

COMMINS ENTERPRISES

Possum Monitoring Report
Matea WaxTag Trial

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Waxtag Monitoring Report

Operation Name:	Matea WaxTag trial.
Area Involved:	Two strata previously monitored using trap-catch. Otamatea – 695ha; Kokomoka buffer – 1772ha.
Monitoring method:	NPCA draft “Protocol For Low Level Possum Abundance Monitoring using the WaxTag Method”
Field Operatives:	Graham Lawson, Dave Ritchie, EJ Thompson, Phil Commins.
Timing:	Otamatea – 14/06/05 to 21/06/05, Kokomoka 28/06/05 to 5/07/05
Weather conditions:	Otamatea – 2 wet nights, 5 fine; Kokomoka – 1 wet night, 6 fine.
Monitoring regime:	Lines of twenty waxtags at 10 meter intervals set out for seven nights (checked at three nights).
Number of lines:	Otamatea – 13, Kokomoka 27. This is the same number as for the trap-catch monitor and more than recommended by the protocol.
Line locations:	See attached map.

Summary of Results. (Also see attached line summary sheet).

Otamatea: **0%** PAI (7 nights).
0% RTCI

Kokomoka: **0.56%** PAI (7 nights). Approximate 95% confidence interval +/- 0.82%.
0.3% RTCI Approximate 95% confidence limits +/- 0.4%.

(PAI – Possum Activity Index; RTCI – Residual Trap Catch Index)

No possums were detected in the Otamatea stratum by either WaxTag’s or trap-catch.

In the Kokomoka stratum the WaxTag monitor detected possums on one bush pasture margin line after 3 nights (2 tags bitten) plus one forest line (1 tag bitten) after seven nights. The trap-catch monitor had an almost identical result with two lines, one bush and one farm habitat line, catching one possum each.

Rodent bite marks were evident on only one line in the Otamatea stratum (13 lines) after seven nights. However in the Kokomoka stratum (27 lines) 4 lines had rodent bite marks after 3 nights and 11 after 7 nights.

In the Otamatea stratum one tag appeared to have been bitten by a cow. Cattle had access to the tags and the tooth mark was nearly as wide as the wax block. On another Otamatea bush pasture margin line 6 waxtags appeared to have been bitten by domestic deer. Tooth marks were consistent with deer incisors and a mob of deer had been moved through the paddock. No other stock had access to the tags.

Sheep were known to have had access to at least one line of tags on the Kokomoka bush pasture margin but no bite marks eventuated.

Comparison of Relative Cost for WaxTag versus Trap-catch Monitoring

Planning costs and the time needed to access and locate the start points for lines is the same for each method.

All field operatives found the setting out of the WaxTag lines to be marginally slower than setting a trap line. This result was somewhat surprising as intuitively it was felt that setting out a WaxTag line would be quicker. Although the time taken to locate the nearest site combine a WaxTag with a luminescent strip and nail it up is much quicker than setting a trap this sequence of actions has to be repeated 20 times compared to 10 for a trap line.

Forest lines in this trial were all within 300 meters of the farm edge so the advantage of having a lightweight monitoring device was not evaluated. It would however be a significant advantage and reduce costs for deep forest monitoring particularly in rough terrain.

Lifting WaxTag lines was also found to be slower than lifting trap lines. The main contributing factors were the 20 versus 10 devices and separating the luminescent strip and nail from the tag to reduce damage to the wax during transport that might otherwise mask animal bite marks. Removing the nail from the tag proved difficult so some small time gains would result from having a hole in the tag.

Reading the WaxTags and recording the results was best carried out at base or in the office. Recording the outcomes in the field is likely to result in some errors particularly in adverse weather conditions or when time is limited. Many of the tags had marks in the wax, some from manufacture but most from transport, so care is required in identifying bite marks. Time required checking and recording results for each line varied from 5 to 10 minutes but this time will reduce with greater experience.

The big advantage of WaxTag monitoring over trap-catch is that it requires only two visits over a 7 day period compared to 4. This could however result in additional travel costs, depending on the distance to the job and the accommodation costs on the job, as field operatives would be returning to their base after establishing lines and then returning to lift lines. Efficient management on large WaxTag monitoring jobs would see field operatives setting out lines for 5 consecutive days, having 2 days off then lifting lines for 5 days.

The draft protocol for WaxTags essentially ignores weather considerations for monitoring over seven nights. This provides a large advantage over trap-catch by removing down time and costs associated with closing and opening trap lines. The affect of adverse weather on the PAI index has not been evaluated but it is reasonable to assume accuracy will be affected.

Differences in the cost of consumables between the two methods will be largely dependant on the number of tags bitten and therefore not reusable compared to the cost of flour and icing sugar. Cost for other consumables, hipchain cotton, staples/nails etc will be similar. For this trial 43 tags recorded bites so the cost was approximately \$38 compared to approximately \$14 for flour and icing sugar so the cost was not significant. Higher populations of possums and/or rodents could result in more significant consumable costs.

This trial has demonstrated that the time required for setting and lifting of WaxTag lines is essentially the same as for trap lines so the cost advantage for WaxTag monitoring is in the

two extra days checking required for trap lines. Some monitoring contractors use a breakdown of the field component of trap-catch monitoring of 40% setting, 15% per day checking and 30% for lifting lines. Some variation in the checking component can be expected depending on habitat and access so a realistic range would be 15 – 20% per day. This would give WaxTag monitoring a 30 - 40% cost advantage in the field. Extra costs of consumables and travel could reduce this advantage for some jobs.

For smaller monitoring contractors overheads would essentially stay the same but for those employing staff the reduced weather related down time using WaxTag monitoring would provide a significant reduction.

From a management perspective WaxTag monitoring could reduce costs or alternatively allow for an increase in the number of monitoring lines for the same budget thereby increasing the precision of the PAI index and increasing the chance of detecting residual patches of possums remaining after control.

Sensitivity

The WaxTag monitoring method has been promoted as a more sensitive population indexing method particularly suited to low density populations. Results from this trial do not support this claim.

Research trials that demonstrated a high level of sensitivity used a different methodology than the current draft protocol. The two significant changes that may have reduced sensitivity are the removal of the flour and icing sugar blaze and the removal of the orange lure. The flour and icing sugar blaze increased the size of the visual lure and provided a food source that may have served to keep a possum at the site for longer. The orange lure sprayed on the wax, as well as providing an olfactory lure may have helped to induce possums to bite what is otherwise an unpalatable substance. There have been concerns expressed that the apparent increased sensitivity of the WaxTag method is in fact the result of possums locating and biting multiple tags. The use of the orange lure and the flour and icing sugar would certainly encourage possums to bite any tags they found but the issue of contagion has not yet been resolved.

It should be remembered that for a monitoring tool to be useful at low population densities requires accuracy and precision as well as sensitivity. Removal of the lures was designed to improve accuracy and precision by reducing sources of variability such as rain or rats removing lure and different levels of aversion in populations and to reduce the possibility of contagion. However these changes were not based on formal testing. Further work is required.

To more fully evaluate the usefulness of the draft protocol for WaxTag monitoring further trials should be conducted. Trials in areas with 2-3% trap-catch would be particularly useful.

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**MATEA WAXTAG TRIAL SUMMARY
JUNE/JULY 2005**

	TAGS BITTEN					
	POSSUM		RODENT		OTHER	
LINE No.	3NIGHTS	7 NIGHTS	3 NIGHTS	7 NIGHTS	3 NIGHTS	7 NIGHTS
O1	-	-	-	-	-	-
O2	-	-	-	-	1 cow	1 cow
O3	-	-	-	-	-	-
O4	-	-	-	-	-	-
O5	-	-	-	-	-	-
O6	-	-	-	-	-	-
O7	-	-	-	-	-	-
O8	-	-	-	-	-	-
O9	-	-	-	-	-	-
O10	-	-	-	-	-	-
O11	-	-	1	1	-	6 deer
O12	-	-	-	-	-	-
O13	-	-	-	-	-	-
K1	-	-	-	-	-	-
K2	-	-	-	-	-	-
K3	-	-	-	-	-	-
K4	-	-	-	-	-	-
K5	-	-	-	-	-	-
K6	-	-	6	7	-	-
K7	-	-	3	5	-	-
K8	-	-	1	2	-	-
K9	-	-	-	-	-	-
K10	-	-	-	-	-	-
K11	-	-	-	2	-	-
K12	-	-	-	2	-	-
K13	-	-	-	-	-	-
K14	-	-	-	-	-	-
K15	-	-	-	1	-	-
K16	-	-	-	-	-	-
K17	2	2	-	1	-	-
K18	-	-	-	-	-	-
K19	-	-	3	7	-	-
K20	-	-	-	-	-	-
K21	-	-	-	-	-	-
K22	-	-	-	2	-	-
K23	-	1	-	2	-	-
K24	-	-	-	1	-	-
K25	-	-	-	-	-	-
K26	-	-	-	-	-	-
K27	-	-	-	-	-	-