

The protected and endangered species of the Szigetköz area, the ecological values of the region, and the initial steps of degradation of the biota

(updated and corrected version)

The ecological (or more precisely the biological) values of an area can be characterised on various ways according to the available information. Degradation (damages and deterioration) can be precisely documented only if we know these values.

What are the main values of the Szigetköz area?

(More information on this topic can be found for example in HC-M, Vol. 4, Part. 2, Annex 18).

- The unexpectedly high species and association richness (species and association diversities). The diversity of the biota is a very important value category, as this diversity was produced and shaped by the millions of years of evolution, and this process is unrepeatable and unique. The flora of the Szigetköz (flowering plants and lichens) consist of 1010 species, there are 80 associations, from which 60 associations are natural, and 15 are extremely valuable relict associations.
- Special flora and fauna elements (dealpine, montane, atlantic, steppe, relict).
- The high biological diversity of the area is partly explained by the mosaic-like structure of habitats, created by the special circumstances arising from the fact that this area is practically an inland delta. The diversion of the Danube and also the artificial water recharge - despite its numerous positive effects can not be denied - ruins this mosaicity and creates higher degree of uniformism.

To facilitate the understanding of this issue two categories must be clearly defined and separated.

1. Being protected and endangered (protected and endangered species). These phrases - and hence the species characterised by them - basically indicate the vulnerability of the natural diversity of habitats. With a little bit of simplification we might say that being protected indicates the rarity of a species, and also shows the expected decline of the species. The listing of protected and endangered species is a meaningful way to demonstrate the biological values of the Szigetköz. 20% of the protected plants and 30% of the protected animals of Hungary occur in the Szigetköz region. Even the objective

observers have to admit that these figures are remarkably high - and indicating the value - compared to the small area of this region.

2. Indication (signalling). The use of a given characteristic or parameter of indicator species, populations, associations to demonstrate for example the change of the state of habitats. In the case of the Szigetköz such a change of state is the degradation of the area (deterioration, loss of values). We have to stress that the protected species are not necessarily indicator species. There is no such a thing -even theoretically- as a list of obligate indicator species. All the living creatures, and all of their characteristics might indicate something. In a given case very widespread, common species - such as a weed- might indicate something. In the case of the Szigetköz indication (namely indicator species, etc.) are applied to measure the degradation of the area.

In a given place that assemblage (population, association, formation, biome) is considered valuable which was formed during the natural progressive succession, regardless the protected species found in them. The degradation (regressive succession) of the biota consist of qualitative and quantitative steps, and most probably starts with the decline of population numbers and shrinking of natural habitats instead of abrupt mass extinction of species. According to the internationally accepted rules a species can be considered extinct when for 15 years its presence was not recorded in a given place.

Since the diversion of the Danube only 4 years have passed, but I dare to state that two protected dragonfly species, listed in the Bern Convention, became extinct from the Szigetköz region: *Aeshna viridis* and *Leucorrhinia pectoralis* (formerly living in the Holt-Duna at Lipót).

In the Upper-, and Lower-Szigetköz as a consequence of the degradation of their natural habitats the number of individuals of several protected plant species has declined, the leaf area of some test-plants has decreased, and the dominance value of degradation indicating species has increased. The invasion of weeds is especially prominent in the former - now desiccated - main-river bed.

The decrease of the abundance and species number of molluscs is also evident in the former main river bed. The invasion of drought tolerant /preferring bird species from outside the dikes into the floodplain is continuously taking place.

Despite the water recharge the demise of the diverse water types leads to higher uniformization of the aquatic fauna.

The experienced impressions, eventhough sometimes they can be hardly expressed numerically, unequivocally indicate the degradation of the areas affected by the diversion of the Danube.

Budapest, 24th September, 1996.

Dr. Ferenc Mészáros

Protected and endangered plant species of the Szigetköz

Protected plant species		protection in Hungary	HRDB	Bern	IUCN RDB1	IUCN RDB2
<i>Achillea ptarmica</i>	**	P	4			
<i>Acorus calamus</i>	*	P				
<i>Adenophora liliifolia</i>		P	3			K
<i>Adonis vernalis</i>		P	4			
<i>Anacamptis pyramidalis</i>		P	4			
<i>Anemone sylvestris</i>		P	4			
<i>Apium repens</i>	**	P	4		X	E(C),V(R)
<i>Aquilegia vulgaris</i>		P	4			
<i>Arabis alpina</i>	*	P	4			
<i>Batrachium fluitans</i>			4			
<i>Carduus collinus</i>		P				
<i>Cephalanthera damasonium</i>		P				
<i>Cephalanthera longifolia</i>		P				
<i>Cephalanthera rubra</i>		P				
<i>Cirsium brachycephalum</i>	*	P			X	R(C),V(R)
<i>Clematis integrifolia</i>	*	P	4			
<i>Dactylorhiza incarnata</i>	*	P	4			
<i>Dactylorhiza maculata</i>	*	P	4			
<i>Daphne cneorum</i>		P	4			
<i>Dianthus superbus</i>	*	P	3			
<i>Dryopteris carthusiana</i>		P				
<i>Dryopteris dilatata</i>	**	P	4			
<i>Epilobium dodonei</i>		P	4			
<i>Epipactis atrorubens</i>		P	4			
<i>Epipactis helleborine</i>		P				
<i>Epipactis microphylla</i>		P				
<i>Epipactis palustris</i>	**	P	3			
<i>Equisetum hyemale</i>		P	4			
<i>Eriophorum angustifolium</i>	*	P	4			
<i>Eriophorum latifolium</i>	*	P	4			
<i>Erysimum odoratum</i>		P	4			
<i>Gentiana cruciata</i>		P	4			
<i>Gentiana pneumonanthe</i>	*	P	4			
<i>Gentianella austriaca</i>	**	P	4			

Groenlandia densa		P	4		X	
Gymnadenia conopaea		P	4			
Hemerocallis lilio- asphodelus	*	P	3			
Hottonia palustris	*	P	4			
Inula oculus-Christi		P				
Iris sibirica	*	P	4			
Iris spuria		P	3			
Iris variegata		P				
Isatis tinctoria		P	4			
Jurinea mollis		P	4			
Leucojum aestivum		P	4			
Lilium bulbiferum	*	SP	2			
Listera ovata		P				
Neottia nidus-avis		P				
Nymphaea alba	*	P				
Nymphoides peltata	*	P	4			
Onosma arenarium		P	4			
Ophioglossum vulgatum	*	P	4			
Ophrys apifera		SP	2			
Ophrys insectifera		SP	3			
Ophrys sphecodes		SP	3			
Orchis laxiflora	*	P	4			
Orchis militaris		P	4			
Orchis purpurea		P	4			
Orchis coriophora		P	4			
Orchis morio		P	4			
Orchis tridentata		P	4			
Orchis ustulata	*	P	4			
Oxytropis pilosa		P	4			
Pedicularis palustris	*	P	3			
Platanthera bifolia		P				
Primula elatior		P	4			
Pyrola rotundifolia		P				
Ranunculus lingua		P	4			
Ribes nigrum		P	2			
Salix elaeagnos	**	P				
Salvinia natans	*	P	2	P	X	
Scilla vindobonenis		P				
Senecio paludosus	*	P				
Senecio rivularis	**	P	3			
Sesleria uliginosa	**	P	4			
Stipa borysthenica		P			X	R(C),V(R)

Stipa joannis		P				
Thelypteris palustris	*	P				
Veronica peregrina			4			

Protected and endangered animal species of the Szigetköz

Protected plant species		protection in Hungary	HRDB	Bern	Bonn	IUCN RDB2	Corine List
Molluscs:							
Theodoxus transversalis	*	P	3			V	
Th. danubialis	*	P	3				
Fagotia acicularis		P	3				
Fagotia esperi		P	3			V	
Ena montana	*	P					
Trichia striolata		P	3				
Helix pomatia		P	3				X
Dragonflies:							
Lestes dryas	*	P					X
Coenagrion ornatum		P					X
Aeshna viridis	** *	P	3	SP		I	X
Anaciaeschna isosceles		P					X
Styrulus flavipes	**	P	3	SP			X
Gomphus vulgatissimus		P					X
Ophiogomphus cecilia		P		SP		E	X
Somatochlora flavomaculata	*	P					X
Epithea bimaculata		P					X
Libellula fulva		P					
Orthetrum brunneum		P					
Sympetrum depressiusculum	** *	P					X
Leucorrhinia pectoralis	**	P		SP			X
Mantids:							
Mantis religiosa		P					

Beetles:							
Calosoma sycophanta		P					X
Calosoma aeropunctatum		P	3				
Carabus coriaceus		P					
Carabus violaceus		P					
Carabus granulatus		P					
Carabus cancellatus		P					
Gasterocercus depressirostris	**		1				
Cucujus cinnaberinus				SP		E	X
Cerambyx cerdo		P	3	SP		E	X
Carabus ullrichi		P					
Carabus scheidleri		P	2				
Cychrus caraboides		P					
Lucanus cervus		P	3	P			
Dorcus parallelipedus		P					
Potosia aeruginosa		P	3				
Osmoderma eremita	**	P				E	X
Megopis scabricornis		P					
Rhamnusium bicolor		P					
Acanthocinus aedilis		P					
Calamobius filum		P					
Caddis-flies:							
Ceraclea nigronevosa	**	P					
Limnephilus elegans	*	P	3				
Butterflies:							
Pammene querceti	**	P	2				
Leptidea morsei major		P	4				
Colias chrysotheme		P	3				
Parnassius mnemosyne		P		SP			X
Zerynthia polyxena		P	4	SP			
Iphiclides podalirius		P					
Papilio machaon		P		SP		E	X
Satyrium w-album		P	3				
Lycaena dispar hungarica	*	P					X
Lycaena thersamon		P					

Maculinea nausithous	*	P	3	SP		E	X
Aricia artaxerxes allous		P	4				
Clossiana euphrosyne		P					
Clossiana selene		P					
Pandoriana pandora		P	4				
Nymphalis polychloros		P					
Nymphalis antiopa		P					
Inachis io		P					
Vanessa atalanta		P					
Apatura ilia		P	4				X
Apatura iris		P	3				X
Hyponephele lupinus		P					
Perizoma sagittata	** *	P					
Acherontia atropos		P					
Hemaris tityus		P	4				
Saturnia pyri		P					
Endromis versicolora		P					
Lemonia taraxaci	*	P					
Dicranura ulmi		P					
Arctia festiva		P	3				
Schinia cardui		P	3				
Oria muscosa		P	2				
Catocala fraxini		P					
Lamprotes c-aureum	*	P	3				
Fishes:							
Eudontomyzon mariae		P		P			X
Umbra krameri	** *	P	2	SP			
Thymallus thymallus		P		P			X
Hucho hucho	**	SP		P		E	
Acipenser ruthenus				P			
Alburnoides bipunctatus		P		P			X
Abramis ballerus	*			P			
Abramis sapa	*			P			
Chalcalburnus chalcoides mento		P		P			
Gobio albipinnatus		P		P			
Gobio kessleri		P		P			
Leucaspis delineatus	*	P		P			
Phoxinus phoxinus		P					

Rutilus pigus virgo				P			
Rhodeus sericeus amarus				P			
Cobitis taenia		P		P			
Cobitis aurata		P		P			
Misgurnus fossilis		P		P			X
Noemacheilus barbatulus		P					
Silurus glanis				P			
Cottus gobio	**	P					
Gymnocephalus baloni	** *	P		P			
Gymnocephalus schraetzer	** *	P		P			
Zingel zingel	**	P		P			X
Zingel streber	**	P		P			X
Amphibians:							
Triturus cristatus	*	P		SP			X
Triturus vulgaris	** *	P		P			
Bombina bombina	*	P		SP			X
Bufo bufo	*	P		P			
Bufo viridis	** *	P		SP			X
Pelobates fuscus	*	P		SP			
Rana dalmatina	*	P		SP			X
Rana esculenta	** *	P		P			
Rana lessonae	** *	P		P			
Rana ridibunda	** *	P					
Rana arvalis	*	P		SP			X
Hyla arborea	*	P		SP			
Birds:							
Gavia arctica		P		SP	+		X
Tachybaptus ruficollis	*	P		SP			
Podiceps cristatus		P		P			
Podiceps nigricollis		P		SP			
Botaurus stellaris		P		SP	+		

<i>Ixobrychus minutus</i>		P		SP	+		X
<i>Nycticorax nycticorax</i>		P		SP			
<i>Ardea purpurea</i>		P		SP	+		X
<i>Ardea cinerea</i>		P		P			
<i>Cygnus olor</i>		P		P	2+		
<i>Anser anser</i>		P		P	2+		
<i>Anas penelope</i>		P		P	2+		
<i>Anas strepera</i>	** *	P	2	SP	2+		
<i>Anas acuta</i>		P	3	P	2+		
<i>Anas clypeata</i>		P		P	2+		
<i>Aythya fuligula</i>		P		P	2+		
<i>Aythya marila</i>		P		P	2+		
<i>Mergus albellus</i>		P		SP	2		
<i>Mergus merganser</i>		P		P	2+		
<i>Pernis apivorus</i>		P	3	SP	2		
<i>Circus aeruginosus</i>		P		SP	2		
<i>Circus cyaneus</i>		P		SP	2		X
<i>Accipiter gentilis</i>		P		SP	2		
<i>Accipiter nisus</i>		P		SP	2		
<i>Buteo buteo</i>		P		SP	2		
<i>Buteo lagopus</i>		P		SP	2		
<i>Falco tinnunculus</i>		P		SP	2		
<i>Falco columbarius</i>		P		SP	2		X
<i>Falco subbuteo</i>		P		SP	2		
<i>Coturnix coturnix</i>			3	P	2		
<i>Rallus aquaticus</i>		P		P			
<i>Porzana parva</i>		P		SP	+		X
<i>Porzana porzana</i>		P		SP	+		X
<i>Gallinula chloropus</i>		P		P			
<i>Vanellus vanellus</i>		P		P	2+		
<i>Pluvialis squatarola</i>		P		P	2+		
<i>Charadrius dubius</i>	**	P		SP	2+		
<i>Limosa limosa</i>		P		P	2+		
<i>Tringa erythropus</i>		P		P	2+		
<i>Tringa totanus</i>		P		P	2+		
<i>Tringa nebularia</i>		P		P	2+		
<i>Tringa ochropus</i>		P		SP	2+		
<i>Tringa glareola</i>		P		SP	2+		X
<i>Actitis hypoleucos</i>	**	P		SP	2		
<i>Philomachus pugnax</i>		P	4	P	2+		X
<i>Larus canus</i>		P		P			
<i>Larus ridibundus</i>		P		P			
<i>Larus minutus</i>		P		SP			

<i>Chlidonias nigra</i>		P		SP	+		X
<i>Sterna caspia</i>		P		SP			X
<i>Sterna hirundo</i>		P		SP	+		X
<i>Streptopelia turtur</i>		P		P			
<i>Cuculus canorus</i>		P		P			
<i>Strix aluco</i>		P		SP			
<i>Asio otus</i>		P		SP			
<i>Caprimulgus europaeus</i>		P		SP			
<i>Apus apus</i>		P		P			
<i>Alcedo atthis</i>		P		SP			
<i>Upupa epops</i>		P		SP			
<i>Jynx torquilla</i>		P		SP			
<i>Dryocopus martius</i>		P	3	P			X
<i>Picus canus</i>		P		SP			
<i>Picus viridis</i>		P		SP			
<i>Dendrocopos minor</i>		P		SP			
<i>Dendrocopos medius</i>		P	3	SP			X
<i>Dendrocopos major</i>		P		SP			
<i>Dendrocopos syriacus</i>		P		SP			
<i>Galerida cristata</i>		P		P			
<i>Lullula arborea</i>		P		P			X
<i>Alauda arvensis</i>		P		P			
<i>Riparia riparia</i>		P		SP			
<i>Hirundo rustica</i>		P		SP			
<i>Delichon urbica</i>		P		SP			
<i>Motacilla flava</i>		P		SP			
<i>Motacilla cinerea</i>		P		SP			
<i>Motacilla alba</i>		P		SP			
<i>Anthus pratensis</i>		P		SP			
<i>Anthus trivialis</i>		P		SP			X
<i>Anthus campestris</i>		P		SP			
<i>Anthus spinoletta</i>		P		SP			
<i>Lanius collurio</i>		P		SP			X
<i>Lanius minor</i>		P	3	SP			X
<i>Lanius excubitor</i>		P		SP			
<i>Bombycilla garrulus</i>		P		SP			
<i>Troglodytes troglodytes</i>		P		SP			
<i>Prunella modularis</i>	**	P		SP			
<i>Erithacus rubecula</i>		P		SP	2		
<i>Luscinia megarhynchos</i>		P		SP	2		X
<i>Luscinia svecica</i>		P	3	SP	2		X
<i>Phoenicurus ochruros</i>		P		SP	2		

Phoenicurus phoenicurus		P		SP	2		
Saxicola rubetra		P		SP	2		
Saxicola torquata		P		SP	2		
Oenanthe oenanthe		P		SP	2		
Turdus merula		P		P	2		
Turdus pilaris		P		P	2		
Turdus iliacus		P		P	2		
Turdus philomelos		P		P	2		
Turdus viscivorus		P		P	2		
Panurus biarmicus		P		SP			
Locustella luscinioides		P		SP	2		
Locustella fluviatilis		P		SP	2		
Locustella naevia		P		SP	2		
Acrocephalus melanopogon		P		SP	2		X
Acrocephalus schoenobaenus		P		SP	2		
Acrocephalus scirpaceus		P		SP	2		
Acrocephalus palustris		P		SP	2		
Acrocephalus arundinaceus		P		SP	2		
Hippolais icterina	** *	P		SP	2		
Hippolais pallida	** *	P	3	SP	2		
Sylvia nisoria		P		SP	2		X
Sylvia borin		P		SP	2		
Sylvia atricapilla		P		SP	2		
Sylvia communis		P		SP	2		
Sylvia curruca		P		SP	2		
Phylloscopus trochilus		P		SP	2		
Phylloscopus collybita		P		SP	2		
Phylloscopus sibilatrix		P		SP	2		X
Regulus regulus		P		SP	2		
Ficedula hypoleuca		P		SP	2		
Ficedula albicollis		P		SP	2		X
Muscicapa striata		P		SP	2		
Aegithalos caudatus		P		SP			
Remiz pendulinus		P		SP			
Parus palustris		P		SP			
Parus montanus	**	P		SP			

Parus ater		P		SP			
Parus major		P		SP			
Parus caeruleus		P		SP			
Sitta europaea		P		SP			X
Certhia familiaris		P		SP			
Certhia brachydactyla		P		SP			
Miliaria calandra		P		SP			
Emberiza citrinella		P		SP			
Emberiza schoeniclus		P		SP			
Fringilla coelebs		P		P			
Fringilla montifringilla		P		P			
Serinus serinus		P		SP			
Carduelis chloris		P		SP			
Carduelis spinus		P		SP			
Carduelis carduelis		P		SP			
Carduelis flammea		P		SP			
Carduelis cannabina		P		SP			
Pyrrhula pyrrhula		P		P			
Coccothraustes coccothraustes		P		SP			
Oriolus oriolus		P		SP			
Corvus monedula		P					
Corvus corone		P					
Phalacrocorax pygmaeus		SP	1	SP	+		
Ardeola ralloides		SP	3	SP			X
Egretta garzetta		SP	3	SP	+		X
Egretta alba	**	SP	3	SP	+		X
Ciconia ciconia		SP	2	SP	2+		X
Ciconia nigra	**	SP	2	SP	2+		X
Platalea leucorodia		SP	3	SP	2+		X
Aythya nyroca		SP		P	2+		X
Pandion haliaetus		SP	1	SP	2+		X
Milvus migrans		SP	3	SP	2		X
Milvus milvus		SP	2	SP	2	K	X
Haliaeetus albicilla	**	SP	2	SP	2	V	
Circus gallicus		SP	3	SP	2	R	
Circus pygargus		SP	3	SP	2		X
Aquila pomarina		SP	2	SP	2		X
Falco cherrug		SP	2	SP	2		X
Falco peregrinus		SP	1	SP	2		X
Crex crex		SP	3	SP		R	X
Numenius arquata		SP	3	SP	2+		
Tyto alba		SP	3	SP			

Athene noctua		SP		SP			
Asio flammeus		SP	4	SP			
Merops apiaster		SP	3	SP			
Coracias garrulus		SP	3	SP			
Luscinia luscinia		SP		SP	2		
Mammals:							
Erinaceus concolor		P		P			
Talpa europaea		P					
Sorex araneus		P		P			
Sorex minutus		P		P			
Crocidura suaveolens		P		P			
Crocidura leucodon		P		P			
Neomys sp.	*	P		P			
Pipistrellus pipistrellus		P		P			
Microtus oeconomus	** *	P	2				
Spermophilus citellus		P		SP			
Mustela erminea		P		P			
Mustela nivalis		P		P			
Nyctalus noctula		P		SP			X
Myotis daubentoni		P		SP			
Eptesicus serotinus		P		SP			X
Pipistrellus nathusii		P		SP			X
Myotis blythi		P		SP			X
Myotis myotis		P		SP	V		
Nyctalus leisleri		P	3	SP			X

Key to the Tables of protected and endangered animal and plant species of the Szigetköz

- * – Endangered and affected species (floods, fluctuation of groundwater level, decrease of groundwater table).
- ** – The most important species of the Szigetköz regarding their natur-conservation value and importance.

Protection status in Hungary: SP - Strictly Protected
P - Protected

Source: Magyar Közlöny 1993. 36th Issue, 12/1993. (III.31.) KTMr.
Magyar Közlöny 1996. évi 64th Issue, 15/1996 (VII.26.)
KTMr.

Hungarian Red Data Book (HRDB):

1	– extinct and disappeared species
2	– species directly endangered by extinction
3	– presently endangered species
4	– potentially endangered species

Source: Rakonczay, Z. (ed.) (1989): Vörös Könyv - A Magyarországon kipusztult és veszélyeztetett növény- és állatfajok. (Red Data Book - The extinct and endangered plant and animal species of Hungary)
Academic Press, Budapest

Bern Convention

SP	– Strictly Protected (Appendix II.)
P	– Protected (Appendix I., III.)

Source: Magyar Közlöny 1990. 64th Issue. Part V. The Convention on the Conservation of European Wildlife and Natural Habitats Actual species list: Convention on the Habitats - Appendices to the

Convention, Strasbourg, 6th March 1992. Appendix I. (protected plants), Appendix II. (strictly protected animals), Appendix III. (protected animals).

- Bonn Convention:**
- 1 – Species listed in Appendix I
(there is no data from the Szigetköz)
 - 2 – Species listed in Appendix II
 - + – Species listed in the Appendix 2 of the Agreement on the Conservation of African - Eurasian Migratory Waterbirds

Source: Magyar Közlöny, 1986. 17th Issue. No 6 decree of 1986. Convention on the Conservation of Migratory Species of Wild Animals, Appendix II lists the species of which the protection status is unfavourable (2).

An agreement following the Bonn Convention: "Agreement on the Conservation of African - Eurasian Migratory Waterbirds" lists in Appendix II the endangered species (+), The Hague, 16th October 1995.

IUCN Red Data Books

IUCN RDB I (only for plants)

- + – indicates that the species is included in the IUCN European Red List published in 1977.

Source: Lucas, G. - Walters, G. (ed.) (1977); List of rare, threatened and endemic plants of Europe. IUCN TPC, Kew, Richmond. (The original book was not available and hence we do not know the protection status of the listed species).

IUCN RDB II

- Ex – extinct
- E – endangered
- V – vulnerable
- R – rare
- I – indeterminate (those taxons that surely belong to one of these categories, but based on available information we can not unequivocally designate them to a single category).
- K – insufficiently known (those taxons that on the basis of available information are supposed to

belong to one of these categories, but it is not yet certain).

In the case of plants the letters - following the above described signs - indicate the followings:

- (E) – endemic species
- (C) – not endemic, but endangered at country level
- (R) – not endemic, but endangered at regional level

Sources: IUCN European Red List : "List of rare, Threatened and endemic plants in Europe (1982 edition) by the Threatened Plants Unit (IUCN Conservation Monitoring Centre) Kew, UK. European Committee for the Conservation of Nature and Natural Resources, Strasbourg, 1983.

In the World Red Data Book there is no animal or plant species which is present in the Sziogetköz. Groombridge, B. (ed.) (1993): 1994 IUCN Red List of Threatened Animals, IUCN Glaud, Switzerland and Cambridge, UK. lvi + 286 pp.

Corine Biotopes Program

X – indicates that the species is listed in the Corine list of endangered animals.

Source: Corine biotops manual - Appendices, Data specifications. Part.1, F1-K10. Commission of the European Communities, 1991.

The Tables contain the annotated, actualised species list valid for the Szigetköz. Some species listed here were considered extinct or disappeared in the Hungarian Red Data Book, but according to recent research their occurrence in the Szigetköz is proved. From the flora list mosses and ferns are missing, and from the fauna list the Hymenopterans, reptilians and partly the mammals. Consequently the real number of protected species can be a bit higher than calculated here.

**The estimated number of individuals of protected plant species living
in the affected Middle-Szigetköz area prior the diversion of the
Danube (1986-1991), and after the diversion (1994)**

species	Prior the diversion of the Danube	in 1994	Location
<i>Achillea ptarmica</i>	100	20	Dsz
<i>Anemone sylvestris</i>	100	50	De
<i>Dactylorrhiza incarnata</i>	1200	400	Dk, Dsz, L
<i>Dryopteris dilatata</i>	-	10	Ár
<i>Epipactis helleborine</i>	1200	500	De, Dk, Dsz, P, Ár
<i>Epipactis microphylla</i>	-	10	De
<i>Epipactis palustris</i>	500	200	Dk, Dsz, L
<i>Eriophorum angustifolium</i>	450	200	Ár
<i>Eriophorum latifolium</i>	600	500	L
<i>Gentiana cruciata</i>	-	10	De
<i>Gentiana pneumonanthe</i>	150	50	Dsz, Sz
<i>Jurinea mollis</i>	-	50	De
<i>Leucojum aestivum</i>	1000	500	Dsz - Dr
<i>Lilium bulbiferum</i>	100	40	De
<i>Neottia nidus-avis</i>	300	100	De
<i>Nymphoides peltata</i>	700	300	L
<i>Pedicularis palustris</i>	-	100	Dsz, L
<i>Ribes nigrum</i>	-	50	Dsz, L, Ár
<i>Scilla vindobonensis</i>	more than 100000	considerable decrease along the Danube	Dk, Dsz, De
<i>Stipa joannis</i>	-	50	De
<i>Vitis sylvestris</i>	400	100 change along the Danube	Dsz, De, Ár

Dsz= Dunasziget, De= Halászi: Derékerdő, Dk= Dunakiliti, L= Lipót, Ár= Ásványráró, P= Püski, Dr= Dunaremete, Sz= Szőgye