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EDIBLE MUTUAL RELATIONS OF SOIL INFUSORIANS WITH OTHERS PEDOBIONTAS

Abstract: Results of intravital supervision and studying of permanent preparations of various kinds of infusorians for the purpose of definition of their basic fodder objects are presented. Close tropic connection of many kinds of infusorians with single-celled seaweed is established. Kinds the predators fed infusorians by phytophagans are defined.

Key words: biology, ecology, biochemistry, infusorians, edible mutual relations, pedobiontas.

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Introduction

Edible mutual relations of free living infusorians are studied extremely poorly though this question has huge not only scientific, but also applied value as the big role of infusorians in processes of production and organic matter destruction in bedrocks is already proved. It is known that in a ration of free living infusorians single-celled seaweed compounds one third of weight of all edible lump, and many kinds of infusorians typical algofagi, educing almost exclusively at the expense of diatomic and seaweed, displaying thus appreciable selectivity. Thanks to a diversity of morphology of diatomic seaweed their consumption various consummates, including infusorians. Selectively enough, also it is possible to speak about taking place selectivity. By assessments of experts the elementary of all bunches consume approximately 50 % of production of seaweed, including in soil ecosystems. Thereby, participating in transformation of organic substance in primary parts of edible chains, infusorians pedobiontas are awakely involved in processes of increase of fertility of bedrock.

Under our data, a diversity of conditions in bedrock which is caused by a region climate, its topography, phylum of bedrock and, also character of a vegetative integument, are the main conditions for a rich specific diversity soil tsiliofaunas. Typical infusorians pedobiontas are characterized by mainly well educed ability to encystment at unfavorable environmental factors, such as, a humidity lack,

absence of edible resources, unfavorable temperature and gas modes.

It is necessary to notice that for infusorians pedobiontas the basic factor is humidity. So for example in dry bedrock of infusorians in the awake form in general is not present, but in wet their aggregate number under optimum other conditions of medium reaches huge sizes, and the biomass compounds from several mg, to in mass development of several G/m^2 (Foissner, 1994; Alekperov, 2012).

Composition of nutrition of free living infusorians was studied by us, as in vivo, a path microscopy the swallowed organisms in cytoplasm of alive individuals and viewing of the fixed cages, including on impregnates silver whole mounts.

It has been positioned that in ration Hypostomata and Cyrtophorida algal flora (especially small diatomic seaweed) has very much great value. So for example at viewing of ten alive individuals large Trithigmostoma steini in their cytoplasm us it is noted from 22 to 63 cages diatomic Navicula sp.on different stages of digestion. It has been noted, as representatives of others taxonomicals bunches also are awakely fed by diatomic seaweed. Among them representatives Urotricha and Longifragma in endoplasm which we marked from 9 to 50 swallowed plant cells. A food of many representatives equally ciliary infusorians diatomic both cabbage-weeds was marked also by other authors (Pavlovsk, the Liver, 1971).



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We also note cases, when at a lack of bacterial cages, even such bacteriophages as Colpidium and Tetrahymena in insignificant quantities (3-7 copies) use in nutrition of a cage of diatomic seaweed.

Probably these known bacteriophages at a lack of environment of their natural nutrition - bacterial flora it is forced to substitute its transferring to algofag though intensive food by seaweed we never marked.

1. At high humidity of bedrock, in wetlands we observed intensive consumption by infusorians of sort *Nassula* of blue-green seaweed. In supervision we repeatedly marked as individual *Nassula terricola* for 1 hour swallowed from 3 to 8 long threadlike seaweed strongly distort ing the form of cages. It is interesting that speed of a food is influenced also by environment temperature, the above temperature, the more intensively food process.

2. Representatives of family Orthodonellidae concern typical phytophagans such, as also. *Chilodontopsis depressa* and *Zosterodasis vorax*. In edible vacuoles of these kinds we constantly marked seaweed *Trachelomonas* sp. *Stephanodiscus* sp and *Scenedesmus* sp.

3. Small colonial flagellates *Synura* sp. On our supervision are awake used both bacteriophages, and phytophagans. These flagellates are almost universal edible object probably as a result of a mean of a food by a passive filtration observed at many kinds of infusorians. On the other hand free living infusorians are edible object of predatory kinds, representatives of family *Trachelidae*, such as *Dileptus terrenus*, *D.alpinus*, etc. awakely fed small bacteriophages and for multicellular pedobiontas, turbellyariya, and some *Tardigrada*. We repeatedly marked cases, when on boggy fields of wood bedrocks of a larva hironomid were awakely fed by infusorians: representatives of sorts *Litonotus* u *Dileptus*.

4. All results of supervision set forth above show what important role and what variety of tropic attitudes bind soil infusorians to other bunches pedobiontas, both vegetative, and animal parentage.

Besides it is now clear that at modern level of ecological researches carrying out of detailed studying of all biocenological communications not only between separate kinds, but also between populations of various animal bunches pedobiontas is necessary.

Materials and Methods

It is known that the soil is a complicated three-phase system in which solid particles are surrounded by air and water. Column soil riddled with cavities of various sizes, filled with an aqueous solution and a mixture of gases. Compared with the surface layer are smoothed in vibrations thicker soil temperature and the presence of groundwater and precipitation of moisture creates inventory and provide humidity mode (Nikitina, 1997). In the soil reserves are

concentrated organic and mineral substances, which are derivatives of vegetable origin, and the remains of dead animal's organisms. Change the parameters of these environmental factors on the seasons dying masses determine the cyclical nature of the succession of species composition of ciliates pedobiontas (Burkovsky, 1992; Alekperov 2012)

In the period of 2012-2016. 9 stationary collection points located in areas of the Samur-Yalama National Park, with varying degrees of impact of human activity, bylo collected and processed 870 soil samples. In addition to assessing the impact of human activities on soil fauna - on the example of communities ciliates pedobiontov, contact 120 soil samples were collected and processed with gardens, orchards and forest soils in the vicinity of settlements.

To quantify the number of soil ciliates, we used a universal method of direct counting unconcentrated samples (Alekperov, 2005). This method is a more reliable results received in recent years widespread, although it requires certain skills.

Long-term observations of the nature of change in species composition of soil ciliates showed that although in some cases seemingly random nature of the seasonal succession of species composition, there are also clear patterns. For example, the species diversity of soil ciliates tend to increase in the later stages, under the conditions of it about the middle of April - beginning of May. In contrast, the density of ciliates above the initial stages of succession. In our opinion, the qualitative composition of the community ciliates pedobiontas and change the dominant species are determined primarily by biochemical parameters, while the number of species is mainly determined by biotic factors such as temperature.

Conclusion

1. In the fall of species diversity of the leading groups in the creation of the total number of communities in soil ciliates pedobiontov increases again to 10 families. However, a closer analysis reveals the following features seasonal succession of species composition. When comparing the species composition of the diversity of ciliates in forest soils in the spring and summer, it turns out that in the creation of the total population in both seasons was attended by representatives of only three families - *Oxytrichidae*, *Spathidiidae* *Colpodidae*. Interesno and that the proportion of the total number of representatives of these families has not changed (*Spathidiidae* 15%) or more increased from spring to summer (*Oxytrichidae* 6% - 10%; *Colpodidae* 18% - 27%).

2. When comparing species diversity leadership groups of soil ciliates in the spring and autumn seasons, it became clear that forming the basis of the total number of representatives of such

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families as Oxytrichidae met in all seasons, and some dropped out of the communities in the hot summer season and only met in spring and autumn - Amphiseliidae and Gonostomatidae or marked only in the summer and autumn of representatives Microthoracidae Urostylidae. We have identified and another group of ciliates pedobiontov that we were awarded only during one season. For example, only in the spring in the creation of the total number of ciliates pedobiontas attended by representatives of the families Litonotidae, Orthodonellidae,

Grossglockneriidae, Turaniellidae, Cinetochilidae. Only in the summer in soil communities of free ciliates were observed by representatives Frontoniidae, and in the autumn the representatives of families Trachelidae, Chilodonellidae, Cyrtolophosidae Spirozonidae were found. In our opinion such a confinement of individual groups of soil ciliates to certain seasons of the year is primarily determined by factors such as temperature and soil moisture, as well as the availability of food that is tropic factors.

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