

METHOD FOR ASSESSMENT OF DIFFERENT TERRITORIES FROM THE NATURE CONSERVATION POINT OF VIEW

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Abstract

The author suggests a method for assessment of distinct territories — protected and non-protected — from the nature conservation point of view. In the course of investigations the following conclusions have been drawn:

1. It is indispensable to have a quick method for assessment which counts with the realities and is applicable in practice to different territories
2. For the sake of completeness it is necessary besides the botanical evaluation method which has been worked out previously to have a zoological method for assessment as well
3. For this purpose different animal groups can come into consideration — e.g. snails, articulates and vertebrates. In the present paper a method using birds has been elaborated
4. It appears that the best approach is to sum up the products of multiplication of the points assigned to every distinct species according to their value category from the nature conservation point of view by the number of individuals. The results obtained by this procedure — i.e. taking into consideration the abundancy, give a better approximation of the actual values and at the same time show tendencies similar to those obtained by other methods.

Introduction

Nowadays the world around us undergoes ever faster changes which lead to a drastic decrease of the territories preserving their original or close to natural state. Gradually vanish those places which rendered possible the observation and investigation of the processes taking place in nature. This justifies ensuring of increased protection of natural or close to natural territories, turning them into nature conservation areas. Those familiar with the procedure of establishment and maintenance of conservation areas are aware of the vast number of questions to be answered in this respect in practice. E.g. justification of establishment of nature conservation area and the level of protection to be introduced, degree of deterioration of the area, tendencies showing after the establishment and treatment of the conservation area,

The answers to these questions are of a primary importance, since they determine the strategy and tactics of nature conservation. For this purpose a method has been worked out by SIMON (1984, 1988) for assessment of vegetation. From publications and numerous lectures dealing with this method it can be concluded that it is suitable for practical applications, though — which coincides with the author's opinion as well — in addition to the assessment of vegetation it should be supplemented with similar studies of fauna, too. These considerations led to the elaboration of the method described below.

Materials and Methods

The starting point in the present work was the necessity to select for fauna studies an appropriate group of animals which can be found in every or at least in the majority of habitats. In this way it will be suitable for assessment of both terrestrial and aquatic locations. Various vertebrate, articulate and mollusc taxons satisfy the above requirements. Birds seemed to be suitable for this purpose, too, and were chosen as a basis for the assessment method. It should be emphasized that for obtaining of reliable results it is desirable to carry out similar studies on other groups as well — mammals, fish, snails, articulates. The method was worked out on the basis of assessment of 346 species following the works of KEVE (1984) and HARASZTHY (1984, 1988).

Results

As a first step every representative of the ornithofauna in Hungary is to be assigned to one of the nature conservation value categories defined in advance. The following species categories are suggested:

1. Endemic species — the only Hungarian indigenous species — short toed lark (*Calandrella brachydactyla hungarica* HORVÁTH) was assigned to this category, irrespective of the fact that it is under special protection. Sign: ES
2. Highly protected species — particularly endangered species in Hungary, nesting mainly in small populations, highly protected. Number of species: 29. Sign HPS.
3. Rare nesting species — those species are assigned to this category which hatch regularly in Hungary, though for some reasons in small number of individuals. However, they do not enjoy special protection. E.g. *Anas acuta*, *Tyto alba*, *Parus cristatus*, etc. Number of species: 45. Sign RN.
4. The hatching species the range of which crosses the territory of Hungary. Naturally, they are represented mainly as small number populations in the Hungarian ornith. Since their occurrence is of zoogeographical importance they are assigned to a special category. E.g. *Falco vespertinus*, *Luscinia luscinia*, *Lanius senator*, etc. Number of species: 10. Sign RS.
5. Natural species — natural species forming bird associations which are typically nesting in a given habitat. More than half of the bird species in Hungary belong to this category. Number of species: 117. Sign NS.
6. Highly protected migrating species — to this category belong species which do not nest on the territory of Hungary but are regular migrants spending here longer or shorter periods, highly endangered species, being under special protection in Hungary. E.g. *Pandion haliaetus*, *Falco peregrinus*. Number of species 2. Sign HPM.
7. Very rare visitors — to this category are assigned species observed in Hungary only on few occasions. Their appearance is accidental, number of individuals — low. Normally only single occurrences. E. g. *Bubulcus ibis*, *Surnia ulula*, *Lanius schach*, etc. Number of species 43. Sign VRV.
8. Rare visitors — those species which winter or migrate more or less regularly through the territory of Hungary, though always in small number of individuals. E.g. *Podiceps auritus*, *Pelecanus crispus*, *Gyps fulvus*, *Nyctea scandiaca*, etc. Number of species 37. Sign RV.
9. Common migrants — here belong those species migrating through Hungary, the appearance of which is regular, though not always in high numbers but not rare. These species form the basis of the spring and winter migration and represent the majority of the wintering species. Number of species: 32, Sign CM.

Naturally these categories cannot be considered as final and closed ones, since the species assigned to different categories and their numbers can change on the one hand as a consequence of changes in fauna, and on the other hand because of alterations in nature conservation regulations.

The assessment of different categories from the nature conservation point of view is possible only if the introduced categories, and the bird species belonging to them are numerically characterized by appropriate point values. This constitutes the basis for all further calculations. Similarly to the approach of T. SIMON the following point numbers were suggested for the categories specified above: CM: 1, RV: 2, VRV: 4, HPM: 8, NS: 16, RS: 32, RN: 64, HPS: 128, ES: 256

The exponentially increasing point numbers adequately reflect the nature conservation importance of bird species assigned to different categories.

In the assessment method worked out for birds it seems justified to take into consideration not simply the presence of different species by summing up the assigned point numbers but rather to weight them with the abundance or dominance. The following three possibilities were considered:

1. The point numbers assigned to different species according to the category they belong to, were multiplied by the actual number of individuals and the products were summed up to obtain the values characteristics of the territory. This- and only this! — method would have been adequate, if the territories to be studied and compared were of identical sizes. However, this is not the case in the practice. Naturally, larger territories have higher abundance, and thus the final value will be significantly higher, too. Although this approach reflects the real value of the territory but the comparison with other territories is difficult, and the application of this method — problematic.
2. A second solution could be to sum up the products of multiplication of point numbers of the species according to their category by the individual dominance. Since the dominance is a relative number the comparison of territories of different sizes becomes possible. However, a problem arises in cases when the number of species and individuals on a given territory is low, thus for certain species extremely high dominance values are obtained which leads to abnormally high products, too. Thus, too high point number is assigned to the territory which does not reflect its real value.
3. The third possibility is to sum up the point numbers of the species according to their categories irrespective of the number of individuals or dominance. In this, way, the abundance which reflects the territories' dissimilarity is not taken into consideration but the results of the calculations seem to reflect satisfactory the real values of different areas.

In this case also a comparison of territories of different sizes could lead to certain discrepancies, since with the increase of the territory, a higher number of species can be expected, too. This, however, is valid only in a certain interval, since the increase in size above certain level already does not result in a significant increase of the number of new species. This effect can be most clearly illustrated by comparison of a national park with a small reserve. The difference is striking, which, however, is understandable taking in consideration the different values they represent from the nature conservation point of view.

On the basis of the final point numbers the territories can be categorized to simplify the practical application of the method. The following categories can be distinguished:

- I. Exceptionally valuable territory from the ornithological point of view. Point numbers calculated according to
 Method 1. 20001 —
 Method 3. 2001 —
- II. Very valuable territory from the ornithological point of view. Point numbers calculated according to:
 Method 1. 15001 — 20000
 Method 3. 1501 — 2000
- III. Valuable territory from the ornithological point of view. Point numbers calculated according to:
 Method 1. 10001 — 15000
 Method 3. 1001 — 1500
- IV. Territory worth protection from the ornithological point of view. Point numbers calculated according to:
 Method 1. 5001 — 10000
 Method 3. 501 — 1000
- V. Indifferent territory from the ornithological point of view. Point numbers calculated according to:
 Method 1. 0 — 5000
 Method 3. 0 — 500

This system of classification has been completed on the basis of studies and assessment of nesting fauna in different protected and non-protected territories. It should be taken into consideration that in most of the cases the nesting species play a decisive role in the life of a given territory, for which reason the majority of the data published in ornithological studies deal with these species. Consequently, in these cases better assessment can be carried out. Naturally, this does not mean that — when available — data on migration of species, e.g. resting places of migrating bird flocks, were not taken into consideration. For this reason special categories are foreseen to which migrating, visitor species can be assigned. This will lead, however, to a significant increase of the point numbers, so it is advisable to broaden the point ranges characterizing different territories.

The suggested system of assessment serves the needs of nature conservation. In this field it is indispensable to estimate the value of a given territory from the nature conservation point of view, its closeness to the natural conditions, which should be expressed by the calculated final point numbers. However, when drawing conclusions and making value estimations one should not forget that the method is based only on ornithological observations. For these reasons the low or relatively low values obtained from calculations do not necessarily mean that the territory in question is not valuable, since from botanical or zoological (based on different animal group) point of view it might be an exceptionally valuable and important one. As an example low values characterizing Sas Hill and Mohos Lake at Kállósemjén can be pointed out (Table 1). For this reason it is desirable in assessment of territories to take into consideration various aspects of the problem.

The suggested methods were applied for assessment of several territories, the results of which are given in Table 1.

Upon comparison of the data on different territories a question arises which factors influence the appearance of high or low values. If the number of species assigned to different categories — species groups — of a given region are represented as a column diagram, it is clearly seen that the calculated nature conservation values

Table 1. *Nature conservation point numbers of the investigated territories based on nesting species*

Territory	Method 1.		Method 3.	
	Value	Category	Value	Category
1. Tiszavasvári castle forest				
2. Bátorliget-marsh				
3. Tiszadob 50 years' oak-forest				
4. Tiszadob 150 years' oak-forest				
5. Tiszadob acacia grove				
6. Mohos Lake at Kállósemjén				
7. White-halomorphic area at Tiszavasvári				
8.				1961
9.				1968
10.				1975
11.				1976
12. Rakamaz flood meadow				1984
13. Tiszalök flood meadow				
14. Palmaliget forestbelt at Tiszavasvári				
15. Dankó poplar grove at Tiszavasvári				
16. Tedej 2nd forest belt at Hajdúnánás				
17. Hajdúnánás grazing forest belt				
18. Királytelek alley at Tiszavasvári				
19. Highway resting place alley at Tiszavasvári				
20. Karámos alley at Tiszavasvári				
21. Hajdúnánás highway				
22. Peszer forest				
23. Conservation area of Badacsony				
24. White Lake at Kardoskút				
25. Pély Bird Sanctuary				
26. Pusztaszer nature reserve				
27. Sas Hill				
28. Conservation area at Szabadkígyós				

are directly proportional to the number of observed categories and species and individuals belonging to them.

Summarizing it can be stated that:

1. It is indispensable to have a quick method for assessment which counts with the realities and is applicable in practice to different territories
2. For the sake of completeness it is necessary besides the botanical evaluation method which has been worked out previously to have a zoological method for assessment as well
3. For this purpose different animal groups can come into consideration. In the present paper a method using birds has been elaborated
4. It appears that the best approach is to sum up the products of multiplication of the points assigned to every distinct species according to their value category from the nature conservation point of view by the number of individuals. The results obtained by this procedure — i.e. taking into consideration the abundance, give a better approximation of the actual values and at the same time show tendencies similar to those obtained by other methods .

References

- BÉCSI, L. (1971—72): Data on the avifauna in the forest of Peszér — *Aquila*. (Budapest) 93—97.
- HARASZTHY, L. (1984): The nesting birds of Hungary — *Natura*.
- HARASZTHY, L. (1988): The bird visitors of Hungary — *Natura*.
- KEVE, A. (1984): List of birds of Hungary — Budapest.
- LEGÁNY, A. (1983): The comparative ornithological investigation into the flood plain meadow at Tiszalök and Rakamaz — *Tiscia* (Szeged) 15, 107—118.
- LEGÁNY, A. (1983): Ecological study of birds in the Mohos Lake nature reserve at Kállósemjén — *Puszta* (Budapest) 1/10, 115—126.
- LEGÁNY, A. (1983): The avifauna of Bátorliget-marsh nature reserv — *Aquila* (Budapest) 90, 1983. pp. 85—93.
- LEGÁNY, A. (1983): The ornithological investigations on the Forest of Tiszadob flood basin nature conservation area — *Tiscia* (Szeged) 18, 125—133.
- LEGÁNY, A.: Ornithological control studies in the Whitehalomorphic area nature reserve at Tiszavasvári — *Aquila* (Budapest) 93—94, 259—271.
- MARIÁN, M. (1975): Avifauna of Pusztaszer nature conservation are — *Aquila* (Budapest) 81—98.
- LÓRINCZ, I. (1978): Fauna assessment of Pély Bird Sanctuary in 1977 — *Aquila* (Budapest) 154.
- RÉTHY, Zs. (1972): Notes on the ornithological studies at Szabadkígyós. — *Nature Conservation Annals of Békés County* 2, 87—100.
- SCHMIDT, E. (1971—72): Data on the avifauna in the nature conservation area of Badacsony — *Aquila* (Budapest) 71—89.
- SIMIG, L. (1975): Bird species occurring in Sas Hill nature conservation area (Budapest) — *Aquila* (Budapest) 99—103.
- SIMON, T. (1984): Nature conservation assessment of the vascular flora of Bugac biosphere reserve — *Abstracta Botanica*. 8, 95—100.
- SIMON, T. (1988): Classification of nature conservation values of the vascular flora in Hungary — *Abstracta Botanica* (in press).
- STERBETZ, I. (1973—74): The avifauna of the nature reserve at Kardos in the period of 1952—1973 — *Aquila* (Budapest) 91—120.

Különböző területek természetvédelmi értékelésének egy módja

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Kivonat

- A szerző különböző területek természetvédelmi értékelésének egy módját dolgozta ki konkrét — védett és nem védett — területek elemzése kapcsán. Ennek során megállapítható:
1. A különböző területek gyakorlatban felhasználható, gyors és a realitásokat kifejező értékelésére szükség van.
 2. A teljesség igénye szükségessé teszi a korábban kidolgozott botanikai értékelési módszer mellett a zoológiai értékelés kialakítását is.
 3. A fentiekre különböző állatcsoportok is alkalmasak — pl. csigák, különböző ízeltlábúak és gerincesek. Jelen dolgozatban a madarakkal végzett értékelés módszerét dolgoztam ki.
 4. Úgy tűnik, hogy a legalkalmasabb módszer az egyes fajok természetvédelmi-érték kategória szerinti pontértékeinek az egyedszámmal szorozott összegzése. Annál is inkább, mert így — abundancia felhasználásával — jobban közelítünk a reális értékekhez, ugyanakkor — mint azt az 1. sz. ábra is mutatja — a kapott eredmények tendenciája hasonló a másik módszer nyújtotta eredményekhez.

Метод оценки территорий с точки зрения охраны окружающей среды

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Резюме

Автором разработан метод оценки территорий с точки зрения охраны окружающей среды на примере исследования конкретных — заповедных и незаповедных — территорий. Сделаны следующие выводы:

1. Существует необходимость в применении на практике, быстром и отражающем реальность методе оценки территорий.
2. В интересах более полного описания необходимо дополнить разработанный ранее ботанический метод также зоологическим методом оценки.
3. Для создания такого метода могут быть использованы разные группы животных — например, улитки, членистоногие, позвоночные. В настоящей статье разработан метод оценки, основывающийся на результатах исследований на птицах.
4. Повидимому самым адекватным является метод, принимающий за основу оценки сумму произведений численного выражения ценности данного вида с точки зрения защиты окружающей среды, умноженного на число особей. При этом подходе, с одной стороны, путем учета распространенности видов осуществляется лучшая аппроксимация реальных ценностей а с другой — как следует из рис. 1, тенденция полученных результатов совпадает с данными других методов.

Jedna metoda za procenjivanje različite teritorije u smislu zaštita prirode

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Abstrakt

Autor je izradio jednu novu metodu za procenjivanje različite teritorije s pomoću konkretnom analizom prirodnozaštitne i nezaštitne teritorije.

Zaključci su sledeći:

1. Potrebno je brza ali realna procena koja se dobro može upotrebiti u praksi
2. S zahtevom potpunosti pored već osnovane metode za botaničku procenjivanju potrebno je procena i za zoologiju.
3. Za ovu procenu pogodno su više vrsta životinja npr, puževi, različiti zglavkari i krajičnjaci. Autor je izradio zoološko procenjivanje sa pticama.
4. Najpogodnija metoda je sledeća:

Množiti bodove vrednosti „prirodno-zaštitne-kategorije” sa brojom jedinki.

S upotrebom abundancije više se može dostići realne vrednosti dok — kao što i 1. slika pokazuje — tendencija dobivenih rezultata je slična rezultatima one druge metode.