

# CALL COUNT MONITORING OF NORTHLAND BROWN KIWI 2012



Photo: E. Craig

Emma Craig  
Department of Conservation

# CONTENT

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>3</b>
1.1	<i>Objective.....</i>	3
1.2	<i>Background.....</i>	3
1.3	<i>Northland listening sites.....</i>	3
<b>2.0</b>	<b>METHODS.....</b>	<b>4</b>
2.1	<i>2011 kiwi listening data.....</i>	4
<b>3.0</b>	<b>GENERAL PATTERNS.....</b>	<b>8</b>
3.1	<i>Northland monitoring trends since 1995.....</i>	8
3.2	<i>Future of monitoring trends.....</i>	9
<b>4.0</b>	<b>TRENDS AT MANAGED POPULATIONS.....</b>	<b>9</b>
4.1	<i>Summary of sites.....</i>	11
<b>5.0</b>	<b>DISCUSSION AND GENERAL RECOMMENDATIONS.....</b>	<b>21</b>
5.1	<i>Other recommendations.....</i>	22
<b>6.0</b>	<b>GENERAL INTEREST.....</b>	<b>23</b>
<b>7.0</b>	<b>ACKNOWLEDGEMENTS.....</b>	<b>24</b>
<b>8.0</b>	<b>REFERENCES.....</b>	<b>24</b>
	<b>APPENDIX 1. Mean call count data for all Northland stations 1995-2012. ....</b>	<b>25</b>
	<b>APPENDIX 2. Summary of Northland kiwi listening data for stations listened from in 2012.....</b>	<b>35</b>

## 1.0 INTRODUCTION

### 1.1 Objective

The objective of this report is to summarise the results of the 2012 call count monitoring of Northland brown kiwi (*Apteryx mantelli*).

### 1.2 Background

There are approximately 25 population clusters of Northland brown kiwi remaining, extending across public and private lands (Figure 1). Northland populations of kiwi have declined mainly due to predation by stoats (*Mustela erminea*), ferrets (*M. furo*), dogs (*Canis familiaris*) and cats (*Felis catus*), and increasing land development pressures throughout the region (Pierce *et al.* 2006).

Population trends of Northland brown kiwi have been monitored annually since 1993 using a call count survey method. This monitoring is part of a nationwide kiwi monitoring and recovery programme (McLennan 1992; Robertson 2003). Currently call counts are the main tool used for assessing trends in kiwi populations and are used in the following Northland scenarios:

- Monitoring the trends in call counts and population size(s) over time at the original 1995 sites (Northern, Eastern, Western, Southern) comprising 24 stations.
- Monitoring the trends in kiwi call counts and populations at the growing number of kiwi management sites throughout Northland.

### 1.3 Northland listening sites

The 24 original kiwi listening stations that were established at the four geographic areas in 1995 (Pierce & Westbrooke, 2003) are listed below (Gartons was added in 1995, the other 23 stations have been listened from since 1993);

<b>Northern</b>	<b>Eastern</b>	<b>Western</b>	<b>Southern</b>
Diggers Valley	Marsden Cross	Katui	Glenbervie 7A
Takahue	Puketotara	Trounson	Glenbervie 9A
Kaiaka	Rangitane	Cathedral	Marlow Road
Puketi Forest	Waitangi No 12	Waipoua L/Out	Purua N
Puketi Scenic Reserve	Mt Bledisloe	Paerata	Rarewarewa S
Gartons	Tikitikiore		Mimiwhangata
			Sandy Bay

Kiwi protection now happens at many sites throughout Northland (Figure 2; Table 1), and many additional stations have been added to the kiwi listening network (see Appendix 1).

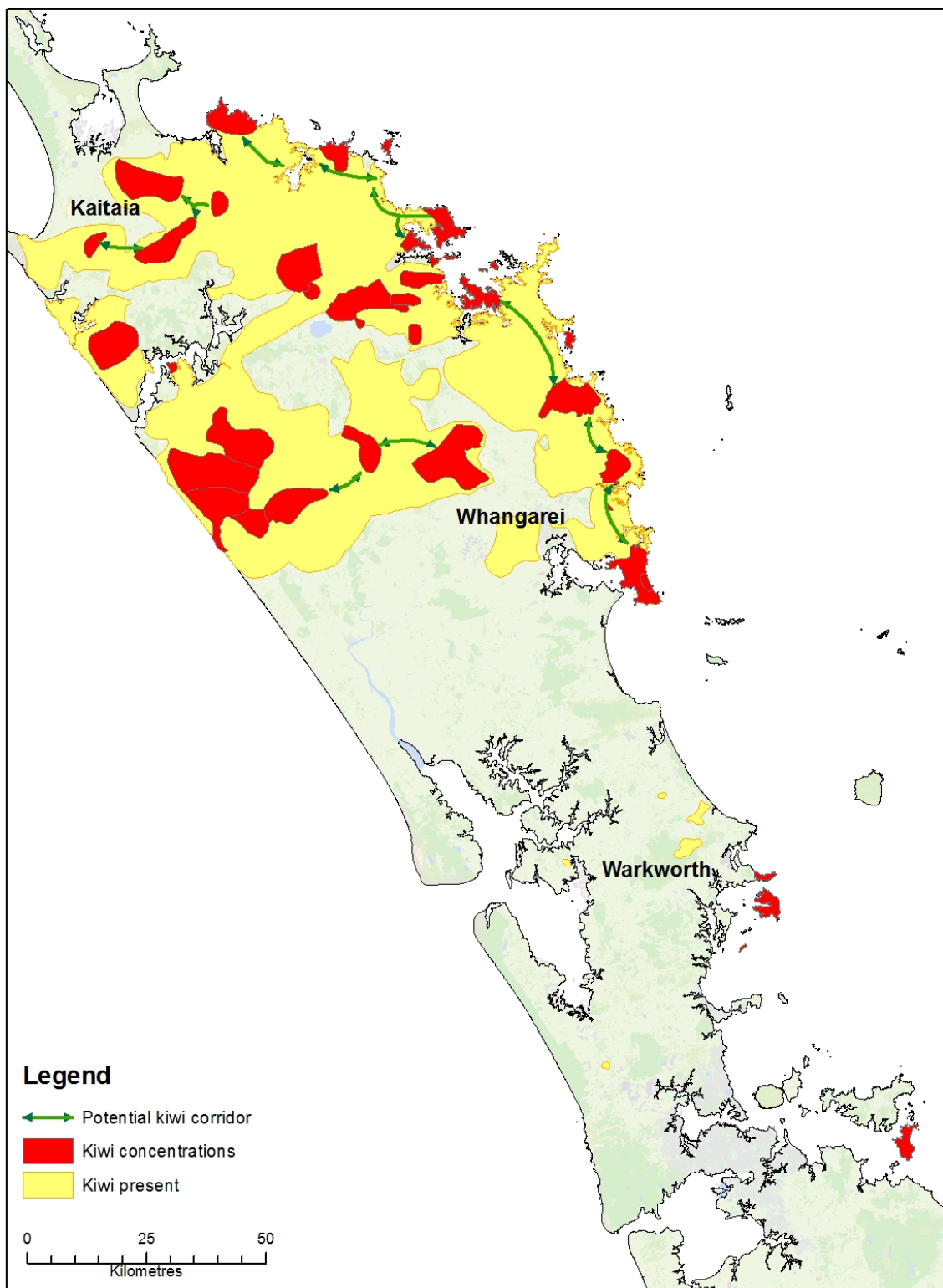
## **2.0 METHODS**

Kiwi listening was carried out during the dark phase of the moon, 7 – 27 June 2012, with a back-up window 6 – 26 July 2012, and generally followed the methods outlined in the Kiwi Best Practice Manual (Robertson & Colbourne 2003). These listening windows were later than usual, as the listening period tends to begin mid-late May. The difference in listening period was due to the timing of the full moon, and it is not thought to have a significant difference on hourly call rates (H. Robertson *pers. comm.*). Later listening windows were also used in 2004 and 2008. There was concern expressed from some kiwi listeners that call count rates would be lower than previous years due to males nesting. However past kiwi listening surveys do not support this, so the call rates from the 2012 listening period can be compared with data from previous years.

### **2.1 2011 kiwi listening data**

Call-count data from 2012 were received from the following management areas:

- Whaakangi
- Mahinepua – Radar Hill
- Waimate North
- Bay of Islands
- Russell Peninsula
- Puketi Forest
- Waipoua Forest complex
- Motatau-Marlow
- Purua-Rarewarewa
- Tutukaka
- Whangarei Heads-Bream Head (3 clusters)
- Tawharanui
- Kawau Island

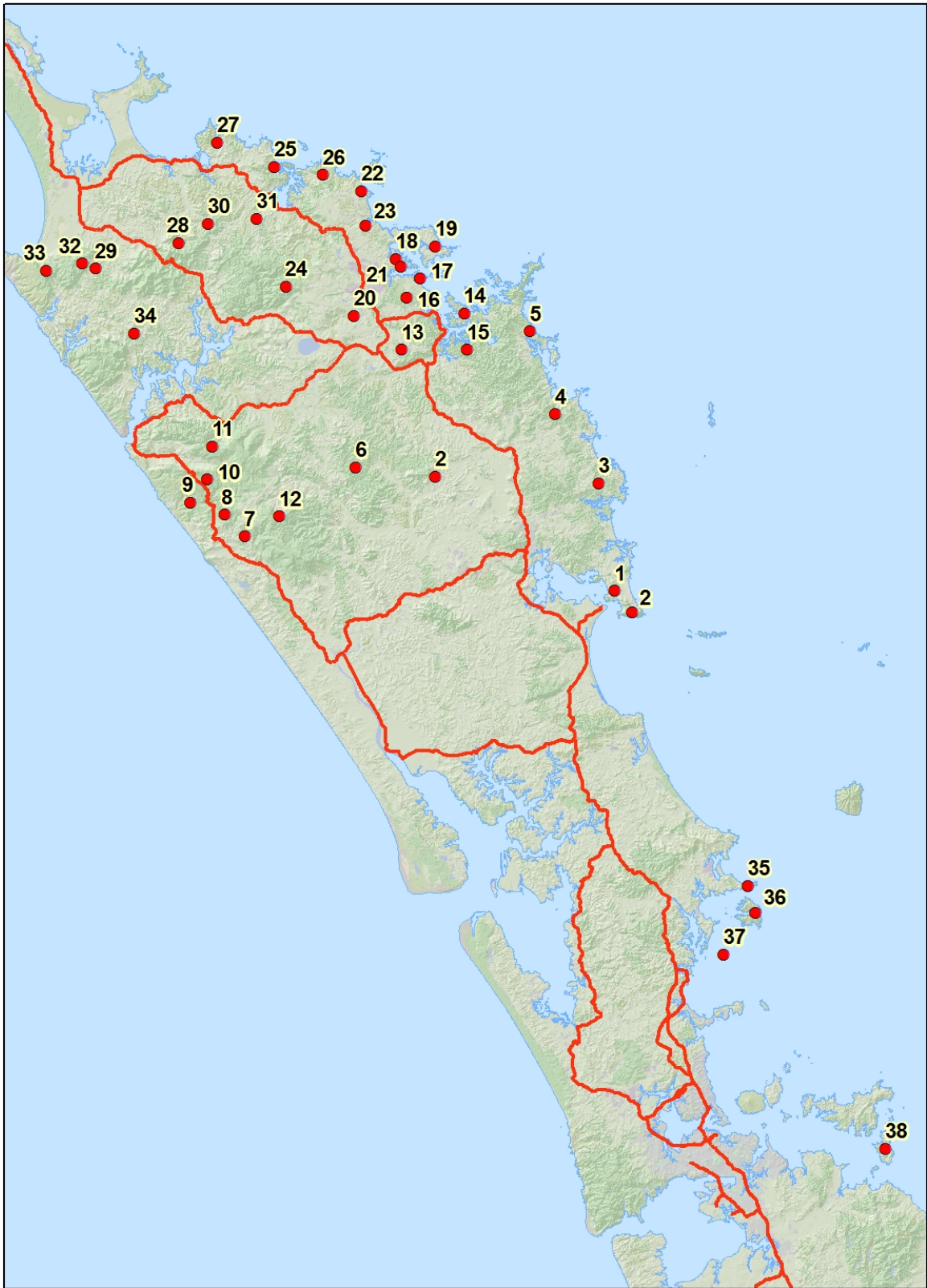


Approximate Kiwi distribution and relative abundance as known in 2009

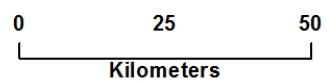
Map prepared: Jan 2011

**Figure 1.** Approximate kiwi distribution and relative abundance as known in 2009.





**Northland Kiwi Recovery Project Locations**



**Figure 2.** Northland kiwi recovery project locations as known in 2009.

**Table 1.** Key for Northland kiwi recovery projects.

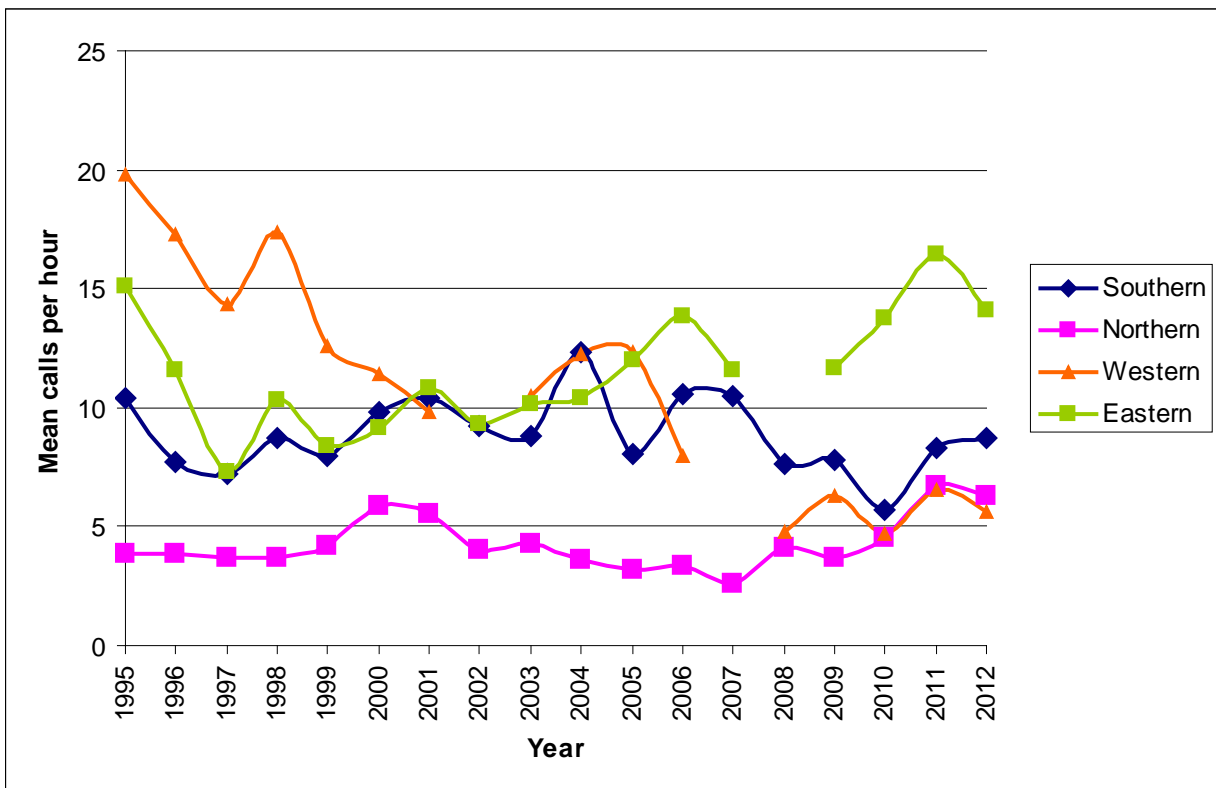
1	Whangarei Heads Landcare Forum
2	Department of Conservation – Whangarei Kiwi Sanctuary
3	Ngunguru – Tutukaka Landcare Coalition
4	Department of Conservation – Mimiwhangata
5	Taupiri and Elliots Bay – NZ Kiwi Foundation
6	Pipiwai – Hancocks Forest
7	Department of Conservation – Trounson Kauri Park
8	Waipoua Forest Trust
9	Department of Conservation – Waipoua
10	Wekaweka Landcare Group
11	Te Mahurehure Roopu Whenua Taonga Trust
12	Opouteke – Hancocks Forest
13	Hupara Landcare Group
14	Department of Conservation, Russell Landcare Group and NZ Kiwi Foundation
15	Waikino Landcare Group
16	Department of Conservation – Waitangi Forest
17	Wharau Road – NZ Kiwi Foundation
18	Kerikeri Peninsular – NZ Kiwi Foundation
19	Purerua Peninsular – NZ Kiwi Foundation
20	Waimate North Landcare
21	Aroha Island Charitable Trust
22	Kauri Cliffs – NZ Kiwi Foundation
23	Takou Were to Mokai Trust/NZ Landcare Foundation
24	Puketi Forest Trust
25	Taupo Bay Landcare
26	Mahinepua, Radar Hill Landcare
27	Whakaangi Landcare Trust
28	Wells Road - Higginson/Khaine
29	Herekino – Sporle/Renwick
30	Honeymoon Valley and Puhoi (Native Forest Restoration Trust)
31	Kohumaru
32	East Herekino – NZ Landcare Foundation
33	Herekino Landcare
34	Humphries Road – Blunden
35	Tawharanui Open Sanctuary (Auckland Council/TOSSI)
36	Kawau Island
37	Motuora Island (Department of Conservation and Motuora Restoration Society)
38	Ponui Island – Massey University

### 3.0 GENERAL PATTERNS

#### 3.1 Northland monitoring trends since 1995

Trends in call count data collected since 1995 at the 24 original listening stations (see under heading 1.3 for list of stations) in the Northern, Eastern, Western and Southern survey areas are graphed in Chart 1 and summary data are presented in Appendix 2.

After the exceptional results from the 2011 kiwi listening survey (call count rates trended up in all four clusters), the 2012 results are not as positive, but they are still above the 2010 means for all four clusters (Chart 1). There will be peaks and troughs within all these clusters, and it is heartening to see the call rates showing a pattern of increase or relative stability over time for the Eastern, Northern and Southern areas. It is particularly positive to see the Northern cluster maintaining a mean call rate above five calls per hour. The Western cluster is more of a concern as the 2012 results are the third lowest since listening records began. This reflects the problems that kiwi and those who are trying to protect them have in this area, especially from dog owners and their dogs.



**Chart 1.** Mean annual kiwi call rates per hour for each of the original four Northland monitoring areas 1995 – 2012. The mean for the Northern and Western clusters were each estimated with one station missing.



### **3.2 Future of monitoring trends**

There is great value in having data since 1995 from the original 24 listening stations in the four different areas. Repeated listening at stations over time provides an indication as to whether a population is stable, increasing or declining (Robertson & Colbourne 2003) and is important information to base management decisions on. It is just as important to monitor those sites where call counts are dwindling or are absent, as those that are growing. The Department of Conservation (DOC) offices that have stations in their areas should make it a priority to organise each of the original stations to be listened at so the monitoring of these trends can continue. Below are the stations within each of the four areas that have not been listened at in 2012;

#### **Northern**

Diggers Valley (last listened from in 2011)

#### **Western**

Katui (last listened from in 2010)

### **4.0 TRENDS AT MANAGED POPULATIONS**

Trends in call counts at managed populations are summarised in Table 2 and graphed in Charts 2 -13. Comments on the trends and recommendations for future listening at each management site are provided below.

**Table 2.** Mean kiwi call count rates from annual monitoring of managed Northland kiwi populations

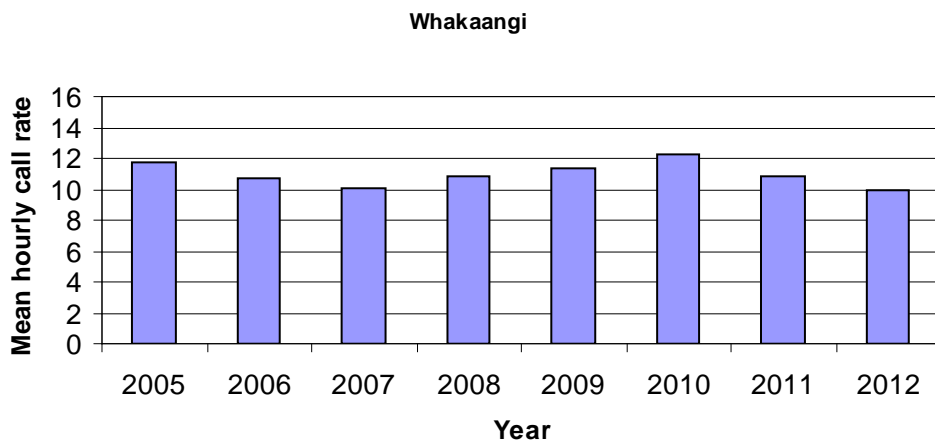
Area	No. Stn	Station No	2012 Station No.#	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Whakaangi	7-9	29, 130-137	131-133,135,136	-	-	11.80	10.70	10.10	10.80	11.68	12.23	10.88	<b>9.93</b>
Mahinepua	8	83-85,87-89,98,99	83-85,88,99	-	3.60	2.80	4.90	2.70	1.90	2.46	4.65	5.50	<b>10.23</b>
Waimate North	5	114, 118, 120, 122, 124	114, 118, 120, 122, 124	-	10.46	4.28	-	6.80	6.48	4.68	8.05	8.98	<b>8.43</b>
Puketi	6	102, 104-106, 108, 111	102, 104, 106, 108, 111	-	-	-	2.88	1.15	1.48	3.66	3.00	4.25	<b>4.11</b>
Russell Peninsula	5	15, 59, 62, 170, 173	15, 59, 62, 170, 173	-	-	4.53	4.01	7.04	5.35	4.61	5.54	11.44	<b>9.77</b>
Waipoua	4	16-19, 33 (33 added in 2010)	17-19, 33	13.08	15.36	15.78	7.98	8.90	5.69	7.49	4.50	11.80	<b>8.38</b>
Motatau-Marlow	6	23,34-36,68,129	23, 34, 68, 129	-	-	7.30	7.60	7.50	4.90	6.39	4.54	7.08	<b>8.28</b>
Purua-Rarewarewa	5	24,25,81,82,139	24, 25, 81, 82, 139	-	-	9.20	11.10	12.70	10.90	12.35	10.63	12.58	<b>11.83</b>
Tutukaka	5	125, 126, 142, 143, 144	125, 126, 142	-	-	6.24	7.30	8.21	8.68	5.67	6.77	7.05	<b>10.17</b>
Bream Head-Taurikura	5	39, 41, 42, 44, 69 (69 added in 2012)	39, 41, 42, 44, 69	-	-	2.50	2.60	2.20	3.20	4.29	2.70	6.59	<b>7.14</b>
Manaia-Nook	5	47-49,56,71	47, 48, 49, 56	3.10	3.50	2.90	3.90	-	4.60	4.43	6.31	7.25	<b>7.75</b>
Kauri Mountain	5	54,72-74,141	54, 72-74, 141	-	-	3.30	2.20	-	2.60	3.02	2.45	4.10	<b>4.00</b>

**#Note:** In previous reports up to 2009: where a single station was not covered, the previous year's results were used. However, some of the stations had not been listened from for several years, so the mean call count rates for the data from 2010 and beyond were calculated only from the relevant stations listened from for that year. Bream Head: Stn 40 was moved and re-named Stn 69 in 2012, so Stn 40 was removed and Stn 69 added to this table.

## 4.1 Summary of sites

### 1. *Whakaangi*

Whakaangi has maintained relatively stable, high call count rates since listening began. The 2012 mean (9.93 calls per hour) is the lowest recorded during this time, but is 81% of the highest recorded mean (12.23 calls per hour, 2010), so should not be cause for alarm unless there are known issues such as a wandering dog problem (Chart 2). Seven stations were listened from in 2012, six had full four nights of listening completed and one had three nights only. Many thanks to the listeners from this site for the extra effort to get almost all stations listened from for four nights.



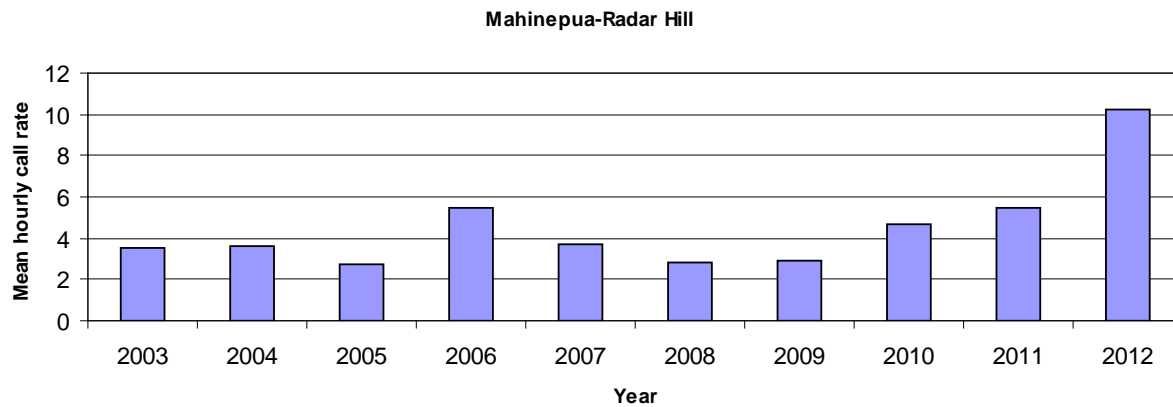
**Chart 2.** Trends in mean call counts at Whakaangi management site

### Recommendations

- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 2. *Mahinepua-Radar Hill*

The Mahinepua-Radar Hill area showed an outstanding increase in mean kiwi call count rates, up from 5.5 call per hour in 2011 (which equalled the previous peak in 2006), almost doubling to 10.23 calls per hour in 2012 (Chart 3). These data came from six listening stations (each listened from for four nights), which is fewer than is generally used for this site. However, all of the six stations had increased call counts from 2011, of between 2.5 and 6.5 calls per hour, and of the 2011 stations that weren't listened from in 2012, only one (Station 92 Mahinepua 14) tended to have particularly low numbers of calls heard. So although the 2012 result is not directly comparable with previous years, it is likely to reflect a true increase in kiwi calls, and therefore kiwi numbers. Excellent news for the Mahinepua-Radar Hill area!



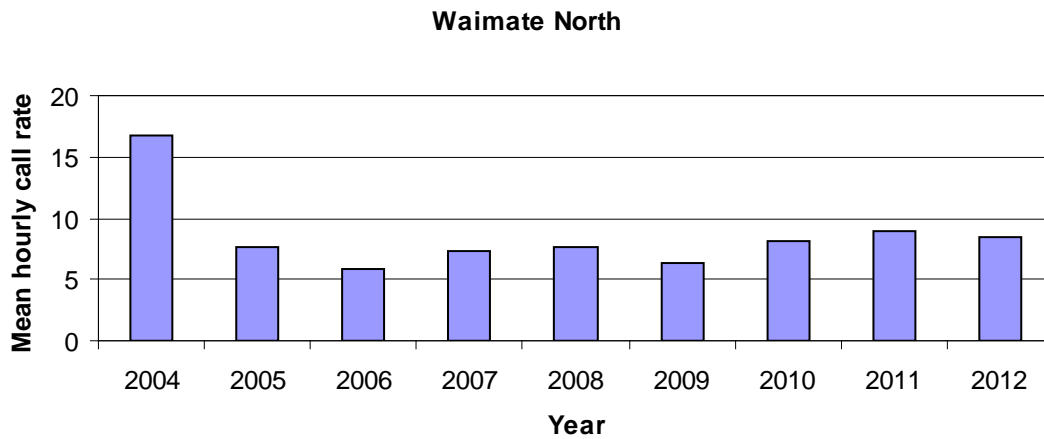
**Chart 3.** Trends in mean call counts at Mahinepua-Radar Hill management site

### Recommendations

- Try to maintain consistency in kiwi listeners, ideally the same person for all four nights, and across multiple years.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 3. *Waimate North*

Waimate North had a slight decrease in mean call counts from the 2011 data, down from 8.98 to 8.43. However, the kiwi call counts from this area have now been relatively stable for eight years, so this slight decrease should not be cause for concern (Chart 4). Nine stations were listened from for this site, of which seven had four full nights of listening completed, one had three nights, and one had two nights only. Two stations had particularly high call rates; W1 had a mean of 23 calls per hour, with the listener hearing 49 calls in one hour alone; and Hupara Land Care (station 191, a new station for 2012) had a mean of 31.25 calls per hour, with a minimum of 22 calls recorded per hour.



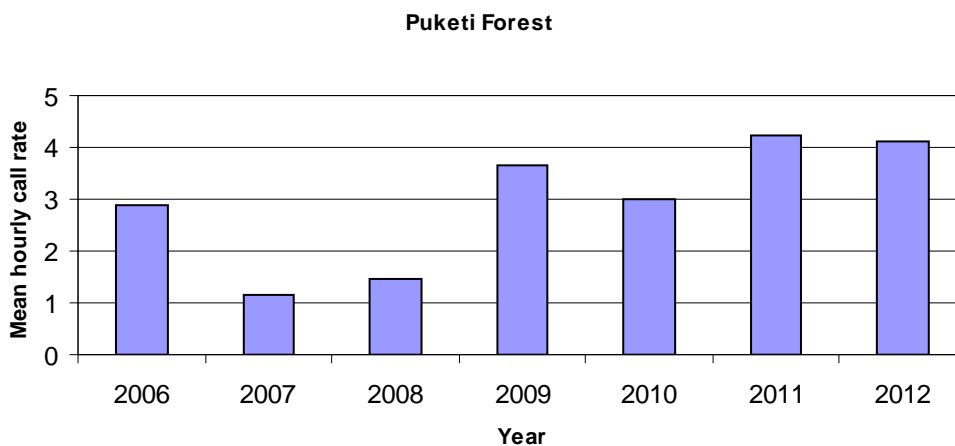
**Chart 4.** Trends in mean call counts at Waimate North management site

#### Recommendations

- Continue to monitor stations 114, 118, 120, 122, and 124 with extra stations listened from if there are enough listeners available.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

#### 4. *Puketi Forest*

The mean call count rates for Puketi Forest showed virtually no change between 2011 (4.25 calls per hour) and 2012 (4.11 calls per hour). After the very low mean call counts from 2007 and 2008 it is excellent to see this cluster maintaining call count rates above four calls per hour (Chart 5). A total of nine stations were listened from, of which seven had four full nights of listening, one had three and a half nights, and one had two nights only.



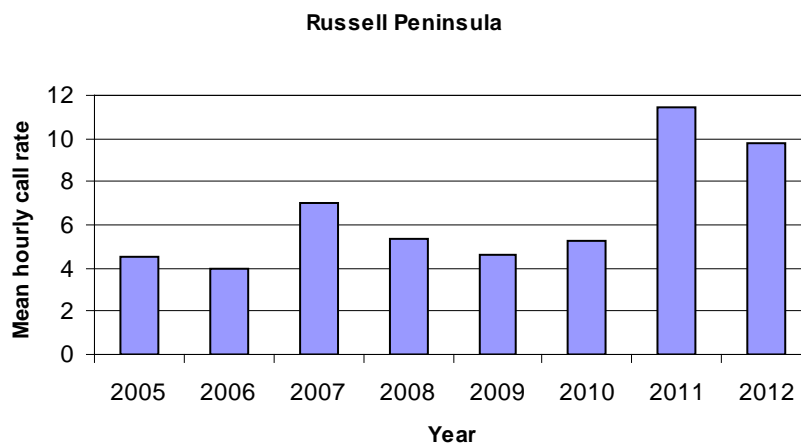
**Chart 5.** Trends in mean call counts at Puketi Forest management site

## Recommendations

- Reduce listening stations to a core of six (102, 104 -106, 108, 111). Ensure that these stations are listened from for a full four nights.
- Try to maintain consistency in kiwi listeners, ideally the same person for all four nights, and across multiple years.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 5. *Russell Peninsula*

After the sharp increase observed in the mean kiwi call count rate last year (2011, 11.44 calls per hour), it is great to see that 2012 has maintained a high mean (9.77 calls per hour). Although this mean is almost two calls per hour less than 2011, it is still much higher than any of the observed mean call rates between 2005 and 2010 (Chart 6). Also, Station 173 (Shortlands; a station with a generally low call count rate) was not included in the 2011 listening, but was listened from again this year, resulting in a lower mean for this cluster. This demonstrates the importance of listening consistently from the same stations over time; the absence of data from just one station can create artificially high or low results for the area. Ten stations were listened from in this cluster, nine for four full nights and one for three nights only.



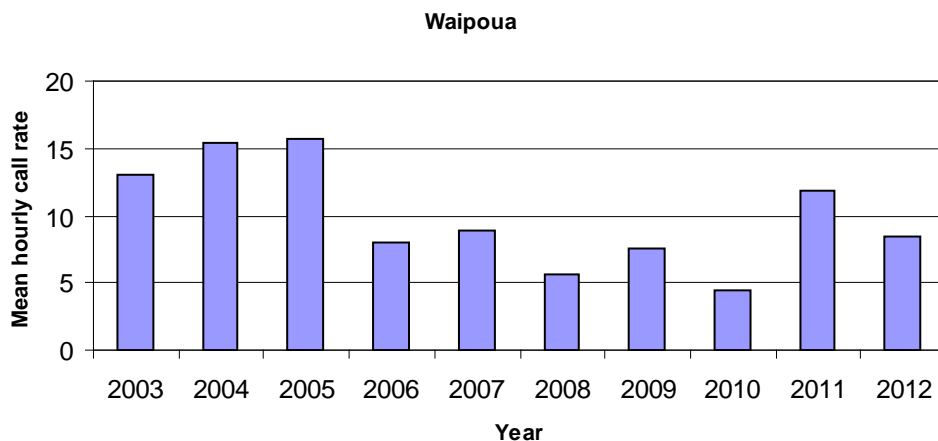
**Chart 6.** Trends in mean call counts at Russell Peninsula management site

## Recommendations

- Continue to monitor stations 15, 59, 62, 170, and 173, with extra stations listened from if there are enough listeners available.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

## 6. *Waipoua*

The mean hourly call count rate for Waipoua decreased from 11.8 calls per hour in 2011, to 8.4 calls per hour in 2012 (Chart 7). This is quite a big decrease, but 8.4 calls per hour is still a reasonably high call rate, and this result may simply represent a natural fluctuation in calling, or reflect the general limitations of the kiwi listening method. The data from the upcoming 2013 kiwi listening will help to give a clearer picture of whether this result is simply a fluctuation, or part of a downward trend. There were six stations listened from for this cluster, each for four full nights.



**Chart 7.** Trends in mean call counts at Waipoua management site

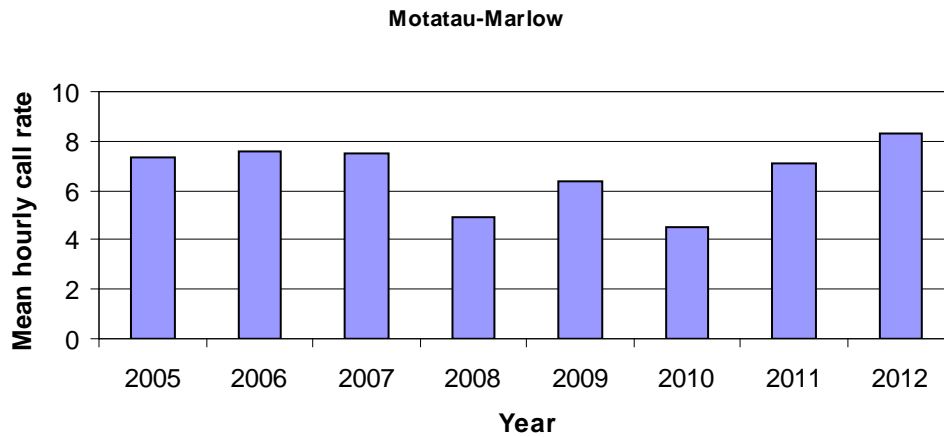
## Recommendations

- Maintain annual kiwi listening in the Western area at all the original 1995 stations 16-19. **Katui (station 16) should continue to be monitored despite low call counts.**
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

## 7. *Motatau-Marlow*

The mean number of calls per hour for Motatau-Marlow in 2012 was 8.28, which is the highest mean recorded for this cluster since at least 2005. It is excellent to see a trend of increasing kiwi call counts for this cluster over the last two years (Chart 8). The mean number of kiwi calls per hours for Motatau-Marlow was derived from four stations, each with four nights of listening.





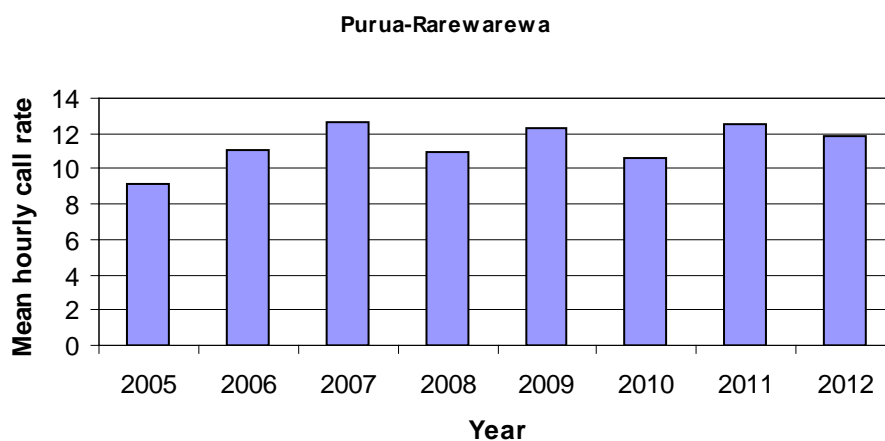
**Chart 8.** Trends in mean call counts at Motatau-Marlow management site

### Recommendations

- Maintain annual kiwi listening at stations 23, 34-36, 68, 129.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 8. *Purua-Rarewarewa*

There has been some fluctuation for this cluster over the last eight years, but since 2006 the mean hourly call rate has consistently been between 10.6 and 12.7 calls per hour. It is good to see that the 2012 mean of 11.83 calls per hour has stayed within this high range (Chart 9). The 2012 data was derived from five listening stations, each with four full nights of listening.



**Chart 9.** Trends in mean call count rates at Purua-Rarewarewa management site

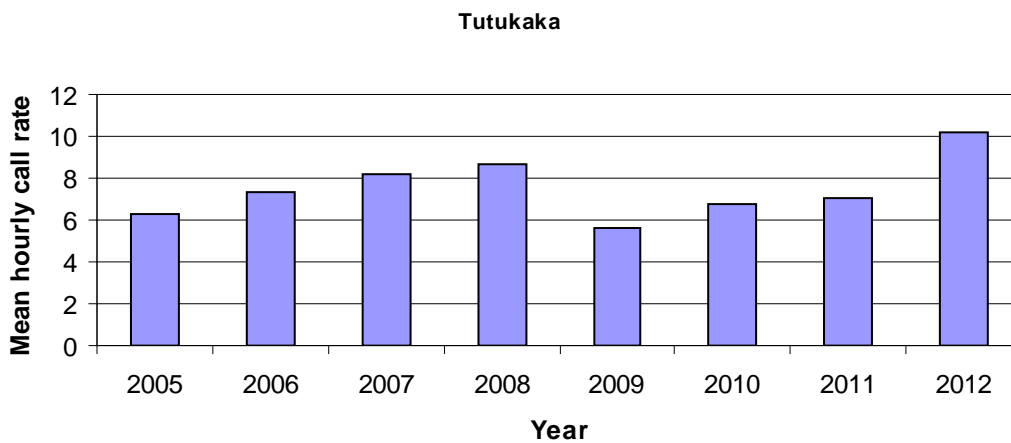
### Recommendations

- Continue to monitor all five stations, especially those where dog predation has occurred.

- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 9. Tutukaka

The mean kiwi call count for Tutukaka has increased from just over 7 calls per hour in 2011, to just over 10 calls per hour in 2012. This is the highest recorded mean for this cluster; the previous maximum was 8.7 calls per hour, recorded in 2008 (Chart 10). This positive result is likely to reflect growing kiwi numbers in the area thanks to the tremendous effort of the local landowners and community in protecting them. Four stations were listened from for this cluster, each for four full nights. One station (144, TLC 6) was not listened from, but this should continue to be included in the Tutukaka kiwi listening.



**Chart 10.** Trends in mean call count rates at Tutukaka management site

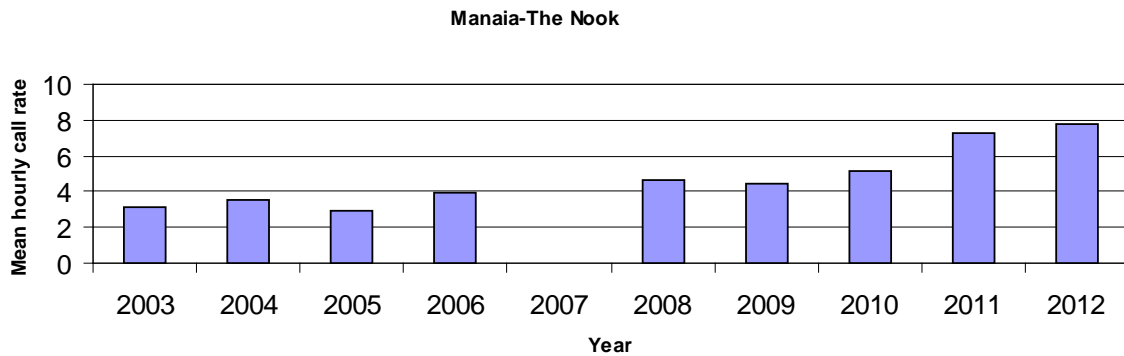
#### Recommendations

- Ensure the main listening stations (125, 126, 142, 143, **144**) are listened from each year, for the full four nights.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 10. Manaia-The Nook

After the almost 50% increase between 2010 and 2011, the kiwi call rates for this cluster have continued to increase, and for 2012 the mean was 7.75 calls per hour (Chart 11). This result is likely to reflect the growing number of protected kiwi in the area. However, one station (71; Manaia 8) was not listened from in 2012, and this station tends to have very low call counts (between 0.25 and 2.13 calls per hour); and

one station (48; Manaia 2) had an exceptionally high mean call rate for this cluster (16.6 calls per hour, up from 8.4 in 2011). These two results could be skewing the data erroneously. The calls from one station (47; Manaia 1) dropped from 10.3 calls per hour in 2011 to 2.9 calls per hour in 2012. This is an area with a potential dog problem so it will be carefully monitored by Todd Hamilton. The 2012 data for the Manaia – The Nook cluster were derived from four stations, each with four full nights of listening.



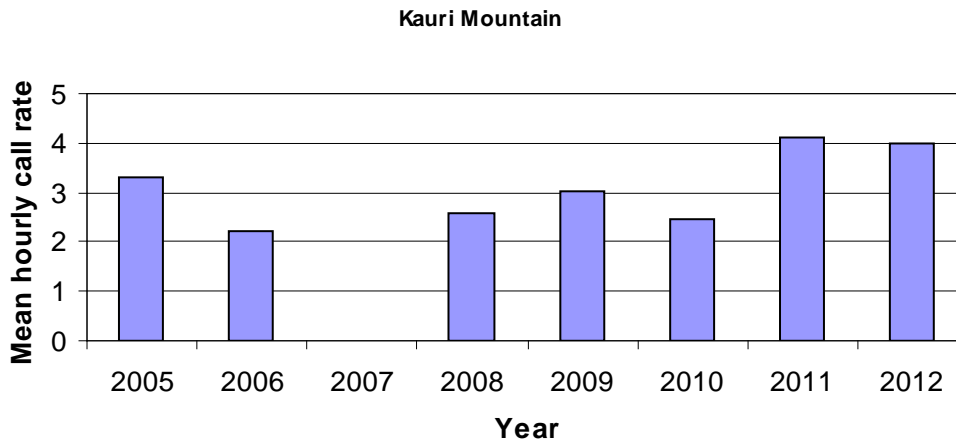
**Chart 11.** Trends in mean call count at Manaia-Nook management site

## Recommendations

- Maintain annual kiwi listening at stations 47-49, 56, 71.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 11. *Kauri Mountain*

The kiwi call counts for Kauri Mountain were very similar between 2011 and 2012 (4.0 and 4.1 calls per hour respectively; Chart 12). There were no excessive increases or decreases in mean kiwi calls per hour at individual stations between these two years. It is pleasing to see this cluster maintaining a slightly higher mean kiwi call rate than between 2005 and 2010. The data were derived from five stations, each with four full nights of listening.



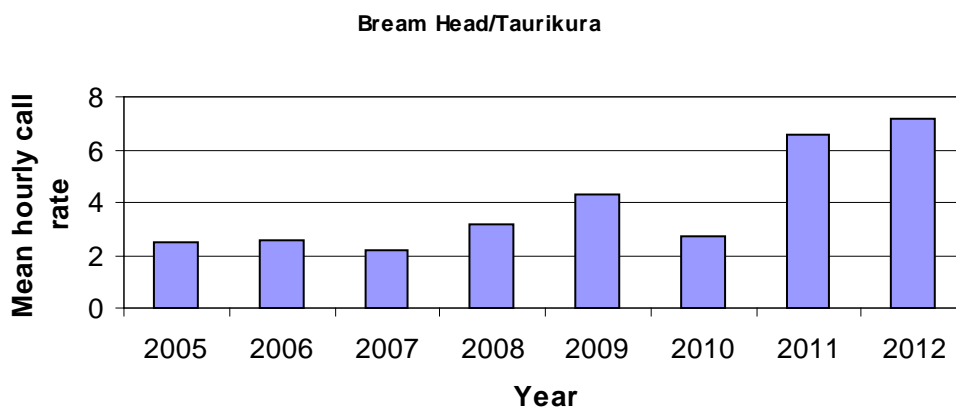
**Chart 12.** Trends in mean call counts at Kauri Mountain management site

#### Recommendations

- Maintain annual kiwi listening at stations 54, 72-74, 141.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

#### 12. *Bream Head/Taurikura*

After the huge increase seen in 2011, the mean kiwi call count has continued to increase for this cluster (7.1 calls per hour in 2012, up from 6.6 calls per hour in 2011; Chart 13). These data were derived from 5 stations, four of which had four full nights of listening, and one which had 1.5 nights of listening. Station 40 was moved as it overlapped with another station. It was re-named BH6/station 69. It is still included in the summary data for this cluster.



**Chart 13.** Trends in mean call counts at Bream Head/Taurikura management site

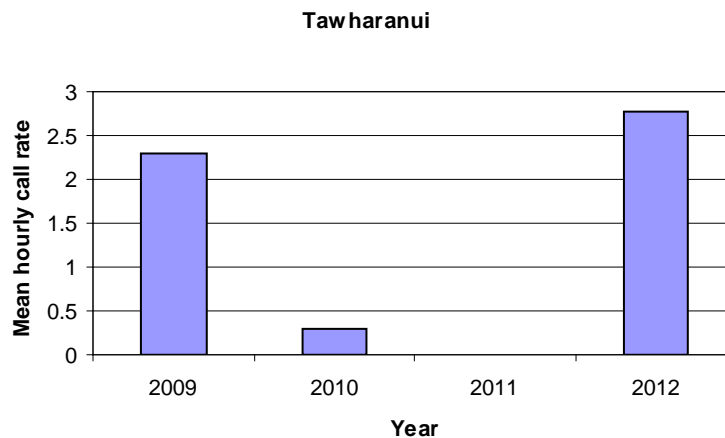
#### Recommendations

- Maintain annual kiwi listening at stations 39, 40, 41, 42 and 44.

- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 13. *Tawharanui*

The 2011 kiwi listening data for this cluster were collected earlier than the kiwi listening period, so were not included in the 2011 report. The 2012 kiwi listening data were collected using the standard kiwi listening methodology, so can once again be included. After the very low calling rate observed in 2010, it is fantastic to see the 2012 rate much higher (0.3 and 2.8 calls per hour, respectively; Chart 14). Although a mean of 2.8 calls per hour is lower than most stations and clusters, this is a young, well protected and growing population. As the population increases, and as more of the population reaches territorial adulthood, this mean call rate is likely to increase relatively rapidly. These data were derived from six stations, each of which had a full four nights of listening.



**Chart 14.** Trends in mean call counts at Tawharanui Open Sanctuary management site

### Recommendations

- Maintain annual kiwi listening at stations 161-166.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

### 14. *Kawau Island*

This is the first year that the Kawau Island kiwi listening data have been included in this report. Thank you very much to the Kawau Island kiwi listeners for providing data for 2012. The two stations listened from were Bostaquet Bay and South Cove. Bostaquet Bay had 22 kiwi calls in 237 minutes of listening over three nights, and South Cove had

12 kiwi calls in 300 minutes of listening over four nights (the fifth night was not included for the purpose of this report). It will be interesting to see how these call rates change over time.

#### Recommendations

- Aim for establishing at least four stations that will be listened from each year.
- Listen from each station for two hours per night, for four nights during the kiwi listening window.
- Refer to each station by the consistent station number as well as by name.
- Ensure that all kiwi call count data sheets are filled out fully and accurately.

## 5.0 DISCUSSION AND GENERAL RECOMMENDATIONS

Overall, the 2012 kiwi listening period resulted in fewer calls per hour being heard; and more clusters trending down following the 2011 results. However, of the downward trending clusters, all but one had a relatively minor decrease from the previous year. Of the five clusters that trended up, three had relatively slight increases. These results suggest a stable population exhibiting natural fluctuations in calling rates, rather than any significant changes in the number of kiwi.

Some stations have been monitored for almost 20 years. Some of these stations (as well as stations added more recently) have consistently low (or at times no) kiwi calls. I want to particularly thank those individuals who continue to monitor stations where no or few calls are heard. It is not as easy to stay motivated at these stations, but it is very important to continue to collect these data. And you never know, one day you might detect the first kiwi moving back into a historic area!

It is critical that the kiwi listening data provided is as accurate as possible. This will ensure that the data and trends derived from it will give a realistic picture of what is happening in your area, and throughout Northland.

Kiwi listening data should have the following:

- The station is identifiable to those who enter and analyse the data for this report, and to future listeners who will repeat listening at the same station. This means that each and every kiwi listening card must include the **individual station number**, and this number must not be changed. Each card must also include an up-to-date GPS

reference for the site. Both the stations number and GPS reference need to be written on every card, every night;

- There is consistency in kiwi listeners. Ideally this will mean the same person will listen from the same station for each of the four nights, and in subsequent years. If this is not practical, aim for at least having the same person covering the same stations for all four nights;
- Each station needs to be covered for four nights if at all possible. If this can not be finished in the first kiwi listening window it is possible to use the second window. **It is more important that fewer stations are listened from for four nights than more stations for only one or two nights.** This will produce more robust data and will give a more accurate measure of kiwi in your area;
- **Kiwi call cards need to be filled out in full, including all the fields, each night.** If fields are missing or data is not legible it will not be used;
- Kiwi data needs to be returned to the Whangarei Area Office, in electronic or paper form, **no later than the 31<sup>st</sup> of August in the year in which it was collected.** This should include recording if regular stations are not listened from. Historically, data has been submitted up to a year after listening occurs. This holds up the process of compiling the report, and it not fair to those who handed data in on time. A reduced capacity in the Whangarei Kiwi Sanctuary team means there is no time for someone to chase up missing or incomplete data. If it is not submitted by the 31<sup>st</sup> of August it will not be included in the report.

### 5.1 Other recommendations

- Provide new listeners with adequate training. This not only includes how to identify the difference between male/female kiwi calls; other species calls that may be mistaken as kiwi; compass use and judging distances but also **how to fill out the forms fully, correctly, and legibly.**
- Try to map the location of calling birds during the four nights of listening. This will help to identify the minimum number of individuals and pairs heard from each station.
- If you add a new station in your area, please identify it very clearly as a new station so that it can be allocated a consistent station number. Please make sure you also provide GPS co-ordinates for the station, a name that will make sense to everyone, and any other identifying or necessary information about the station.



- Please check the station numbers listed in appendix 1. If any of these numbers are not accurate, please let Emma Craig (DOC Whangarei Area Office, ph. 09 4703350, [ecraig@doc.govt.nz](mailto:ecraig@doc.govt.nz)) know as soon as possible.

Thanks to those who followed these recommendations for 2012, your efforts are very much appreciated. Thanks also to everyone who clearly used the station number when identifying their spot, this has made reporting and analysis much easier.

Breaking news: just as this report was being finished there was a kiwi release at Marunui Conservation Ltd, on the southern slopes of the Brynderwyn range. The release of 14 kiwi there in the 13<sup>th</sup> of April was a significant step for Northland kiwi recovery, and the first time that kiwi have been able to call the Brynderwyns home since the 1970's. Congratulations to all those involved, and I look forward to including your kiwi listening data in the 2013 report.

### **Kiwi listening 2013**

Kiwi listening for 2013 should preferably be carried out from 28 May – 17 June, with a back-up window 26 June – 16 July. After the relatively late listening period for 2012, the 2013 window is back on par with the usual listening window.

## **6.0 GENERAL INTEREST**

It takes a particular type of hardy person who is willing to sit out in the dark and cold, usually alone, for a total of eight hours in the middle of winter. I would like to introduce this section to the kiwi listening report to recognise that the experience of kiwi listening is something that we all have in common. Do you have any interesting anecdotes or observations you would like to share with other keen kiwi listeners throughout Northland? Perhaps you have some good tips for keeping warm, stories of seeing kiwi on the way to your listening station, interesting changes that you have noticed from listening from the same station over time, your record number of shooting stars, etc. All contributions welcome for inclusion in the 2013 kiwi listening report. Please send them either via email [ecraig@doc.govt.nz](mailto:ecraig@doc.govt.nz) or phone 09 4703371.

Information about kiwi listening can be found on the Kiwis for kiwi website <http://www.kiwisforkiwi.org/resources/call-count-monitoring/>.

## 7.0 ACKNOWLEDGEMENTS

Thank you to all the people who carried out kiwi listening in 2012. Participants are listed by station in Appendix 2. Your time and effort in obtaining information about kiwi in your area on those cold winter nights is very much appreciated. Thanks also to local co-ordinators Irene Petrove, Monte Woodworth, Phillip Saunders, Daryl Way, Jeff Hall, Angela Newport, Wendy Sporle, Todd Hamilton, Mike Camm, Ursula Buckingham, Ian Wilson, and Keith Russell. A big thank you to Hilary Gardiner who spent many hours entering kiwi listening data from all over Northland; and for chasing up queries during the writing of this report. Thanks also to Gina Williams for co-ordinating the 2012 kiwi listening.

## 8.0 REFERENCES

- McLennan, J.A., 1992. Nationwide monitoring of kiwi populations. *DSIR Land Resources Contract Report No 92/91*. Wellington, Science and Research Division, Department of Conservation.
- Pierce, R.J., Westbrooke, I.M. 2003. Call count responses of North Island brown kiwi to different levels of predator control in Northland, New Zealand. *Biological Conservation* **109** (2). pp. 175 – 180.
- Pierce, R.J., Gardiner, C., Moodie, H., Robertson, H.A., Sporle, W. 2006. Sustainable management of brown kiwi and other threatened birds in Northland. *Wildland Consultants Ltd Contract Report No. 1193*. Prepared for Department of Conservation and New Zealand Landcare Trust, Whangarei.
- Robertson, H.A. 2003. Kiwi Recovery Plan 1996-2006. Wellington, Department of Conservation.
- Robertson, H.A., Colbourne, R. 2003. Kiwi (*Apteryx* spp.) Best Practice Manual. Wellington, Department of Conservation.

**APPENDIX 1. Mean call count data for all Northland stations 1995-2012.**

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
5	Kaiaka	1.7	1.3	2.4	3.4	1.6	3.5	3	2.1	1.9	3.75	2.8	1.5	0	0.75	-	1.63	1.13	<b>0.25</b>
7	Puketi	6.6	5.4	2.1	3	6	7.6	6.4	3.5	5	3.4	1.5	2.3	0.8	3.9	4	6.88	9.38	<b>6.25</b>
8	Puketi SR	5.4	6.5	4.4	4	5.1	6.5	6.1	6.4	8.25	9.4	2.3	5.1	7.4	8.9	9	7.88	9	<b>11.75</b>
3	Lightning Hill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>15.5</b>
218	Wells Rd, Kaiaka, Kaitaia	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-	-
<b>Whakaangi</b>																			
130	Whakaangi 1	-	-	-	-	-	-	-	-	-	-	9	10.4	4.6	7.6	6.33	-	-	-
131	Whakaangi 2	-	-	-	-	-	-	-	-	-	-	14.9	25	15.3	20.75	17.13	16.13	9.38	<b>8</b>
132	Whakaangi 3	-	-	-	-	-	-	-	-	-	-	13.5	14.6	9	10.75	12.17	12.17	5.5	<b>3.13</b>
29	Whakaangi 4	-	-	4.5	-	2.9	1.9	6.25	3.75	4.9	6.6	2.3	6.8	6.3	4.9	5.75	9.83	5	-
133	Whakaangi 5	-	-	-	-	-	-	-	-	-	-	9.8	13.8	10.1	-	8.25	-	7.88	<b>4.13</b>
134	Whakaangi 6	-	-	-	-	-	-	-	-	-	-	6	7.3	3.9	-	9.5	7	-	-
135	Whakaangi 7	-	-	-	-	-	-	-	-	-	-	21.9	28	24.5	27	25.88	21.88	23.38	<b>19.13</b>
136	Whakaangi 8	-	-	-	-	-	-	-	-	-	-	14.1	29	11.8	18.8	15.25	10.5	20	<b>15.25</b>
137	Whakaangi 9	-	-	-	-	-	-	-	-	-	-	4.8	8.4	5.6	6.5	4.88	8.13	5	-
138	Whakaangi 10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.75	4	5.83	<b>4.33</b>
140	Langridge House	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.63	<b>7.63</b>
<b>Mahinepua-Radar Hill</b>																			
90	Mahinepua 0	-	-	-	-	-	-	-	-	-	-	-	-	2.9	2.9	3.38	3.63	4	<b>7.13</b>
83	Mahinepua 1	-	-	-	-	-	-	-	-	3.5	-	2.6	4.1	3.5	2.6	2.38	2.25	3.13	<b>7.5</b>
84	Mahinepua 2	-	-	-	-	-	-	-	-	4.2	0.8	2.3	4.8	4.3	2.75	3.25	3.25	4.25	<b>6.75</b>
85	Mahinepua 3	-	-	-	-	-	-	-	-	5.6	4.75	4	5.5	5.4	3.25	5.88	5.25	5.25	<b>10.25</b>
88	Mahinepua 4	-	-	-	-	-	-	-	-	6.1	4.1	3	7.8	4.7	4.1	9.5	4.75	5.38	<b>10.63</b>
87	Mahinepua 5	-	-	-	-	-	-	-	-	-	-	-	-	2.4	0.9	2	-	-	-

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
86	Mahinepua 6	-	-	-	-	-	-	-	-	1	2.5	2.3	-	0.4	0.75	1.25	-	-	-
89	Mahinepua 7	-	-	-	-	-	-	-	-	0.9	5.9	1.8	4.8	1.9	0.4	-	-	-	-
181	Mahinepua 8	-	-	-	-	-	-	-	-	-	-	-	-	0.8	0.4	-	-	-	-
182	Mahinepua 9	-	-	-	-	-	-	-	-	-	-	-	-	0.1	0.1	-	-	-	-
183	Mahinepua 10	-	-	-	-	-	-	-	-	-	-	-	-	1.6	1.25	-	-	-	-
184	Mahinepua 11	-	-	-	-	-	-	-	-	-	-	-	-	2.9	1.25	1.25	-	-	-
98	Mahinepua 12	-	-	-	-	-	-	-	-	-	3.5	2.3	3.8	2.5	3.4	2.88	-	-	-
99	Mahinepua 13	-	-	-	-	-	-	-	-	-	3.9	3.8	7.4	7.3	5	9.38	7.75	9.5	<b>16</b>
92	Mahinepua 14	-	-	-	-	-	-	-	-	-	-	-	-	0.6	1.25	1.13	1.38	0.75	-
91	Mahinepua 15	-	-	-	-	-	-	-	-	-	-	-	-	1	1.1	1.63	1.75	3.13	-
93	Mahinepua 16	-	-	-	-	-	-	-	-	-	-	-	-	1.3	6	2	2.63	5.25	-
94	Mahinepua 17	-	-	-	-	-	-	-	-	-	-	-	-	2.5	4.9	5	3.38	6.88	-
95	Mahinepua 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-	-	-
<b>Bay of Islands</b>																			
146	Kauri Cliffs 1 (Pink Beach)	-	-	-	-	-	-	-	-	9	-	-	4	4.25	1.75	5	6.5	-	-
147	Kauri Cliffs 2 (Puriri)	-	-	-	-	-	-	-	-	-	-	-	1.5	3	2.75	1	-	-	-
10	Marsden Cross	20.9	18.3	9.6	16.7	14.5	19.9	21.9	17.9	18.5	22	19.3	30.6	23	-	20.25	24.5	34.88	<b>30.86</b>
148	Wiwiki Beach	-	-	-	-	-	-	-	-	-	-	-	32.1	-	-	-	-	-	-
149	Mataka Stn Gate, Purerua	-	-	-	-	-	-	-	-	-	-	-	4	4.1	8.25	6.75	18.5	3.25	<b>10</b>
150	McKenzie Rd, Purerua	-	-	-	-	-	-	-	-	-	-	-	9.5	12.1	10.25	5	7.5	-	<b>2.5</b>
151	Mtn Landing (Lot 30) Purerua	-	-	-	-	-	-	-	-	-	-	-	12.3	10.2	18.75	12.6	25	22.75	<b>20.25</b>
11	Puketotara	10	13.8	8.1	11.6	9.7	8	-	2.5	7.5	3.6	-	7.1	13.7	10.6	6.17	9.5	9.25	<b>9.13</b>
152	Waitoto Block	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
12	Rangitane	14	5.6	8.4	10.5	7.5	8.4	11.5	10.5	8.6	8	8	11.5	9.1	15.9	15.25	11.38	10.75	<b>12.75</b>
153	Aroha Island	-	-	-	-	-	-	-	-	6.88	-	-	12.6	-	-	-	-	-	-
154	Napia Bay	-	-	-	-	-	-	-	-	-	8.7	5.5	4.6	4	4.5	3.25	5.6	7.5	<b>3.6</b>

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
155	Stirlings Quarry	-	-	-	-	-	-	-	-	7.3	9.8	13	12.4	10.2	8.3	4	8.5	-	-
97	Kurapari Rd	-	-	-	-	7.1	-	-	-	12.7	8.8	9.25	10.4	5.5	6	6.75	4.75	2.33	<b>5.5</b>
13	Waitangi No 12	7.6	7.6	6.3	8.9	5.3	7.1	11.5	15.1	18.4	13.75	11.5	15.5	6.3	-	-	-	-	<b>6.75</b>
14	Mt Bledisloe	27.1	10.9	5.5	7.9	8.8	5.1	6.4	6.75	4.9	8.9	9.1	5.5	9.6	11.25	8.25	11.38	13.71	<b>7.38</b>
138	Hupara	-	-	-	-	-	-	-	-	-	25.6	19.3	27.8	-	-	-	-	-	-
185	Akeake Reserve, Kerikeri	-	-	-	-	-	-	-	-	-	-	-	-	-	2.75	0.5	-	6.00	-
186	Cunningham Gardens, Aroha Island	-	-	-	-	-	-	-	10.75	8.63	-	-	-	-	-	-	-	8.17	-
187	Gaitens, Rangitane Rd, Kerikeri	-	-	-	-	10	-	12.8	6.33	6.88	10	12	12.63	14.7	10.5	8	7.25	7.50	<b>4.75</b>
188	Blacksmiths Bay (east), Kerikeri (Lex Rennes)	-	-	-	-	-	-	-	10.25	10.3	7.67	8.26	6.20	6	8	4.5	6.88	8.75	<b>6.40</b>
189	Doves Bay, Kerikeri (Lockyer)	-	-	-	-	4.17	-	-	2	-	3.78	2.46	-	-	4.5	7.5	15.25	18.25	-
190	Rangitu, Opito Bay Road, Kerikeri	-	-	-	-	-	-	-	-	-	-	-	-	9.1	16	15.5	15.5	-	-
191	Tikorangi Road, Opito Bay, Kerikeri	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	4.5	4	-	-
192	Kraus, Hansen Rd, Purerua	-	-	-	-	-	-	-	-	-	3.33	-	-	-	-	11	-	-	-
193	Mataka Beach, Mataka Station, Purerua	-	-	-	-	-	-	-	41.5	-	30	39	32.67	24.5	41.75	30	41.25	-	<b>30.83</b>
194	Mataka Station, Ninepin Track, Purerua	-	-	-	-	-	-	-	-	-	30	-	-	-	50.75	43.5	-	18.00	-
195	Mountain Landing (Lot 30) Wharengaere, Purerua	-	-	-	-	-	-	-	-	-	-	-	12.25	10.2	18.75	12.6	25	22.75	<b>20.25</b>
196	Mountain Landing, Mataka Ridgeline, Purerua	-	-	-	-	-	-	-	-	-	-	-	7.50	10.1	18	25.5	14.25	22.00	-
197	Mountain Landing, Paddle (Entrance), Purerua	-	-	-	-	-	-	-	-	-	-	-	8.50	10.2	12.5	14.25	17	-	-
198	Mountain Landing, Poraenui Point	-	-	-	-	-	-	-	-	-	-	-	-	7.3	14.5	16	13.75	-	-
199	Paoneone	-	-	-	-	-	-	-	16.67	-	-	-	-	-	-	-	-	37.60	-
200	Pattersons Big Hill	-	-	-	-	-	-	-	9	-	-	30.5	-	4.01	20.5	70.25	33	35.50	-
201	Pattersons, Rocky Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	16.5	19.5	17.67	11.67	-
202	Tapuaetahi	-	-	-	-	-	-	-	-	-	-	-	5.00	-	3	3.25	16.5	-	-
203	Wharengaere Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.5	15.50	-

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
204	Wiroa Station	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	6.67	-
205	Wiroa Station Hill 11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	-
206	Maintenance Facility, Kauri Cliffs45	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	5	13.13	-	-
207	Waiaua Bay, Matauri X	-	-	-	-	-	-	-	-	2.25	-	-	0.5	0.5	-	-	-	-	-
208	Waterfall, Kauri Cliffs, Takou Bay	-	-	-	-	-	-	-	-	6	-	-	5.5	2.25	4.5	3.5	-	-	-
209	Hikuria Rd (end)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
212	Drivers Whitehills farm	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	2	8	8.00	<b>7.88</b>
213	Landcorp Takou Kiwi covenant	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	0.75	3	-	-
214	Maori Block	-	-	-	-	-	-	-	-	-	-	-	-	1.5	-	-	3.5	-	-
215	Otaha Station (south end)	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3	-	-
216	Just past Clinton's	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
217	End of Te Ra Rd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.25	-	-
219	Achtzener, Bulls Gorge, Kerikeri	-	-	-	-	-	-	-	-	-	-	-	7.0	-	6	11.75	5.75	2.75	-
220	Airstrip Rd (Baigent-Mercer)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	<b>3.25</b>
221	Airstrip Rd (Sharp)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-
222	Candy Bush, Puketi Road, middle ridge	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	6	-	-	-
223	Candy Bush, Puketi Road, red cliffs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	-	-	<b>5.75</b>
224	Candy Bush, Puketi Road, white/yellow path	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	<b>11.00</b>
225	Kauri Hills, Totara North	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.00	<b>6.25</b>
226	Poultons, Kerikeri River, Mangaparerua Rd	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	6.5	-	<b>5.38</b>
227	Puketotara Rd = 709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-
228	Puketotara Rd = Kearney	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.5	-	-
229	Waipapa Rd West, Kerikeri (Anne C.)	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-
230	Waipapa Rd West, Kerikeri (Isabella C.)	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6	0.5	-	-	-
231	Waitoto, 500m west of Rhyolitic dome, Mangaparerua	-	-	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	-

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
232	Waitoto, Rhyolitic dome, Mangaparerua Road	-	-	-	-	-	-	-	-	-	-	-	4.5	4.6	8	5	-	-	-
233	Wharau Rd, Kerikeri (Manning)	-	-	-	-	-	-	-	-	-	-	-	-	3.6	2.5	-	5.5	3.50	<b>4.50</b>
234	Wharau Rd, Kerikeri (Starr)	-	-	-	-	-	-	-	-	-	-	-	-	6.25	7	-	-	-	-
<b>Puketi Forest</b>																			
102	Bramley's Rd	-	-	-	-	-	-	-	-	-	-	-	2.5	0.5	2	2	2.75	2.75	<b>2.5</b>
103	Pirau Ridge	-	-	-	-	-	-	-	-	-	-	-	0	-	0	1	0.5	1.25	<b>1.25</b>
104	Pond	-	-	-	-	-	-	-	-	-	-	-	4.5	1	3.75	5	3.5	8	<b>6.88</b>
105	Pudding Bowl Hill	-	-	-	-	-	-	-	-	-	-	-	0.3	0.75	1.125	2.04	2	1	-
106	Takapau Track	-	-	-	-	-	-	-	-	-	-	-	0	1	0	2.5	3.25	2.38	<b>2.57</b>
107	Takapau/Pirau Rd Junction	-	-	-	-	-	-	-	-	-	-	-	0.5	-	1	2.75	1.38	3.5	<b>1.5</b>
108	Totara Ridge	-	-	-	-	-	-	-	-	-	-	-	5.75	-	0.75	7.13	3.5	6.13	<b>4.63</b>
109	Waihoanga Gorge	-	-	-	-	-	-	-	-	-	-	-	2	-	3.75	5.38	3.25	6.25	<b>4.5</b>
110	Waihoanga Gorge 2	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	2.5	1.5	-	-
111	Walnut	-	-	-	-	-	-	-	-	-	-	-	4.25	2.5	1.25	3.29	3	5.25	<b>4</b>
112	Stoat line 9 - Puketi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.13	<b>4</b>
188	Puketi Nature Trail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.13	-
<b>Russell Peninsula</b>																			
15	Tikitikiore	10.8	13.5	6.1	6.1	4.5	6.5	2.9	3.3	3.1 (12.3)	6.1 (7.1)	3.38	13	7.9	-	12.25 (5.25)	12.25	13.5	<b>17.75</b>
59	Opito Farms	-	-	-	-	-	5.7	-	9.9	-	-	4.63	13.1	6.1	9.13	6.75	4.25	5.25	<b>8.13</b>
60	Flagstaff/Te Maiki	-	-	-	-	-	3.7	1.3	1.3	-	-	-	4.3	-	6.38	-	2.5	4.25	<b>3.88</b>
62	Uruti Rd	-	-	-	-	-	10.8	7.6	10.5	-	-	7.63	14.4	7.9	5	12.75	12.25	12.75	<b>11.5</b>
61	Milne Ct	-	-	-	-	-	-	-	-	-	-	-	6.3	5.8	-	-	-	-	-
156	Russell Heights	-	-	-	-	-	-	-	-	-	-	-	9.8	4.8	5	2.5	5	-	-
171	Mace/Farmer	-	-	-	-	-	-	-	-	-	-	-	-	-	6.63	4.75	17.63	10.38	<b>6.25</b>
172	Pipiroa Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	2	2.75	<b>6</b>



Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
173	Shortlands	-	-	-	-	-	-	-	-	-	-	2	-	2.5	1.38	1.13	1.25	-	<b>2.33</b>
170	Nikau Block	-	-	-	-	-	-	-	-	-	-	12.88	10	-	1	3	8.88	14.25	<b>9.13</b>
174	Johnsons	-	-	-	-	-	-	-	-	-	-	-	-	9.75	12.75	-	1.63	11.38	<b>8.5</b>
176	Jarvis	-	-	-	-	-	-	-	-	-	-	5.38	4.3	-	-	-	-	-	-
177	Soloman's Gate	-	-	-	-	-	-	-	-	-	-	11.5	6.38	-	-	-	-	5.38	<b>6.25</b>
210	Paroa Bay, Russell	-	-	-	-	-	-	-	-	-	-	-	-	4.3	-	-	-	-	-
211	Eagles Nest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	-	-
<b>Waimate North</b>																			
113	W1	-	-	-	-	-	-	-	-	-	23.5	15.8	24.75	-	-	25.5	25.75	23.63	<b>23.13</b>
114	W2	-	-	-	-	-	-	-	-	-	12.25	7	9.5	7.9	11.5	5.75	14.5	11.63	<b>12.5</b>
115	W3	-	-	-	-	-	-	-	-	-	14.9	-	-	-	-	-	-	1	<b>0</b>
116	W4	-	-	-	-	-	-	-	-	-	9.4	10.5	6	-	8	-	8.5	13.5	-
117	W5	-	-	-	-	-	-	-	-	-	5.9	1.83	3	-	-	-	-	-	-
118	W6	-	-	-	-	-	-	-	-	-	22.3	11	5.7	8.5	7.3	9.13	5.63	10.63	<b>8</b>
119	W7	-	-	-	-	-	-	-	-	-	-	5.3	6.5	-	3.1	-	-	-	-
120	W8	-	-	-	-	-	-	-	-	-	13.75	2.83	1	8.1	8	5.5	8.13	9.13	<b>11.88</b>
121	W9	-	-	-	-	-	-	-	-	-	5.2	3.5	2.125	2.3	3.5	-	-	-	-
122	W10	-	-	-	-	-	-	-	-	-	-	-	7.33	8.3	5.9	5.25	4.13	7.25	<b>5.13</b>
123	W11	-	-	-	-	-	-	-	-	-	7.07	7.75	2	-	-	-	-	-	-
124	W12	-	-	-	-	-	-	-	-	-	18.9	9.75	6.1	3.6	5.9	6	7.88	6.25	<b>4.63</b>
178	W13	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	2.8	-	-	-
127	W14	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.88	0.5	0	<b>10.5</b>
128	W16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	2.17	-	-
<b>Western</b>																			
16	Katui	47.6	39.4	20.4	28.2	17.5	16.1	14.4	-	14.9	13.9	-	4	-	0	-	0.25	-	-
17	Trounson North	8.5	17.3	12.5	19	16	14.3	16.1	-	15.25	19.9	22.2	15.4	-	13.75	22.33	5.75	15.13	<b>12</b>

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
33	Trounson South	-	-	-	-	-	-	12.25	-	23.75	19.1	-	-	8.2	8.9	-	11.13	12.33	<b>10</b>
18	Cathedral	2.3	3.8	5.1	5.5	5.1	1.8	2.75	5.9	5.25	4.9	4	4.6	4.4	3	1.63	2.75	4.13	<b>2.63</b>
19	Waipoua L/Out	30.9	24.4	30.8	27.7	21.4	21.8	14.6	8.4	16.9	22.75	23	-7.9	11.8	6	6	9.25	15.63	<b>8.88</b>
79	Toronui Track	-	-	-	-	-	-	-	-	1.75	2.4	-	-	-	-	-	-	-	-
96	Kawerau Rd Cr	-	-	-	-	-	-	-	-	3.4	2	0.3	0.4	1	-	-	-	-	-
179	Marlborough 13	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	-	-
20	Paerata	9.9	1.3	3.1	6.5	2.8	3.1	1.25	-	0	-	-	-	0.9	1.1	1.63	0.25	0.38	<b>1.13</b>
31	Te Matua Ngahere	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.25	4.13	-	-
13b	Site 13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.13	-	-	-
14b	Site 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-
16b	Site 16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.38	2.13	1.5	<b>1.38</b>
18b	Site 18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-
28b	Site 28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.25	8.88	3.63	<b>4.13</b>
30b	Site 30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	0.88	-
31b	Site 31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-	-	-
32b	Site 32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	-	-	-
157	Opouteke CHH	-	-	-	-	-	-	-	-	-	-	-	6.6	6.1	2.8	11.25	-	-	-
158	Pipiwai CHH	-	-	-	-	-	-	-	-	-	-	-	7.3	0.5	1.5	-	-	-	-
189	Alf's Cottage	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-
190	River Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
<b>Southern</b>																			
21	Glenbervie 7A	5	6.4	7.1	7.5	5	0.5	1	2.4	1	-	1.3	-	2.4	2.5	1.88	1.75	2.63	<b>1.13</b>
22	Glenbervie 9A	11.2	3.8	4.3	7.3	5.9	12.6	6.75	5.25	4.5	6.5	-	1.8	2.8	2.9	1.38	2.88	1.63	<b>6.75</b>
23	Marlow Road	22.4	13.9	14	17.8	19.8	21.3	22.9	-	19.8	17.6	12.1	10	13.3	11.1	10.25	7.25	13.13	<b>15.38</b>
24	Purua North	12.1	13	10.3	10.5	10.6	15	12.75	12.5	13.25	10.9	12.6	13.6	18.3	9.9	13.5	10	16.13	<b>16</b>
81	Purua South	-	-	-	-	-	-	-	-	14.75	15.9	14.4	14.1	14.6	10.5	12.5	11.13	17.5	<b>10.75</b>

Stn No.	Station name	1995 Mean	1996 Mean	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean	2008 Mean	2009 Mean	2010 Mean	2011 Mean	2012 Mean
<b>Northern</b>																			
1	Diggers Valley	1.1	2.4	4.1	2.5	2.1	3.3	4.1	3.75	3	3.9	3.9	2.7	1.3	2	1.67	-	2.5	-
2	Takahue	4.3	3.5	5.5	5.4	6.3	8.4	7.9	4.5	3.3	4.75	5.3	5	3.6	4.9	3.13	4.75	11.38	<b>6.88</b>
4	Gartons	5.6	5	1.2	-	0.8	2	8.6	-	1.5	4.1	4.9	7.1	1.5	1.25	0	0.13	0.25	<b>0.75</b>
25	Rarewarewa –early listen	-	-	-	8	10.4	4.6	7	6.5	4.6	5.9	5.6	4.8	6	-	-	-	-	-
25	Rarewarewa South	7.5	8	8.5	6.6	8.3	6.6	7	5.8	6.5	6.6	5.3	6.3	6.6	6.4	8.88	4	7.88	<b>6.5</b>
82	Rarewarewa North	-	-	-	-	-	-	-	-	9.75	6.6	4	8.5	7.9	10.4	11.38	11.38	11.88	<b>12.13</b>
139	Hodges Bush	-	-	-	-	-	-	-	-	-	-	9.8	13	16.1	17.75	15.5	16.63	9.5	<b>13.75</b>
145	Whangaruru	-	-	-	-	-	-	-	-	-	-	-	6	6	10.25	13.38	10.75	24.29	<b>13.5</b>
26	Mimiwhangata	11	5.6	3.5	3.6	0.3	9.4	19.1	20.3	13.8	20.25	14.3	21	19.5	12.9	11	8.38	-	<b>11</b>
167	Kaikanui Rd	-	-	-	-	-	-	-	-	-	-	-	-	8.5	11.6	15	8.38	7.25	<b>3.75</b>
27	Sandy Bay 1	3.6	3.4	2.8	8	6.1	3.3	3.5	-	3	-	2.5	-	-	6.75	-	5.25	-	<b>4.17</b>
194	Sandy Bay 2	-	-	-	-	-	-	-	-	-	-	-	4.5	-	-	3.83	3.5	2.5	<b>4.5</b>
195	Sandy Bay 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	<b>4</b>
34	Motatau 1	-	-	-	-	8.8	-	10	15	6.75	7.5	5.6	6.5	7.5	8.75	6	-	4.88	<b>2.5</b>
35	Motatau 2	-	-	-	-	-	-	-	2.7	-	-	1.5	3	2.5	-	-	-	4.25	-
36	Motatau 3	-	-	-	-	-	-	4.8	1.5	2.75	5.5	3.5	4.6	4	0.9	-	-	5.5	-
38	Motatau 5	-	-	-	-	-	-	1.5	1.25	0.9	1	-	-	-	-	-	-	-	-
68	Motatatu 9/ Marlow 1	-	-	-	-	-	-	-	11.7	11.75	17.6	13.5	10.5	9.3	2.9	7.13	3	9.75	<b>9.88</b>
129	Motatau 10/ Marlow 2	-	-	-	-	-	-	-	-	-	7.1	7.5	10.9	9	5.75	2.17	3.38	5	<b>5.38</b>
168	Worsp Rd	-	-	-	-	-	-	-	-	-	-	-	-	1.8	2.4	2	5.75	1.38	-
185	Whau Valley Dam	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-
<b>Whangarei Heads</b>																			
39	Bream Hd 1	-	-	-	-	-	-	5	3.1	5.75	3.1	4.7	5.1	3.5	5	6	3	7.13	<b>9.5</b>
40	Bream Hd 2	-	-	-	-	-	-	1.2	2	1.25	2.1	2.4	2	2.8	2	-	-	1.25	-
41	Bream Hd 3	-	-	-	-	-	-	-	-	-	-	1.5	2	1.3	1.6	-	-	-	<b>8.38</b>
42	Bream Hd 4	-	-	-	-	-	-	1.2	2	1.25	2.1	2.4	2	1.5	3.1	2	2	5.38	<b>5.33</b>
69	Bream Hd 6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<b>2.88</b>
44	Taurikura 1	-	-	-	-	-	-	-	-	-	-	1.5	2	-	4.4	4.88	3.13	12.63	<b>9.63</b>
45	Taurikura 2	-	-	-	-	-	-	-	-	-	-	-	-	-	9	8.5	10.88	10.25	<b>5.5</b>





**APPENDIX 2.** Summary of Northland kiwi listening data for stations listened from in 2012.

Stn. No.	Station name	Listener	1		2		3		4		Total	Mean
			1	2	1	2	1	2	1	2		
<b>Whakaangi</b>												
131	Wha 2	W. Sporle	9	5	8	4	17	7	12	2	64	8.00
132	Wha 3	R. Renwick/W. Sporle	4	1	3	4	1	0	8	4	25	3.13
133	Wha 5	A. J. Goodwin	5	0	4	2	10	1	5	6	33	4.13
135	Wha 7	W. Sporle/L. Baigent	26	20	21	17	19	9	20	21	153	19.13
136	Wha 8	Johnstons	16	19	14	16	10	19	16	12	122	15.25
138	Wha 10	J. Salt	2	5	5	4	5	5	-	-	26	4.33
140	Langridge House	Mike & Jill	13	5	14	4	7	7	5	6	61	7.63
<b>Western</b>												
18	Cathedral	J. A. Hall	0	3	4	3	1	3	5	2	21	2.63
19	Lookout	B. Searle	10	9	19	11	7	1	7	7	71	8.88
16b	Site 16 Malborough Rd	M. Calder	0	1	2	0	2	4	2	0	11	1.38
28b	Site 28	W. Morunga	2	5	7	5	2	4	2	6	33	4.13
17	Trounson Nth	M. R. Leach	10	3	18	6	12	14	15	18	96	12.00
33	Trounson Sth	A. Meduna	11	5	5	11	6	18	8	16	80	10.00
<b>Southern</b>												
139	Hodges	D. Kervell	11	8	21	20	9	13	13	15	110	13.75
81	Purua S	G. Brackenbury	5	10	17	13	15	10	9	7	86	10.75
25	Rarewarewa South	M. Valdes	11	5	8	5	1	6	5	11	52	6.50
82	Rarewarewa North	G. Pilon	10	20	11	6	14	13	11	12	97	12.13
34	Motatau 1	S. Murfil <i>et. al</i>	4	2	4	1	4	0	3	2	20	2.50
129	Motatau 10	P. MacDonald	3	7	7	14	1	1	4	6	43	5.38
24	Purua N	P. Cornille	23	14	19	8	14	10	18	22	128	16.00
167	Kaikanui	P. MacDonald	0	7	3	5	2	4	5	4	30	3.75
23	Marlow Rd	G. Coulston	12	19	8	24	13	14	9	24	123	15.38
20	Paerata	G. Coulston	5	0	4	0	0	0	0	0	9	1.13
68	Motatau 9/Marlow 1	M. Ritchie	4	13	8	8	9	17	6	14	79	9.88
22	Glenbervie 9A	P. Graham	8	7	3	4	10	8	10	4	54	6.75

Stn. No.	Station name	Listener	1		2		3		4		Total	Mean
			1	2	1	2	1	2	1	2		
21	Glenbervie 7A	S. Wairau	0	0	0	2	1	1	3	2	9	1.13
26	Mimiwhangata	C. Moretti	21	5	17	3	19	4	14	5	88	11.00
145	Whangaruru	T. Grant	18	12	21	12	17	13	10	5	108	13.50
<b>Mahinepua</b>												
90	Site 0	M. Woodworth/R. Wright <i>et. al</i>	5	14	6	4	7	11	5	5	57	7.13
83	Site 1	J. Hill/D. Leeming/J. Portman	6	9	5	5	9	11	7	8	60	7.50
84	Site 2	M. Woodworth/M. O'Higgins <i>et. al</i>	3	9	9	4	5	11	6	7	54	6.75
85	Site 3	R. Borman/L. Barnes <i>et. al</i>	10	12	15	12	11	6	12	4	82	10.25
88	Site 4	C. Pusch/A. Herbert <i>et. al</i>	21	13	9	8	11	7	8	8	85	10.63
99	Site 13	T. Kay/F. Craig/B. Ross/J Newberry <i>et. al</i>	23	15	20	13	17	9	16	15	128	16.00
<b>Waimate North</b>												
191	Hupara Land Care	W & S Atkinson	38	32	26	40	33	30	29	22	250	31.25
113	W1	D. Way	24	10	16	13	40	19	49	14	185	23.13
114	W2	B. Wards/H. Gee	14	10	4	9	27	10	10	16	100	12.50
115	W3	K. Taylor	0	0	0	0	-	-	-	-	0	0.00
118	W6	D. Henderson	12	16	6	5	8	2	7	8	64	8.00
120	W8	D. Way	16	20	5	15	9	15	8	7	95	11.88
122	W10	D. Liebert/J. Morgan	9	6	4	2	8	3	4	5	41	5.13
124	W12	J. Shaw/J. Todd/P. Atkins	4	3	4	4	8	7	5	2	37	4.63
127	W14	D. Way/P. Saunders/C. Boniface	8	13	10	15	4	13	-	-	63	10.50
<b>Whangarei Heads</b>												
39	Bream Head 1	R & W Newbold	19	15	3	9	14	3	7	6	76	9.50
41	Bream Head 3	O. A. Petel	12	6	11	9	11	5	9	4	67	8.38
42	Bream Head 4	G. Pike/D. Capey	10	2	4	-	-	-	-	-	16	5.33
69	Bream Head 6	C. Cook	4	5	1	5	2	3	1	2	23	2.88
54	Kauri Mt 1	J. Nairn	2	13	4	1	3	1	5	0	29	3.63
72	Kauri Mt 2	M. Barteldres/J. Nairn	10	6	5	0	3	7	4	7	42	5.25



Stn. No.	Station name	Listener	1		2		3		4		Total	Mean
			1	2	1	2	1	2	1	2		
73	Kauri Mt 3	T. Bull/B. Carr	2	8	1	1	8	2	0	4	26	3.25
74	Kauri Mt 4	R & G Faber	6	1	6	0	4	7	3	3	30	3.75
141	Kauri Mt 5	L. Brown	2	3	11	0	6	0	8	3	33	4.13
47	Manaia 1	U. Schmid	1	5	5	0	2	5	0	5	23	2.88
48	Manaia 2	T. Hamilton	22	14	15	27	16	8	22	9	133	16.63
49	Manaia 3	P. Richards	6	0	4	0	9	1	5	0	25	3.13
186	Manaia 9	J. Williams	6	0	7	2	1	2	4	7	29	3.63
55	Nook 1	W. Oxborrow	1	0	2	0	2	2	2	1	10	1.25
56	Nook 2	P. Coates/P. King	14	13	6	3	5	5	13	8	67	8.38
57	Nook 3	L. Sutcliffe	3	2	5	0	2	6	6	3	27	3.38
58	Nook 4	L. Brown	0	2	3	1	-	-	-	-	6	1.50
44	Taurikura 1	C. Mitchell	15	18	5	3	7	11	7	11	77	9.63
45	Taurikura 2	G. Pike	6	3	5	6	6	4	6	8	44	5.50
46	Taurikura 3	K. Lange	10	2	5	4	3	3	2	8	37	4.63
187	Craig Rd	C & L McNamara	3	10	10	26	6	20	22	16	113	14.13
<b>Tutukaka</b>												
125	TLC 1	M. Camm	4	3	11	22	16	12	9	19	96	12.00
126	TLC 2	C. McInnes	13	18	14	5	8	2	15	5	80	10.00
142	TLC 3	A & J Gilbert	0	0	22	13	8	8	11	6	68	8.50
160	TLC 7	N. Shayer	1	0	6	6	4	14	9	4	44	5.50
<b>Eastern</b>												
10	Marsden Cross	K. Upperton/A. Ross	45	25	33	10	35	41	32	13	234	30.86
14	Mt Bledisloe	R. Booth	13	5	1	0	10	7	18	5	59	7.38
11	Puketotara	A. Newport	11	3	17	11	9	4	7	11	73	9.13
13	Waitangi No. 12	R. Booth	7	4	3	19	5	9	4	3	54	6.75
12	Rangitane	A. Walker	10	15	8	11	13	12	19	14	102	12.75
<b>Puketi Forest Trust</b>												
102	Bramley's Ridge	A. Blackmore/I. D. Wilson	5	3	1	4	1	6	0	0	20	2.50
103	Pirau Ridge	D. Godbert/B. Sutton/I. D. Wilson	1	0	1	2	0	4	0	2	10	1.25
104	Pond	D. Godbert/L. M. Alston/N. H. Walker	11	7	6	3	7	1	9	11	55	6.88

Stn. No.	Station name	Listener	1		2		3		4		Total	Mean
			1	2	1	2	1	2	1	2		
106	Takapau Track	P & J Hodgson	3	-	5	1	2	2	3	2	18	2.57
107	Takapau/Pirau Rd Jn	L. M. Alston/D. Godbert/I. D. Wilson	3	0	2	0	0	0	4	3	12	1.50
108	Totara Ridge	L. J. Moller/I. Godbert/B. Sutton	14	8	4	1	2	3	5	0	37	4.63
109	Waihoanga Gorge	C & R Robinson	6	1	4	7	4	6	3	5	36	4.50
111	Walnut	I. D. Wilson/A. Blackmore	8	3	4	4	5	2	3	3	32	4.00
112	Stoat line 9 - Puketi	T. Hayes/L. Moller	6	4	4	2	-	-	-	-	16	4.00
<b>Northern</b>												
7	Puketi	D. O'Halloran	12	8	10	0	7	7	4	2	50	6.25
8	Puketi SR	I. D. Wilson/B. Sutton/A. Mentor	14	13	14	2	12	14	16	9	94	11.75
2	Takahue	F. Schou	8	1	4	8	11	10	6	7	55	6.88
4	Gartons	I. Petrove/G. Upson	3	2	0	1	0	0	0	0	6	0.75
5	Kaiaka	K. Khaine/T. Higginson	2	0	0	0	0	0	0	0	2	0.25
3	Lightning Hill	L. Baigent	21	11	18	14	17	15	18	10	124	15.50
<b>Russell</b>												
59	Opito	K. D. Russell	6	4	9	2	14	9	9	12	65	8.13
15	Tikitikiore	L. Gordon	15	15	27	16	30	10	19	10	142	17.75
170	Nikau Block	L. Gordon	12	17	24	9	1	2	4	4	73	9.13
171	Mace/Farmer	K. D. Russell	9	7	13	4	12	0	4	1	50	6.25
172	Pipiroa	M & T Pasco	5	8	16	0	5	5	0	9	48	6.00
62	Uruti road	C. J. Richmond	21	7	8	4	11	6	16	19	92	11.50
173	Shortlands	K. Russell/L. Gordon	5	1	2	3	3	0	-	-	14	2.33
60	Te Maiki/Flagstaff (sundial)	H. Lindauer	2	6	4	12	2	4	1	0	31	3.88
174	Johnsons	M. Frankum	9	11	9	10	6	10	8	5	68	8.50
177	Solomon's Gate	K. D. Russell	3	4	8	2	3	8	12	10	50	6.25
<b>Tawharanui</b>												
161	TWN 1 Marine triangle	Patte <i>et. al</i>	1	0	2	2	3	1	1	0	10	1.25

Stn. No.	Station name	Listener	1		2		3		4		Total	Mean
			1	2	1	2	1	2	1	2		
162	TWN 2 Trig triangle	J. Barruel <i>et. al</i>	4	5	2	2	6	2	6	4	31	3.88
163	TWN 3 Top ecology track	K. McGee <i>et. al</i>	0	0	2	1	1	1	4	4	13	1.63
164	TWN 4 Possum gully	S. Richardson <i>et. al</i>	2	1	3	3	0	1	8	4	22	2.75
165	TWN 5 Twin hills	R. Blackburn <i>et. al</i>	4	1	1	8	0	1	1	2	18	2.25
166	TWN 6 South coast water tank	R. Williams <i>et. al</i>	1	4	6	5	7	5	6	5	39	4.88
<b>Kawau Island</b>												
192	Bostaquet Bay	J. Barton/J. Myhre, S & C Hoyle	2	1	5	-	5	9	-	-	22	5.57
193	South Cove	C. Rathe, S. Johnson, J. Barton, K. Ayton	1	4	2	0	3	2	0	0	12	2.40