

## RAT POPULATIONS IN CANEFIELDS DURING THE SPRING OF 1948

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### SUMMARY.

*Seasonal movements of rat population were observed and pregnancy records made. The data revealed a transient type of population consisting of small concentrations of survivors.*

*Weight-age curves of *Melomys littoralis* drawn from data secured between 1937 and 1948 are presented.*

### INTRODUCTION.

During the second half of 1948, rat infestations occurred in canefields in the Mackay district, particularly in scattered fields of the variety Q50, and in some of the far northern districts. Buzacott (1949) has recorded that rats, probably *Rattus conatus* Thomas, attacked young ratoon cane on river flats in the Mulgrave area of northern Queensland in early December. In the Seaforth area, near Mackay, the pests were prevalent in pineapple fields. These occurrences afforded opportunities for further population studies, in addition to the satisfactory testing of newer rat poisons reported previously (McDougall, 1949a and 1949b).

### METHOD.

As well as by field observations and spot trapping from September, 1947, to January, 1949, basic data were obtained by tag and elimination trapping on standard grids in the concentrated populations available from June to December, 1948. Most of the work was done in the Mackay district, but some trapping by an experienced operator was made in the Mulgrave area during August and September, 1948.

Pregnancy records of suitable monthly samples were made, and pairs from the field were placed under observation in breeding cages. The ages of all specimens of *Rattus conatus* and *Melomys littoralis* Lonnberg were determined. These determinations were subjective, as previously described for *R. conatus* (McDougall, 1946). Though the body weight (to the nearest  $\frac{1}{2}$  gm.) of *M. littoralis* is not statistically sound as a criterion of age estimates, it was of some assistance: the weight-age curves for this species have not been published previously and are given in the appendix.

## RESULTS.

Checks by trapping in rat damaged cane before September showed that most populations had moved after attacking the crops. The largest *R. conatus* population encountered in cane during a September census was  $30 \pm 6$  rats per acre covering 4.5 acres: most populations were scattered. In pineapple fields the heaviest pest population was  $25 \pm 5$  rats per acre, and usually both *R. conatus* and *R. culmorum* T. & D. were present. Distribution was mainly as scattered colonies. From late October onwards, populations commenced to move and thin out, with an occasional temporary concentration. By January, 1949, the usual summer trapping difficulties due to movement and dying-off were encountered.

As there were no significant differences between population compositions, by age groups as percentages of monthly samples, from the central and northern districts, the combined data are given in Figure 1.

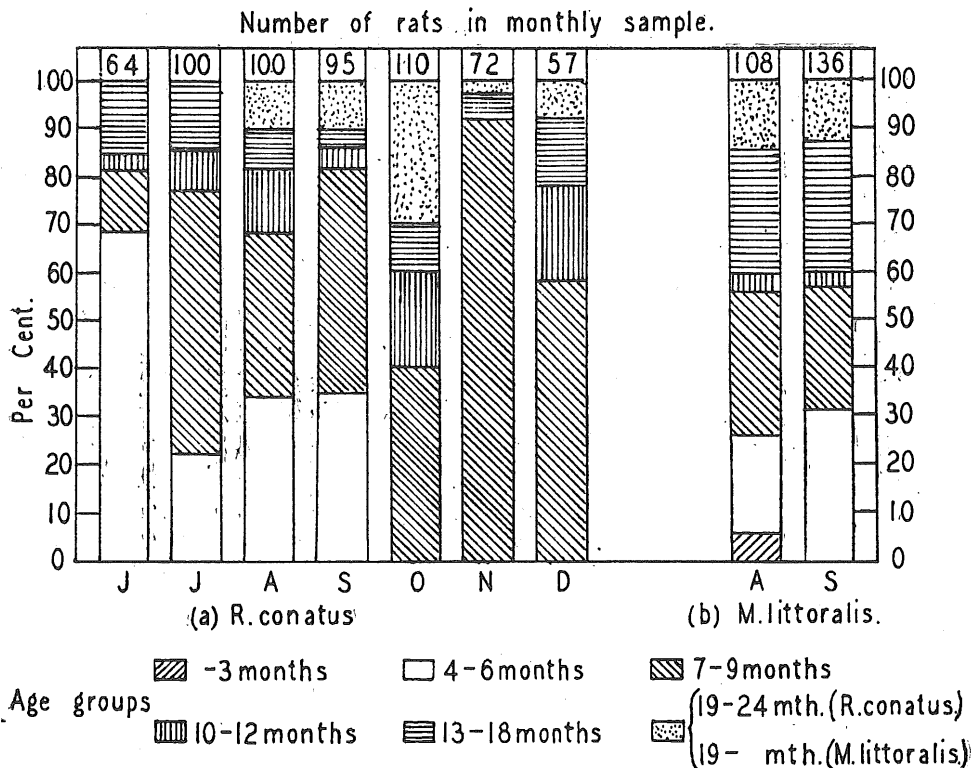
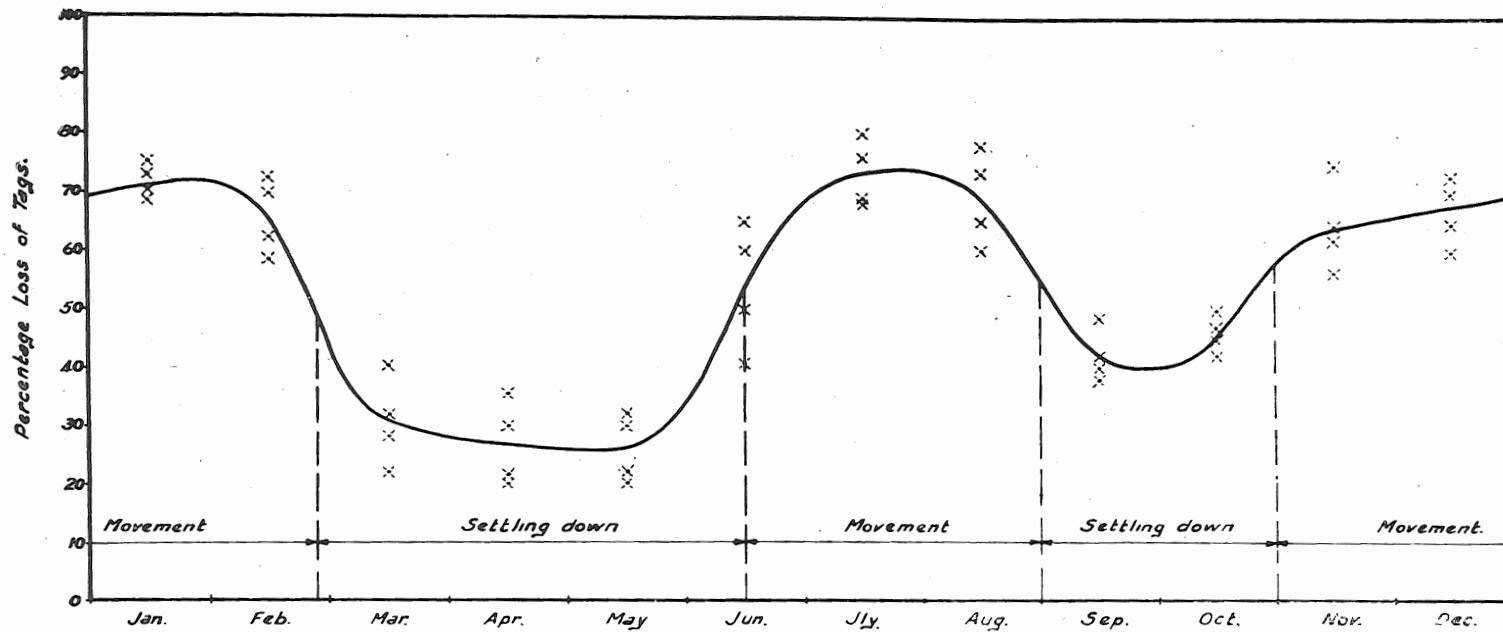


Figure 1.

Population composition by age groups as percentages of monthly samples from complete trapping out.

Only very light breeding by *R. conatus* occurred during the late spring of 1947 and in March and April, 1948. No pregnant specimen of this species was taken in the field during the second half of 1948, and no fruitful cage



RATS IN CANEFIELDS—SPRING, 1948.

Figure 2.

Seasonal movement of rats illustrated by percentage loss of tags, on a monthly basis during 1937-41, from all finalised temporary grids. Many of the missing tags were recorded in other grids away from the original tagging sites.

breeding was recorded over this period. Pregnant females of *M. littoralis* were present in field populations during September to November, 1947, and April to June, 1948: an embryo count seldom exceeded 3, and breeding was never extensive.

Damage to cane by rats in the central districts was of mild nuisance value only, and did not warrant control measures. However, attacks on pineapples were of economic importance, but during the spring settling-down period (Figure 2) the pests were controlled at little cost with loose 1:1000 fluoroacetate-wheat. Some 400 lb. of grain were used in this commercial project (McDougall, 1949b).

### DISCUSSION.

General seasonal movements of rat populations were similar to those described earlier (McDougall, 1946), and Figure 2 is a graphic summary of the data on these important happenings.

Previously it has been stated (McDougall, 1949b), that in canefields and environs it is possible to have the presence of old rats without breeding, or breeding in the absence of older specimens: both these have been observed but are transient. Figure 1 gives data on the presence of old rats without breeding in Queensland canefields. In effect, this examination of the population demonstrates that the small concentrations of rats during the spring of 1948 were made possible by survival; there was no true upsurge.

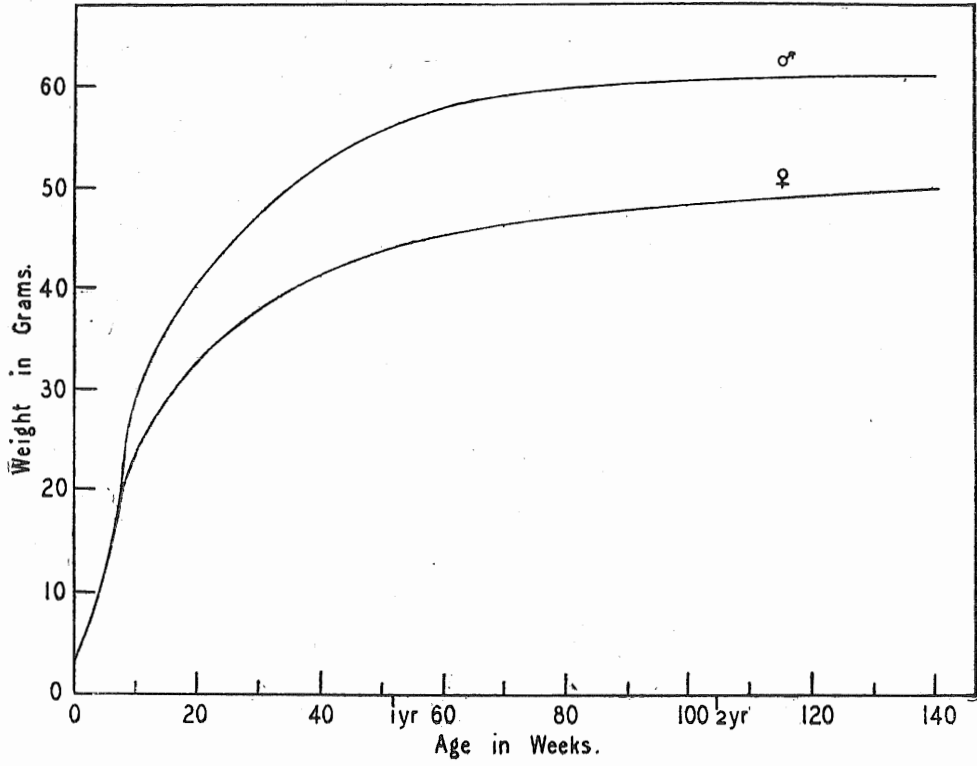
There is no doubt that reports of the prevalence of rats in canefields in some seasons are due to the presence of populations similar to the type under discussion. Even the 1948 spring population was referred to topically as a rapid building up of rat numbers. From the economic and extension viewpoint these transient survivals require little attention. The maximum efforts in canefields could be confined to quietening pest activities in the few instances where an appreciable concentration is found actually attacking the crop.

### REFERENCES.

- BUZACOTT, J. H. 1949. Damage from *Rattus conatus* in young ratoon cane. Proc. Cane Pest and Disease Control Boards Conference (Qld.) May, 1949 (unpublished).
- McDOUGALL, W. A. 1946. An investigation of the rat pest problem in Queensland canefields: 5. Populations. Qld. J. Agric. Sci. 3: 157-237.
- . 1949a. The rat poisons sodium fluoroacetate and "Castrix." Qld. J. Agric. Sci. 6: 54-60.
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## APPENDIX.

Weight-age curves of *Melomys littoralis*. Curves from spot weights of dormitory rats of known ages during the years 1937-41 and 1945-48.



A. H. TUCKER, Government Printer, Brisbane.