

FROM THE LIFE OF THE ASSOCIATION TISZA RESEARCH CONFERENCE '72

Compiled by
GY. BODROGKÖZY

The Committee of Tisza Research held its Tisza Research Conference for this year at the headquarters of the Szeged Committee of the Hungarian Academy of Sciences, on April 22nd 1972. Dr. I. HORVÁTH, President of the Committee, in his opening address commemorated the fifteenth anniversary of the Tisza Research, delivering also a short exposition of the history of these researches that goes back till the part played by MARSIGLI in the year 1700. His first comprehensive work was publishing several data about the natural history of the Tisza. The organized researches started in 1957, under the guidance of G. KOLOSVÁRY. At present, there are already functioning separate work teams and their activity takes a more and more complicated form. The researches are at present concentrated on two areas: the river barrage at Kisköre and the nature conservation area at Mártély. The five work teams consist altogether of thirty-five research workers and there were published so far 250 scientific papers and the six volumes of the Tiscia.

After the opening address, the registered and received lectures were delivered:

ANDÓ, M.:

Micromorphological problems of the inundation and flood areas of the South Tisza basin (Abstract).

The lecture is analysing the development of surface in the South Tisza basin in the Holocene, the surface-shaping activity of the river, the accumulation of deposits.

The Tisza basin is, in fact, the depression hollowed out in the Pleistocene layers at the beginning of the Holocene and filled in by the Tisza gradually until the present day. The Tisza of the Holocene eroded and filled up an area of 5 to 10 km breadth with its meanders and wandering beds. The Holocene surface formed in this way is, to be sure, still lower than the adjacent area that consists of Pleistocene layers. In some places, this difference in altitude can hardly be noticed; in other places, however, it brought about a one-two m bench. The Pleistocene layers were removed here by the Holocene erosion about 15 m deep.

In the surface face of the river basin mainly the geomorphological formations from before the anti-inundation work are dominant. These form-combinations are bearing the marks of the erosive and accumulative activity of the river. Owing to the Tisza-regulation, as a result of the large-scale accumulation — particularly in the inundation area — the single morphological formations have undergone a transformation, during their silting up some so-called secondary microformations were formed in their place. These recent formations, that are nothing else but the deposits of the flooding river overflowing into the inundation area, may take various forms.

In developing these formations a considerable part may be played by the density of the vegetation covering the surface, the stand of plants, the extent and earlier relief of the inundation area, the hydrodynamical mechanism of the river water, etc.

Summing up, there have been formed, owing to the recent development of surface, so-called overflow areas, manifested universally in the aggradation of the whole inundation area. For the time being, as a result of the sediment-laying work, the environment in the inundation area is situated two to three m higher than the protected flood plain environment.

Contributions to the discussion:

MARIÁN, M.: He calls the attention to that the papers published in the „Tiscia” will be available, in the future, in Hungarian language, as well, in the library of the Committee of Tisza Research. He is proposing to place there a copy of M. ANDÓ'S lecture already now for making it easy of access.

BODROGKÖZY, GY.: He establishes that the results of the lecture delivered are supplying a great want in the field of the Tisza Research, rendering help to the investigations in hydrobiology, zoology, and botany. It would be desirable that the colleagues do really use it.

HAMAR, J.:

The Zooflagellates of the Middle Tisza Region.
(In the press, to be published in the “Tiscia”, Vol. 1973).

Contributions to the discussion:

GÁL, D.: Pathogenic Protozoa have been found by him, too, in refuse waters. These have got into the river mainly with faecal matters (e.g., *Entamoeba coli*). The *Trichomonas* has got into the refuse water similarly by urine. To be sure, it could not be proved to be present in the Tisza, only in the refuse water.

HORVÁTH, I.: He regards as a merit of the lecturer to have investigated just this group that can only be studied with difficulty but by means of which we may obtain a more complete picture about the natural history of the Tisza.

Lecturer's answer: He has found the *Trichomonas* in the sullage-pipe of a pig-farm. He hasn't any data, if this species occurred in the vagina of sow. In the Tisza, on the other hand, he has found Zooflagellates in every sample, only in lower species and individual number. The pollution is marked very well in spots. They occur mainly in the waste-waters of sugar-works and paper-mills in higher individual number. In the backwaters mainly the periphyta are of non-planktonic character.

FERENCZ, MAGDOLNA and CSOKNYA, MÁRIA:

Comparative zoobenthos investigations in the Tisza and Maros.
(Published in the “Tiscia”, Vol. 1972)

Contributions to the discussion:

HAMAR, J.: He asks if mollusc species were found by the lecturers in the refuse waters.

MARIÁN, M.: He is setting high value on the statements in connection with the migration of *Palinogenia* and asks if the samples are from the inrush of sewage-water or from the refuse water itself.

BODROGKÖZY, GY.: The material of the lecture is meaning a powerful help for recognizing the food-chain, resp. the biorhythm of the rivers while endeavouring to give an answer to several „why”-s. He is emphasizing that the graphs applied have rendered a service for making the material easier to survey. He regards as interesting that the fluctuation of water level is so important.

The lecturers were giving answers to the questions.

HARKA, Á.:

Data to the stock of fish of the Tisza-reaches at Tiszafüred.
(Published in the “Tiscia”, Vol. 1972)

Contributions to the discussion:

HAMAR, J.: Whether or not it is to be supposed that the *Ctenopharyngodon idella* in the river-basin pullulates in the future as the species cannot be given access to the river.

BERETZK, P.: He asks if there are any regular fish-introduction and angling in those reaches.

BODROGKÖZY, GY.: He asks if the quantitative changes can be evaluated with suitable reliability and for how long a period these statements are valid.

SZITÓ, A.: The importance of ichthyology for science and people's economy is incontestable. But the stock of fish gives a reliable picture only after the lapse of some years. Particularly the problems connected with the fish migration are unsolved. The fact is that the fish population continuously shrink, nevertheless there are not any new fish introductions. It would be desirable to change this wrong outlook as soon as possible. The scientific research must get a decisive part in making a decision on the degree of fishing and fish introduction. The natural conditions of the multiplication of the fish species amur are not given in Hungary, as yet.

Lecturer's answer: He has used for his investigations the data about netting and sport-angling, as well. At present, in the river, a tendency of the multiplication of the less valuable fish species is general. The decrease of spawning-grounds results generally in the numerical reduction of fish masses. The more and more increasing water pollution is a harmful factor, as well. In the new reservoir to be formed, the decrease of some species and the multiplication of others may be expected. The reservation of the biological equilibrium at the various interventions is, therefore, to be taken into consideration in an increased degree.

TÓTH, L.:

Fish-stock investigations in the backwater at Tiszafüred.
(Published in the "Tiscia", Vol. 1972)

Contributions to the discussion:

HAMAR, J.: He asks if there is a difference between the backwaters of different limnologic properties and the fish species; if there is a fish introduction, apart from the backwater at Tiszafüred, into other backwaters, as well, resp. if there get fish there from the Tisza.

MARIÁN, M.: The work of ichthyologists is supplying a great want, their responsibility is great, first of all the research of the living Tisza-water in this direction is important. He regards as *important* the co-operation in this field with the Hatchery and Research Institute for Pisciculture at Szarvas. He is proposing, in addition to the quantitative investigations, the weight investigations, as well. To-day there is indispensable already, in this connection, also to carry out a marking investigation in regard of the major species. The preservation of nature has, as well, several fishing connections (e.g., the extinction of silures).

BODROGKÖZY, GY.: The elaboration of the backwater vegetation in the affected area and the publication of the material of that work took place. The next step would be the biocoenological exploration of these backwaters. The ichthyological investigations are facing a considerable task in the framework of that. It is namely to be supposed that, owing to the various plant combinations in the backwaters of different ages, there are to be found some differences in respect of the fish species combinations, as well. He would be interested, too, in carrying out an investigation in respect of replanting the backwaters with shoals of fish, after becoming completely dry from time to time.

Lecturer's answer: A connection between the single backwater types and their fish species combinations has so far not been investigated with exact measurements, there are only some results of comprehensive view at our disposal. The common sunfish lives, for instance, only in the backwaters, and the *Lucioperca* only in major mortlakes with a rich flora. A stocking took place only in a single backwater for sport-anglers (pike, carp). In case of high water, there is a change of fish fauna between the river and backwaters. Some weight investigations, resp. fish markings will start before long. He holds for desirable a comparative ichthyological investigation of the backwaters of different age and state.

GALLÉ, L.:

Changes in the cryptogamic vegetation of the circular dam in Szeged since 1938.

The circular dam of Szeged, covered with brick in an eight km long sector, has perceptibly changed since the first paper of the author referring hereto and published in 1938, as a result of the crumbling of the covering material, of being grown in

great profusion by various mosses, and the tensive effect of the root system of several floriferous plants.

On the brick surface, in its present state, there are living one filiform alga, 29 crustaceous lichens, seven foliaceous lichens, together 36 lichen species, and five foliose mosses.

The lichen coenoses are as follows:

1. *Verrucarietum nigrescentis* (KAISER) GALLÉ 1960
2. *Caloplacetum murorum* (DE RIETZ) KAISER 1926
Caloplacetum murorum caloplacetosum arenariae
(WILLMANN) GALLÉ 1970
varietas (a) *Lenanorosum crenulatae* GALLÉ 1970
(b) *Lecanorosum albescens* GALLÉ 1970
(c) *Candellariellosum vitellinae* GALLÉ 1970
3. *Caloplacetum citrinae* (GALLÉ) BESCHEL 1950

The number of character species taking part in the building up of lichen coenoses increased eight during the time passed. Among them, there are to be found particularly well-developed thalluses of *Lecidea fuscoatra* f. *regularis* and *Squamaria albo-marginata*.

I have performed growth measurements on the most permanent lichen species that are the most characteristic of brick surface. As a result of these measurements, on the basis of about 250 metric data, it can be established that the annual increase of the thalluses of the single lichen species changes between 0,9 and 4,5 mm. The approximate age of the species, measured rough reckoned from the annual growth, is between 5 to 50 years.

On the brick surface, besides algae and lichens, there are living five foliaceous moss species, as well: *Tortula muralis*, *Grimmia pulvinata*, *Funaria hygrometrica*, *Bryum murale*, and *Bryum argenteum*.

The development of the micro-vegetation is influenced by the pollution of the town air only in the neighbourhood of the Rókus railway station. Here are the covering values of the single species lower, the development of apothecium rarer and there are to be found many sterile asci in them.

The cryptogamic and phanerogamic plant species promote a slow crumbling process of the brick surface. The organs of flood prevention protect the dam against them with scratching and burning.

Contributions to the discussion:

HORVÁTH, I.: He asks the cause of the increase in species number of the lichen coenoses.

HAMAR, J.: He asks if also other establishments of water conservancy are damaged by the lichen thalluses and if there exists a substratum offering resistance to them.

BODROGKÖZY, GY.: He considers the lecturer's lichen coenological and syncological investigations to be considerable even on a world scale. Research works on a similar topic have been carried on for such a long period but by a few investigators. He asks what differences in the phytomass production were induced by the humid and arid vegetation periods during the investigations lasting for more decades.

Lecturer's answer: An increase in lichen species takes place only under optimum ecological conditions. The presence of phanerogamic plants is, for instance, unfavourable to the increase in lichen vegetation. The deleterious after-effect of lichens is a fact established as they multiply first of all on decaying brick surfaces. Under the flood level, on the other hand, there develops never any lichen vegetation.

BODROGKÖZY, GY. and HORVÁTH, I.:

Effect of hydrological factors on the zonation conditions of the uliginous vegetation in the area at Sarud.

Contributions to the discussion:

MARIÁN, M.: The reported results of the investigations are important for the other researchers working under the condition of the inundation area, as well.

BÁBA, K.: The knowledge of plant associations indicating the hydrographic conditions and the use of their data are important also for him, as a zoologist. He would be pleased to cooperate.

Lecturer's answer: It is an old wish that the modern biocoenological investigations, at least to some extent, should be realized. He regards, therefore, as desirable to establish in the future a closer cooperation between the single special fields of research.

SZITÓ, A.:

A quantitative and qualitative investigation of the Chironomidae grubs in the Tisza region between Tiszafüred and Kisköre.
(Published in the "Tiscia", Vol. 1972)

Contributions to the discussion:

GÁL, D. He asks from what water depth the lecturer's samples were obtained and if the Chironomidae grubs are migrating in case of a change in water depth. He is proposing vertical investigations for the further research series.

BÁBA, K.: He asks how the quantitative conditions of the grubs change at the middle of the river bed. The species and individual number of Molluscs is namely higher in the neighbourhood of banks.

Lecturer's answer: The samples were retained from the Tisza at a depth of 2,5 to 3,5 m. The water-course in the sampling place is so slow that it is tolerated even by species of stagnant water. He has not observed the migration of grubs. They tide over the fluctuation of water level by creeping into the silt. In the backwaters, the quantity of the Chironomidae grubs depends generally upon food. It is, anyway, influenced by the conditions of vegetation, as well.

Lectures delivered in the afternoon:

GALLÉ, L.: Investigations on the Formicoidea populations of the Tisza-dams, with particular regard to the region at Tiszafüred.
(Published in the "Tiscia", Vol. 1972)

Contributions to the discussion:

BODROGKÖZY, GY.: He is delighted to learn that the lecturer carried on his investigations in a biocoenological framework. By that, the lecture furnished a new proof in respect of the synecological interconnections of the single biocoenoses. In the time when he carried out the investigation of these dam-grass coenoses, he found a close connection between the race combination of the single coenoses and the climatic conditions. He thinks to be desirable that the lecturer — in the course of his subsequent research — includes the climatic factors, as well, into his investigations.

HORVÁTH, I.: He speaks highly of the lecturer's mathematico-statistical method of evaluation.

Lecturer's answer: The alimentary activity of the single Formicoidea species is influenced, apart from the temperature, by the degree of humidity, as well. He carried on some activity investigations like this in the area at Vesszős, on the Tisza-dams. He regards desirable a closer cooperation with botanists. The knowledge of the vegetation and microclimatic conditions would namely mean a great help to him in clarifying the living conditions of the single Formicoidea populations.

BÁBA, K.:

The snail coenoses of the willow groves in the Middle Tisza region.

I carried out zoocoenological samplings in the area of river barrage II, in the Middle Tisza region, in the years 1959—62, 1964, 1969 and 1970. The sampling took

place in the area of Kisköre, Tiszaszöllös, Tiszaug, Tiszaörvény, Óhalászi and Poroszló, on the sides of the river bed, in the inundation areas, and in backwaters. The vegetation of the biotops investigated may be divided into willowies and cultivated woods. From 20 biotops, 650 individuals of 16 species came to light. The species number of the coenoses is 2 to 5 on the sides of the river bed, 3 to 10 in the inundation areas. The individual number is low. The most part of the species found (13 species) are hygrophytic ubiquists. The colouring elements, found in this region only rarely nowadays, are: *Vertigo antivertigo* (DRAP), *Succinea putris* (L.), *Nasovitraea hammonis* (STRÖM), *Euconulus fulvus* (O. F. MÜLL.), *Bradybaena fruticum* (O. F. MÜLL.).

There are five species that can generally become character species alone or together with other species. These are: *Cochlicopa lubrica* (O. F. MÜLL.), *Succinea oblonga* (DRAP), *Succinea pfeifferi* (ROSM.), *Zonitoides nitidus* (O. F. MÜLL.), *Monachoides rubiginosa* (A. SMIDT). *Succinea pfeifferi* and *Zonitoides nitidus* are character species differentiated opposite to the Lower and Upper Tisza regions, not only on the sides of the river bed (BÁBA, 1969) but also in the inundation areas.

In the various associations of willow groves, and in the facies of these, I have separated the following synusium types:

(a) In the *Salicetum albae-fragilis* Issle-association:

1. *Succinea oblonga*
2. *Succinea oblonga*-*Monachoides rubiginosa* (fac.: *Amorpha fruticosa*)
3. *Succinea oblonga* (fac.: *Nymphaetum*)
4. *Succinea pfeifferi*-*Monachoides rubiginosa*-*Zonitoides nitidus* (fac.: *Phragmitetum caricetosum*)
5. *Zonitoides nitidus* (*Salicetum albae* SIMON, consociation)

(b) In the *Salicetum triandrae* Malcuit association:

1. *Zonitoides nitidus* — *Succinea pfeifferi*
2. *Monachoides rubiginosa* — *Succinea pfeifferi* (in thin-grown places).

(c) In poplar — willow groves of various origins:

1. *Zonitoides nitidus* — *Cochlicopa lubrica* (in thin-grown places)
2. *Zonitoides nitidus* (in a dense bramble undergrowth)
3. *Succinea pfeifferi*
4. *Zonitoides nitidus* — *Monachoides rubiginosa* — *Cochlicopa lubrica* (fac.: *Amorpha*)
5. *Cochlicopa lubrica* (fac.: Phragmites).

(d) Cultivated woods:

1. *Zonitoides nitidus* (oaken)
2. *Zonitoides nitidus* — *Monachoides rubiginosa* (American ash grove)

It may be established that in case of a change in environmental factors, if they become one-sided, if the plants put forth stems, if monoculture follows or a facies-forming plant species gets the preponderance (consociation), then the species number decreases. The number of character species decreases to one. In rather shadeless places, the *Cochlicopa lubrica*, *Monachoides rubiginosa*, in shadier, moister places the *Zonitoides nitidus*, *Succinea pfeifferi* become character species of the synusia.

Contributions to the discussion:

GALLÉ, L., Jr. asks if any montanic species were found by the lecturer in the willow groves, respectively if they survive in the consociations.

BODROGKÖZY, GY.: is drawing the attention to that the narrow *Populus* forests attract the thermophilous species. Here gets the underwood more sunshine, and the montanic species demanding a cool climate are rather connected with the dams. He asks, as well, in which plants of the area investigated any traces of gnawing were observed.

HORVÁTH, I. thinks important to clear up the role of Molluscs in the food chain.

GALLÉ, L., Sr. established that he often saw lichens gnawed by snails.

HAMAR, J. asks what the mosaic character determines if plant and water cooperate.

Lecturer's answer: In the Middle Tisza region the montanic elements are only accessory. In the Upper Tisza region, however, they are characteristic ones, too. The surprise of the montanic elements is not excluded by cultivation. The Molluscs are no food specialists. The species in the inundation area are mainly detritophages, resp. feeding on mixed food. The vegetation is of microclimate-inducing effect. Where the microclimate is favourable, there often live 900—1000/qu. major individuals. They may have an important part in the food circulation. Water chemistry has a fundamental role in the distribution of species.

MARIÁN, M. and PUSKÁS, L.:

Quantitative investigations on the Passeriformes stock in the inundation area of the Tisza.

(Published in the "Tiscia", Vol. 1973)

Contributions to the discussion:

BERETZK, P.: Lecturer's investigations needed much work from which conclusions could be drawn in respect of the whole inundation area of the Tisza. It is of great value that he established the number of nesting birds. After a while, in the inundation area the possibility of nesting will come to an end, the change is worth being observed.

BÁBA, K.: From the single species, the small- and large-statured birds, belonging to the Carnivores group, are represented in an approximately similar individual number. He asks if their food is different.

CSIZMAZIA, GY. asks if the investigation has covered the quantitative connections of food.

HAMAR, J.: The biomass indicates a more or less instantaneous state. In a longer period, the population dynamics changes. The birds exert an effect even on the life of waters. He asks what an influence river barrage Tisza II. will have on the birds.

GALLÉ, L. Jr.: He is appreciating the pioneering character of the work. He regards striking the very high individual number of tree-sparrows as compared with their past number and asks whether there is a connection between the overpopulation of the fall webworm and the increase in the individual number of sparrows.

HORVÁTH, I. asks what an anthropogenic effect was experienced by the lecturer.

MARIÁN, M.'s answer: At the quantitative reckonings, he always took for basis the average weight of the developed individuals. Three carnivorous species take their food from different places. He did not carry out any food investigations as he worked with the living material. The stock was taken in the hatching period, in the time of maximum life functions. The birds are area-bound only at nesting. The river barrage at Kisköre may be a water-fowl's paradise but the warblers can settle down there only later on. The multiplication of the stock of sparrows may have been induced by the overpopulation of the fall webworm. The anthropogenic effect is of high degree. The unfavourable effect of the huge mass of dust raised by the vehicles of transport makes itself felt in an indirect way.

CSIZMAZIA, GY.:

Methods of taking up the mammal stocks in the inundation area of the Tisza.

(Published in the "Tiscia", Vol. 1972)

Contributions to the discussion:

GÁL, D. is sceptical about the living of wild cat in the neighbourhood of Sasér.

BERETZK, P., however, is stating it positively.

MARIÁN, M. is appreciating the lecture mainly from methodical point of view. The conclusion of the food of mammals from their droppings is logical.

HORVÁTH, I. is giving his special thanks for the report on the new methodical methods.

Lecturer's answer: The wild cat lives in Sasér and even it multiplies. One can make the attempt to clear up the number of females after their cry.

Declarations:

BODROGKÖZY, GY.: In the Tiscia of this year 24 papers will be published. For Volume 1974, the papers are to be presented until May 1st 1973. Also the Abstract of the lectures delivered here will also be published in the "Tiscia".

President's concluding words.

HORVÁTH, I.: He is establishing that the Conference has been characterized by good lectures and keen interest. There are given more and more lectures connected with the matter-energy circulation and that meets the fundamental requirements. The research programme of the biosphere is namely important in the long-range planning and the encouragement of that is getting along in a good way. After desiring further good work, he is closing the conference.