

Dissertation Abstracts

Gagarin V. G. «Free-living nematodes from fresh waters in Russia and adjoined countries». Doctor of Sciences. Thesis, 1993, Moscow State University, Moscow, 229 pp.

The main materials for this research were samples taken from 98 reservoirs in the former USSR. Some 287 nematode species belonging to 123 genera, 45 families and 9 orders were recovered from these samples; 68 species are described as new to science. Two new genera: *Prodomorganus* Gagarin gen.n. and *Peritobrilus* Gagarin gen.n. and a new family Chronogasteridae Gagarin, 1975 are also described. The species are subdivided into three groups according to their ecological characteristics: hydrobionts (typical fresh-water species), amphibionts (species found in fresh-water and in soil) and adaphobionts (soil inhabiting species which enter reservoirs accidentally). Free-living nematodes may be placed in three fresh-water cenoses: association of soft bottom, periphyton and rhizocenosis. Nematodes inhabiting soft bottom covering reservoir bed accounted for than 90% of all known fresh-water species. Qualitative

Mavlyanov O. «Phytonematodes of cotton (problems of taxonomy, ecology, zoogeography and control)». Doctor of Sciences. Thesis, 1993, Institute of Zoology of Academy of Sciences of Uzbekistan, Tashkent, 360 pp.

In cotton fields 304 species of nematodes belonging to 43 families and 8 orders were found. Twenty five of these species are new to science and 3 species are transferred to other genera. Seasonal dynamics of nematode populations and nematode distribution in soil and plants were studied. Nematodes were obtained from different soil horizons

indexes of the nematode fauna from each cenosis are presented.

The possibility of using of free-living nematodes as indicators of pollution of fresh-water reservoirs was investigated. In reservoirs with little pollution *Diplogaster rivalis* or species of the genus *Mononchoides* was usually predominant. In contaminated waters species in the genera: *Diplogasteritus*, *Paroigolaimella*, *Curviditis*, *Rhabditidoides* and others were most common components of the nematode fauna. The nematode population density in pollution plumes were found to exceed one million specimens in 1 m², that is 10 to 100 times more than nematode number in clean waters.

An estimation of the variability of 9 morphological characteristics was determined using 45 nematode species. Vulva position was the most stable character. Research on intraspecific variability of nematodes was also carried out. Taxonomic composition of the orders Enoplida, Araeolaimida, Monhysterida and Chromadorida are discussed. A scheme for phylogenetic relationships between families inside the orders and a hypothesis of evolution of nematode fauna in fresh-waters are presented.

(down to 140 cm). Largest numbers of nematodes were recovered from the plant rhizosphere, down to plough depth. In spring and autumn the nematode populations increased, and decreased in summer. Sandy loam soil supported the largest number of nematode species. The effects of salt concentrations, soil type, crop rotation, irrigation and fertilizer application on nematode community structure were studied. In cotton fields in Uzbekistan 65 species of plant parasitic nematodes were found with *Meloidogyne acrita* being the most pathogenic. Some cultural and chemical methods for controlling root-knot nematodes in cotton are discussed.

Savkina E. V. «Nematodes of conifer seedlings in the forestries of the Cheljabinsk region and its interrelation with the disease inducing fungus *Lophodermium seditiosum*». Candidate of Sciences. Thesis, 1993, Institute of Zoology, Kazakh National Academy of Sciences, Alma-Ata, 138 pp.

During a survey some 56 nematode species were found in 11 forests in the Cheljabinsk region. *Tylenchus neominimus* n sp. Savkina 1989 is described. Nematodes from the genus *Paratylenchus* were the most widely distributed. Fifty three plant

Voronov D. A. «Embryonic development in the marine nematode *Enoplus brevis*». Candidate of Sciences. Thesis, 1993, Institute of Developmental Biology, Russian Academy of Sciences, Moscow, 135 pp.

The embryonic development of *Enoplus brevis* inhabiting the upper sublittoral sands of the White Sea was studied by the intracellular injections of the next tracers: Lucifer Yellow and horse-radish peroxidase. Morphology of *E. brevis* first-stage juveniles was also examined to estimate constancy of cell counts in the hypoderm, dopaminergic neurons and sensitive structures. An important similarity was found in the disposition of hypodermal cell nuclei in *E. brevis* and *Caenorhabditis elegans* first stage juveniles. Almost half of the zygote cytoplasm and a few from four and eight cell blastomeres were eliminated from the developing embryo without changes in viability or cell

Neilson R. «An investigation into the horizontal spatial distribution and ecology of marine nematodes in an intertidal estuarine biotope». MSc. Thesis, 1993, University of Dundee, Scotland, 168 pp.

Eighty-eight sediment samples were taken along transects radiating out in six directions from a sewage outfall in Invergowie Bay, an intertidal area of the

nematode species were recovered from the rhizosphere of pine seedlings and 30 species from fir and larch seedlings. Population dynamics of nematodes in roots and soil were studied. Pathogenicity of *P. teres* and *P. penetrans* with the associated fungus *Lophodermium seditiosum* on pine seedlings was established. A positive correlation was recorded between the disease induced by the fungus and the population increase of these nematodes.

The effects of the fungus-nematode complex on some morpho-physiological characters of plants e. g. linear growth, dry and wet weights, water content and photosynthetic activity were examined.

composition of first-stage juveniles. The disposition and the contacts between blastomeres on early stages of embryonic development were altered by applying pressure to the cover-glass or with a glass rod, without any effects to the embryo development. Vital stain injection revealed that the distribution of the descendants of the two first blastomeres of bicellular stages differ in individual embryos of *E. brevis*. The border between the descendants of these two blastomeres may be situated along the longitudinal axis of the embryo, (60-100 cell stage) or perpendicular to it. Only one of the 8-cell blastomeres gives rise to the gut (and only gut), thus resembling the development of *Caenorhabditis elegans*, but unlike the latter this blastomere can be recruited both from either the descendants of anterior* as a posterior* blastomere of bicellular stage (*estimated from future head or caudal end position).

River Tay estuary. A simple flotation technique using colloidal silica extracted approximately two hundred nematodes from each sample. Sixty-seven marine nematode species representing 38 genera were recovered.

The horizontal spatial distribution of marine nematodes was investigated using Taylor's power law of aggregation *B*. Different transformations were

examined for their ability to normalise the distributions. A logarithmic transformation stabilised the variance of the distributions for the majority of species, genera and families studied. The remaining species, genera and families required a variance-stabilising transformation given by the formula: $z = x^{1-B/2}$. Some of the detailed information yielded at species and genera level was lost after re-analysing the spatial data at family level.

Nematode diversity and the percentage contribution of epistrate feeders to the community was found to increase with increasing distance from the outfall, whereas, the percentage contribution of selective deposit feeders decreased with increasing

distance from the outfall. The trophic index and ratios of either non-selective deposit feeders or selective deposit feeders to epistrate feeders were poor indicators of environmental perturbation to nematode communities. Subtle effects of pollution by heavy metals were detected using *k*-dominance curves.

Group-average cluster analysis using the Bray-Curtis similarity coefficient was the most satisfactory clustering algorithm.

**Sergei Subbotin and
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Information

First All-Russian meeting on free-living and parasitic nematodes

The First All-Russian meeting on free-living and parasitic nematodes is hosted by the Institute of Inland Waters Biology of Russian Academy of Sciences. It will be held from 23th to 26th May 1994. The meeting will include oral presentations, poster sessions and colloquia. For further information, please contact:

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