

Country report

**Report of *in situ* conservation status of farm animal genetic resources in the
Republic of Croatia**

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Native and protected breeds are unique genetic and cultural heritage that contribute to agricultural diversity as well as the total biodiversity of the ecosystem. In Croatia 26 native breeds exist with different status of endangerment which was one of the reasons for development of "National programme for protection of native and protected breeds of domestic animals in the republic of Croatia", adopted in March 2010. Other important tasks of National programme include development and monitoring implementation of *in-situ* and *ex-situ* conservation programmes for protection of native breeds, development of the model for protection of native breeds in sustainable use systems, protection and/or management of native breeds within natural habitats as well as establishing cooperation on national, regional and global level.

Current status of native and protected breeds in Croatia according to Annual report from Croatian Agriculture Agency (CAA) and Croatian Horse Breeding Centre - Đakovo and Lipik National Stables (HCK) for 2012 year is listed in table 1. In the group of critically endangered are four breeds of domestic animals (Međimurje horse, Slavonian Syrmian Podolian Cattle, Istrian and North Adriatic donkey). In a highly vulnerable group (I) there are six breeds, in the group of potentially endangered (II) ten breeds, and six of the native breed are not affected (III).

In accordance with the guidelines of the National program related to chapter "Development of *in-situ* programs for the preservation of native and protected breeds in Republic of Croatia", support for existing *in situ* models are continued (monitoring the size, distribution and structure of the breed, and genetic consolidation). For some breeds optimization of existing breeding programs are recommended (i.e. Istrian sheep, sheep from island Pag), and for others establishing a new one (e.g. Istrian donkey) is in progress. Due to their vulnerability, special attention is given to critically endangered breeds: to carefully implementation of breeding programmes, including mating schemes and productivity monitoring. For a small number of native breeds (Istrian Cattle, Black Slavonian pig and others) development of models of economic reaffirmation and involvement in management of protected areas is supported. In the case of Istrian Cattle, Croatian markets are represented by gastronomic delicacies from fresh, durable and semi-durable meat products (Picture 1). Good example is durable salami "Bakin" and fillet in olive oil "Boškarin" that are among the top range of cured products and are gastronomic delicacy which can be consumed only in licensed catering facilities.

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Figure 1. Rich selection of dishes from Istrian cattle and famous salami "Bakin"

Products from Black Slavonian pig like pates, sausages, *kulen*, and salami also represent delicacy, recognized by both domestic and foreign consumers.



Figure 2. Rich selection of dishes from Black Slavonian pig

Conservation of traditional breeds in protected areas in Croatia is of great importance, like: Nature Park Lonjsko polje, Turopoljski lug and Odransko polje, Gajna area, river valley Raška and mountain Učka in Istria, mountain Velebit with Lubenovac area. In those areas exist cohabitation among animal species (i.e. Istrian donkey, Slavonian Syrmian Podolian Cattle, Croatian Posavian Horse, storks) and plant species (oak forests, grass of flooded and wetland), that contribute to the biodiversity preservation.

Competent authorities in Croatia encourage programs of economic utilization and strengthening the competitiveness of native breeds through their promotion and sustainable management, they support marketing activities to promote local products (i.e. various fairs, events, exhibitions), and encourages inclusion of indigenous breeds in folklore and tourist program (i.e. donkey race). As effective protection of native and protected breeds is followed by the research activities and programs, research institutions (i.e. scientific and educational institutions) are included in this part of conservation of native breeds (especially in genetic analysis).

In Croatia, protection of native and protected breeds of domestic animals involves national governmental institutions, educational and research institutions, non-governmental organizations, breeding companies, breeding organizations, breeders and hobbyists. With regards to interests, obligations and authorities, the stated partners take part in the activities of implementation of *in situ* (and *ex situ*) programmes.

In Croatia, strategy of protection of native and protected breeds of domestic animals is still primarily based on the *in-situ* models for preservation. Characterization of native breeds at the exterior level, genetic and productivity level is continued and will be utilized in breed profiling, management of the breed and specification of its products.

Table 1. Overview of native and protected breeds, population size, categorisation in relation to endangerment level, trend estimate and efficiency of *in situ* program

Species	Breed	Number of animals valid for breeding				Effective size of population (Ne)		Categorisation of breed endangerment status	Estimate of the population trend
		Total (*estimate)	Male	Female	Young	Ne			
Horses	Lipizzan horse	1761	174	691	851	556.0		Potentially endangered (II)	Positive
	Croatian cold-blooded horse	6158	248	3228	2674	921.		Potentially endangered (II)	Positive
	Croatian Posavina horse	4944	128	2364	2452	485.7		Potentially endangered (II)	Stable
	Medimurje horse	66	5	36	25	17.6		Critically endangered (Ia)	Positive
Donkeys	Istrian donkey	200*						Critically endangered (Ia)*	Positive*
	Littoral Dinaric donkey	2000*	539	1560	716	-		Highly endangered (I)*	Positive*
	North Adriatic donkey	150*						Critically endangered (Ia)*	Stable*
Cattle	Buša	563	33	308	222	119.23		Highly endangered (I)	Positive
	Istrian cattle	1041	36	627	378	136.18		Highly endangered (I)	Positive
	Slavonian Symirian podolac	257	9	145	103	33.90		Critically endangered (Ia)	Positive
Sheep	Pag island sheep	30000*	218	4143	680	-		Not endangered (III)	Stable
	Krk island sheep	18000*	7	111	41	-		Potentially endangered (II)	Stable
	Lika sheep	30000*	159	6553	1032	-		Not endangered (III)	Stable
	Dubrovnik's Ruda	712	38	564	110	142.41		Highly endangered (I)	Positive
	Rab island sheep	6500*	18	443	75	-		Potentially endangered (II)	Stable
	Dalmatian pramenka	200000*	293	8184	838	-		Not endangered (III)	Stable
	Istrian sheep	2314	96	1769	449	-		Potentially endangered (II)	Stable
	Cres island sheep	15000*	32	737	143	-		Potentially endangered (II)	Stable
	Tzigai sheep	3000*	26	1135	255	-		Potentially endangered (II)	Stable
	Croatian white goat	5000*	4	58	13	14.97		Highly endangered (I)	Conditionally stable*
	Croatian spotted goat	35000*	30	394	97	111.51		Not endangered (III)	Stable*
	Pigs	Black Slavonian pig	1005	109	896	297	388.71		Potentially endangered (II)
	Turopolje pig	159	30	129	75	97.36		Critically endangered (I)	Stable
Poultry	Hen "Hratica"	1500*	103	949	-	371.0		Potentially endangered (II)	Positive
	Zagorje turkey	3000*	428	2255	-	1439.0		Not endangered (III)	Stable*
Bees	Grey bee	320000*	-	6000	-	-		Not endangered (II)*	Stable

* estimate; Source: Annual reports of CAA and HCK for 2012, reports from Associations/Unions of breeders; * honey bee colonies