

THE FERTØ- HANSAG NATIONAL PARK

NATURE CONSERVATION SCHOOL AT THE FERTØ-HANSAG
NATIONAL PARK

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1.0. Foreword

Many generations have grown up in the past decades with no concept provided to them on nature except to the layman term "the nature is a nice green something". There are only few people in today's society who are able to answer the simplest question on nature. There are thousands of people having the faintest idea on how an oak tree leaf looks like, what is the difference between a common sparrow and an Emberiza citrinella, or on how devastating action was the drainage of the Hanság area.

There is a growing social concern on the nature conservation issues, that may be the first result of the activities of the environmental education centers that were established in the 70's. Also, preparation of local education plans in schools put more emphasis on nature and environmental protection. To correspond these needs education of teachers has started. Outlined pleasing processes are have to be considered as the initiation of a long-term development.

Extra-academical forms of environmental education are also developing (National Parks, Museums, Societies, other environmental education centers) all having particular importance in this sometimes desperate enterprise.

In the followings I would like to give a brief introduction on the present activities of the Fertő-Hansági National Park (formerly Fertő Lake National Park) related to environmental education. A summary is given of the education experiences of the past four years work and the presentation of the opportunities towards the establishment of a "nature protection school". My primary aim is to draw the attention of the colleagues to the particular aspects of nature protection with regard to the conceptual framework of the environmental education. Presented education methods and topics that are used successfully in the National Park can be easily adopted to other areas.

2.0. THE FERTŐ-HANSÁG NATIONAL PARK THE GROUND FOR THE FORMULATION OF ENVIRONMENTAL CONSCIOUSNESS

2.1. Use of terrain endowments in education

The Fertő-Hanság National Park (FHNP) was established as the fifth national park in Hungary. Legal establishment was published in Hungarian Legislation as the 5/1994. (III.8.) Order of Ministry for Environment and Regional Policy. Its establishment was actually the unification of the former Fertő Lake National Park (established by the 2/1991 (II.9.) Order of Ministry for Environment and Regional Policy) and the enlarged Hansági Nature Protection Area (that was established by the 2/1990 (XI.21). Order of Ministry for Environment and Regional Policy). Since 24 April 1994 the National Park is considered to be belonging to two countries mutually, as the Austrian part of the Fertő Lake, and the eastern Fertőzug (also an Austrian territory) was declared to be protected.

Activities of the FHNP are controlled by the Directorate, that is in the same time is responsible for the tasks of the “West-Transdanubian Nature Protection Agency” covering 80,000 hectares of state owned land in Győr-Moson-Sopron and Vas Counties. Tasks are categorized as follows:

- protection of different habitats and species and their dynamic ecological processes, these are the so-called nature protection aimed land uses,
- acting as an authority on nature protection issues,
- environmental education, training,
- organization of “mild- or ecotourism”, direction thereof, covering some of the protected areas.

It is quite evident from the above listed tasks, that environmental education and training forms an important though a relatively minor part of the activities (in the following only the education at the FHNP will be discussed). This activity is based on practical field training, that is supported by the infrastructure of the FHNP. Use of contemporary buildings established in the frame of the PHARE aid program and other formerly constructed buildings are mentioned in this respect to the indoor education.

There is one full-time employee responsible for nature protection education and training at our National Park, his activity is supported as required by the other colleagues engaged with other tasks, such as field managers, and supervisors. College and university students occasionally also provide help in education.

In the Hungarian side of the FHNP the protected area of land covers 19,629 hectares. It has to be mentioned, that the actual area of the national park has a mosaic (patchy) character, as protected areas are not entirely joined. As a consequence of this, the overall area is divided into five smaller-larger subareas that are the following:

- The largest is the Fertői mosaic covering the former area of the Fertő Lake National Park, between the national border and the settlements along the shoreline; this is the western core of the NP.
- With regards to the topographical setting the central area is called Osló-Hárság (or South .Hárság), that is located north to the Hárság-Kapuvár-Osló-Földsziget line, reaching up to the national border.
- The eastern larger territory is the Lébényi Hány (or more commonly the Northern Hárság) that is situated on the area among Tárnokréti-Lébény- Jánossomorja-Mosonmagyaróvár settlements.

- There are two smaller units within the National Park that are the remnants of the former wetlands and lake system together with their littoral zone. These are the **Fehér Lake** (boundary of **Fehértó** municipality), and the **Barbacs Lake** next to the **Barbacs** municipality.

Nature protection education and training activities are determined by the protected areas and existent habitats of the National Park. From this point, areas of the National Park are divided into two parts:

- areas of the **Fertő** Lake,
- **Hanyi** areas.

Distinction is based on the differences of geological development, geographical location and current state of the two areas.

The **Fertő** Lake is the westernmost member of the Asian steppe lake series with the age of approx. 20,000 years. It was formed by the gradual decrease of the Pannonic Sea in the deepest sea basin as a shallow freshwater lake. As a consequence of its hydrological character (no outflow), its water is quite saline and rich in sodium and magnesium salts. Lake bed contains heavy quantities of sediment and the lake is in eutrophic state. Area of the lake is 309 km² from which 161 km² is covered with reed. From the west and south its boundaries are formed by the so-called **Fertőmelléki** hill series, that are consist of miocenic **Lajta** limestone north of **Fertőrákos**. At the south-eastern/eastern part of the lake a silty lake ensemble is located (**Fertőzug**) on Austrian territory. These silty lakes are reaching to Hungary in the vicinity of **Mekszikópuszta**. Its untouched reed stands, silty patches and wetlands provide important breeding, feeding and resting places to the masses of water birds (so far more than 350 water bird species were recorded here by the researchers). In the Hungarian part of the **Fertő** Lake reed stands contain a network of channel (approx. 240 km length) connecting muddy, shallow water bodies with small inner lakes.

From nature conservation education viewpoint the following habitats have primary importance:

- reed stands, littoral zones of trenches and channels,
- silty water bodies at **Mekszikópuszta** and artificially flooded areas,
- **Szárhalmi** forest (lime preferring vegetation communities),
- **Fertőrákosi** lime mine (miocenic **Lajta** limestone)
- bog meadow next to **Kis-Tómalom**
- abandoned agricultural lands, secondary and tertiary weed communities on the drained areas,
- meadows and pastures.

On the listed habitats different ecosystems are excellently represented. These habitat types can easily serve as examples of human intrusion and management activities (channel and drainage

systems) as many of them have caused irreversible changes in the natural ecosystems. In this way, different aspects of nature conservation can be illustrated.

The human devastation of these natural ecosystem types can be seen in many places of this formerly untouched marshlands. The **Hanság** basin is a natural continuation of the **Fertő** basin, but the direct connection was interrupted during the XVIII. century by the construction of a dam. The two important basins of the Hany is divided by the **Bősárkány** bog-throat. During the holocenic period bog formation processes took place, when the **Hanság** truly become to an undrained watershed area. Uninterrupted water coverage, and the lush vegetation favored the processes of bog formation. Approximately 3/4 of the **Hanság** bog area is real bog while to a lesser extent surface bog formation are also evident.

Despite of the former drainage activities there are many variable habitat left in the **Hanság** area, that can be utilized as illustrations for environmental education. These habitats are the followings:

- lakes and their surroundings at the **Hanság**,
- bog meadows, drained pastures,
- marshlands and mesophilic pastures,
- high bulrushes,
- alder groves,
- willow groves,
- hard-tree gallery forests,
- soft-tree gallery forests,
- so-called noble-poplars.

Knowledge on these habitats and their biological communities is helping the formation of a positive attitude in students towards nature protection. Nevertheless, we are using the “negative examples” of the human landscape and nature alterations (e.g., drainage, noble poplar plantations, etc) in order to develop a certain negative attitude towards the devastation of nature. It is my opinion, that by the application of this doublefold education scheme parallel to each other, will form in the children attending our courses a life-long reliability and respect towards all of the differences that are occurring in nature. The aim of our nature and environmental education is to make the perception of these right values conscious for the children attending the courses held in our national park.

It has to be mentioned also, that according to the internationally accepted principles the areas of the FHNP are divided into different zones. The following three zones are continuously connected with each other in the national park:

natural zone (provision of undisturbed biological communities, and areas for scientific research),

- protection zone (zone, that serves for the protection of the natural zone, a kind of a buffer zone to quench the civilizatorian effects),
- outer zone (zone of different, lesser degree nature protection measures covering the outer boundaries of the national park).

Fields for the nature protection education can only be selected from areas of the protection and outer zones, as the natural zone is formed of areas having enormous nature protection values, therefore the undisturbed character of those areas need to be provided by all means.

2.2. Establishments and infrastructure of the FHNP serving education objectives

Previously those habitats of the National Park were discussed that are relevant from nature protection education viewpoint. There are facilities at the disposal of FHNP that can be used for in-door education, or alike for the supplementation of the field studies. The primary aim of the in-door education is to provide a preliminary introduction beforehand of the field education, and also for the processing of the information gained during field surveys (e.g., during a camp program). When time is available independent lectures are also given. With regard to the education of nature protection, however, the infrastructure of the National Park is far from complete. Facilities at the disposal of the National Park in this respect are:

- Kócsagvár: It was built in 1993 at Sarród by the financial aid provided by the PHARE Office. It is entirely serving the objectives and activities of the National Park; among them the nature protection education having a high priority. The central building of the facility is located in the very core of the National Park in the eastern gate of the Fertő mosaic. There is a lecture hall, supplement rooms, hall, and a hotel serving for the accommodation of 46 people within the facility serving educational aims. Equipments, such as slide projectors, overhead projectors, VCRs, photos, microscopes are available to facilitate education. Also, bicycles and binoculars are stored here, that are used on field works. A permanent nature photograph exhibition is established here, and an educational nature trail is under the process of establishment in the grove surrounding the Kócsagvár.

- Research house at Fertőújlak: It was built also by the financial aid provided by the PHARE Office. Its expressed objective is to have an easy-to-access near-to-the site base for the field researchers, university, college, and high-school students. The building can easily serve for the accommodation of approx. 10 people and also for the technical support for them.

- Pile-house at Fertőrákos: This building is situated within the recreational area of the western Fertő belonging to the National Park. Here accommodation conditions are more simple (no hot water, sleeping bags) serving mainly children needs (approx. 30-40 children can be accommodated here). This particular building will serve as a base for the water tours (by canoe) in summertime. Open water of the Fertő Lake can not be visited from other site than this. Some of our field work is going to be organized in the area of the nearby Szárhalmi forest, and

also in the Kistóalmi meadowland. Due to the vicinity of these areas to the pile-house, this predestinates the building to serve as a primary base for these field works. No permanent equipmentation is provided here, but can be transported to the location from other sites, as needed.

- The living word of the Hanság exhibition at Öntésmajor: This exhibition is operational for 14 years located in the western edge of the Osli-Hany, at Öntésmajor. The exhibition is devoted to the nature protection and education entirely. It consists of three large halls, but the surrounding park is also organically attached to the building. Regular education using the museum pedagogic methods is organized excellently by my colleague, Mr. László Nagy, who is the areal manager here.

- Esterházy bird-watch tower: It is located near to Osli municipality, next to the so-called Csíkos alders. Visitation of this bird-watch point is limited. The role of this object is highly similar to the Öntésmajor building. Although its primary aim is to support research activities, nevertheless its rich collection can serve education aims, preparation and evaluation of field works.

- Fehértói bird-watch tower: It is located near to Fehértó municipality, next to the smallest mosaic of the National Park. Its primary aim is research, but along with Mr. Tibor Fülöp, I have been continuing education here more than two decades. Mr. Fülöp's name has been unified with the object itself, and with the regular summer camp (Fehértói Nature Protection Camp) organized by him for 18 years.

3.0. Education at the Fertő-Hanság National Park towards the establishment of a future Nature Protection School

3.1. Education activities for different age groups

Education at the Fertő-Hanság National Park is conducted in the establishment described above. The following matrix summarizes the types of education according to different age groups:

Type of program/age group	Child care	Elementary school grade 1-4	Elementary school grade 5-8	High school
Single field work	+	+	+	+
Regular field work (small groups)	-	+	+	+
Independent indoor education	+	+	+	+
Camps	-	+	+	+
Nature protection camps	-	-	-	+

It is not evident from the above table, that there is an opportunity to hold different character programs together while taking into account the age group characteristic.

It has to be mentioned also, that single field works and indoor lectures are regarded as the most unadvantageous forms for education of nature protection, as the occasional character of the program prevents the planned widening of the scope and concepts. Children attending courses and other forms of education arriving from every corner of the country. Most of them is attending one day courses as yet, but there is a positive tendency towards the longer (more than one day) programs in attendance.

One day programs, such as one day field trips and indoor lectures are mainly available for the children living in the very vicinity of the National Park. There is a growing demand for these activities as well.

Summer camps (including few days education programs) are open for everyone from the country. It is a pleasure to see, how the accommodation capacity of the camps increases.

There were approximately 7000 children attending education courses in the organization of the FHNP in the year 1994 from the child care age group to the high-school students. Of this number, approximately 500 people attended nature conservation camps and programs of the same character.

3.2. Generalization levels

Generalization levels in the pedagogic sense respecting to the age group characteristics can be set according to 8 levels targeting minimal objectives:

- | | |
|-----------------------------------|-----------------------|
| - child care age group | level of imagination |
| - elementary school (6-8 years) | level of imagination |
| - elementary school (8-11 years) | level of recognition |
| - elementary school (11-14 years) | level of organization |
| - high school students | level of readiness |

3.3. Education programs (themes and microstructures) at the Fertő-Hanság National Park

3.3.1. Concept of nature aspects

Both field studies and in-door education are based on the natural endowments of the National Park, therefore programs are adopted to the different aspects of the ecosystems, site selection and investigation goals. According to Szentendrey (1993) these are the following:

1. Fall aspect: from middle September till end of November
2. Winter aspect: from end of November till early March
3. Early spring aspect: from the beginning of March until end of April
4. _____ aspect: from early May till the middle of June
5. Summer aspect: from the middle of June till end of July
6. Late summer aspect: August - September

3.3.2. Field studies, practices

Before going to the detailed discussion of the thematic of field practices some general directives need to be enlightened for the planning and actual realization of such studies:

The objects of actual studies are determined by the natural elements and phenomena occurring in a given time period within the area as potential inductive materials.

Topics of the education of microstructures are adopted to the age of children and also to the actual site (habitat) and aiming to use only a few characteristic species and phenomena as induction material. One of the most difficult pedagogical task is the selection of these

characteristic induction materials! The selection have to be based on such material that is characteristic to a given microstructure, can be memorized easily and somewhat spectacular as well. Also adaptation to the location (habitat) and aspect (time period) is essential. Upon planning field practices there is a need for the selection of a surrogate species (preferably animal) in preparing to the fact, that sometimes the primary target organism can not be found on the selected site.

- In spite of the fact, that the actual layout (e.g., the trails to be followed) of the field trips are more or less determined and constant, no two identical field practices exist, these are the mixtures of varying education topics. The primary reason for this is the changing nature obviously.

- The primary aim of any field practice is the formation of environmental awareness and the education of nature history is only a tool for this! The fundament for this is the formation of awareness and consciousness in the children towards the natural values.

- Length of trails is always adopted to the age of children and their physical state. In no case overload in terms of length of trail is imposed on the children! For the smaller ones frequent stops are suggested. During such stops a story is told attached to the site or to a phenomenon in order to keep the attention of the children active.

- Layout of the trails is usually planned in such a way, that they form circles around the observed microstructures in order to provide an excellent opportunity for the memorization of events and phenomena.

- Description and discussion of any given microstructure is always conducted when it is visible therefore the induction material directly enhances education. Sequence of the describable microstructures therefore is determined by the actual sequence of occurrence of induction materials on the field (e.g., discussion of the predatory birds of the reed vegetation is conducted upon seeing a *Circus ae. aeruginosus* in front of our binoculars, and we are not going to discuss the orchidea flora of the meadows when a hunting *Egretta a. alba* is in front of us.)

- During field practices several habitat are visited providing an opportunity for the comparison amongst the different sites and microstructures. Recognition of relations and interactions provide a special experience for the children and enhance the recognition of the system character of nature.

- Ideal number for field practices is considered to be about less than 15 students, however, todays conditions are only allow this during the organized summer camps. (Occasional field studies are usually attended by a whole school class having 25-35 children, and due to the lack of instructors no further division of these classes is allowed.

3.3.2.1. Topics during field practices

Before discussing the individual microstructures of field practices the following draft table summarizes the topics that has primary importance in the formation of the awareness of nature protection. These topics are divided according to the aspects of nature as well as the function of age-groups. Obviously, topics are selected from these themes depending on season, age-group and activity type both during single courses and summer camps. Topics are largely determine the site and trail of field program.

Legends:

- 0 : no field education is possible in a given aspect
- o : child care age-group (between 3-6 years)
- a : elementary school level (between 6-10 years)
- f : elementary school level (between 10-14 years)
- k : high school level (between 14-19 years)

ASPECTS	fall	winter	early spring	spring	summer	late summer
Education topic	oafk	0	oafk	oafk	oafk	oafk
protection of wild soft steamed plants	afk	afk	afk	afk	afk	afk
trees and shrubs	afk	afk	afk	afk	afk	afk
plant communities		0	fk	fk	fk	fk
nature friendly management	k	k	k	k	k	k
microscopic life of waters	0	0	afk	afk	afk	afk
invertebrates	Oafk	0	Oafk	Oafk	Oafk	Oafk
amphibians and reptile protection	Oafk	0	Oafk	Oafk	Oafk	Oafk
migration of amphibians and reptiles	afk	0	afk	0	0	0
nesting birds	0	0	Oafk	Oafk	Oafk	0

migration of birds	Oafk	0	Oafk	0	0	0
overwintering birds	Oafk	Oafk	Oafk	0	0	0
protection of predatory birds	fk	fk	fk	fk	fk	fk
determination of small rodents from owl spits	afk	afk	afk	afk	afk	afk
soil protection	fk	fk	fk	fk	fk	fk
importance of wetlands	afk	afk	afk	afk	afk	afk
meadow and pasture communities	afk	0	afk	afk	afk	afk
bog forest communities	afk	0	afk	afk	afk	afk
ancient domestic animals	Oafk	Oafk	Oafk	Oafk	Oafk	Oafk
nature protection aspects of hunting	fk	fk	fk	fk	fk	fk
nocturnal nature	afk	afk	afk	afk	afk	afk

3.3.2.2. Microstructures during the processing of the topics of field practices

Microstructures are discussed in a tabulated form according to the site and trail of individual field studies as well as the different aspects of nature. Induction material and age-groups are also shown in each table. It has to be noted that induction material in most of the cases is a living organism -hence the correspondence to special habitats- that can be shown in a particular habitat type. When indicating induction material therefore the scientific name of the species is described.

Topic: Protection of wild soft-steamed plants
 necessary assistance tool: plant determination book

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Early spring plants	Szárhalmi Forest Eastern part of Fertő land Osli Hany	steppe meadows oak tree forest trench and ditch sides	Pulsatilla grandis Adonis vernalis Corydalis cava Orchis morio Caltha palustris
Spring and early summer plants	Szárhalmi forest Kis-Tómalom Mekszikopuszta Vicinity of Lászlómajor Osli Hany	steppe meadow oak forest drying bog pasture sodic sites, ditch sides ditch vegetation, wetlands	Iris pumila Dictamnus albus Sesleria heufleriana Dactylorhiza incarnata Salicomia sp. Iris pseudocorus Typhaceae
Summer and early fall plants	Vicinity of Mekszikpuszta Lébényi Hany	sodic sites ditches pastures trench sides high bulrushes meadows	Plantago maritima Salicomia Aster punctatus Ononis spinosa Dipsacus laciniatus Gentianella austriaca Colchicum autumnale

Topic: Trees and shrubs

necessary assistance tool: plant determination book

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Tree and shrub species of limestone based soils	Szárhalmi forest	oak trees karstic shrub communities	Ligustrum vulgare Euonymus europaeus
Bog forest tree species	Oslı-Hany	alder and willow galleries	white willow alder tree
Hardwood forest tree species	Oslı-Hany	hardwood groves	oak tree
Softwood forest tree species	Oslı-Hany	softwood groves	
Trees of sodic soils	Vicinity of Mekszikópuszta	sodic pastures, meadows	Eleagnus angustifolia
Planted trees	Szárhalmi forest Oslı-Hany	planted pines planted poplars	pinės, black pine, poplars

Topic: Plant communities

necessary assistance tool: plant determination book

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Karstic shrub communities	Szárhalmi forest	Shrub forest	Dictamnus albus Sesleria heufleriana Comus mas Crataegus sp.
Secondary pastures and meadows, weed vegetations	Mekszikópuszta and its vicinity Lászlómajor and surroundings	Meadows and pastures	Cirsium arvense Chenopodium album Papaver rhoeas Ononis spinosa Poa nemoralis
Sodic vegetation	Mekszikopuszta and its vicinity Lászlómajor and surroundings	Sodic communities	Salicomia sp. Plantago maritima Camphorosa annua
Alder grove forests	Oslí-Hány	Alder groves	Humulus lupulus Lilium martagon Iris pseudacorus
Pastures	Oslí-Hány	Wetland pastures	Molinia coerulea Colchicum autumnale Salix caprea

Topic: Environment friendly management methods
 necessary assistance tools: binoculars

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Terms of extensive and intensive land use	General	General	images of former agricultural fields
Management of meadows	Osli-Hany	meadows	ground nesting birds (e.g. <i>Vanellus vanellus</i>)
Management of pastures	Eastern part of Fertő field	pastures	grazing animal, ground nesting birds (<i>Perdix perdix</i> , <i>Cotumix cotumix</i> , <i>Alauda arvensis</i>) <i>Ononis spinosa</i>
Drying bog pastures	Bog pastures of Kis-Tómalom	drying pastures	growing reed population, water shortage
Management of alder groves	Királytői alder forest (Osli-Hany)	alder bog	drying alder population, water shortage
Management of steppe meadows	Steppe meadow of Szárhalmi forest	steppe meadow	forestation of steppe meadow

Topic: Microscopic community of natural waters

necessary assistance tools: sampling pots, microscopes, determination books

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Unicellular organisms	Eastern part of Fertő field	water of ditches, trenches, inundated areas	unicellular organisms in water (e.g., Paramecium sp.)
Colonist plants	Eastern part of Fertő field	water of ditches, trenches, inundated areas	algae in water sample
Multicellular plants	Eastern part of Fertő field	water of ditches, trenches, inundated areas	submers macrovegetation
Multicellular animals	Eastern part of Fertő field	water of ditches, trenches, inundated areas	water fleas, mosquito larvae, Nepa rubra

Topic: invertebrate animals

necessary assistance tools: sampling pots

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Earth worm	general	general	e.g., bog earth worm
Insects	general	general	Dorcadian aethiops, Apidae, Bombinae, Vespa crabro, Cerambycidae, daylight butterflies
Spiders	general general	ditch sides reed stands general	Argiopidae Lycosidae

Topic: protection of amphibians and reptiles
 necessary assistance tools: probably determination book

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Protection of amphibians	general Eastern part of Fertő field	general	Rana esculenta Hyla arborea Bufo bufo newts Bufo viridis
Protection of reptiles	general Szárhalmi forest	general general	water snake (Natrix natrix), Lacerta agilis, L. viridis Coronella austriaca

Topic: migration of amphibians and reptiles
 necessary assistance tools: none

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Migratory species	Fertőboz	Acacia forest	different frogs newts, Natrix natrix, Lacerta viviparus
The reason for migration	Fertőboz	Acacia forest	character of the season
Dangers of migration	Fertőboz	motorway	accidentally hit animals
Protection opportunities	Fertőboz	Acacia forest	fences and tunnels on site

Topic: nesting birds

necessary assistance tools: binoculars, determination books

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Nesting herons	Mekszikopuszta Osli-Hany	Inundation Alder groves	Casmerodius albus, Ardea cinerea, A.purpurea, Botaurus stellaris
Nesting ducks	Mekszikopuszta	Inundation	Anatidae
Nesting	Mekszikopuszta	Inundation	Vanellus vanellus Himantopus himantopus, Recurvirostra avosetta
Nesting meadow bird species	Mekszikopuszta	meadows	Alauda arvensis, Perdix perdix , Cotumix coturnix
Singing birds	Osli-Hany Mekszikopuszta	alder groves soft and hardwood groves reeds and ditch sides	Emberiza citrinella, Erithacus rubecula, Troglodytae, Acrocephalus arundinaceus, A. palustris
Others	Mekszikopuszta	Eleagnus angustifolia	Pica pica, Falco tinnunculus, Asio otus

Topic: migratory birds

necessary assistance tools: binoculars, determination books

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
The reason for migration	Mekszikópuszta	Inundation	Weather conditions
Migratory species	Mekszikópuszta	Inundation	Philomachus pugnax, Sturnidae, Falco peregrinus
Factors effecting migration	Mekszikópuszta	Inundation	images
Nature protection tasks related to bird migration	Mekszikópuszta	Inundation	given habitat, as feeding and resting place

Topic: overwintering birds

necessary assistance tools: binoculars, determination books

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Overwintering geese	Mekszikópuszta	Inundation	Anser fabalis, A. anser, A. albifrons
Overwintering duck species	Mekszikópuszta	Inundation	Bucephala clangula
Overwintering predatory birds	Mekszikópuszta	Inundation	Haligaetus albicilla, F. peregrinus
Overwintering owls	Mekszikópuszta	Human constructions	Asio otus
Overwintering singing birds	Mekszikópuszta	Meadows	pine thrush

Topic: protection of predatory birds
 necessary assistance tools: binoculars, determination books

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Daytime predatory birds	Fertő field Eastern part	Inundated wetlands	Circus aeruginosus Buteo buteo, Falco tinnunculus, F. peregrinus,
Feeding patterns	Mekszikópuszta	Pastures	Citellus citellus, Microtus arvalis
Protection of predatory birds	Mekszikópuszta	general	artificial nest, winter feeding, resting places

Topic: determination of small mammals from owl spits
 necessary assistance tools: sampling pots, determination books, microscopes

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Origin of spits	Mekszikópuszta	constructed	owl spits
Contents of spits	Mekszikópuszta	constructed	owl spits
Investigation of spits	Mekszikópuszta	constructed	spit + determination book
Importance of investigations	Mekszikópuszta	constructed	bones of small mammals
Method of spits collection	Mekszikópuszta	constructed	resting place of owls

Topic: soil protection
 necessary assistance tools: none

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Role of karstic shrubs in soil protection	Fertőrákosi rock mine and surroundings, Szárhalmi Forest	rock lawn, karstic shrub	rendzina soils
Characteristic of sodic soils and their protection	Mekszikdpusztá	sodic vegetation	heavy sodic soils
Protection of bog soils	Osli-Hany	bog areas	special bog soils

Topic: importance of aquatic habitats
 necessary assistance tools: binoculars, determination books

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Terms of aquatic habitats	Kis-Tómalom Eastern part of Fertő land Osli-Hany	drying bog meadow, reed stands, sides of ditches, bog meadow, wetlands, bog forest, lake, bulrushes	habitat habitat habitat
Biological diversity of aquatic habitats	Kis-Tómalom Eastern part of Fertő land Osli-Hany	drying bog meadow, reed stands, sides of ditches, bog meadow, wetlands, bog forest, lake, bulrushes	habitat habitat habitat

Topic: meadow and pasture communities
 remark: the topics and microstructures of this particular topic can be found in earlier topics and can be adopted from there!

Topic: communities of bog forests

remark: the topics and microstructures of this particular topic can be found in earlier topics and can be adopted from there!

Topic: ancient domestic animals

necessary assistance tools: binoculars

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
History of domestic animals	Lászlómajor	pastures	ancestral cattle, sheep varieties, dogs
Character of their management	Lászlómajor	constructed	farm
Reason of their protection and importance	Lászlómajor	pastures	above species

Topic: nature protection aspects of hunting

necessary assistance tools: binoculars

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Required hunting methods of water games	Mekszikópuszta	pastures, weed communities	flying water game (e.g., goose)
Big game damages in agriculture and nature protection	Mekszikópuszta	pastures, agricultural fields	e.g., tracks of Sus scrofa
Small game on protected areas	Mekszikópuszta	pastures, meadows, weed vegetation	pheasant, partridge, hare, fox

Topic: nocturnal nature
 necessary assistance tools: lamp

<u>Microstructure</u>	<u>Site</u>	<u>Habitat</u>	<u>Induction material</u>
Place of Earth in the Universe	general	general	some star formation
Diversity of life on Earth	general	general	images of former daylight tours
A hidden world: nocturnal nature	general	general	some nocturnal creature (e.g., night owl, spider, insect)

3.3.3. Indoor education

To summarize in a nutshell, topics of indoor education are similar to the outdoor ones, however, induction materials are different, usually not living ones, but slides, audio records, videos, etc. Processing of the facts nevertheless is adopted to the field works, usually having a preparatory character to the field practices, or serving systematic and memorizing purposes.

As it was mentioned earlier, in case of summer camps and organized professional circles there is an opportunity to provide independent indoor education, that is not related directly to the field works. The topics of these sessions are varying widely; from the worldwide nature protection issues to the national nature protection organizations.

3.3.4. Camps

To put it in short, camp programs are highly similar to the formerly described field studies and outdoor programs,

4.0. CLOSING REMARKS ON IDEA OF NATURE PROTECTION SCHOOL

So far, this idea is only represent an intention that is going to be realized under the umbrella of the Fertő-Hanság National Park. We have done a lot for it, but we have to work hard for the full recognition.

In my opinion this type of school:

Will teach children in any day of the year both indoor and outdoor in devotion to nature protection.

Most of the children can attend regular, longer camps in any season of the year.

Appropriate number of instructors will be provided.
Accommodation, meal, communication and supply of necessary equipments will be provided to both of the children and their relatives.

Even if the above listed problems are solved (we are on the right way though) we have to fight a resistance of the school directors, that are not willing to let the children go to such camps. Even in neighboring countries there are regional schools operated similarly to the described way. Dear school leaders, and child care unit managers! Please follow the good example!

5.0. Recommendation

I recommend this booklet to those that are at the beginning of the education of nature protection, and to those that on the basis of their large experiences are able to help this undertaking by their sharp critic. I also recommend this writing to my colleagues that can see this as the confirmation of their work, and finally I recommend with good hearth to those that will read it.

Sarród, February 26, 1995.

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Attila Fresch
Organizer in nature protection education

6.0. Literature

Szentendrey, G. (1993) Environmental biological studies. *Iskolakultura*, 3. 13-14. pp. 90-92. (in Hungarian).