

Kuliah 0

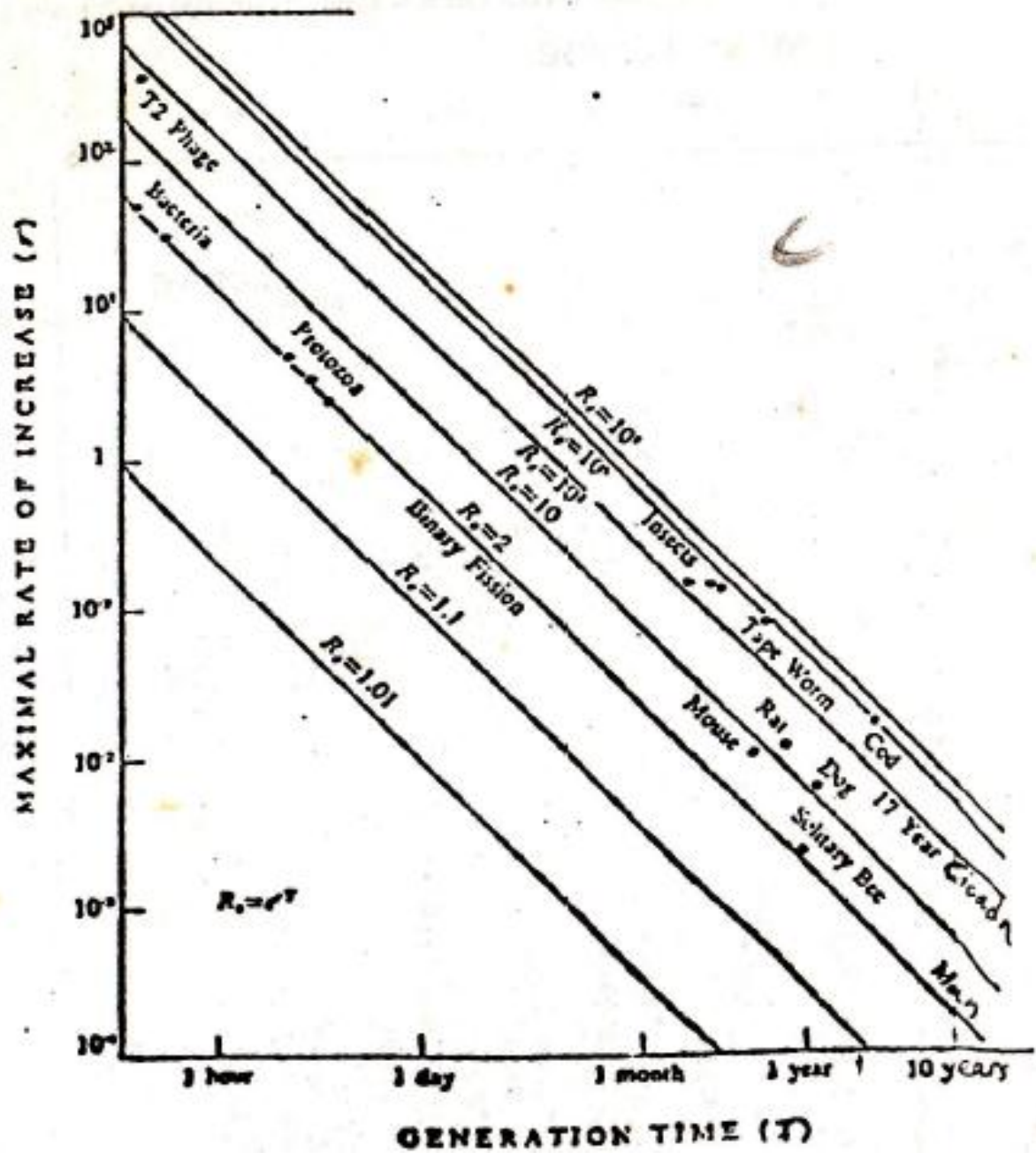
Introductory remarks

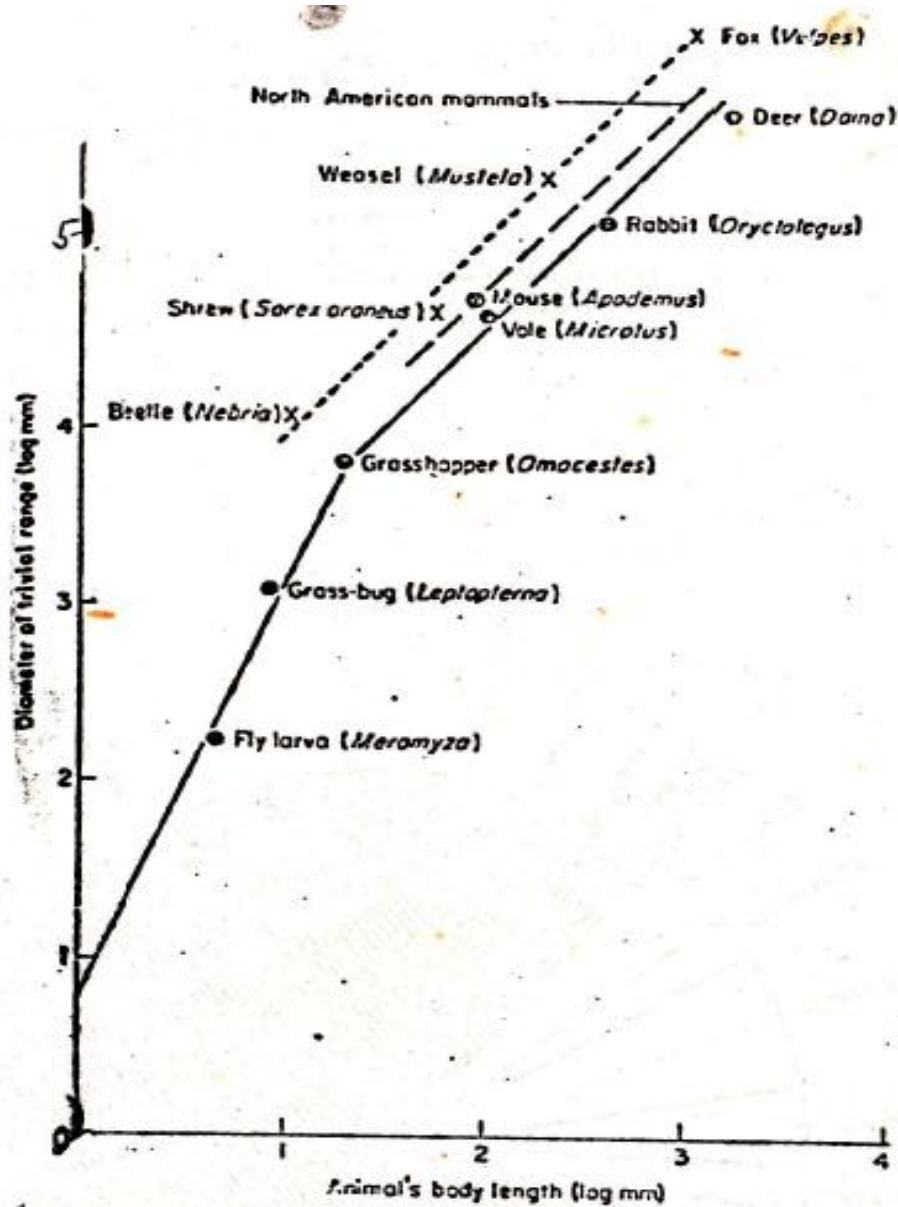
1. Why study insect ecology?
 - taxonomic diversity (Southwood, 1978)
 - numerical abundance (May, 1978)
 - diversity of life histories
 - economic importance (Metcalf, Flint and Metcalf, 1962)

2. Insect ecology as the ecology of smallness

- autecology---implications of the surface area/volume ratio (Gould, 1974; Schmidt-Neilsen,1975)
- population ecology---inverse relationship between body weight and reproductive rate ($r = aW^{-.275}$) (Fenchel, 1974; relationship between generation time and body length ($Tg L$) (Bonner, 1965)
- evolutionary ecology---short generation times and large population size combine to accelerate evolutionary rates (May, 1978)

- community ecology---relationship between trivial range and body size (Sothwood, 1976) and effects on habitat partitioning; “.....insects.....are generally among the animals that have the least chance of preempting or sequestering large fractions of habitats and resources....” (Janzen, 1976)
- ecosystem ecology---inverse relationship between species number and body length ($S = L^{-x}$) for a variety of organisms (May, 1978; van Valen, 1973)
- behavioral ecology---aerobatic capacity and sexual selection (McLachlan, 1986)





The relationship of tritoid range (linear diameter) to body length for ambulatory (solid line) and predators (dotted line) at Silwood Park. The corresponding relationship for North American mammals [after Hutchinson & MacArthur (1959)] is shown

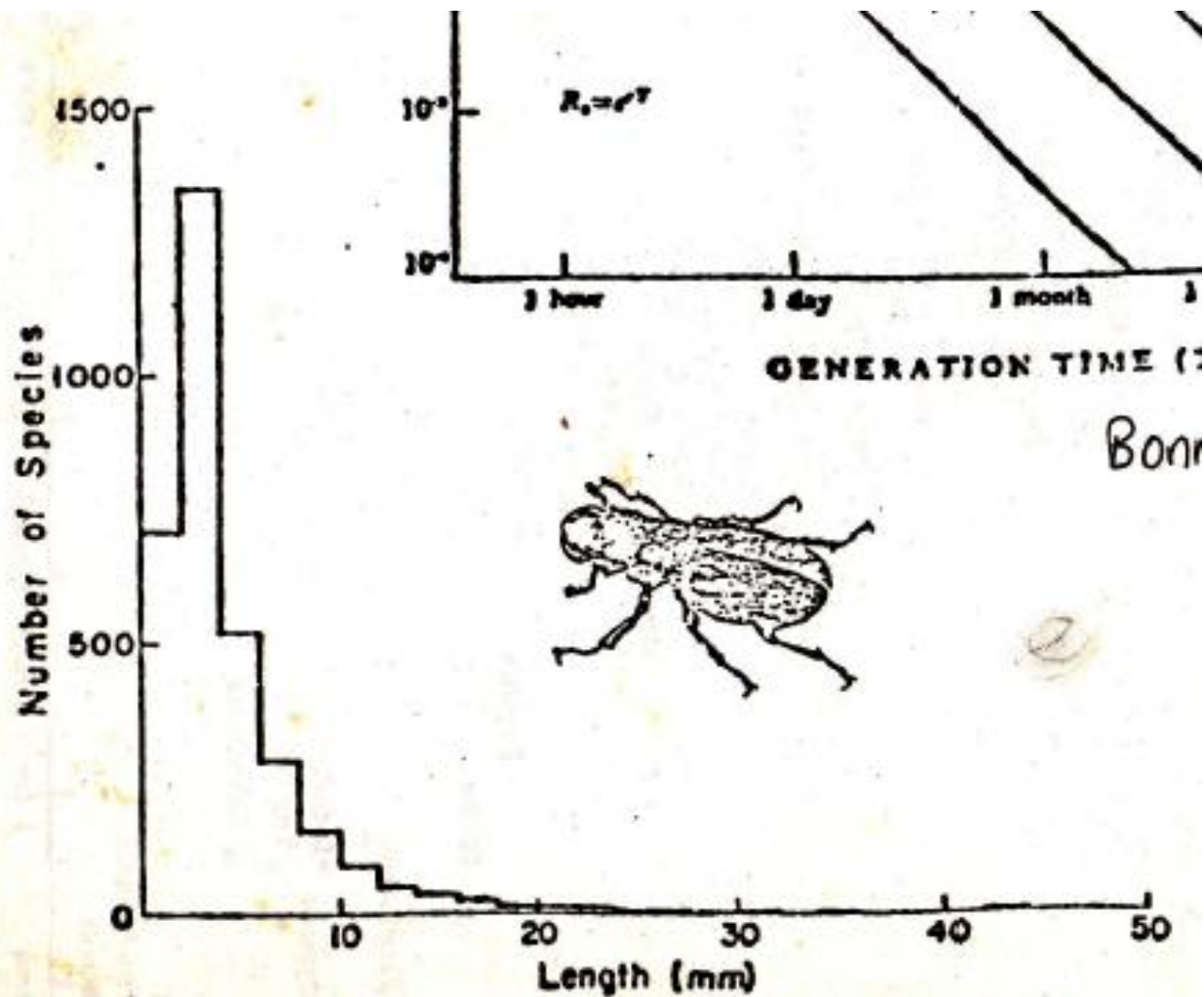
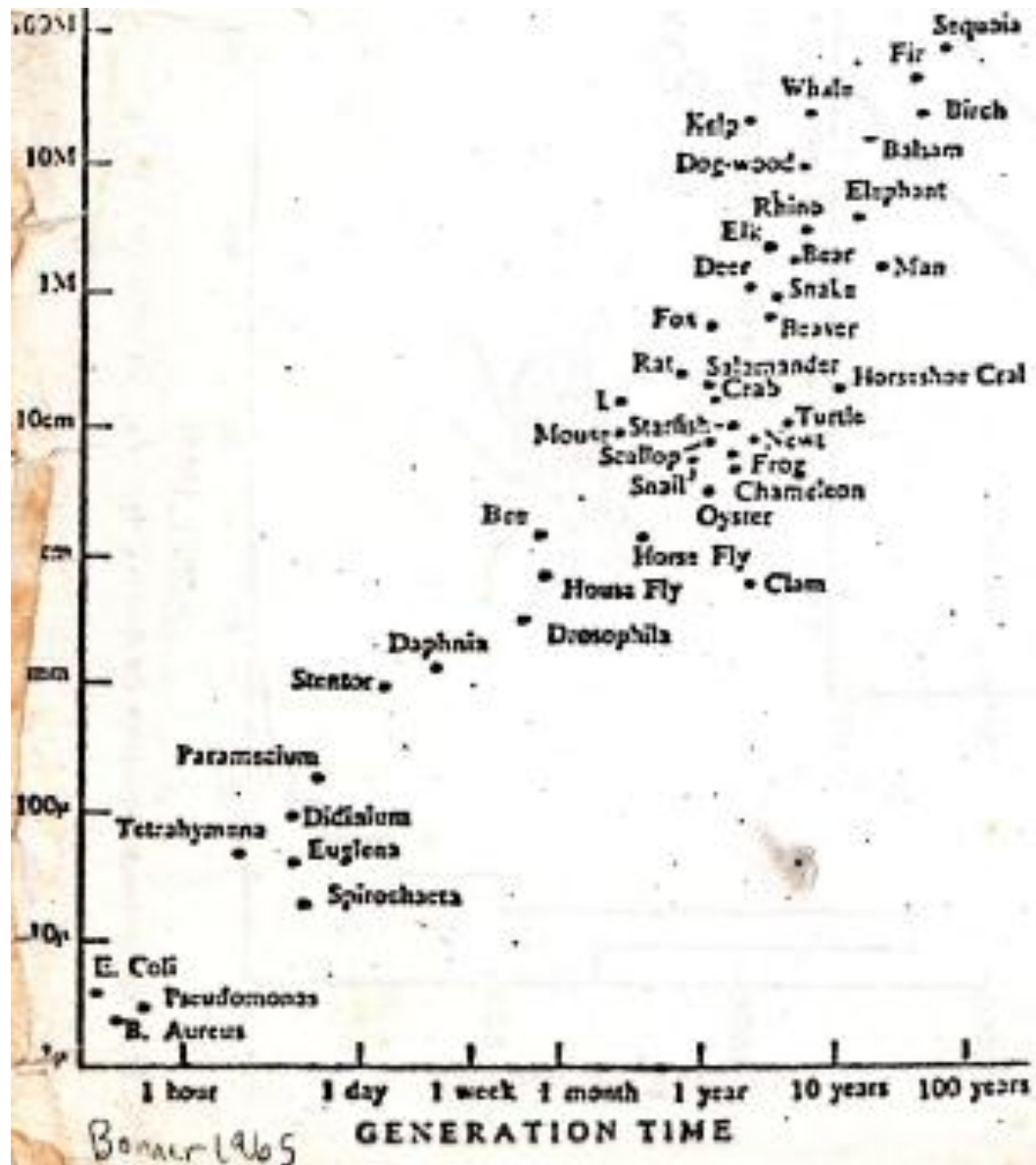


FIG. 12.4. Species-length histogram for British Coleoptera, Southwood, 1976



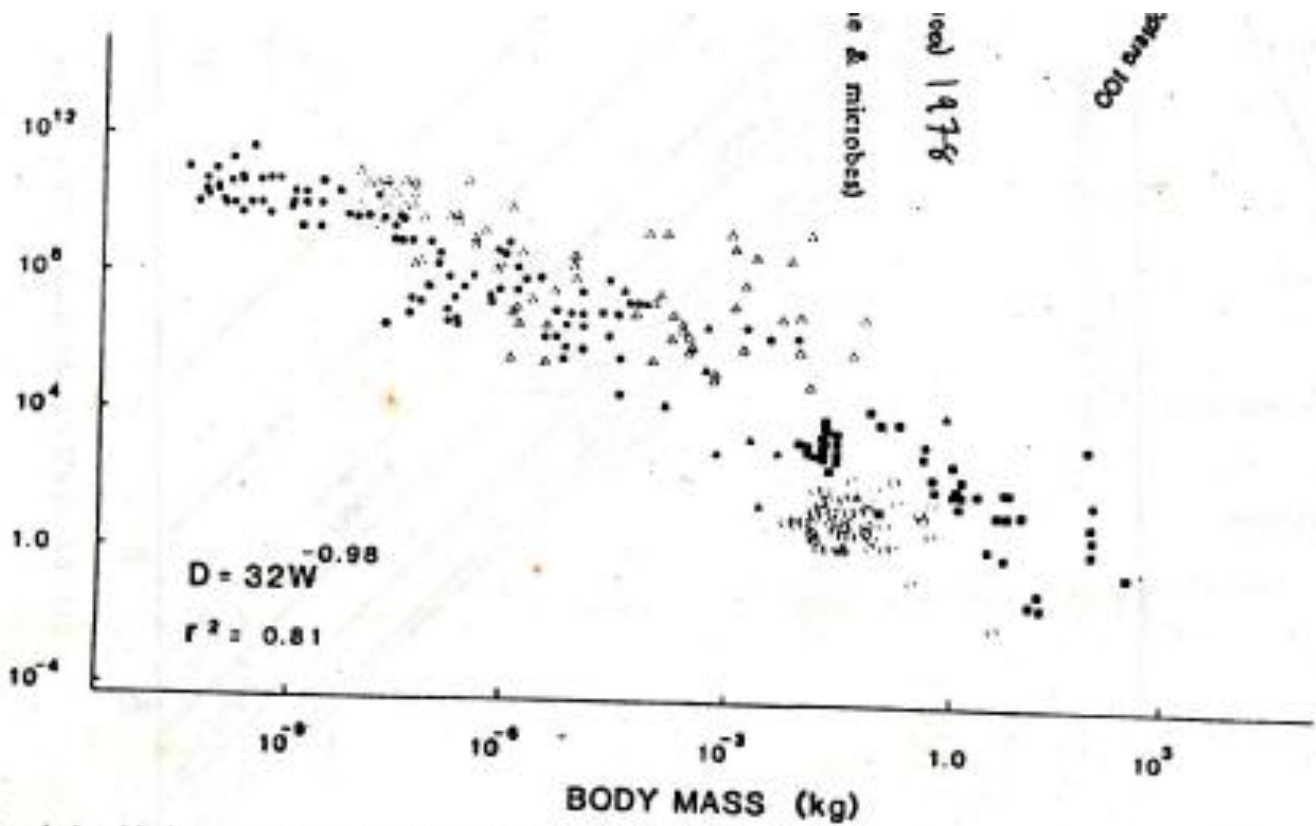


Fig. 1. The relationship between animal body size and species abundance.

FIGURE 1. The length of an organism at the time of reproduction in relation to the generation time, plotted on a logarithmic scale. This graph shows the data in Table 1. (Note: For a similar graph see C. F. Yarrow, *Amer. Nat.*, 40:97, 1956.)

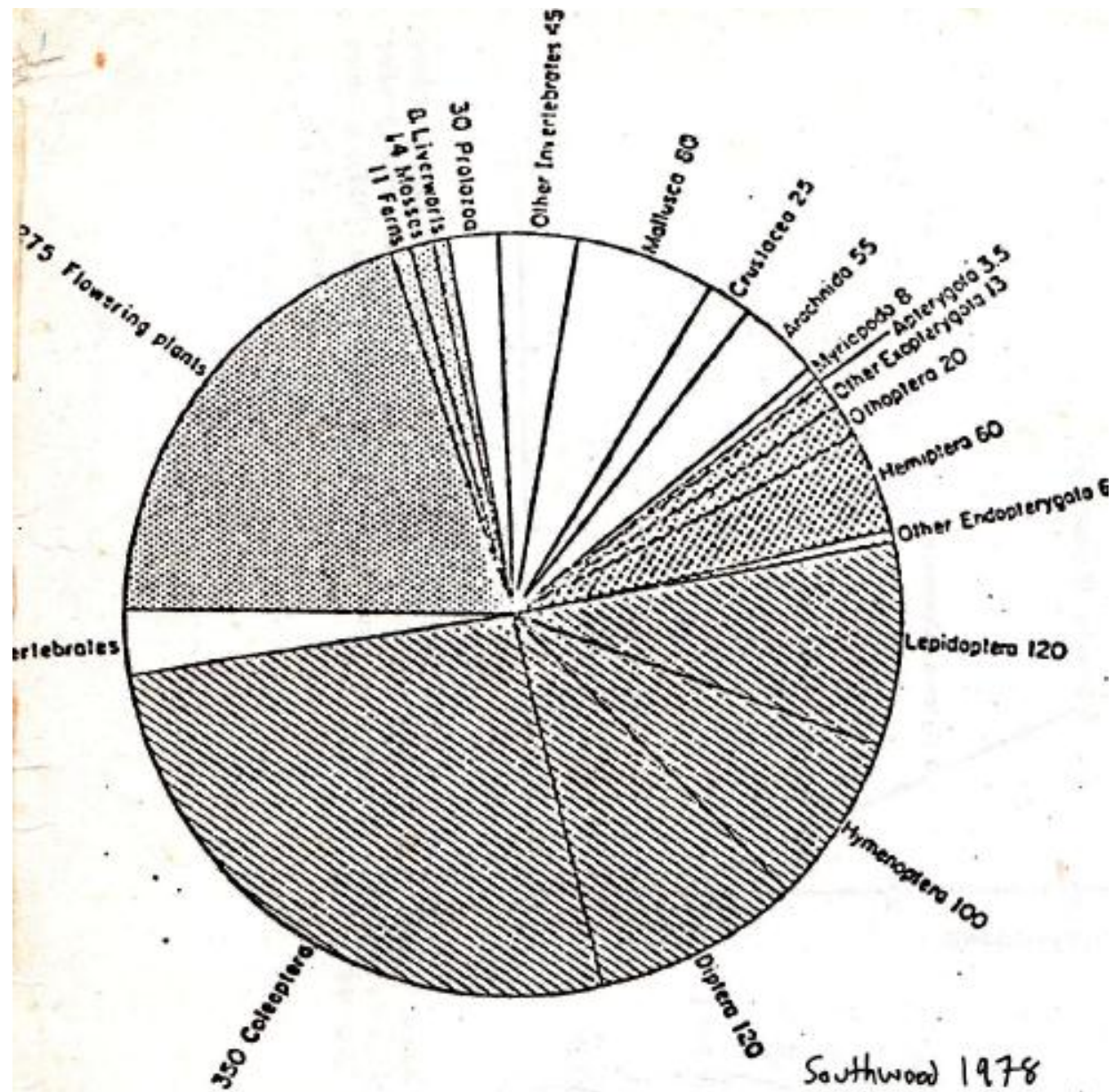


FIG. 2.1. The number of species in different taxa (excluding Fungi, Algae & microbes) (numbers are thousands of species).