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# DAIRY RESEARCH AND DEVELOPMENT CORPORATION

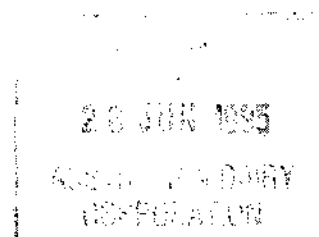
Final Report, April, 1992

## Project.

DAT 31

Distribution of introduced dung beetles to Tasmanian dairying districts.

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## Introduction.

Seven species of exotic dung beetles were first introduced to Tasmania on 23 sites between 1972 and 1981.

A field survey in 1988/89 assessed 22 of these sites indicating;

- (i) the successful establishment of three, summer active, species (*Onthophagus binodis*, *Onthophagus taurus* and *Euoniticellus fulvus*),
- (ii) the failure of any winter active species to establish,
- (iii) a deficiency of releases in the north west region,
- (iv) the development of an effective, farmer generated, redistribution of *O. binodis*.

The initial redistribution program in the north east of the state has enabled the widespread establishment of beetles, primarily by farmer discussion groups and hobby farmers, in sufficient concentrations to have a visually significant effect on dung incorporation over an area of 80 km<sup>2</sup> within 4 years of commencement. Additionally, the development of inexpensive beetle 'traps' has allowed improved efficiencies in collections.

This project aimed to redress points (ii) and (iii) by use of the redistribution technique outlined above. Redistribution centres were to be established with initial large-scale releases to aim at the establishment of collectable populations within 2-3 years.

## Material and Methods.

The initial redistribution location was established at Tullendeena (north east) in 1988/89. A second centre, at Sheffield High School farm (central north), was developed in 1990. Multiple beetle species have been released at both locations.

A further four potential redistribution centres were identified in the north west dairying regions of the State (see diag. 1).

Three properties (in the Lileah, Mawbanna and Myalla districts) were selected due to their relative isolation (to minimise migration to allow maximum

population concentration) and the willingness of the farmer to cooperate with free access for collection and redistribution.

The fourth location (Pet Dam catchment, Ridgley district) was selected to both establish a larger, regional, redistribution centre and to assist in the reduction of faecal contamination of the Burnie Municipal water supply. The 36 km<sup>2</sup> area contains approximately 30 cattle/dairy properties (see diag. 2).

The species to be released to include *O. taurus*, *E. fulvus* and *Geotrupes spiniger* as available from CSIRO Entomology Division, Canberra.

## Results.

No *G. spiniger* were available due to adverse seasonal conditions in the collection areas.

Numbers of beetles released at the four locations were;

Lileah	22 500
Mawbanna	60 000
Myalla	32 000
Pet Dam	<u>110 000</u>
	<u>224 500</u>

The Pet Dam releases reinforced 13,000 beetles (both *O. binodis* and *G. spiniger*) released in the area in the previous year.

All other locations have had previous releases of *O. binodis* from local sources.

## Discussion.

From previous experience small-scale releases of 1 to 2,000 beetles (the usual degree of release from CSIRO shipments) take over 6 years to be effective and to allow efficient collection for redistribution. Such large-scale concentrations as outlined above will enable population numbers suitable for large-scale collections to be achieved much earlier.

The initial two redistribution sites (north east and central north) will be assessed for the success of establishments in 1993.

The additional four sites will need to be inspected in 1994 to determine the success of establishment. They also should be reinforced with both *O. binodis* and *G. spiniger* as available from other sites (or additional CSIRO shipments) to enable farmers to collect beetle 'cocktails' with the one visit.



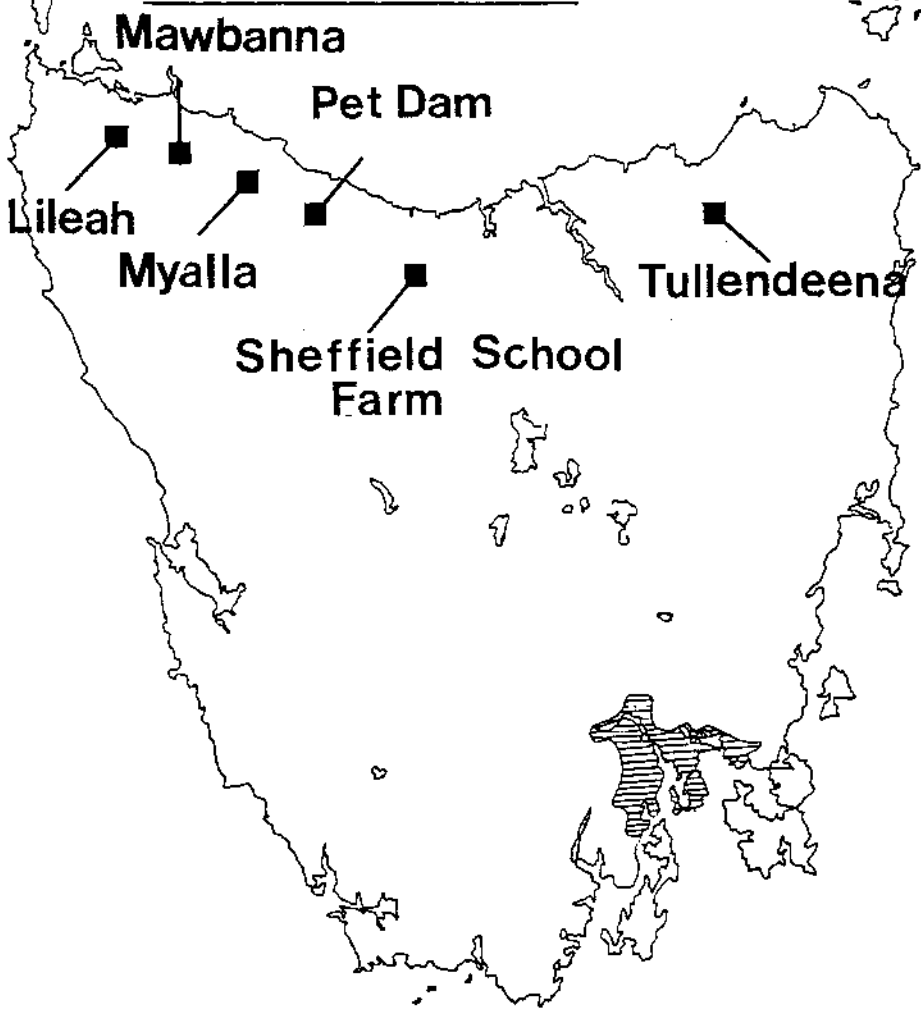
King  
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**Diag.1 : Dung  
Beetle regional  
redistribution sites;**



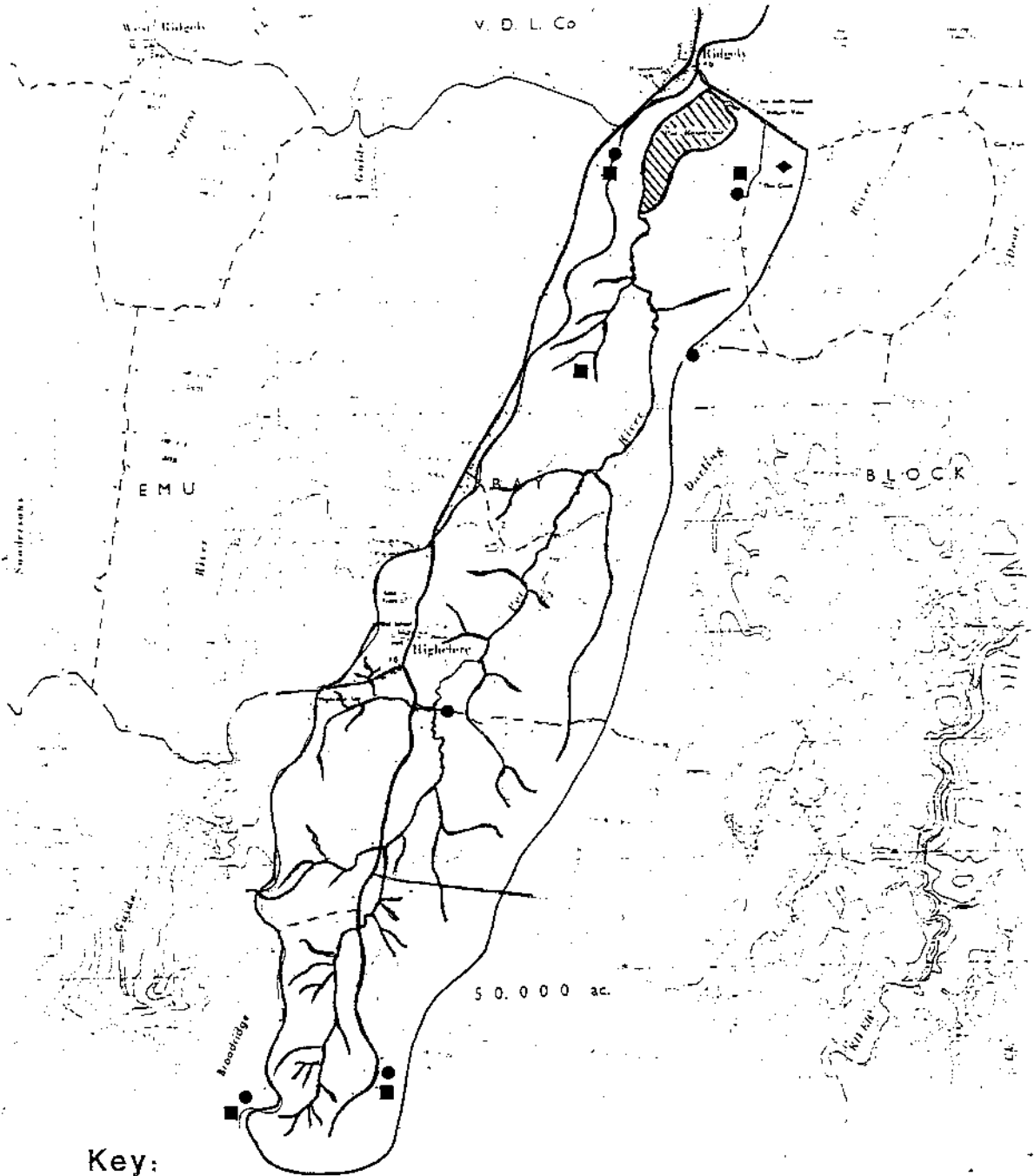
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**NW Tasmania**



# Diag.2: Dung Beetle regional redistribution

## Pet Dam catchment



Key:

- *O. binodis*
- *E. fulvus* & *O. taurus*
- ◆ *G. spiniger*