

An in-situ model for the preservation of the indigenous breeds in Lonjsko Polje Nature Park

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Lonjsko Polje Nature Park is not just the largest protected lowland floodplain area in the whole of the Danube basin, but is also the area in Croatia that has the largest concentration of indigenous breeds. Lonjsko Polje Nature Park Public Service has from its inauguration in 1998 taken measures for the preservation of individual domesticated taxa, in a way in accordance with the objectives of the Strategy for the Preservation of Biological and Landscape Diversity (Official Gazette 81/99):

1. Preservation of the landscape
2. Conservation of ecological systems and habitats
 - 2.2 wetlands and water
 - 2.6 grasslands and ploughland
 - 2.8 habitats
4. protection of the genetic diversity of domesticated taxa.

The accent has been placed on in-situ preservation, primarily because the population of the nature park is still engaged with traditional style farming. The large complex of floodplain pastures enables grazing to be provided for an “unlimited” number of head of livestock. Since conventional breeds, because of their greater profitability, are driving out the original breeds, the Public Service has undertaken a number of activities for the restoration of the original breeds to Lonjsko Polje. Thus on July 20, 2001, the Service acquired six sows and three boars of Turopolje hog. Three sows and one boar came from Ivan Adamovic of Muzilovcica and three sows and two boars from the Noble Commune of Turopolje for the sake of creating a nucleus of a herd of Turopolje hogs in their original environment. There were several crucial reasons why the Lonjsko Polje Nature Park wanted to create a core herd of Turopolje hogs. These are:

1. The Turopolje hog is part of the very landscape of Lonjsko Polje, and has an important role there in the maintenance of biological diversity. It is highly adaptable to the pathological conditions of wet and wetland habitats, and is resistant and undemanding with respect to housing, feeding and care conditions. It is ideal for keeping outside in forest and field grazing.
2. Looked at from an economic point of view, the Turopolje hog could be an interesting feature in the tourist fare. The possibility of producing food on the organic production principle, which is to say the traditional manner of keeping it in Lonjsko Polje, gives a particular importance to the Turopolje breed.
3. From the cultural history point of view, the pasturing system is the only remaining such system that was once so typical of the whole of Central Europe up to the end of the 19th century.
4. The Turopolje hog has a particular value because it can be used for scientific purposes as well, as follows:
 - ecological research into the system of combined herd management,
 - study of the impact of pigs during field and forest grazing on the vegetation
 - comparison and estimation of genetic improvement and change in selected populations
 - biological research into the physiology, nutrition, reproduction, genetics and resistance to extreme climatic conditions and to diseases.

Since the number of pigs owned by the Service has enlarged we have resorted to the model of leasing and giving Turopolje hogs to all the local population that is interested. It was decided that the Service should retain two complete genetic copies of pigs in Krapje at the location Krapje 30, where there is a sty. All the young are offered to interested inhabitants of the area of the Nature Park and the surrounding area. To such people, the Service will contractually provide young Turopolje hogs, two females and one male per animal husbandman. The hogs will remain in the ownership of the Service for three years, after which they will belong to the husbandman by whom they are kept. The rearer has the obligation to adhere to the instructions of the Service concerning rearing, and in a period of three years, return to the Service the same number of young females as he or she received hogs in the first place. The Service will receive a government incentive for the hogs it owns, and will make this over to the rearer to cover the costs of feed. All the young that are in the possession of the local people are their own property, and they can do as they like with them. This programme has been in operation since April 20, 2004, and by September 1, 2007, a total of 12 contracts of gift or loan of Turopolje hogs were signed. The state of the main herd owned by the Service as of September 1, 2007, was nine boars and twenty-six sows. The loan and gift programme has been in operation continuously, the vigour and dynamics depending on the number of piglets. There is a surprising interest on the part of the population, and people put their names down for hogs from the Service a year in advance.

One immediate consequence of the war, above all in that part of the Park downstream from Jasenovac, was the disappearance of animals from the pastures. When the livestock vanished from the area, the natural succession started, pastures and meadows turning into forest, and in addition, the neophyte false indigo, *Amorpha fruticosa*, spread rapidly. This is a North American species that started spreading in Posavina sixty years ago, above all via the flooding, because of the light seed that will float on the water. Today almost 2.5% (10201 ha) of the area of the Lonjsko Polje Nature Park has turned into clear stands of false indigo, and there are another 5817 ha on which it has appeared to a greater or lesser extent (Lonjsko Polje Nature Park habitat map, 1:2500, LPNP and OIKON, 2006). Thinking over the possibilities for renewing the pastures, the methods and manner in which this can be done, the Service decided on the acquisition of resistant, adaptable and original cattle that will eat the plant. Since in part of Posavina the Posavina *gulja* was bred, a subtype of the Podolia, which had however become extinct in the meantime, in 2004 the Service acquired a breeding herd of Slavonia-Syrmium Podolia cattle from the breeding centre in Krizevci. Nineteen cows and one bull were bought. The herd was located on the Orlinci pastures, which are right alongside the Ornithology Reserve at Krapje Dol, and a protection order was placed upon the area. The actual Orlinci pastures were until 1990 the arable fields of a former (socialist) agribusiness. When the ploughland was abandoned, the natural succession took place, and it became completely overgrown with the neophyte species false indigo (*A. fruticosa*). After placing a conservation order on the area, the Service started to manage the pastureland in a traditional way. The pasture is in the phase of being transformed from abandoned ploughland into *Trifolio-agrostidetum soloniferae* pastureland, clover with creeping buttercup, with a combination of mowing and grazing, and is particularly hence valuable as:

1. an influential area of the ornithology reserve of Krapje Dol, in which a mixed colony of white spoonbills, little egret, night herons, purple herons, yellow egret, species on the list of the Bird Directive of the EU (Council Directive 79/409/EEC).
2. An influential area of a valuable habitat of freely floating and submersed hydrophytes (3150 Hydrocharition) from the Habitats Directive (Council Directive 92/43/EEC)
3. a feeding habitat for birds
4. a habitat for endangered butterfly species Large Copper (*Lycaena dispar*) (Insecta: Lepidoptera) (see the undergraduate dissertation of Vlatka Micetic, Faculty of Science and Mathematics, Zagreb) which is on the Habitats Directive, and has a stable population on the said pastureland.

The breeding herd arrived on the pasture at Orlinci on October 22, 2004. Today on the pasture there are 27 cows, 1 bull, 17 female and 13 male calves, as well as 7 bullocks, and there is one more bull in the Reproduction Centre in Krizevci to be used for the purpose of creating a sperm bank. The actual purpose of purchasing a breeding herd of the Slavonian-Syrmium Podolia cattle was, apart from the preservation of the species, also for the rehabilitation of the pastures that had become degraded in the war. The said ploughland alongside Krapje Dol Ornithology Reserve was taken as trial area for the renovation of the pastures. The area had become almost completely overgrown with false indigo. The procedure of renovation was started immediately the cattle arrived on the field. The vegetation of the whole area was subjected to shredding and the land divided into four parts. One part, of 2.5 ha, was used for quarantine and wintering for the animals. An area of ca 20 ha was used just for grazing, about 10 ha was mown once a year, in spring, and the rest of the year used as pasture, and ca 3 ha was left to the natural succession. The aim of this division and the different models of grazing and mowing was to ascertain which model would most rapidly result in "natural pastureland". The trials at Orlinci showed that the most effective method of renovation was to have the abandoned, overgrown pasture shredded once, and then to have the animals graze upon it. The Service plans to use the growth in the size of the herd of the Podolia cattle to renew the abandoned pastures in Lonjsko Polje. The model would consist of having the overgrown fields mulched, putting the Podolia cattle to graze it for a year or two, and after that letting the local livestock out onto it. The reason for the resort to this model is that there are still very small numbers of local livestock on the pastures. The population on the whole drive their animals to the clean and well maintained pastures, and avoid those that are overgrown totally or partially, because they are not highly productive. With this model for the renovation of the overgrown pastures, the Service is creating the preconditions for the arrival of local livestock on the one hand and the increase of the population of Podolia cattle on the other. A priority area for renovation is Poganovo Polje, on the eastern end of the park, the most valuable part of the Park in terms of biodiversity. As for the in-situ preservation of the breed of Slavonia-Syrmia Podolia cattle, the long-term objective is to have the same model of giving/leasing animals to the local people as was used for the Turopolje hog. Since the Podolia cattle can be of interest to the local population only if the venture pays off, Mr Gugic has drawn up a comparative analysis of the renovation of the pastures of the Jasenovac Memorial Area and the Orlinci pastureland. The meadows in the memorial area, like those of Orlinci, were also completely overgrown

by false indigo during the war. The results of the comparative cost analysis can be seen below:

Jasenovac Memorial Area	Orlinci Pastures
120 ha	50 ha
Mulching done three times: 165,000 euros	20 animals: 18,500 euros
	Veterinary services and other documents: 1000 euros
	Fences: 4300 euros
	Hay: 6300 euros
	Keeper: 4100 euros
④ 1375 euros per ha	④ 684 euros per ha

From this analysis it can be seen that the Lonsko polje method of renewing the pastureland is 50% cheaper than the Jasenovac Memorial Area method, although the price includes the purchase of a breeding herd.

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