

FORTUNER, R., The computer: an indispensable tool for taxonomic work.

The ever increasing number of described nematode species, and of the genera into which these species are grouped; the rapid changes in nematode nomenclature with new species and new combinations constantly being proposed; and the growing awareness of the intraspecific variability of most taxonomic criteria, have rendered obsolete the traditional tools of the taxonomist. Nomenclatorial compilations and dichotomous keys are fast becoming useless for a correct identification of the taxa. It is shown that computers are indispensable nowadays to gather the wealth of available information and process it in a satisfactory manner. Two computer programs have been written: NEMAS for nomenclatorial information, NEMAID for nematode identification. User friendly programs and worldwide data networks assure that these new tools are available to all taxonomists. California Department of Food and Agriculture, Nematology Lab, Room 340, 1220 N Street, Sacramento, California 95814, U.S.A.

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The computer; an indispensable tool for taxonomic work.

Introduction:

taxonomists used to be unexpensive. - 30 yr. old microscope
- home made camera lucida

they started to require new tools - modern microscope
- phase interference microscopy
- SEM

now they want a computer.

Why a computer? - gadget
or indispensable tool?

proof. 2 examples nomenclature
identification.

The computer in nematode nomenclature.

~~Refer to...~~

The past: nomenclatorial compilations. books published every
10 years or so.

2 types: Baker (1962) - list by genus.

Tarjan & H. - list by species.

advantages: they are always at hand.

but - out of date by 2/3 years when published
- very expensive to ~~make~~ publish (ask son)

- 1960 ^{supp.} 1967 1974 ^{supp.} 77, -?
- difficult to update.
 - once every 10 yrs = 2 yrs of work for new books
 - every year = searches become more and more complicated.
 - impossible to correct.
 - search impossible for genus if by species.

still it was OK until the seventies but:

- the number of new spp. increases.
- the status keeps changing.
- syn. / validation
- new comb.

Future: the computer.

- easy to keep up dated (as long as I do the job)
- easy to correct.
- not too expensive to maintain (only the first datefile is expensive)
- very easy to search

~~Whether~~ Whether nematologists like it or not, the computer is the only tool that permits to keep abreast of nomenclature changes

3. Identification. (species unknown to be identified by non specialist)

The past: dichotomous keys. also published every 10 years or so for the large genera.

- out dated and difficult to update
- very difficult to make
- ~~sometimes~~ difficult to use. wrong choice → get lost

In addition a fundamental short coming:

- no place for intra-spc. variability.
(expedient: some spp. are ~~placed~~ ^{entered} twice
but → most spp should be entered many times.
- what of the sample variability?

Present: tabular key, OK for small genera only

Consequences: artificial splitting of genera, for the only reason that they are "too large".

Future: the computer.

- keeps a datafile (update easy)
- compare your sample to all the spp in the datafile (similarity).
- give a list of most similar spp. Wrong choices may be saved by the rest of the criteria

- variability taken into account;
- easy manipulation of the data.
 - synonym genera -
 - weights of the criteria -
 - criteria used
 - species valid -
 - etc -

The computer is the only tool that permits to identify sp. in large genera. Helios. Xphi

The main objection to computer is the availability and easy use.

- what of labs who cannot afford a computer?
- I don't know nothing about computer and I don't want to learn.

Amount of data \rightarrow Taxonomy needs computer as much as microscope -
 Computer \rightarrow other uses = - collections.

I don't have time to explain in detail how the 2 prog. work but there is a demonstration in Poster - - at -

We are making the 1st step. We need many people, to spread the costs. I need 50 labs. subscribing to these programs I have only - so far.