MONITORING AND

Wainuiomata and Orongorongo Catchments

Initial Monitoring Results

Possum Monitoring Report

November 1999

1.0 Summary

During May-June 1999 a predominantly aerial applied possum control programme was undertaken in the Wainuiomata and Orongorongo Catchments. A limited ground control programme was also undertaken to complement the aerial programme. The primary objective to reduce the possum population to a level of 5% or less RTC was successfully achieved. Post-operational monitoring undertaken from July-September 1999 recorded an average weighted residual trap-catch rate of 1.9% (95% CI +/-1.0). RTC = residual trap catch.

The management area was divided into two areas of similar size, Wainuiomata Catchment and the Orongorongo Catchment. The Orongorongo Catchment received the standard straight toxic baiting method with 100% baiting coverage at 3kg/hectare.

The Wainiomata Catchment was prefed prior to toxic baiting. Toxic baits were applied in 7-l 0 metre wide strips spaced at approximately 70 metres. The average sowing rate was 3kg/hectare.

2.0 Monitoring and Control History

Historically the majority of possum control and monitoring has been undertaken in the Wainuiomata Catchment. The following results are therefore not reflective of the entire Wainuiomata and Orongorongo Catchments.

Limited possum control has been completed prior to 1992.

1992
A pre-control monitoring assessment during 1992 indicated that high possum densities were evident. Cyanide baits with flour and aniseed lure placed in bait stations were used as the pre-control assessment technique. Following this assessment, two staff contracted to carry out possum control using trapping and cyanide methods removed approximately 9000 possums.

1993-1994
Wellington Regional Council staff undertook further cyanide poisoning along major spurs and valley floors.

1995
A pre-control monitoring assessment in 1995 using the leg-hold trapping method indicated that possum densities were still at carrying capacity. An average trap-catch rate of 37% was recorded from 5 trap-lines. Individual line results ranged from 22%-58%.

1996
Again in 1996 a small-scale possum control operation using private contractors was initiated. Control methods included the use of trapping and cyanide. Post-operational monitoring using the trap-catch method indicated that no significant reduction in the possum population had occurred as a result of the control operation. An average post-operational trap-catch result of 33% was recorded.

1997
Volunteer trappers completed a cyanide and trapping control programme within a few small-designated blocks. Results were mixed.

3.0 Control Technique

The Wainuiomata Catchment was targeted for a trial baiting strategy that would target not only possums but achieve a maximum by-kill of deer. To maximise the by-kill of deer, the Wainuiomata Catchment was prefed 3 weeks prior to toxic baits being applied. Toxic baiting using the strip sowing method required baits to be sown at high-density strips 7-10 metres wide, with 70-metre intervals between strip centres. Even though the average sowing rate would be 3 kg/hectare over the entire area, bait density within the 7-10 metre wide strips would amount to approximately 2 l-30 kg/hectare.

Prefeed baiting of the Wainuiomata Catchment was flown during 19-20 May 1999. Toxic baiting of Wainuiomata Catchment was undertaken from 10-l 1 June 1999.

The Orongorongo Catchment received straight toxic baiting and was sown at an application rate of 3kg/hectare in a broadcast method (i.e. 100% baiting coverage). Toxic baiting of Orongorongo Catchment was undertaken from 1 O-l 1 and 24 June 1999.

Common to both catchments was the toxic bait type. Toxic baits were no. 7 cereal pellets, mean weight 10 grams (20mm diameter), double lured with cinnamon and containing 0.15% 1080 w/w.

4.0 Monitoring Results

Monitoring was stratified to reflect the differences in the control programme as described in section 3.0. 25 pre/post paired trap-lines were completed for the monitoring assessment, 15 pairs in the Wainuiomata Catchment (strip sowing) and 10 pairs in the Orongorongo Catchment (broadcast sowing). Post-trap lines were placed parallel to the pre-trap lines and separated by approximately 200 metres. Monitoring lines were placed at approximately right angles to the flight paths.

Pre-control monitoring was completed during March-April 1999, and post-control monitoring during July-September 1999. All lines, except line 1 (pre), were placed in the field and trapped for three consecutive nights. The weather remained predominantly fine for the duration of both pre and post monitoring phases. Of 37 nights that trapping was undertaken, 30 received no rainfall, 5 recorded rainfall less than 10mm and 2 recorded rainfall greater than 1 Omm. In both instances where rainfall has exceeded 10mm, the timing of the rain has meant that the data can be validly included in the results.

The approximate paired line locations and post control line results are shown on the attached map. Table 1 provides details of individual line results. Both pre and post-control monitoring of the Wainuiomata/Orongorongo Catchments was carried out in accordance with the most recent "Trap-catch for Monitoring Possum Populations" protocol.

Table One - Monitoring Line Summary

Strata	Line 'No.	Pre-Control RTC (%)	Post-Control RTC (%)
Wainuiomata Catchment	3	23.5	0.0
Wainuiomata Catchment	7	15.1	0.0
Wainuiomata Catchment	8	27.1	0.0
Wainuiomata Catchment	11	23.3	0.0
Wainuiomata Catchment	13	22.0	0.0
Wainuiomata Catchment	15	0.0	0.0
Wainuiomata Catchment	1	33.8	1.7
Wainuiomata Catchment	2	13.3	1.7
Wainuiomata Catchment	4	8.3	1.7
Wainuiomata Catchment	5	20.0	1.7
Wainuiomata Catchment	6	18.3	1.7
Wainuiomata Catchment	9	6.8	1.7
Wainuiomata Catchment	10	16.7	1.7
Wainuiomata Catchment	12	28.3	1.7
Wainuiomata Catchment	14	18.5	3.3
	Average RTC	18.3% (95% CI +/-4.6)	1.1% (95% CI +/-0.5)
Orongorongo Catchment	3	10.3	0.0
Orongorongo Catchment	4	1.7	0.0
Orongorongo Catchment	8	1.7	0.0
Orongorongo Catchment	1	6.7	1.7
Orongorongo Catchment	2	6.7	1.7
Orongorongo Catchment	6	10.0	3.3
Orongorongo Catchment	7	3.3	3.3
Orongorongo Catchment	9	1.7	3.3
Orongorongo Catchment	10	11.8	3.4
Orongorongo Catchment	5	28.3	10.1
	Average RTC	8.2% (95% CI +/-5.1)	2.7% (95% CI +/-1.9)
Combined Weighted Average RTC		**13.5% (95% CI +/-3.4)**	**1.9% (95% CI +/-0.9)**

5.0 Non-Conformance

Deviations from the trap-catch protocol or work plan are summarised below:

1) Line 1 @e-control monitoring) was trapped for two consecutive nights as opposed to three. This line result has been multiplied by an empirically derived correction factor of 0.9 to account for the difference in number of nights trapped. Line 5 (post-control monitoring) was also trapped for two consecutive nights. A 0% catch was recorded for this particular line, thus requiring no adjustment to the result for 2 nights trapping.
2) Line 10 (post-control monitoring) was relocated from its original line locality due to time constraints and safety issues. As a result the post line is approximately lkm from the pre line.

6.0 Discussion of Monitoring

Of all 25 post lines completed, only one line (line 5) recorded a result above 3.4%. This line located within the Orongorongo Catchment recorded an individual RTC of 10.1%. Analysis of the Orongorongo Catchment data indicates that there is a strong positive correlation (0.83) between pre and post results. Those pre lines that recorded higher RTC results also recorded higher post RTC results. Line 5 is no exception, recording the highest pre and post result for Orongorongo Catchment. The line is located well within the aerial flight paths.

Both the prefeed trial (strip sowing) and the straight toxic (broadcast sowing) methods achieved excellent post-operational results. All individual line results from the prefed (strip sowing) method used in the Wainuiomata Catchment are consistently low and only spread between 0.0% and 3.3%. Prefeeding prior to toxic baiting has proved very successful in this case and may have had the effect of achieving greater consistency in results as opposed to straight toxic baiting.

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7.0 Details of Management Area

Location	Code: 8941254	*Name: Wainuiomata-Orongorongo*
Control Phase	*N/A*	
Management Area (hectares)	*7,400 approximately*	**Operational Notes (control)**
Treatment Area (hectares)	*7,400 approximately*	
Strata	*Wainuiomata Catchm.* *Orongorongo Catchm.*	
Control Methods	*Aerial and ground application of 1080 cereal pellets*	
Date of Control	*Start: 19 May 1999*	Finish: 24 *June 1999*

8.0 Details of Monitoring Project

Monitoring Dates:	Start: *08 / 03 / 99*	Finish: 03 / 09 / 99
Rainfall *(date that the rain gauge was read)*	*9.3.99 6mm* *10.3.99 2mm* *11-12.3.99 fine* *30.3.99 fine* *31.3.99 21mm* *1.4.99 fine* *13-14.4.99 fine* *15.4.99 26mm* *16.4.99 4mm* *20-23.4.99 fine*	*27-29.4.99 fine* *10-12.5.99 fine* *13-16.4.99 fine* *10-12.8.99 fine* *13.8.99 2mm* *24-27.8.99 fine* *31.8.99 fine* *1-2.9.99 fine* *3.9.99 2mm*
Number of Traplines	*25 pre and post*	
Total Number of Trapnights	*1480 pre and post*	
Trap Set Type	*Ground sets - Victor1 traps*	
Approved Operator	*Eddie Jephson, Chris Loader and Vince Duckett*	

Summary Statistics

Pre-Initial Catch Rate[1]	13.5%	*95%* CI: +/-3.4
Current Catch Rate	1.9%	*95%* CI:*+/-0.9*
Percent Remaining	*18.9%*	95% CI:*+/-6.4*

[1] Any pre-initial monitoring data is stored in the operational file. A copy is available from the Monitoring and Investigations Section on request.

9.0 Supply of Monitoring Data - Terms and Conditions

The enclosed information is supplied, within the framework of our data quality system, from the best practice currently available. The Council' has exercised all reasonable skill and care in controlling the contents of the information.

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Wainuiomata-Orongorongo Post-initial Trap Line Locations