

Summary of Yellow Point trap line Data Abel Tasman National Park

- The numbers of rats and stoats taken during each trapping session is quite variable, and does not show any strong seasonal bias or steady decline in the numbers of either species. The numbers of rats varied from 2– 29, and of stoats from 0 – 4 within trapping sessions.
- While few stoats have been caught, it must be remembered that stoats usually occur at quite low densities but have huge home ranges of 200-300 ha. Thus even when at low densities, their great mobility can enable low catch rates to have a significant effect on their populations.
- There is no obvious relationship between the numbers of rats and stoats trapped. That is to say, there is no evidence that rat numbers are held in check by stoats or that stoat numbers are driven by rat numbers. Such relationships have been revealed in other trapping programmes, but our data is too sparse, as yet, to show such relationships.
- The catch of rats over the entire trapping period along the trap line from successive groups of 10 traps show some variation, with group 2 (traps 10-20) and group 6 (traps 51-60) catching more than the expected number of rats (based on the average trapped over the entire line) and groups 7 and 8 (traps 61-80) catching fewer than expected rats. That said, the difference in the number of rats trapped is not so great or the number trapped on part of the line so few, as to suggest the closing down of part of the trap line. Equally importantly, the entire line has to be ‘walked’, so the closure of part of it would save little trapping effort.
- A seasonal comparison of the catch of rats in autumn 2009 and 2010 – the only two successive seasons available to date, shows no difference. However the data collected so far is not robust enough to permit any sensible comparison, with 3 trapping sessions in March/April/May in 2009 and 7 trapping sessions in 2010. The numbers of stoats trapped is far too few to allow any seasonal comparisons.
- It needs to be remembered that the primary purpose of the trap line is to keep stoats at such low numbers along the coastline as to reduce the likelihood of them swimming across to and recolonising Adele and Fisherman’s Islands. The fact that no stoats have apparently got there as yet, even though the distance involved is well within stoat swimming range indicates that the trapping programme is meeting that objective. Any rats captured are a bonus.
- Thus, while the existing data does not show any real decline either in the numbers of rats or stoats, the case for continuing the trapping programme is as valid at present as it was when the programme started.

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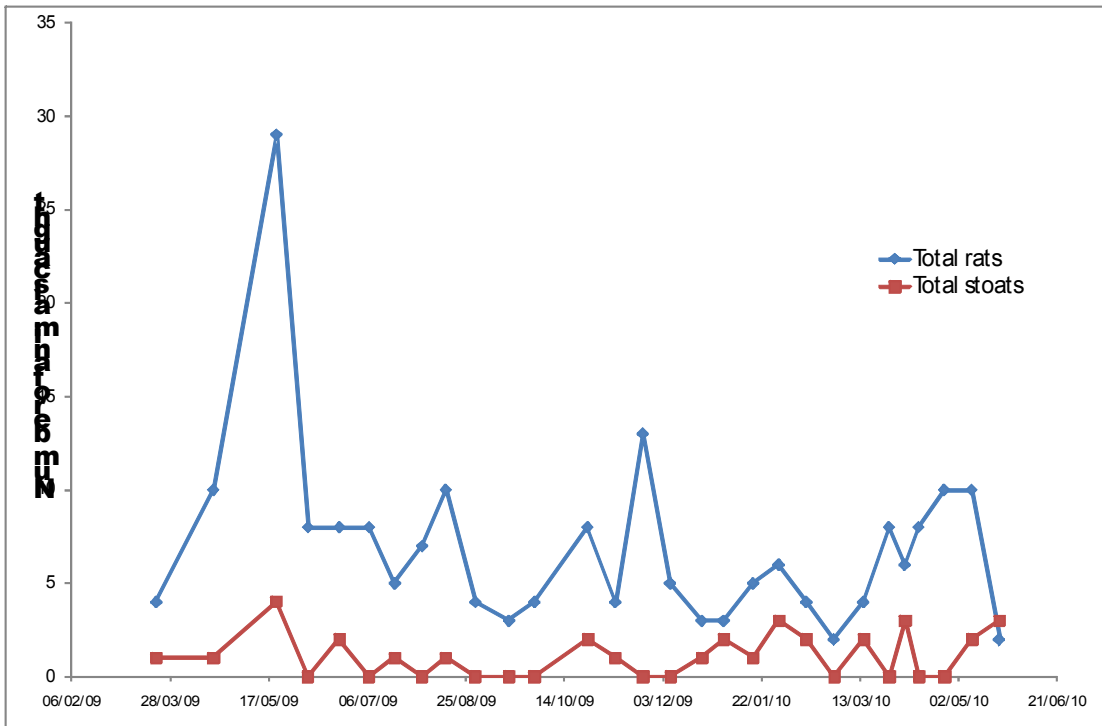
Yellow point traps, an analysis

Points 1 and 2

Table showing catch by sample period

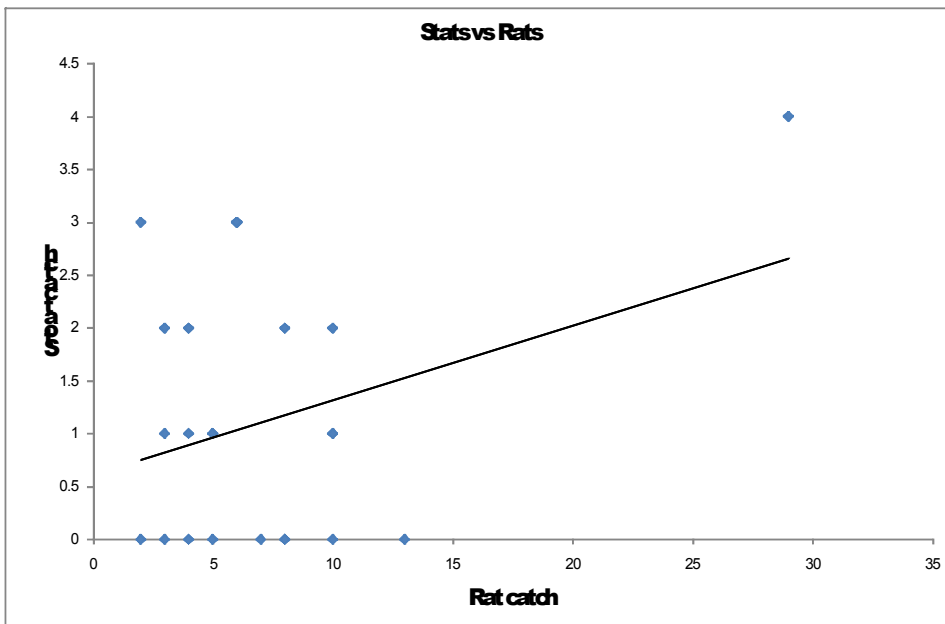
Date	Days since start	Rats	Stoats
21 March 2009	0.00	4	1
19 April 2009	29.00	10	1
21 May 2009	61.00	29	4
6 June 2009	77.00	8	0
22 June 2009	93.00	8	2
7 July 2009	108.00	8	0
20 July 2009	121.00	5	1
3 August 2009	135.00	7	0
15 August 2009	147.00	10	1
30 August 2009	162.00	4	0
16 September 2009	179.00	3	0
29 September 2009	192.00	4	0
26 October 2009	219.00	8	2
9 November 2009	233.00	4	1
23 November 2009	247.00	13	0
7 December 2009	261.00	5	0
23 December 2009	277.00	3	1
3 January 2010	288.00	3	2
18 January 2010	303.00	5	1
31 January 2010	316.00	6	3
14 February 2010	330.00	4	2
28 February 2010	344.00	2	0
15 March 2010	359.00	4	2
28 March 2010	372.00	8	0
5 April 2010	380.00	6	3
12 April 2010	387.00	8	0
25 April 2010	400.00	10	0
9 May 2010	414.00	10	2
23 May 2010	428.00	2	3

Numbers of rats and stoats caught out of 80- traps (not corrected for trap nights)



Point 3

Comparing rat and stoat catches



Appears to be no correlation between rat and stoat catches. Confirm using a Spearman rank correlation

```
> cor.test(total.rats,total.stoats,method="spearman")
```

Spearman's rank correlation rho

data: total.rats and total.stoats
 S = 4161.454, **p-value = 0.8976**
 alternative hypothesis: true rho is not equal to 0
sample estimates:

rho
-0.02498867

No significant correlation between catches of rats and stoats over the 29 trapping occasions, note that some points are superimposed on one another ($r_s = -0.02499$, $n = 29$, $p = 0.90$)

Point 4

Are some of the traps worth continuing?

Sum of rat	Trap group								
Date	1	2	3	4	5	6	7	8	Total
21/03/2009	0	1	0	1	0	2	0	0	4
19/04/2009	2	1	1	0	1	3	2	0	10
21/05/2009	3	5	3	6	6	3	2	1	29
6/06/2009	2	3	2	0	0	1	0	0	8
22/06/2009	1	1	1	2	2	1	0	0	8
7/07/2009	1	1	1	3	0	0	1	1	8
20/07/2009	1	0	0	0	2	1	1	0	5
3/08/2009	1	1	1	1	0	1	1	1	7
15/08/2009	0	1	1	2	1	2	1	2	10
30/08/2009	0	1	0	1	1	1	0	0	4
16/09/2009	0	1	0	0	0	1	1	0	3
29/09/2009	0	0	0	0	0	3	0	1	4
26/10/2009	1	4	0	0	2	1	0	0	8
9/11/2009	0	0	1	0	2	1	0	0	4
23/11/2009	0	1	0	3	3	1	3	2	13
7/12/2009	1	0	1	0	1	0	0	2	5
23/12/2009	1	0	0	2	0	0	0	0	3
3/01/2010	0	1	0	0	0	1	0	1	3
18/01/2010	1	2	1	0	0	1	0	0	5
31/01/2010	1	0	0	1	0	1	3	0	6
14/02/2010	0	3	0	1	0	0	0	0	4
28/02/2010	0	1	0	0	0	1	0	0	2
15/03/2010	1	0	1	0	1	1	0	0	4
28/03/2010	1	0	1	3	2	1	0	0	8
5/04/2010	0	3	1	1	1	0	0	0	6
12/04/2010	2	1	0	0	2	2	0	1	8
25/04/2010	2	2	1	1	1	1	0	2	10
9/05/2010	2	0	1	2	0	2	2	1	10
23/05/2010	0	0	0	0	0	0	0	2	2
Total	24	34	18	30	28	33	17	17	201

Are the totals of trap groups randomly distributed, or do some trap groups catch less or more rats than others?

```
> rat <- c(24,34,18,30,28,33,17,17)
> p <- rep(25.125,8)
>
> chisq.test(rat,p=p,rescale.p = TRUE)
```

Chi-squared test for given probabilities

```
data: rat
X-squared = 14.204, df = 7, p-value = 0.04767
```

Marginal difference between the number of rats caught in trap groups. If rats were distributed randomly over the 8 trap groups you would expect 25.125 (201/8) rats in each group. Trap group 2 and 6 are slightly higher than the expected, while trap groups 7 and 8 are slightly below ($\chi^2_7 = 14.204$, $p = 0.05$). I would say that these small discrepancies do not warrant abandoning portions of the trap line.

Point 5

Compare March/April/May catches for the two years

More sampling events were carried out in 2010 than in 2009 (2,3,2 vs 1,1,1 for March, April, May respectively) so I summed up the catches for the 2010 data.

There are not enough data for a meaningful paired t-test ($n=3$), so I used the non-parametric equivalent the signed rank test (even so with this small sample size these tests are at the limits of their usefulness)

```
> rat.2009 <- c(1,1,4)
> rat.2010 <- c(2,3,5)
> wilcox.test(rat.2009,rat.2010, paired=T)
```

Wilcoxon signed rank test with continuity correction

```
data: rat.2009 and rat.2010
V = 0, p-value = 0.1736
alternative hypothesis: true location shift is not equal to 0
```

Not surprisingly there are no detectable differences between the two years.