the MUs to improve yearly demographic monitoring. In the process, recording songs and calls in order to expand our collection of Oahu Elepaio vocalizations at all MUs.
- Conduct surveys within and beyond MUs to monitor bird movements and population growth of the species. This includes a follow-up survey of South Haleauau gulch in SBW to update the original survey that was conducted in 2010.
- Increase the use of motion sensor cameras to monitor nesting activity at night and document Elepaio nest predation.
- Conduct rodent control and Elepaio monitoring at Ekahanui, SBW, Palehua and Moanalua to meet required 75 managed pairs.

### 6.1.5 Terms and Conditions for Implementation

Minimize direct impacts of military activities on survival and reproduction of Oahu Elepaio within the action area at Schofield Barracks Military Reserve (SBMR).

1. *The Army will report to the Service in writing at least semiannually (twice per year) the number of high explosive rounds that land above the fire break road, the locations where such rounds land, and whether these locations are within any known Elepaio territories.*

[No high explosive rounds landed above the firebreak road]

2. *The Army will notify the Service within 24 hours of any fires that burn any portion of a known Elepaio territory and the number of Elepaio territories affected.*

[No fires affected any known Elepaio territories during the 2015 breeding season]

3. *The Army will limit training actions in the forest above the fire break road at SBMR in the Elepaio nesting season (January to May) to small numbers of troops (platoon or less) that remain in one location for short periods of time (one hour or less), to limit possible nest disturbance.*

[No training actions have occurred above the firebreak road]

4. *The depository designated to receive specimens of any Oahu Elepaio that are killed is the B.P. Bishop Museum, 1525 Bernice Street, Honolulu, Hawaii, 96817 (telephone: 808/547-3511). If the B.P. Bishop Museum does not wish to accession the specimens, the permittee should contact the Service's Division of Law Enforcement in Honolulu, Hawaii (telephone: 808/541-2681; fax: 808/541-3062) for instructions on disposition.*

[No specimens were collected by OANRP staff]

Minimize loss of Oahu Elepaio habitat at SBMR, Schofield Barracks East Range (SBER), and Kawaihoa Training Area (KLOA).

1. *The Army will report to the Service in writing on a semi-annual (twice per year) the number of fires above the fire break road, the area burned by each fire above the fire break road, including the amount of critical habitat burned, and how each fire was ignited or crossed the fire break road.*

[On October 29, 2015 a fire burned 5.78 acres of Elepaio critical habitat at SBER. Surveys conducted before and after the fire revealed no resident Elepaio.]

2. *The Army will notify the Service within 24 hours of any instance in which training was not conducted in accordance with the Wildland Fire Management Plan (WFMP).*

[All training was conducted in accordance with the WFMP]

Manage threats to Oahu Elepaio and Oahu Elepaio habitat at SBMR, SBER, and KLOA.

1. *The Army will report to the Service in writing annually the number of Elepaio territories in which rats were controlled, the location of each territory in which rats were controlled, the methods by which rats were controlled in each territory, the dates on which rat control activities were conducted in each territory, and the status of Elepaio in each territory from the previous year.*

[This report documents all of the above requirements]

2. *The Army, Service, and ornithological experts will formally reassess all impacts to Oahu Elepaio and Elepaio critical habitat that have occurred during the first five years following completion of this*

*biological opinion. This formal review will occur before the end of calendar year 2008 and its purpose will be to reassess impacts from training exercises and, if necessary, correct any outstanding issues that are still impacting Elepaio and resulting in the loss suitable Elepaio habitat at SBMR. The feasibility of restoring critical habitat areas that have been lost also will be reassessed during this formal review.*

[Completed]



**Figure 8:** Adult feeding its young at a nest in native *Pisonia umbellifera*. This year, only 5% of Elepaio nests were built in native trees.

## 6.2 MIP ELEPAIO MANAGEMENT 2016

### Background

The initial Biological Opinion (BO) that triggered the development of the Makua Implementation Plan (MIP) was issued in 1999. At that time, the Oahu Elepaio (*Chasiempis ibidis*) was not listed as an endangered species, but the 1999 BO did include recommendations related to Elepaio. These included conducting complete surveys of the Makua Action Area (AA) for Elepaio presence, monitoring of all known Elepaio within Makua Military Reservation (MMR) and installing and maintaining predator control grids around nesting pairs within MMR. In 2000, the U.S. Fish and Wildlife Service (USFWS) granted the Oahu Elepaio endangered species status under the Federal Endangered Species Act and in 2001 designated critical habitat on Oahu for the Elepaio. In the *Supplement to the Biological Opinion and Conference Opinion for Proposed Critical Habitat for Routine Military Training at Makua Military Reservation* issued in 2001, the recommendations from the 1999 BO became requirements. In September 2004, the USFWS issued another BO that covered newly designated critical habitat within the Makua AA for plants and Elepaio. This BO outlined additional requirements related to this critical habitat. The most recent BO issued in 2007 required the protection of all Elepaio pairs within the Makua AA. A term and condition in this 2007 BO was to construct ungulate-proof fencing around Makua Military Reservation and control rodents using aerially broadcast rodenticide when authorized.

### Methods/Results

The methods section and the presentation of the results are in the same format as in the OIP Elepaio management section of this year-end report.



**Figure 9:** Elepaio molt all their feathers at the end of each breeding season. This bird must manage without a tail before growing back a new one.



## Makua Territory Occupancy Status and Rat Control 2016

**Map removed to protect rare resources. Available upon request**

### Makua Site Demographic Data

Makua	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
<b>Single Males</b>	2	N/A	0	2	2	2	2	1	1	2	4
<b>Single Females</b>	0	N/A	0	0	0	0	0	0	1	1	1
<b>Pairs</b>	0	N/A	0	0	0	0	0	2	2	2	1
<b>Pairs with Rat Control</b>	0	N/A	0	0	0	0	0	2	2	2	1
<b>Active Nests<sup>1</sup></b>	0	N/A	0	0	0	0	0	1	1	0	0
<b>Successful Active Nests<sup>2</sup></b>	0	N/A	0	0	0	0	0	0	0	0	0
<b>Unknown Active Nests<sup>3</sup></b>	0	N/A	0	0	0	0	0	1	0	0	0
<b>Failed Active Nests</b>	0	N/A	0	0	0	0	0	0	1	0	0
<b>Family Groups Found<sup>4</sup></b>	0	N/A	0	0	0	0	0	0	0	0	0
<b>Fledglings Found<sup>5</sup></b>	0	N/A	0	0	0	0	0	0	0	0	0
<b>Fledglings/Pair<sup>6</sup></b>	0	N/A	0	0	0	0	0	0	0	0	0

<sup>1</sup> Nest containing eggs or nestlings.

<sup>2</sup> Total number of successful active nests observed.

<sup>3</sup> Total number of active nests with unknown outcome (time gap between visits).

<sup>4</sup> Total number of occurrences where pairs were observed with fledglings in which no nests were found.

<sup>5</sup> Total number of fledglings observed from successful active nests and family groups.

<sup>6</sup> The ratio of fledglings per managed pair.

### Reproductive Results

In 2016, one survey of the valley was conducted at the end of June. Previous occupied territories and other areas containing suitable breeding habitat were surveyed with the help of digital recordings of Elepaio songs and calls specific to Makua Valley. During the 3-day camping trip two adult males were found, both defending separate territories in gulches deep within the valley. Another survey will hopefully take place in the fall to see if either male finds a mate. A breeding pair of Elepaio has not been observed in Makua Valley since 2009.

### **MIP Summary**

#### **Management Actions 2016**

- There were no Elepaio territories monitored for breeding activity in Makua Valley.

#### **Management Actions 2017**

- Conduct yearly territory occupancy surveys at all territories and surrounding gulches within the Makua AA, monitoring and banding, and data entry and organization.



**Figure 10:** As the sun rises, OANRP staff look out over beautiful Makua Valley.

### 6.3 NENE MANAGEMENT 2016

#### Background

A family of four Nene geese (*Branta sandvicensis*) were observed using a construction site at the eastern end of the Wheeler Army Airfield runway for foraging activities during the summer and early fall of 2014, but only sporadically since. The Nene were observed once during the reporting period in December 2015. The table and aerial photo below summarize observations through 30 June 2016

#### Summary of Nene observations through 30 June 2016

Date	Time (hrs)	Observed	Location
8/14/14	0745-1000	4 birds: K59, K60, 001 and 002	New planted and watered grass
9/23/14	1813	4 birds: K59, K60, 001 and 002	Southeast corner of airfield next to Medevac helicopter park, evaporation pond being built.
10/3/14	0830-0900	4 birds, bands not observed	North west edge of construction site, adjacent to pooling water and green new grass
10/4/14	1100	4 birds, bands not observed; could see transmitter on one bird.	North west edge of construction site, adjacent to pooling water and green new grass. Northern pintail duck also observed using same pool.
10/6/14	0715-0845 And 1000-1435	4 birds: K59, K60, 001 and 002	North west edge of construction site, adjacent to pooling water and green new grass
7/16/15	0915	3 birds	Area E Central, resting in planted grass area.
12/17/15	Not recorded	2 birds	Not recorded



**Figure 11:** Aerial photo of the WAAF construction site.

The parent birds were Kauai Island individuals, translocated to Hawaii Island in an effort to reduce the number of Nene near the Lihue airport. These birds left Hawaii Island and nested at the James Campbell National Wildlife Refuge (NWR) in Kahuku, Oahu in 2014. They successfully fledged two chicks, aided by the ongoing predator control program at the NWR. The male parent bird died during the past year (Aaron Nadig, USFWS, pers. comm.) so only three birds are known to remain on Oahu.



**Figure 12:** Nene geese at Wheeler Army Airfield.

### **Nene Management Summary**

In order to avoid any harm to the geese, the USFWS recommended all activity cease within 150 feet of the birds. In addition, OANRP outreach staff conducted an educational campaign. An article was published in the Hawaii Army Weekly that included information on how to report and avoid negatively impacting the Nene. In addition, outreach staff produced posters with the same information for sites around Wheeler where the Nene would most likely be observed including; the Wheeler Tower, Wheeler Airfield operations and the construction site offices. Additionally, the Leilehua golf course staff was notified to report any Nene appearances. OANRP are coordinating closely with USFWS to modify practices at the construction site to reduce the site's attractiveness and are including Nene in the Biological Assessment being prepared for Oahu training. OANRP developed a Nene observation form on which construction workers and airfield employees can record data and to ensure consistency. This form is included on the next page.

# NĒNĒ GOOSE OBSERVATION FORM

Date: \_\_\_\_\_ Observer Name/Contact: \_\_\_\_\_

Time: \_\_\_\_\_ #Birds present: \_\_\_\_\_

Banded Y/N Band Number(s): \_\_\_\_\_

*(Only obtain band numbers using binoculars. Maintain safe distance (at least 10 meters) from nēnē at all times)*

Observations:

What are the geese doing? (Feeding, resting, preening, bathing, etc).

What areas? (Water retaining area, planted grass area, etc)).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please call or text DPW Environmental, Natural Resource Section, immediately when nēnē are observed.

Kapua Kawelo, Chief **864-1014** Phil Taylor, Avian Conser. Spec. **916-412-9215**

Please scan and email Nēnē Observation Form to: **Hilary.k.kawelo.civ@mail.mil**

## 6.4 OPEAPEA MANAGEMENT 2016

### 6.4.1 Background

OANRP originally conducted acoustic monitoring for the Hawaiian Hoary bat (*Lasiurus cinereus semotus*) or Opeapea from 2010 to 2013 on all Oahu Army Training Areas: Dillingham Military Reservation (DMR), Kahuku Training Area (KTA), Kawaihoa Training Area (KLOA), Makua Military Reservation (MMR) and Schofield Barracks Military Reservation (SBMR). These surveys were conducted for over 301 nights in order to establish bat presence or absence and document potential seasonal use of habitats by the Opeapea. OANRP found Opeapea present at all Oahu Training Areas (Figure 13). Specific foraging behavior was documented from KTA, DMR and Schofield Barracks West Range (SBW). In general, bat detections on Oahu are much lower than from data collected on Hawaii, Maui and Kauai islands (C. Pinzai pers. comm.).

***Map removed to protect rare resources. Available upon request***

**Figure 13:** OANRP bat survey sites on Army Training lands.

### 6.4.2 Opeapea Management Summary

OANRP secured funding in FY 15 to conduct more intensive acoustic monitoring surveys across a majority of the Army installations on Oahu, including cantonment areas. The survey period was originally from January 2015 to January 2016 but due to range scheduling conflicts the recorders were left out until March 2016. Figure 14 displays all of the locations that the bat acoustic recorders were placed throughout the duration of the study. A total of 30 monitoring stations were run nightly for this study. Final results are forthcoming and these data will be used to inform the upcoming consultation with the USFWS.

***Map removed to protect rare resources. Available upon request***

**Figure 14:** Current survey sites for Opeapea on Army controlled lands.

In the interim, the USFWS provided restrictions to minimize impacts to bats through an informal consultation. Consequently, the Army has ceased felling trees which are greater than 15 feet tall during the bat pupping season, June 1<sup>st</sup> through Sept 15<sup>th</sup> each year. During the 2016 pupping season, permission was given to remove trees that were safety hazards or necessary for ongoing construction projects. The Army's expert arborist provided guidance on the necessity of trimming or removal in regards to the safety issues. In each case, OANRP employed a combination of acoustical monitoring and thermal imager surveys or to determine if bats were utilizing the trees for roosting and if pups were present. OANRP also recorded whether any other wildlife was observed during the surveys. Results of all the surveys are listed in Appendix 6-2 to 6-7. Table 6.1 shows that a total of six surveys were conducted by OANRP before the

end of this reporting period. All totaled, about 17 hours (this includes travel time) were spent conducting these surveys in 174 trees (17 different species). Zero roosting or flying bats were detected during the course of these surveys. These procedures will be formalized in the upcoming Section 7 consultation. Also, tree removal contracts are now being designed to include bat pupping season restrictions and the summer cutting limitations are being built into landscape maintenance timelines. In early September 2015 an official Garrison policy was signed placing a moratorium on tree cutting during the bat pupping season. This policy is included as Appendix 6-8.

OANRP purchased two thermal imagers, on Fluke 400T and one IR Hunter Mark II, to use for detecting possible roosting bat pups. OANRP continues to work closely with the biologist for HECO to formulate a bat survey program and find alternative methods for determining the presence of a roost tree with pups.

**Table 6.1 2016 Opeapea Acoustic/Thermal Surveys**

<b>DATE</b>	<b>2016-06-16</b>	<b>2016-06-18</b>	<b>2016-06-25</b>	<b>2016-06-27</b>	<b>2016-07-05</b>	<b>2016-08-18</b>
<b>INSPECTOR</b>	K. Kawelo	M. Burt	M. Burt	M. Burt	K. Kawelo	M. Burt
<b>THERMAL OR ACOUSTIC SURVEY</b>	Thermal	Both	Both	Both	Thermal	Thermal
<b>START TIME</b>	5:30	5:00	4:40	4:40	05:00	06:00
<b>END TIME</b>	6:30	6:30	6:30	7:30	06:30	06:20
<b>TOTAL TIME</b>	1 Hr	1.5 Hr	1.8 Hr	2.8 Hr	1.5 hrs	20 min
<b>BAT DETECTED (T/A)?</b>	No	No	No	No	No	No
<b>WILDLIFE DETECTED?</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>WEATHER</b>	Clear, Light wind	Clear, Light wind	Clear, Light wind and rain	Clear, Light wind	Clear, Light wind and rain	Clear, Light wind
<b>Army Installation</b>	SBMI	FSAB	WAAF	SBMI (LGC)	SBER	FSAB
<b>AFRICAN TULIP</b>	8			11		
<b>EUCALYPTUS SPP.</b>	19		15	18	10	
<b>MONKEY POD</b>		8				
<b>BANYAN</b>		3		3		
<b>ALBIZIA SPP.</b>	12				3	
<b>CINNAMON</b>	4					
<b>PRIDE OF INDIA</b>	1				5	
<b>JAVA PLUM</b>	2					
<b>SHOWER TREE</b>		2				1
<b>EAR POD</b>		5				
<b>GUN POWDER</b>	1				3	
<b>TROPICAL ASH</b>				1		
<b>PHILIPPINE NARRA</b>				2		
<b>CHRISTMASBERRY</b>					5	
<b>IRONWOOD</b>					2	
<b>MACARANGA</b>					6	
<b>SILK OAK</b>					2	