Dynamiques environnementales

Journal international de géosciences et de l'environnement

35 | 2015

Les espaces naturels protégés sont-ils nécessaires ?

From natural flood basin to cultural landscape- The Szigetköz protected area (Hungary)

Az ártéri síkságtól a kultúrtájig - A változó Szigetköz (Magyarország)

D'une plaine alluviale naturelle à un paysage culturel : l'espace protégée de Szigetköz (Hongrie)

Olga Baranyai and Gábor Baranyai

Electronic version

URL: <http://journals.openedition.org/dynenviron/1170>

DOI: 10.4000/dynenviron.1170

ISSN: 2534-4358

Publisher

Presses universitaires de Bordeaux

Printed version

Date of publication: 1 January 2015

Number of pages: 112-123

ISBN: 979-10-300-0033-7

ISSN: 1968-469X

Electronic reference

Olga Baranyai and Gábor Baranyai, « From natural flood basin to cultural landscape- The Szigetköz protected area (Hungary) », *Dynamiques environnementales* [Online], 35 | 2015, Online since 01 January 2016, connection on 10 December 2020. URL : <http://journals.openedition.org/dynenviron/1170> ; DOI : <https://doi.org/10.4000/dynenviron.1170>

La revue *Dynamiques environnementales* est mise à disposition selon les termes de la Licence Creative Commons Attribution - Pas d'Utilisation Commerciale - Pas de Modification 4.0 International.

*the Moson-Danube
near Kunsziget
(photo by Andrea
Pozsgai).*

From natural flood basin to cultural landscape: the Szigetköz protected area (Hungary)

Gábor Baranyai¹ & Andrea Pozsgai²

Résumé/Abstract/Összefoglaló

'Szigetköz' is the largest island in the Carpathian basin. Due to the variety of natural conditions, the flora and fauna appear in quite individual forms. The most valuable natural formations of the region are the morotlakes, the floodplain forests and their flora and fauna. Anthropogenic activities have resulted in considerable changes and as a consequence, in this region the landscape has changed, and due to the regulation of waterways, the region has become a cultural landscape. The former large areas of forests and open woodlands nowadays accommodate cultivation, and, in parallel with that, the original variety of species has also become rather poor. But the transformation is worth discussing not only from the viewpoint of flora and fauna, but also since the society of the inhabitants has also changed. Old crafts looking back on great traditions, mainly processing local resources, have disappeared (loach catchers, marsh-dweller hunters and fishers, trough-makers/monoxylon carvers) or have become crafts of minor significance (basket makers). In addition to biodiversity, cultural variety has also become poorer.

D'une plaine alluviale naturelle à un paysage culturel : l'espace protégée de Szigetköz (Hongrie)

Szigetköz est la plus large île du bassin des Carpates et grâce à la grande diversité de ses caractéristiques naturelles, on y observe une faune et une flore unique. Les bras-morts, liés aux divagations des divers bras du Danube - ici anastomosés -, sont des sites naturels exceptionnels couverts de forêts alluviales et riches d'une très importante biodiversité. L'activité anthropique est à l'origine d'importantes modifications majeures dans ces paysages alluviaux. La régularisation des fleuves a produit un paysage culturel. Les anciennes grandes étendues forestières sont aujourd'hui devenues de grands espaces cultivables. Parallèlement, la biodiversité originale s'est appauvrie. Toutefois il ne faut pas analyser la transformation de ce paysage uniquement au regard de la faune et de la flore car la structure sociale a joué un rôle essentiel dans cette transformation. De nombreux anciens métiers basés sur les ressources locales ont disparu. On constate ainsi que parallèlement à la biodiversité, la multiculturalité s'est aussi appauvrie.

Az ártéri síkságtól a kultúrtájig - A változó Szigetköz (Magyarország)

A Szigetköz a Kárpát-medence legnagyobb kiterjedésű szigete. A természeti adottságok változatosságának köszönhetően mind a flóra-, mind a faunaelemek egyedi formában fordulnak elő. A térség kiemelkedő természeti értékei a morotvák, az ártéri erdők valamint ezek élővilága. Az antropogén tevékenységek komoly változásokat eredményeztek. Ezek következményeként a térségben a táj átalakult, a vízszabályozásoknak köszönhetően a térség kultúrtájja alakult. Az egykor nagy kiterjedésű erdőszegélyes térszinek napjainkban szántóföldi növénytermesztésnek adnak otthont és ezzel párhuzamosan az eredeti fajösszetétel is szegényesebbé vált. De nem csak a növény- és állatvilág szempontjából érdemes az átalakulást elemeznünk, hiszen az itt élők társadalma is megváltozott. Régi, nagy hagyományokkal rendelkező - elsősorban a helyi erőforrásokat feldolgozó mesterségek tűntek el (csikász, pákász, teknő/bödönhajófaragó) vagy váltak marginális jelentőségűvé (kosárfonó). A biodiverzitás mellett a kulturális sokszínűség is szegényesedett.

Mots clés/Key-words/Kulcsszavak

Protected area, natural landscape, biodiversity, cultural landscape, Danube, Hungary.

Aire protégée, paysage naturel, biodiversité, paysage culturel, Danube, Hongrie.

Védett terület, természeti táj, biodiverzitás, kultúrtáj, Duna, Magyarország.

Preface

The formation of Szigetköz began in prehistoric time some 2.5-3 million years ago, somewhere on the borderline of the Tertiary and the Quaternary. This was the time that witnessed the rush of the huge amount of

water of the Ancient-Danube into the deserted basin of the Pannonian Sea. The water spread over the plain and here and there deposited its fluvial drift forming islands, shallows and in between them followed its course in thousands of smaller branches. These millions of years shaped a large alluvial cone comprising

1. University of West Hungary, Faculty of Natural Sciences, Institute of Earth-and Environmental Sciences - baranyai.gabor@ttk.nyme.hu

2. University of West Hungary, Faculty of Natural Sciences, Institute of Earth-and Environmental Sciences - pozsgaiandrea13@gmail.com

figure 1 : Localisation of the Szigetköz protected area.

mainly sand and pebbles. In the middle lies the large island of Szigetköz delimited by the Big-Danube and the Moson-Danube (Alexay, 1997).

Here from time immemorial everything depended on the water. The large river had built and demolished, gave life and devastated the land. Humans appeared here in very early times, where water and wild game gave them an easy life and the land itself protected them against wandering hords. Ancient skills developed heavily relying on this land and the living world around. A harmonic relationship was established, which prevailed for many centuries. The environment did not only determine the various skills and the mode of building, but had also a strong influence on mental culture, on tales, on legends, on folksongs featuring the Danube, the flowers, fishes and birds (Göcsei, 1979). Frequent floods, the changing of the river-bed, the collapse of the banks meant danger to all those living here. The struggle for life had been continuous between the Danube and the man. This struggle was sometimes successful, wattles and heaps of stones protected the bank, long dikes somehow decreased the severity of the devastation of the floods, but did not give a secure protection against large floods.

Between 1886 and 1896 river control and embanking work realized a permanent river-bed protected with stones. The branches were cut off, at many places stone dikes were erected across the water from bank to bank rendering a higher water-level for navigation.

High dikes were constructed and outside of these all other water-courses became dead-arms, which by today have been more or less silted up. So, Szigetköz has changed, the so-called salvaged side has been established for good, where an agriculture common for any flat land has developed, though here and there are many canals, dead-arms, lines of trees indicating the not longer existing old banks (Szabó, 2000).

The ancient scenery is still prevailing here and there, in the flood-plain, in the hardwood groves along the Moson-Danube, in the stretches of marshes and dead-arms and in the wet meadows.

I- The Flood-Plain

This plain came about as the result of the river control comprising some 6,000 hectares of land. It is here, where we might capture the real atmosphere of the ancient Szigetköz, where the water is still the master as it has been for many millennia. The old water-life could prevail here, since during river control the construction work reconed with a medium-high water-level, so the flood-plain was left wide. Later it became evident that at low water-level the water spreads over the flood-plain leaving only a little water in the river-bed. This error of calculation, disadvantageous both for hydrology and navigation, preserved the life of this land in the past 100 years, giving us the opportunity to study and enjoy it. There are some five hundred islands here, forming a wonderful water labyrinth where the stranger may easily lose his way (Gergely, 2001).

This insular world is continuously changing even today. During large floods the flood-plain is filled up with water, sandbanks arise, at other places trees fall into the river because the banks are washed away. Small islands develop so as they did in ancient times.

When inundation is over, these sandbanks are quickly occupied by vegetation, first by willow scrub, followed by willow-poplar groves, thereby the sandbanks turn into small islands.

This process sometimes needs only a few years, this is why some of these islands have no names at all and are not marked even in the most detailed maps. The annual two floods-in the spring and in the early summer-and the persistent low water-level of the autumn and winter are fundamental factors in the formation of extreme conditions in the flood-plain, thus, here could prevail only euryaceous plants.

The autochthonous willow-groves and poplar-woods have been substituted by cultivated poplars, although the underwood still harbours several species descending from the original groves (Timaffy, 1980).

The extensive forests of the flood-plain are real homes of the stag and wild-boar of Szigetköz, and this is also the place for the black stork, which cannot suffer disturbance, as for the black woodpecker, the hawk, the hobby, the black kite and for many other protected, rare species. Since there are several barrages at the upper reaches of the Danube, frequently sudden floods occur. These are due to the

fact that during heavy rains the storage-lakes are filled up and the excess of water is let off at once. Such operations cause the water-level to rise within 24 hours by 1.5-2 metres bringing death to many animals. Since water control the floods culminate much higher than prior to construction work, because the large quantity of water cannot spread over the extensive flood-plain so as before.

As the water recedes an interesting and lively life bustles about on the banks of the shallow dead-arms. When the dikes were constructed the earth was dug up in the flood-plain leaving large clay-pits behind. These pits are filled with water in the spring, wherein the brown toads, the tree-frogs and the edible frogs lay their eggs. The water is clean and warms up quickly in the sun lending an ideal place for many fishes, newts, frogs, lower crustaceans and worms to live in. Here the algae, the duckweeds and the water-spikes proliferate in large quantities. But when the river subsides, the water-level in the pits goes also down and the pits eventually dry out bringing death to all living creatures in there.

In the winter we might watch a new face of the flood-plain. The slow flowing or standing water of the dead-arms quickly freezes, and the sandbanks are populated by birds arriving from the north: ducks, wild-geese, mergansers, mute swans (Rakonczay, 1996). Since river control the Big-Danube rarely freezes, the fast flowing water has at most drift-ice which piles up frequently along the banks.

II- The environment of marshes, dead-arms and canals

Backwaters, marshy places and water-covered flats are frequent in the flood-plain and on the salvaged side of Szigetköz, their common feature is that their water is rich in organic substances, they are the so-called stagnant waters. Occasionally the floods refresh the waters of the flood-plain, but at ebb-time they are cut off again from the main course, thus, appear the plant associations which are characteristic of the backwaters. The situation is the same in the 200 km long network of canals constructed during inland drainage, here the water flows slowly and often becomes stagnant. The importance of these canals goes without saying since they cut the land of Szigetköz through and through, somehow substituting the old water-courses.

Most of the arms of the Danube which had been barred by the dike have long since been silted, only a small number of them still has some water. From among these the biggest ones are the Lipót- and the Dunaszeg-backwater and the Zátony-Danube but in these too the vegetation invades the water indicating that the beds become shallower year by year.

In the open-water live the duckweeds, algae, the *Ceratopteris*, the *Salvinia*, the yellow-flowered bladderwort digesting insects, the water violet, species of the so-called floating reed-grass associations. Sometimes they occur in huge masses and cover the entire surface of the water (Simon, 1993).

In the shallow stretches we find the other reed-grass association with roots by which they fix themselves in the mud, although their leaves and flowers are on the surface of the water. These plant communities are highly colourful, especially the groups formed by the white water lily, the floating bogbean and the yellow water lily (Hahn, 1997).

These backwaters are also rich in animal life highly similar to that of navy-pits-here we find species of frogs, snails, shell-fish, worms and lower crustaceans being the prey of water-birds. On the salvaged side their number is always less than in the flood-plain.

It is interesting that the white stork mostly frequents these places, rather than the flood-plain, forming its hunting ground over the wet meadows and the navy-pits. The banks with shallow water are often covered with sedge, among the tussocks here and there is the tall and beautiful water horsetail. The open-water is skirted with thick stands of reed, reed-mace, the true bulrush difficult to penetrate. These marginal areas are excellent hide-outs for many animals and birds. In the undisturbed, extensive reeds the purple heron, the little bittern, the marsh harrier, ducks and grebes build nests here, and since 1975 the mute swan has also returned. Since then from the several hundred swans migrating through the region in the winter, one or two pairs stay with us every year and build their huge nest in the thickets.

In the reeds of the salvaged side more birds build nests than in the flood-plain, since here the flood does not endanger their nestlings. Often the wild-boar finds shelter and builds its lair in these reeds, especially when in the spring the high water-level drives it out from the thickets of the flood-plain. The stag, the deer, the fox particularly favour these places. It is unintelligible why in the spring these thickets are burnt regularly-in spite of prohibition-because this time many still sleeping animals perish in the fire. Thus the region becomes year by year less populated by the animals, and though the reed sprouts but many trees and shrubs are so heavily damaged that eventually they die (Alexay, 1997).

The alder-fenwoods of open-water are of particular interest in Szigetköz, where among the glutinous alder-trees we find the marsh fern, the various species of sedge and the thick skirt of reeds on the banks. The water here is black and stinking due to the higher amount of organic substances; the region is passable only by stepping on the thick mat of entangled roots of alder- and willow-trees.

III- Wet meadows

The embankment along the Big-Danube from Vének to Lipót is accompanied by low-lying wet meadows. In flood-time at the lower points water breaks out, but even in drought the meadows here are lively green since the water-level in the soil is high, thereby supplying enough moisture to the vegetation. Some of these meadows are mowed, but only when the Danube has a low water-level, otherwise these tracks are impassable. These less disturbed places lend a good shelter for rare animals and plant species.

These meadows are not monotonous, grassy plains; willows and shrubs, at the deeper places reeds make them more picturesque. From spring till autumn everything is covered with a beautiful mat of flowers. First the pilewort and the common marsh marigold appear followed by the different buttercups, the summer snowflake, the common comfrey and the daisy. In early spring the protected Siberian iris is blooming here. This beautiful and rare flower appears in Szigetköz in large masses. To see the blossoming of the narrow-leaved cotton grass is especially catching, as if snow had covered the fresh, green meadows (Szabó, 2001).

And this is the time also to find our commonest orchids: the flesh-coloured marsh orchid, and the rarer bog orchid. From this cavalcade of plants arise the flowers of the purple loosestrife and the yellow loosestrife. In autumn the protected marsh gentian comes out and at places a purple mat of the meadow saffron or naked ladies covers the meadow.

The huge masses of flowers are visited by many insects: butterflies, flies, bumble bees, beetles, which are in turn preyed upon by the crab spider with its long fore pair of legs hiding among the petals. At the end of summer and in autumn the glistening spider webs of the cross-spider and the banded epeira appear. In the tall grass we might catch a glimpse of the quickly fleeing sand-lizard, may watch the sun-bathing common grass snake and tree-frog having a rest on the leaves of some plants (Rakonczay, 1996).

The lapwing, the godwit, the snipe build their nests in the short grass of these wet meadows mottled with bushes and trees.

The butcher-bird, the wood-pigeon, the turtle-dove and many other birds breed in the bushes, while the old trees give dwelling place for the tits, the starling, the long-eared owl inhabiting hollows, or the kestrel and the common buzzard building their nests among the branches. The deer also favours the reeds and thickets of these meadows, frequently they are seen forming smaller or larger herds nibbling at the vegetation.

In the autumn-winter evenings we might enjoy the appearance of a thin layer of mist as the air is cooling down growing and slowly rolling until everything is muffled in a thick vapour of water.

The migrating birds frequently flock together on the flats along the Danube, where we might watch both white and black storks. This is, when the most colourful Hungarian bird, the bee-eater appears in Szigetköz. Here they cannot find a breeding place for they nest in the precipitous sand and loess-walls, but they spend a longer time along the water mostly at the end of August and the beginning of September.

By the approach of the end of September, as if on a word of command, the swallows and the storks suddenly disappear. And we are left behind with the croaking of large flocks of crows. Now the mist descends more frequently, and we may smell the scent of the drying grass, and in the purple of the twilight the honking of the passing wild-geese calls our attention to the irrevocable coming of the winter.

IV- Hardwood groves

Even prior to river control Szigetköz had higher grounds, which were flooded only at an exceptionally high water-level. Thus, on these grounds the robur-woods favouring drier biotope could develop.

Today the remnants of these woods can be found in the vicinity of the Moson-Danube and Mosonmagyaróvár. Since water conditions here were not so severe, the more exacting plant species also occurred forming very valuable areas (Draskovits, 1997).

Besides robur, the ash, the elms, poplars, gean, wild crab tree, wild pear are the most common tree species. Here the scrub level is more various than in the poplar-woods (Simon, 1993). Already at the end of winter the catkins of hazle appear followed by the golden yellow flowers of the cornelian cherry, the peculiar hair-like stamens of bow elder, then the common dogwood, the wayfaring tree and many other shrubs.

The oak-woods reach the top of their beauty, when the crowns of the trees have not yet developed and plenty of sunshine reaches the ground, where the soft-stemmed plants are in bloom. The earliest ones are the snowdrops and the wild hyacinth, then come the yellow corydalis, the pulmonaria, the pasque flower, the arum, the bear's onion. In summer the canopy level is fully developed, only a little light may penetrate through the leaves. Illumination is somewhat better in the clearings and along the glades. From May on our most beautiful plant, the orchid opens here its flowers. Real rarities are the bee orchid and the fly orchid, the flowers of which much resemble insects, this is how they have got their names. Their resemblance is so strong that sometimes the male insects attempt to copulate with them. So far 20 species of orchids have been found in Szigetköz, mostly in the drier parts. The most frequent orchid species are the military orchid and the lady orchid, but the butterfly orchid, the sword-leaved helleborine, the common twayblade and other helleborines also occur in some places. Among the rarities are the round-leaved wintergreen and the bulbous lily.

The insects of the oak-woods are highly versatile, here several species occur which are absent from the flood-plain. Examples are the stag-beetle, the scarred melolontha, several long-horn beetles, among the butterflies the southern festoon being already rare, the orange tip and the speckled wood. The slow-worm which usually inhabits regions in hills or mountains also occurs here in the dry woods, though only rarely.

Water-fowl are obviously scarcer in this area than in the flood-plain, but along the Moson-Danube here or there a common heron may be seen, but it does not build its nest here. Ducks are also scarcer though some pairs breed in the oak-woods. Characteristic bird species are the wood-pecker, the starling, the owl, the thrush, and from among the small-bodied singing-birds the tits, the goldfinch and the greenfinch.

The fox and the badger particularly favour drier grounds, since here their lair is not flooded by water:

A village of Szigetköz,
Dunaszeg (photo by
Andrea Pozsgai).

in the lower places frequently they are forced to save their life by swimming. Here there are many stags, wild-boars, and though the groves are less extensive than the poplar-woods, their vegetation is more varied and the young ones are not endangered by floods (Szabó, 1995).

In autumn the groves become colourful, besides the crimson leaves of the bramble, the honey-yellow ash and the fallow greens of the oak, we now see the various colours of the fruits. The red of rose-hips can be seen from a long distance and striking is also that of the barberry, the spindle-berry and the cornelian cherry, the blue berries of the sloe-tree, while at other places the black fruit of the privet and the wayfaring tree. These fleshy fruits are ready food-stuffs of many birds in the lean season of the winter.

V- The inhabitants of Szigetköz and changes of their life

The life of the people settled here had for centuries been determined by the river. However, water control brought fundamental changes, overthrowing centuries of harmony, consequently, the occupations once practiced here along with the characteristic houses gradually disappeared, save some traces that survived.

In the waters huge masses of fish bred, so one of the most ancient occupations was fishing (Timaffy, 1980). For centuries young and old had caught fish. However, by today the old fishing gear is rarely used, since the drag net and the moored net replaced them: the square fishing net and the fish basket are used by hobby fishers only. Fish became scarcer in the Danube, big catches are the memory of the past, thus, less people can live from fishing. The anglers rather frequent the water-courses of the flood-plain. Here hundreds of boats are moored at the bank of Ásványráró and Bagamér, and many of them go out on the water and stay there from dawn to twilight to try their luck.

On the wet meadows and on the clearings of the islands throughout the year there is a fresh supply of grass for the herd of cattle. The once practiced

nomadic stock-raising passed with time, today no herd is swam from one island to the other, though the animal husbandry of Szigetköz is still famous.

Here the reed, the withe and the wood are in profusion, which were used for centuries to various ends. Houses were built from them, as were made tools, furniture, small boats and ferries; wicker-work protected the river-bank too (Rakonczay, 1996). Today these materials are not used so multilaterally, but still many people can make panniers and coops, and from corn-husking satchel and door-mat. There are still a few skilled workers who can groove washtubs and basins from the thick trunks of willow or poplar. The quickly growing willows and poplars produce in a short time large quantities of wood. Both forestry and timbering have obviously changed a great deal, but even today they are important jobs in the flood-plain of Szigetköz. The machinery put an end to the romantics of forest-work, but today, however, we could not find a woodcutter who would fell a 30-40 metres high poplar with an axe. Hand work has been replaced by machine work, motor saws, hydraulic levers, cranes, but sometimes when water is low, we might see also wheel-barrow transporting logs to the tow-boat.

Long ago the boats and the ferry-boats were the most important vehicles of transport, since only these could pass the thousands of water-courses here. The hay and felled trees were transported by ferry-boats. Among the island these vessels are still in service but human power is now replaced by motors.

The three ancient occupations: boat-towing, gold-washing and milling have completely disappeared. The last gold-seeker of Ásványráró died in 1944 (Alexay, 1989). This year also witnessed the destruction of the last water-mill: the retreating German forces set fire to it.

The villages of Szigetköz have also changed in the last fifty years. No longer can we find cob-walled houses of wattle-work and rarely thatched roofs. It is a good thing that new houses are built in place of the old ones but that these new ones no longer resemble the old peasant cottages is rather sad; this is how their national Hungarian character is disappearing.

References

- Alexay, Z. (1989)** - *Szigetköz photoalbum*, Interpress, Budapest
- Alexay, Z. (1997)** - *Változó Szigetköz*. Hazánk könyvkiadó, Győr
- Gergely, A., Hahn, I., Draskovičs, R., Simon, T., Szabó, M. & Barabás, S. (2001)** - Vegetation succession in a newly exposed Danube riverbed. *Applied Vegetation Science*. 4: 35-40.
- Göcsei, I. (1979)** - *A Szigetköz természetföldrajza*. Akadémiai Kiadó, Budapest
- Hahn, I., Szabó, M., Simon, T., Draskovičs, R., Gergely, A. & Molnár, E. (1997)** - Vegetation succession in the exposed Danube bed. In: I. Láng, I. Banczerowski, Á. Berczik (eds.): „Studies on the environmental state of the Szigetköz after the diversion of the Danube. MTA Szigetköz Bizottság, Budapest, pp: 75-82.
- Rakoncay, Z. (1996)** - *Szigetköztől az Órségig*. Mezőgazda Kiadó, Budapest, 93.-103. p.
- Simon, T., Szabó, M. (1995)** - Impact of the G/N Project on vegetation in the Szigetköz. In: International Court of Justice, Case concerning the Gabčíkovo-Nagymaros project (Hungary/Slovakia). *Reply of the Republic of Hungary*, Vol. 3. Annex 5. pp: 55-77.
- Simon, T., Szabó, M., Draskovičs, R., Hahn, I., Gergely, A. (1993)** - Ecological and Phytosociological changes in the willow woods of Szigetköz. *Abstracta Botanica* 17/1-2. pp. 179-186.
- Szabó, M., Molnár, E. (2000)** - Landscape changes in the Szigetköz region NW Hungary. In: Gallé, L. – Körmöczi, L. (eds.). *Ecology in River Valleys*. Szeged. pp. 37-42.
- Szabó, M., Simon, T., Hahn, I., Gergely, A. & Draskovičs, R. (1997)** - Changes in the natural vegetation of the szigetköz following the Danube diversion. In: I. Láng, I. Banczerowski, Á. Berczik (eds.): „Studies on the environmental state of the Szigetköz after the diversion of the Danube”. MTA Szigetköz Bizottság, Budapest, pp: 61-75. 13.
- Timaffy, L. (1980)** - *Szigetköz*. Gondolat Kiadó, Debrecen

Bank of the Moson-Danube by Mecsér (photo by Andrea Pozsgai).