ANALYSIS OF DIFFERENTIAL PREDATION

B. F. J. MANLY

Biometrics Unit, University of Otago, P.O. Box 56, Dunedin, New Zealand

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I WOULD like to make two comments on the paper by Maskell *et al.* (1977) published recently in this journal.

In the paper the authors considered the results of 24 experiments involving sticklebacks eating pale and light coloured prey. The results of a single experiment are of the following form.

	Eaten	Left	Total available
Pale prey	a	c	a + c
Dark prey	b	d	b + d

My first comment is that if such data are to be analysed using the computer program GLIM (Nelder, 1974) then a double log model would be more appropriate than the log-linear model that was used by Maskell *et al.* I have given some reasons for this in a paper in this journal (Manly, 1976). Essentially it is a question of how the time period of a survival experiment affects the results.

However, my second comment is that a much simpler method for analysing Maskell *et al.*'s data exists, based upon the use of β coefficients (*e.g.*, see Manly, 1972). These are estimates of the probability of a pale prey being taken first, assuming that predators are faced with equal numbers of pale and dark prey. For the results given in Maskell *et al.*'s tables 2A, 2B and 2C the β estimates are as follows:

Percentage of pale prey			
	20	50	80
	0.00	0.60	0.71
	0.50	0.50	1.00
	0.00	0.58	1.00
	0.32	0.45	0.61
	0.32	0.40	0.50
	0.21	0.61	1.00
	0.34	—	1.00
	0.27	—	1.00
	0.41	—	0.64
Mean	0.26	0.52	0.83

My linear model for apostatic selection seems to apply (Manly, 1973); *i.e.*, there seems to be a linear change in the value of β when the frequency of one type of prey changes.

REFERENCES

- MANLY, B. F. J. 1972. Tables for the analysis of selective predation experiments. *Res. Popul. Ecol.*, **14**, 74-81.

- MANLY, B. F. J. 1973. A linear model for frequency-dependent selection by predators. *Res. Popul. Ecol.*, 14, 137-150.
- MANLY, B. F. J. 1976. Some examples of double exponential fitness functions. *Heredity*, 36, 229-234.
- MASKELL, M., PARKIN, D. T., AND VERSPOOR, E. 1977. Apostatic selection by sticklebacks upon a dimorphic prey. *Heredity*, 39, 83-89.
- NELDER, J. A. 1974. *Glim Manual*. Distributed by the Numerical Algorithms Group, 13 Banbury Road, Oxford.