TISCIA /SZEGED/ 6, 1970-71

Data to the ornithological conditions of the inundation area Tiszafüred-Kisköre

A. Legány

"János Kabay" Primary and Secondary School,
Tiszavasvár

/Received November 29, 1969/

Abstract

Owing to the activity of man, transforming his surroundings, several biologically valuable areas become desolate, with their interesting animal and vegetable kingdoms. Also the inundation area in question that we can demarcate with the line Tiszafüred-Abádszalók-Kisköre-Poroszló, is like that. The whole area will be inundated by the water of Tisza dammed un. That is the cause of my trying to immortalize as much as possible of the animal kingdom of the area. I have performed collections in all the types of biotops borrow-wood in the inundation area, old willow-plantations, noble poplars, native poplars, wood of acacias and of ashtrees, orchards, meadows and pastures studying the quantitative and qualitative composition of the ornithofauna and their role in the biological protection of their environment.

In the course of analysing several collections, I have established that the inundation area is occupied first of all by xerophilous species. The birds living in the woods are dominant both in respect of the number of their species and in that of the number of individual specimens. Mainly those breeding on the level of the leafy crown and of the stem of tree are to be found in a high number. The mass of the species - 50-75 p.c. - are insectivores. The mass of the food consumed can be concluded from analysing the relations of weight dominance. Here have the herbivores a major role, being species of bigger bodies. The colonies of *Corvus frugilegus* L. mean a special problem. If the woods ensuring their settling down are eradicated, they cannot help being concentrated in the agricultural areas becoming in this way possibly parasites there.

Man considers as a task to transform his environs, for obtaining the most from it. As a consequence of that activity a lot of areas that are important biologically and from the point of view of cultural history, as well as a number of animal and plant species perish. To satisfy our conscience, even if we cannot save them, we ought to describe everything about them for informing our children's children about them. An area like that is that mentioned above, demarcated by the line of Tiszafüred-Abádszalók-Kisköre-Poroszló and investigated by me /Cf.Fig.1./. The water dammed un by the river barrage Tisza II that is being built at Kisköre will entirely inundate the part being between the present dams und thus one of the huge inundation areas of our country perishes together with its characteristic flora and fauna. The purpose of this paper is, therefore, first of all to collect as many data as possible and to immortalize them concerning the avifauna of the area.

Methods of investigation:

With regard to the large extent of the area, I could not overlook systematically every small part of it. But it was not necessary, either. My method was to carry out collections from every type of biotops occurring in the inundation area: borrow-wood in the inundation area, old willow-plantations, old poplars, planted, orchards, wood of acacias and of ashtrees, native poplars, meadows and pastures. I performed in a type, of course, more collections, for getting a picture of the characteristic avifauna. The collections - counting the species and individual specimens - were performed on two hectares in the wood and orchard /100 x 200 m/. At the meadows and pastures, on the other hand, I have ranged an area of 50 hectares or so /1000 x 500 m/. On the basis of the observed specimens, singing males and discovered nests, I have endeavoured to establish the number of species and individual specimens living in the area considered as a unit. This datum served for basis for further analyses. At the species breeding in colonies, however, I have counted every nest independently from the extent of the colony.

There were, of course, some rare and remarkable species - *Ciconia nigra* L. - nesting outside the collecting area. I have counted these, too, and mentioned at the given biotop.

I carried out my observations in two aspects - in early spring and in the beginning of summer - getting in this way a more perfect picture about the avifauna.

Results of the investigation:

As I have performed the collections, too, according to the types of biotop, I wish to analyse also the avifauna in this framework. Before doing that, however, I hold as necessary to characterize shortly the single types of biotop, for being able to evaluate the world of birds in their connection with their environs.

Wood at the borrows. It accompanies the inundation dams, having come into being in the borrow area as these dams were built. It is formed mainly by the *Populus alba* L. and *P. tremula* L., both of gigantic growth, overgrown by *Vitis silvestris* G m e l. It is accompanied on the inner side of the dam generally by a zone of old, hollow, truncated willow-plantation. The underwood is *Rubus caesius* L., the shrub level *Amorpha fructuosa* L.

Old willow-plantations of pure stand. They occur in a comparatively not large extent and only in spots in the area. They are formed mainly by *Salix alba* L., with several old, hollow exemplars. This wood type may have been the old autochthonous association of the inundation area that later was ousted by the artificial afforestation. In its underwood *Rubus caesius* L. and *Urtica dioica* L. can be found.

Noble poplars planted. This is the wood type taking the largest area. In the shrub level *Amorpha fruticosa* L. is mostly growing in an extremely dense stand. The oldest plant may be 25-30 years old. There are planted first of all the giant, Italian, French and koari poplar species.

A c a c i a g r o v e s . I have discovered them only in a single considerable continuous area, planted along the mortlake at Cserőköz between Tiszaderzs and Tiszaszőllős. Here they are, anyway, in an area of about 100 hectares, being worth while mentioning and investigating.

A s h - w o o d s. There are planted comparatively large areas with *Fraxinus excelsior* L. Its continuous stands of major extent can be found in the large inundation area at Tiszafüred-Poroszló.

N a t i v e p o p l a r s . They are the second, probably autochthonous association of the inundation area, formed by old *Populus alba* L. of giant growth and here and there also by *P. tremula* L. Their age may be at least 70-80 years. They occur in comparatively small spots /2-3 ha/ and only in 2-3 sites. I am mentioning them because of their typical inundation character and fauna. They are before being driven out.

O r c h a r d s . They occur in several places of the inundation area in smaller or larger spots, being formed mainly by plum- and apple-trees. They have, almost without any exception, an old, hollow stands, in the high percentage of cases in a neglected state.

M e a d o w . There are wet meadows in a great extent, variegated with a considerable amount of willow and poplar shrubs and trees. The latter ones have a great influence on the composition of the fauna therefore I do investigate them separate from the next bioton.

P a s t u r e . It is perhaps the bioton of the largest extent. They are treeless grass-lands, first of all for grazing. They may be found in the largest continuous piece at the Sarudi meadow. In some deeper parts of it the hydrofilous flora and fauna components are concentrated. The depressions are, however, dry in June, and the birds are attracted there only by the bulrush and reeds.

I did not speak separately about the planted oak woods that can be found in the area, too, because they are mostly of young stand and their avifauna here is similar to that of ash-woods. The avifauna of mortlakes has similarly not been investigated, because the species living here will be touched only a little or not at all by the coming changes.

The examination of *Riparia riparia* L. and *Merops apiaster* L. breeding in the steep bank-walls of the Tisza was carried out by M. Marián, therefore I do not speak about them, either.

Analysation of the avifauna

As already mentioned at discussing the methods of collection, I have performed more collections in any bioton type-related to some territorial units, for being able to establish in a given bioton the quantitative and qualitative composition of the avifauna. Having got these numerical data I could carry out the necessary statistical analysis, thus among others also the analysis of the dominance relations. In this way I could arrange the members of the avifauna know qualitatively with the help of the quantitative indices. Inside the single communities, therefore, I have distinguished - on the basis of their dominance - dominant /above 12 D p.c./, subdominant /8-11, 9 D p.c./, accessory /5-7,9 D p.c./ and rarus - rare - species /0-4,9 D p.c./. The end values have been established on the basis of local analyses.

Avifauna of the borrow woods

It is characterized by a community that is rich in species and specimens, utilizing the possibilities of the bioton comparatively well.

Dominant species: *Streptopelia turtur* L., *Fringilla coelebs* L.

Subdominant species: *Oriolus oriolus* L., *Parus maior* L., *Muscicapa striata* Pall., *Passer montanus* L.

Accessory species: *Parus coeruleus* L., *Luscinia megarhynchos* Brehm., *Sylvia atricapilla* L., *Sturnus vulgaris* L.

Rare species: *Falco subbuteo* L., *Columba palumbus* L., *Cuculus canorus* L., *Coracias garrulus* L., *Picus viridis* L., *Dendrocopos maior* L., *Corvus cornix* L., *Chloris chloris* L. This nesting community is throughout characteristic of the borrow woods in the region investigated by me. Exceptions are only the wood part where *Corvus frugilegus* L., colonies came about. From the members of the above mentioned community some perish - *Falco subbuteo* L., *Picus viridis* L., *Dendrocopos maior* L. and new ones are substituting them - *Falco tinnunculus* L., *Sylvia curruca* L., *Phoenicurus phoenicurus* L., *Phasianus colchicus* L., The difference between the two communities appears rather in the obvious change in the dominance conditions. It is probable that the single species respond in a different way to the noisy vicinity of the *Corvus frugilegus* L., presenting itself in the same place, and that results in the change of the dominance relationship.

The bird species living in the borrow woods hatch on the four nesting levels available for them. 8,7 p.c. of the species hatch on the soil level, 13 p.c. in the shrub, 34,9 p.c. on the stems of trees and 43,4 p.c. in the foliage. I regard as particularly important the high percentage of the species hatching on the level of stems because they are, without excention, very useful and important insectivorous birds that live in hollows. Just after them, I have to refer to the distribution according to food, as well. 52 p.c. of the species of this bioton is insectivorous, 8,7 p.c. carnivorous, 21,8 p.c. herbivorous, and 17,4 p.c. of mixed nourishment. The high percentage of the insectivores refers to the great significance of the community for the forest economy. Its real value appears, however, only after the complex relationships of weight dominance being investigated. A conclusion may namely be drawn from that not only concerning the quality of the food consumed but also as to its quantity what is very important for us. On this bases, the insectivores have a weight dominance of 40 p.c., the carnivores of 6 p.c., the herbivores of 36 p.c., and those with mixed food of 18 p.c. These numerical data are more or less in harmony with the above-mentioned indices.

It is, anyhow, a modified situation in the woods where there are crow nests. Here belongs 95-99 p.c. of the weight dominance to those with mixed food, and all the other nourishment forms present themselves only in fractions of the percentage. That is important because in the given situation - just as a consequence of the mixed food - the denizens of the plantation do touch keenly the agricultural production. This conserns, anyway, every crow colony in the inundation area. I will return separately to that problem later on.

Avifauna of the old willow plantations of pure stand

This is the biotop which is richest in species in the investigated inundation zone. The cause of that is, as I see, that as a characteristically inundation wood-type, it corresponds the most to the avifauna of the inundation area. The great lot of hollow old trees, the comparatively dense underwood ensure extremely favourable conditions for settlements.

D o m i n a n t s p e c i e s : *Streptopelia turtur* L., *Passer montanus* L., *Parus maior* L., *Fringilla coelebs* L.

S u b d o m i n a n t s p e c i e s : *Oriolus oriolus* L., *Sylvia atricapilla* L., *Muscicapa striata* P a l l .

A c c e s s o r y s p e c i e s : *Columba palumbus* L., *Picus viridis* L., *Turdus merula* L., *Luscinia megarhynchos* B r e h m .

R a r e s p e c i e s : *Phasianus colchicus* L., *Dendrocopos maior* L., *Corvus cornix* L., *Pica pica* L., *Parus caeruleus* L., *Aegithalos caudatus* L., *Certhia barchidactyla* B r e h m ., *Phoenicurus phoenicurus* L., *Locustella fluviatilis* W o l f., *Sturnus vulgaris* L.

In the areas of that biotop type, outside the site of collections, I have found a pair of nesting *Falco subuteo* L., and some *Ciconia nigra* L. In the nest of the latter one there were two young ones.

The utilization of the nesting levels of the biotop is the best and the most balanced. 9,1 p.c. of the species hatches on the soil-level, 22,7 p.c. in the shrubs, 36,4 p.c. on the tree stems and 31,8 p.c. of them on the foliage level. Here is the percentage of the hollow-dwellers the highest, and if we add that even the number of their individual specimens is not low, then their importance considerably grows. Our attention is drawn to that, anyway, by the distribution according to nourishment, as well. 68 p.c. of the species is insectivorous, 18,3 p.c. herbivorous, and 13,7 p.c. is of mixed nutrition. /*Falco subbuteo*, mentioned earlier, was not contained in the collection/.

The weight dominance is, at the same time, showing an absolute dominance of herbivores - eating weedseed - the distribution developing in the following way: insectivores have 31,6 p.c., herbivores 58,5 p.c., and those of mixed nutrition only 9,9 p.c. of the total weight. I have, of course, not recorded the data of the crow settlement - that occurs in this biotop type, too - because it would strongly change the conditions, giving a false picture about the avifauna of the willow-plantations.

Avifauna of the noble poplars planted

That is an entirely peculiar biotop, being extremely poor in the number of species and specimens. About the cause of that a separate monograph could be written. Here I refer only to the loose branch- and leaf-structure of the noble poplars that is not favourable for nesting and hiding. I have discovered a comparatively more "lively" bird life only in 25-30 years old poplar groves. The younger woods were characterized - in more places - by a full absence of birds.

Dominant species : *Sylvia atricapilla* L.

Subdominant species : *Streptopelia turtur* L.

Accessory species : *Oriolus oriolus* L.

Rare species : *Columba palumbus* L., *Sylvia curruca* L., *Lanius collurio* L., *Fringilla coelebs* L.,

In two sites of the collection I have discovered crow settlements, as well, but only in an older - about 20 years old - poplar grove.

The degree of utilization of the nesting levels is bad. 50 p.c. of the species hatches on the level of shrubs, 50 p.c. on that of foliage. The woods being young, there is no hollow tree, and the large and very useful group of hollow-dweller birds is, therefore, fully absent.

The distribution according to nourishment is: 57 p.c. insectivores, 43 p.c. herbivores. On the basis of weight dominance, 47 p.c. of the species are insectivores and 53 p.c. of them herbivores. Those of mixed nutrition are represented only by *Corvus frugilegus* but here I have not mentioned them.

Avifauna of acacia groves

It is rich in the number of species and individual specimens, having a dominance of warbler communities.

Dominant species : *Streptopelia turtur* L., *Fringilla coelebs* L., *Sylvia atricapilla* L.

Subdominant species : *Parus maior* L., *Luscinia megarhynchos* Brehm., *Muscicapa striata* Pall.,

Accessory species : *Columba palumbus* L., *Oriolus oriolus* L.,

Rare species : *Falco tinnunculus* L., *Phasianus colchicus* L., *Cuculus canorus* L., *Pica pica* L., *Locustella fluviatilis* Wolf., *Sturnus vulgaris* L., *Carduelis carduelis* L.

The composition and richness of the community is influenced favourably

by the wood lying along the mortlake at Cserőköz and by the fact that the stand contains also old, hollow trees.

On the four available nesting levels we have discovered hatching species although the dwellers of the foliage level are dominant. The distribution of species is as follows: 8 p.c. of the birds hatched on the soil, 17,6 p.c. of them in the shrubs, 17,6 p.c. on the tree-stem level, and 53 p.c. on the foliage level.

On the basis of the nutrition consumed, the distribution of species is as follows: 59 p.c. of them are insectivores, 5,9 p.c. carnivores, 29,2 p.c. herbivores, and 5,9 p.c. those of mixed nutrition. This acacia grove was therefore, the most favourable for the arbicolous species consuming insect nourishment.

On the other hand, the weight dominance is favourable for the category of herbivores. The cause of that is that the species belonging here are generally heavier and, even if they have a subordinate role at the investigation of the individual specimens here is their situation anyway advantageous. In the weight dominance, the insectivores are represented with 18,5 p.c., the herbivores with 63,2 p.c. the carnivores with 4,2 p.c., and those of mixed nutriture with 14,1 p.c.

Avifauna of ash-woods

In this biotop I have found even three nesting communities. Two of them - crow and heron settlements - are special, i.e., they are not characteristic of ash-woods. And the third one proved - after being counted more times - to be the poorest of all of them.

D o m i n a n t s p e c i e s : *Sylvia atricapilla* L.
S u b d o m i n a n t s p e c i e s : *Streptopelia turtur* L.
R a r e s p e c i e s : *Muscicapa striata* P a l l., *Parus maior* L.

The extraordinary poverty in number of species and specimens observed here may, perhaps, be explained by these woods being - with only one exception - young. There are scarcely, if any, hollow trees or those suitable for being hollow. The shrub level and the underwood are almost fully missing or they are very rare.

From the species discovered here one hatches on the shrub level, one of them on level of tree-stems, and two on the foliage level.

On the basis of nutrition, the insectivores have got an absolute dominance - 75 p.c. - opposed to the herbivores - 25 p.c.

The conditions of weight dominance are, however, like in a lot of other cases also here favourable for the herbivores, the insectivores giving 27,5 p.c. of the community while the herbivores 72,5 p.c. of it.

In the same way as at the earlier biotops, I don't analyse here the crow settlements.

On the other hand, I consider as necessary to make known the heron settlement. It can be found in the old ash-wood, mentioned earlier as an exception, in the inundation area at the left bank of the Tisza, between

Tiszaszőllős and Örvény. In the settlement I have discovered 34 *Ardea cinerea* L., 32 *Nycticorax nycticorax* L., 5 *Egretta garzetta* L., and 3 *Phalacrocorax carbo* L. nests. The great number of common herons /*Ardea c. cinera*/ - 31 pairs - and the cormorants /*Phalacrocorax sp*/ nested on a giant trembling poplar grown at the edge of the ash-wood. The night herons /*Nycticorax n. nycticorax*/ and little egrets /*Egretta garzetta*/ hatched, however, on the ash-trees around the poplar. It is interesting that in the same place, around the heron settlement, there was also a *Corvus frugilegus* L. settlement, populous enough.

Avifauna of native poplar woods

The native poplar woods are characterizing the large river inundation areas as much as the willow woods do. As their wood is, however, less suitable for industrial purposes than that of the noble poplars, they are driven more and more from everywhere. In the woods studied I have found a strongly mixed community of heterogeneous composition. It still conserved some elements from the species of the inundation woods of large extent but, just because of the shrinking areas, the still existing few wood-spots were occupied rather by the small singing-birds.

D o m i n a n t s p e c i e s : *Parus maior* L., *Fringilla coelebs* L.

S u b d o m i n a n t s p e c i e s : *Streptopelia turtur* L., *Oriolus oriolus* L., *Sylvia atricapilla* L.

R a r e s p e c i e s : *Milvus migrans* B o d d., *Phasianus colchicus* L., *Columba palumbus* L., *Dendrocopos maior* L., *Muscicapa striata* P a l l.

Hatching species have been found on all the four nesting levels occurring in the woods. It is to be noticed, anyhow, that here was the distribution not even. 50 p.c. of the species hatches on the foliage level, 20 p.c. on the level of tree-stems, 20 p.c. on the shrub level, and 10 p.c. on the soil level.

The distribution according to nourishment is, on the other hand, as follows: 50 p.c. of the species are insectivores, 40 p.c. of them herbivores, and 10 p.c. carnivores. As the insectivores are - even if being numerous - song-birds of small body, at calculating the weight dominance they fall considerably into the background. The herbivores have 61,4 p.c. of weights, the carnivores 28 p.c., and the insectivores 10,6 p.c. of them.

Avifauna of orchards

It is not a natural bioton. It would, in fact, be even regarded as an agricultural area. All of them are old, uncared-for, less-disturbed

fruit-gardens. There developed an avifauna with the dominance of a characteristic small song-bird, being here poorish, there richer.

D o m i n a n t s p e c i e s : *Passer montanus* L.

S u b d o m i n a n t s p e c i e s : *Parus maior* L., *Lanius collurio* L.,

R a r e s p e c i e s : *Streptopelia turtur* L., *Parus coeruleus* L., *Sylvia atricapilla* L., *Sylvia curruca* L., *Muscicapa striata* P a l l ., *Sturnus vulgaris* L., *Carduelis carduelis* L., *Fringilla coelebs* L.

The distribution of species according to nesting levels is interesting and characteristic. 36,4 p.c. of them hatch on the shrub level, 36,4 p.c. on the level of tree-stems, and 27,2 p.c. on foliage level. The neglected state of orchards is shown also by the high percentage of the species hatching on the levels of shrubs and tree-stems. Where the fruit--trees are not nursed duly, the number of insect pests increases what really attracts the insectivorous birds that settle down if the conditions are favourable. It can be explained in this way that 63,6 p.c. of the species living here are insectivores, 27,4 p.c. herbivores, and only 9 p.c. of them are those of mixed nutrition.

This absolute predominance of insectivores is, however, strongly moderated by the weight dominance, without decreasing, anyway, the value of the community. The distribution is as follows: in the total weight of the avifauna the representation of insectivores is 31,1 p.c., that of herbivores 39,8 p.c., and that of those with mixed nutrition 29,1 p.c.

Avifauna of meadows

The meadows variegated with trees, shrubs are characteristic and ancient biotops of the inundation area of Tisza. Their avifauna in the area investigated cannot be considered as too rich either in the number of species or in that of individual specimens.
This may possibly be the result of the systematic disturbance by mowing. According to the collections, in the area the following species are living:

D o m i n a n t s p e c i e s : *Passer montanus* L.

S u b d o m i n a n t s p e c i e s : *Streptopelia turtur* L., *Oriolus oriolus* L., *Sturnus vulgaris* L.

A c c e s s o r y s p e c i e s : *Lanius collurio* L., *Cuculus canorus* L.

R a r e s p e c i e s : *Perdix perdix* L., *Parus maior* L., *Fringilla coelebs* L.

The distribution of species according to nesting levels may be called even. 12,5 p.c. of them hatches on the soil, 25 p.c. on shrub level, 37,5 p.c. on the level of tree-stems and 25 p.c. on foliage level.

The overwhelming majority of species: 50 p.c. are insectivores. The percentage of herbivores is 37,6 p.c., that of those with mixed nutrition is 12,4 p.c.

At evaluating the weight dominance, the leading role have got also here - as everywhere - the herbivores. They mean 52,1 p.c. of the total weight of the avifauna, while the insectivores only 36,2 p.c., and those with mixed nutrition 11,7 p.c.

Avifauna of pastures

The treeless pastures of large extent are another characteristic open biotop of the inundation areas. Their avifauna - just owing to the almost full absence of trees and shrubs and the wet depressions occurring here and there - is quite different from that in the former biotop.

D o m i n a n t s p e c i e s : *Coturnix coturnix* L., *Alauda arvensis* L., *Emberiza citrinella* L.

S u b d o m i n a n t s p e c i e s : *Motacilla flava* L., *Emberiza calandra* L.

A c c e s s o r y s p e c i e s : *Sylvia communis* L.

R a r e s p e c i e s : *Acrocephalus scirpaceus* H e r m ., *A. schoenobaenus* L., *Anthus campestris* L.

A great number of species, 66,6 p.c. nest on the soil. Only 11,1 p.c. of them hatch on shrub level, and 22,3 p.c. on reed level. /The latter ones appear in spots of rushes and reeds/.

The distribution of species according to the nutrition consumed is: insectivores are 55,6 p.c. herbivores are 22,2 p.c., and those with mixed nutrition 22,2 p.c.

The values of weight dominance have been formed in the following way: the weight percentage of insectivores is 8,8 p.c., that of herbivores is 49,4 p.c., and that of those with mixed nutriture is 41,8 p.c.

Looking over the data described above, we may say that the area mosaic investigated is of complex character where the different biotops covered with wood and meadow are placed alternately by one another.

It is proved by the observations that the species utilize the nesting possibilities given by the biotops. The occasions being different in the various biotops, also the degree of utilization changes is harmony with that. The backbone of the avifauna is formed - independently from the character of the biotop - by the insectivores. They comprise 50-75 p.c. of the species. This group is followed by the herbivores with 18-43 p.c.,

then follow the species of mixed nutrition with 6-22 p.c., and finally the carnivores with 6-10 p.c. The insectivores consume, almost without any exception, the nourishment given by the biotop. From the herbivores of the woods, those belonging to the columbine class and the carnivores obtain the great part of their nourishment from territories outside the wood. Not to speak about the crows of mixed nourishment. In this way the woods are invaded - mainly from the agricultural areas - by a great quantity of energy; these woods are, therefore, to be considered - from nourishmen-biological point of view - as open biotops.

On the other hand, the meadows and pastures can be considered as closed areas because the avifauna living there can obtain on the spot the nourishment of necessary amount and kind.

Their role in protecting the avifauna biologically and in conserving the biological balance is, therefore, a double one: partly they serve the protection of the nesting biotop - main biotop - partly have an influence on the traffic of materials in the nourishment biotop e.g., agricultural areas, pastures. The question whether this effect is of negative or of positive value, depends upon more factors. At any rate, we may establish unequivocally that the few carnivores that consume first of all rural rodents and the kinds of doves and finches eating weed-seeds are useful for the adjacent agricultural areas. The *Corvus frugilegus* L. of mixed nourishment, if breeding too rapidly, may be noxious to its surroundings. I will still return separately to this problem.

Studying the avifauna of the different biotops and comparing it with L. Horváth's work "Communities of breeding birds in Hungary", I had to establish that these communities do not present themselves as purely and typically as indicated in the monograph quoted.

I have discovered here different modifications of the communities indicated there. In the woods of borrow pits of the inundation areas, in the willow-plantations, the native poplars and acacia woods the collectivity *Locustella fluviatilis* can be discovered but not typically and in a similar quantitative and qualitative composition but in a form adapted to the peculiarities of the biotop. The differences are induced by the presence or absence of some species, resp. by the changes in the dominance relations of the present species. It is extremely difficult to determine the type of a nesting community if it can be observed only in fragments. This is the case, in my opinion, e.g. in the ash-woods and the noble poplares planted where the fragments of theabove community seem to be present. Here and there the situation was complicated because there could be discovered three adjacent communities of decreased numbers of species but being confinable from each other.

An example for that was an ash-wood where I have discovered, anart from the *Locustella fluvialis* community already mentioned and being in fragments, the communities of *Milvus migrans* - heron settlement - and *Corvus frugilegus*, as well.

I could observe in the orchards the adaptation of the *Carduelis cannabina* community that is convenient to the local conditions, getting more vivid and richer in species settled in from the adjacent inundation woods.

In the course of analysing the meadows and pastures, I have established that both biotop types belong to the sphere of interest of the nesting community *Corvus cornix*. At the same time, however, owing to the physiognomical difference of biotops, we find two varieties of the communities. While in the meadows with trees and shrubs the members of community hatching on trees, shrubs are present, in the treeless pastures we can observe the absolute dominance of the terricolous species.

I have found in more biotop types a closed, independent community, the ensemble *Corvus frugilegus*. As in the area investigated the number of crow settlements and that of pairs nesting there is considerable, I consider as necessary to make known in details the results obtained. /Cf. Table 1/.

Table 1. The crow colonies found in the area investigated and their nesting data

biotop	numbers of colonies	crow nests	daw nests
Borrow-wood	IV	325	10
"	V	351	-
"	VI	180	-
Willow-plantation	VII	230	-
Noble poplar-wood	VIII	177	-
"	IX	219	-
Ash-wood	I	282	15
"	II	1131	-
Native poplar-wood	III	648	-
"	X	423	-
Total:		3966	25

The number of nesting crows is, therefore, rather considerable. So much that they induce here and there considerable damages in the yellow corn crops even to-day. An example for that is the case of the farmers' agricultural co-operative in Tiszaszőllős where the farm of a comparatively small area had to employ thirty men for motion away the crow. At any rate, the crows present themselves as harmful only in the time of feeding their young ones - what is simultaneous with sowing the corn and its sprouting - but only where they cannot find in the neighbourhood any meadow or pasture

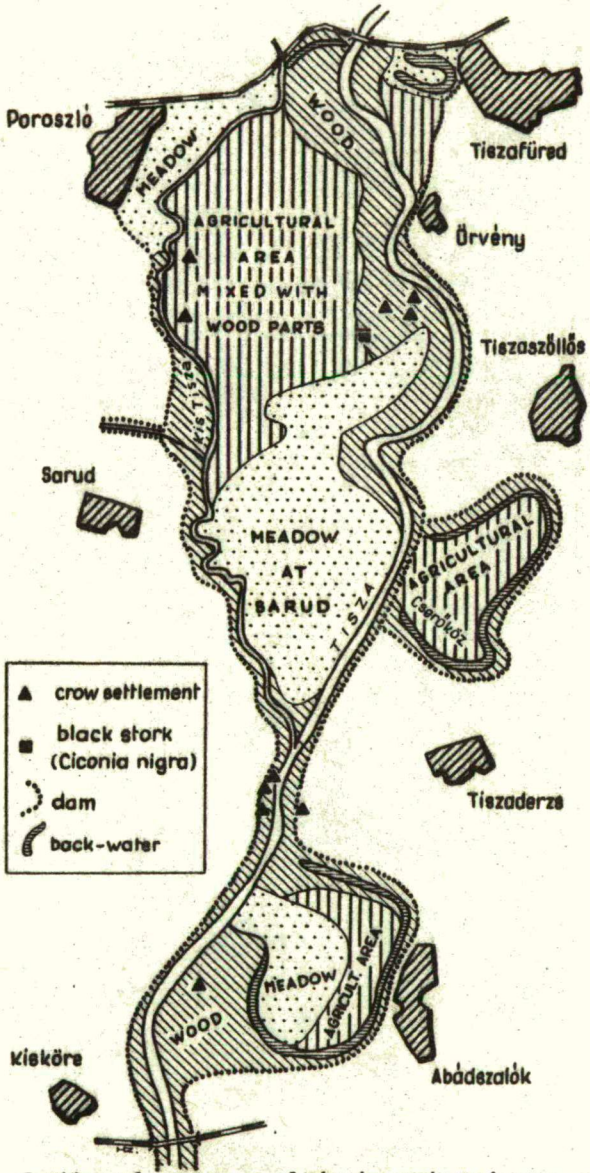

Fig. 1. Outline of structure of the investigated area, with heron and crow colonies, as well as the nesting sites of the black stork /*Ciconia nigra* L./

where they can obtain the food necessary for them. This problem will be graver in the future. As all the woods in the inundation areas are being cleared the crows connot help invading the woods lying outside the inundation dams and concentrating there. It may be supposed with reason that in this case they will touch more keenly the economy of the adjacent agricultural areas. Even if we cannot suggest a concrete and decisive solution for the time being, we ought to look for an economical and humane way for solving the crow problem that is to be expected.

The investigation and identification of the nesting communities called the attention to that the good and serviceable system prepared by L. Horváth would be worth while being developed, disintegrating the single nesting communities into sub-types, and even completing them possibly with new ones.

Summary

Summing up what was said above, we may establish that the investigated huge inundation area is composed of the mosaic of different biotops of various characters. The local observations and analysis did not cover the few mort-lakes of small extent or the agricultural areas, because of the causes made known above. A further cause of that was that these territories do not play any considerable role in forming the picture of the inundation area.

The dominance of the xerophilous elements opposite to the hydrophilous ones, even in an inundation area, is characteristic of the composition of the avifauna. This dominance is expressed both in the number of species and in that of the individual specimens.

It refers to the considerable extent of woods in the inundation area that the great number of species are arbicolous, hatching on the foliage level. The old age of woods can be concluded from the high percentage of the hollow--dwellers.

As to the distribution of the avifauna according to nourishment, I have observed the dominance of insectivores. The groun is represented mainly by the warblers with a great number of species and specimens. And while here are the herbivores outdone, after the evaluation of the weight dominance they get a considerable advantage. Both grouns are economically important and extremely useful.

Here I refer to that the woods are open biotops, and the energy pouring in the form of food from the adjacent, mainly agricultural areas is composed first of all of agricultural parasites and weedseeds. I am fully aware that the picture given about this field is not complete, however I have tried to give it. This can partly be understood because I should need several years work for giving a complete picture. In this area, however, where everything is doomed to perish I had no time for that. Our task was rather to measure and to immortalize as much and as exactly as possible from the life of the area for our own use and for teaching the generations yet to come.

References:

B a l o g h, J. /1953/: A zoocönológia alapjai /Bases of zoocoenology/. Budapest.

B a l o g h, J. /1958/: Lebengemeinschaften der Landtiere. Berlin.

H o r v á t h, L. /1956/: Communities of breeding birds in Hungary. Acta Zool. 2.

L e g á n y, A. /1967/: Vergleichende ornithologische Untersuchungen an drei Altwässern entlang der Tisza. Tiscia, Szeged 3.

L e g á n y , A. /1968/: Erdőtelepitések madártani jelentősége /Ornithological importance of wood plantations/. Állat.Közl. 55, 1-4.