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STANDARDISATION OF ECOLOGICAL TERMS IN NEMATODOLOGY

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The meaning of a range of nematological terms pertaining to traditional taxonomic characters has been defined by Caveness (1964). However an examination of the literature shows some ambiguity with regard to the terminology in nematode ecology to describe numbers of nematodes found in a population. Clear definitions of words such as abundance, incidence, intensity, density and prevalence are required to clear the confusion caused by some authors who consider many of the words interchangeable. A committee set up by the Canadian Society of Zoologists made recommendations (Margolis *et al.*, 1982) which were subsequently used by parasitologists when defining terms "used and abused by parasitological ecologists" submitting papers for publication (Margolis *et al.*, 1982).

Since there are many similarities between animal and plant parasitology and many research workers study nematodes which are common to both disciplines it seems sensible to have similar definitions for words used by nematologists and parasitologists. The following definitions are closely based on those by Durfee (1978), Margolis *et al.*, (1982), Whitaker *et al.*, (1973) but slightly altered to refer to soil inhabiting and plant nematodes rather than those found in an animal host.

Algebraic notations are as follows: T = total number of samples, U = the weight or volume of the sample, i = the number of specimens, j = number of samples, T_i = the number of samples where i is present.

Prevalence (Normally expressed as a percentage): Number of samples having a particular nematode species, symptom of damage or disease/number of samples examined (incidence is often confused with this term) $\times 100$. Has been called absolute frequency or constancy ($P_i = T_i/T \times 100$).

Incidence (Normally expressed as a percentage): Number of samples containing a particular nematode species, symptom of damage or disease at a given time/number of samples containing the same species, symptom or disease at a previous time/date $\times 100$. Incidence T_i at time 1/ T_i at time 2 $\times 100$.

Intensity (Usually given in a numerical range): The number of individuals of a particular nematode species in each infected host plant or sample positive for that species (I_{ij}).

Mean intensity: The number of individuals of a particular species in a number of positive plant or soil samples/the number of positive samples ($MI_i = \sum I_{ij}/T_j$).

Density: Number of individuals of a particular nematode species per unit of volume or weight, of infected host tissue or soil (the units could be grams of roots/tissues, leaf area, weight or volumes of soil, etc.) ($D_i = I_{ij}/U$).

Relative abundance or density: Total number of individuals of a particular species in a number of samples/

total number of samples i.e. including those with zero counts for that species. (This equates to mean intensity \times prevalence/100.) ($A_i = \Sigma I_{ij}/T$).

Prominence : The density of a population multiplied by the square root of the prevalence ($P_{ri} = D_i\sqrt{P_i}$).

Population : All individuals of a particular species within a prescribed area (the prescribed area may be isolated to some degree from others of a similar species).

Intrapopulation : All individuals of a particular species feeding on the same host plants (Esch *et al.*, 1975).

Suprapopulation : All individuals of a particular species within a particular ecosystem.

Relative concepts which can also be misunderstood include :

Relative prevalence (or frequency) : The prevalence of the species divided by the sum of the frequencies of all the species found during the survey.

Relative intensity : The number of specimens of the species in a sample divided by the total number of species present in the sample. This is the intensity of species *i* divided by the sum of the intensities of all the intensities of all the species present.

Importance : The sum of the relative prevalence, relative intensity and biomass (biomass can be roughly calculated as the body length *L*, multiplied by the body diameter *d*, divided by 16×10^6).

The above list is by no means exhaustive and may evolve with time. Whether or not it is used will depend

upon each individual nematologist but much of it has become standard terminology within parasitology. If other terms are to be used, or these terms used in a different context, then it would be helpful if they were clearly defined.

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