EFFECTS OF ENDOCRINE DISRUPTING COMPOUNDS (EDCs) ON TERRESTRIAL MOLLUSC

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BACKGROUND

- Endocrine disrupting compounds (EDCs) adversely affect species ranging from bacteria to higher vertebrates.
- Reproduction, immune function and behaviour can be affected.
- There is potential to use terrestrial molluscs as bioindicators of EDC effects.
- Sewage sludge (fertiliser) contains a mixture of EDCs including potentially toxic metals.

AIMS

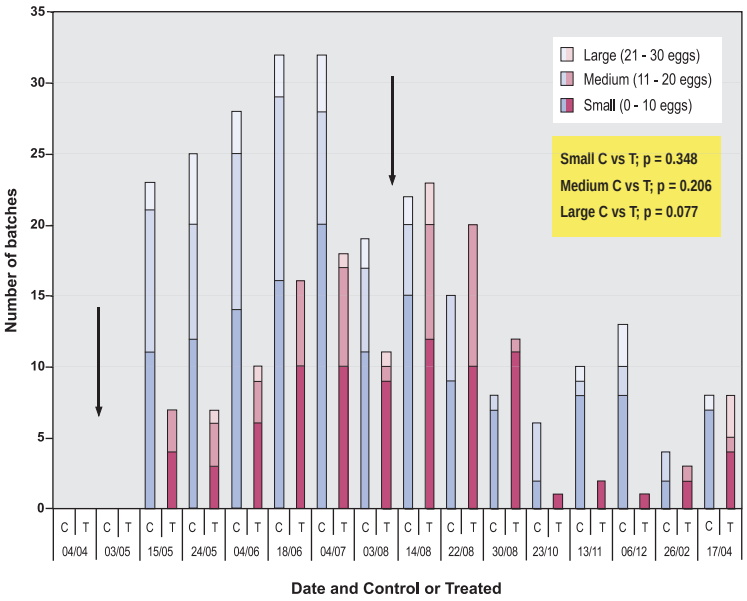
- To determine effects of EDCs on terrestrial mollusc reproduction and population size.
- To assess the value of terrestrial molluscs as bioindicators for the effects of EDCs.

METHODS

- 3 **treated** replicate plots – fertilised with 2.25 tonnes (dry matter) sludge/ha twice annually.
- 3 **control** replicate plots – fertilised with inorganic fertiliser containing equivalent amounts of nitrogen.
- Plots grazed to maintain low/moderate pasture height.
- 12 roof tiles placed in each replicate.
- Slugs collected and eggs recorded from under tiles at varying intervals.

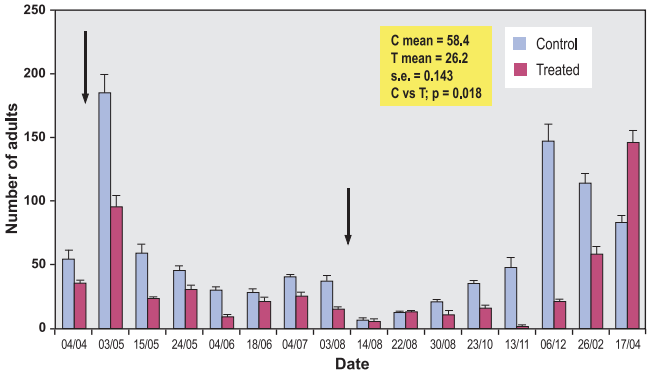
RESULTS

MEAN NUMBER OF EGG BATCHES OF EACH SIZE GROUP

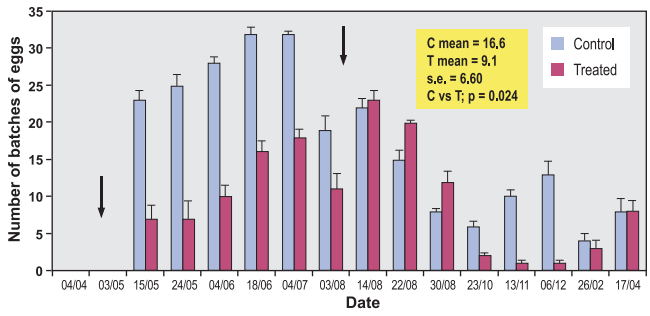


- indicates application of sewage sludge

MEAN NUMBER OF ADULT SLUGS COLLECTED



MEAN NUMBER OF EGG BATCHES



CONCLUSIONS

- Exposure of slugs to environmentally relevant levels of EDCs reduced egg batch numbers.
- Exposure to elevated EDC concentrations reduced adult slug numbers irrespective of season.
- A trend towards smaller egg batch sizes was apparent after exposure.
- No effect on numbers of batches of eggs per adult (p = 0.810).
- Molecular, histological and chemical concentration analyses of tissues are ongoing.
- It is concluded terrestrial molluscs have the potential to be used as bioindicators of EDC effects.