

The Greek Steppe Breeds

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English translation by the author (andgad@alice.it)

In Greece two cattle breeds belonging to the Podolian strain are reared, Katerini and Sykia, both threatened with abandonment, endowed with great rusticity, able to survive in inaccessible areas and with limited nutritional resources, resistant to diseases, pests and predators.

However according to many local zootechnicians the two Greek breeds do not belong to the Podolian strain, but to Grey Steppe breeds, characterized by small size and dark grey coat, while the now disappeared Greek Podolian would have been similar to those of the rest of the Balkan peninsula, with large size, and light grey coat.

In Italy and the Balkans, the terms "Steppe" and "Podolian" are instead considered substantially equivalent, corresponding to the terms "*Asian*" or "*primigenius*", used until the beginning of the 1900s to define long-horned grey cattle. The name "*primigenius*" was attributed because these cattle were considered the most direct descendants of wild bovine ancestor, at the time classified as *Bos primigenius*, *Bojanus*, 1827.

The old Greek Podolians were widespread in the north-east of the country, where almost all the cattle belonged to this breed. They were similar to Iskar, originally from neighboring Bulgaria, but they were smaller in size, so much so that technicians advised crossings with the Bulgarian breed.

At the beginning of last century initiatives of study and improvement were undertaken, then abandoned, until extinction. In 1934 Papadopoulos registered not less than six breeds belonging to "*primigenius*" strain. In addition to Katerini, the mentioned Sykia, called "*Chalkidiki*", the "*Gura*", now considered a type of Katerini, the "*Macedonian of the plains*" (area of Thessaloniki, Serres and Drama), the "*Trace of the plains*" (Xanthi, Komotini and river Evros) and "*Thessalian of the plains*" (areas of Larissa and Volos).

There were therefore different breeds in the plains and in the mountains, with a situation similar to that of Marchigiana and Romagnola breeds, in which in the past a mountain variety was distinguished, more rustic and less powerful at work, and one of the plain, showing greater size and vigor, but less resistant to adversity.

In 1966 according to French on the island of Tinos there was a type of steppe cattle larger than the others, with withers height of 120-125 cm and weight of 325-340 kg. Grünenfelder *et al.* report that Sykia was widespread in the Sporades islands.

The Grey Greek, like the similar breeds of the Balkans and of Italy, in the past had triple-purpose, predominantly for draught, and they were put into crisis by agricultural mechanization and by the spread of foreign breeds, Brown Swiss, Simmental and, more recently, Limousine and Charolaise.

The introduction of these breeds created three groups of cattle, one of native beef or draught breeds (Katerini, Sykia and Vrachykeratiki), one of crosses with native breeds (beef and beef/dairy), and one of pure foreign breeds. (dairy and beef/dairy) (*Ligda*).

It should be stressed the importance in Greece of the mentioned Vrachykeratiki, an autochthonous Greek breed of Illyrian strain with short horns and reddish coat, similar to the Busha reared in the rest of the Balkan peninsula, widespread in Aetolia-Acarnania, East Macedonia, Epirus and Kefalonia.

Currently confined in marginal areas, mostly on the mountains, the two surviving Grey Steppe live for most of the year outdoors, grazing, requiring only shelters and fodder additions in the colder 2-3 months, with natural mating and without the need assistance for calving, thanks to the very low percentage of dystocia.

Katerini and Sykia are renowned for the organoleptic and nutritional quality of their meat: for Katerini the works by Karatosidi *et al.* (2013a and 2013b) showed a low percentage of fats and a high content of $\omega 3$. Often the breeders themselves directly market the meat or serve it in their catering businesses, where there is a great demand for it, as the consumers deem it of higher quality.

In 1999 a research group of the Genetics and Animal Breeding Laboratory of the Faculty of Agriculture of Thessaloniki Aristotle University, led by Prof. Andreas Georgoudis and Dr. Christina Ligda completed a census, as part of a project on Autochthonous Cattle Breeds, funded by the Greek Ministry of Agriculture. The census surveyed 2,000 heads of native breeds and 420,000 crossbreeds.

The national coordinator for the management of animal genetic resources, for the FAO Domestic Animal Diversity Information System (DAD-IS) is the same Dr. Ligda, now at the Veterinary Research Institute of Thessaloniki, research unit of Dimitra Hellenic Agricultural Organization.

Both breeds have been included in the Rural Development Plan 2007-2013, among the agri-environmental measures, action 3.1 (Conservation of autochthonous endangered animal breeds).

A fundamental contribution to the survival of the traditional Greek breeds at risk of abandonment is given by the Greek association Amaltheia, and the international foundation SAVE (Safeguard for the Agricultural Varieties in Europe), to which Amaltheia is associated, which financed the actions of protection and recovery, and provided support for the challenging task of tracing small herds of animals in sparsely populated and inaccessible environments.

Katerini

The name of the breed derives from the homonymous town of over eighty thousand inhabitants of Central Macedonia (regional unit of Pieria), where today it is no longer bred, while the current diffusion zone corresponds with Thessaly, region of central Greece, and in particular with the mountain areas surrounding the wide central plains. According to DAD-IS, in 2017 Katerini had a population of 770 animals, of which 27 bulls and 480 cows, increasing after a minimum of about 80 animals recorded in 1995, which grew to 198 in 2005 and to 373 in 2013. The herd book was established in 1999 and is held by the Center for Animal Breeding Improvement (KGVZ) of Karditsa, also in Thessaly, of the Greek Ministry of Agriculture, which at 31 December 2017 reports the following consistency:

Age/gender	M	F	TOT
> 24 months	36	466	502
6÷ 24 months	10	34	44
< 6 months	159	132	291
tot	205	632	837

Four farms are found, referable to three breeders, all enrolled in the herd book, and probably corresponding to the total number of existing farms.

Dimitrios Dimos, of Avra, near Trikala, in Thessaly, in 2002 won the Slow Food award for his activities to save livestock biodiversity. In addition to Katerini Dimos rears other breeds at risk of abandonment: Greek black pigs, Skopelos, Oulokeratika and Kymi goats, Karystos sheep, Thessaly and Crete ponies and horses.

Konstantinos Outras, of Trikala, breeds Katerini in Paliosamarina, near Paliopyrgos, as well as Limousine, Charolaise and Simmental, Pindus, with Arabs and Thessaly horses, and buffaloes, in various locations of the region. On the whole, 1,200 partially free-ranging animals are bred, 450 of which are reared under organic production system.

The third breeder is Nikolaos Tsantouris, from Anavra, in south-eastern Thessaly, who breeds the Gura or Anavra variety, which, as seen previously, was considered a separate breed and occupied the entire homonymous plateau. Today, however, Tsantouris herd is the only Katerini in an area dominated by herds of Greek Red, one of the most widespread breeds in the country, originated by crossbreeding of Katerini and Vrachykeratiki with Brown, Simmental and Limousine.

The Katerini shows the typical traits of the Podolian strain, but with a reduced size: the average withers height is 123 cm for males and 113 for females and the average weight is 375 kg for bulls (with peaks of 400 kg) and 280 kg for cows.

The coat is grey, generally darker than in other Podolian breeds, and tends to black in 30% of the heads, and may have reddish hues. The muzzle is edged in white. The calf at birth has a fawn coat, which turns grey around weaning. The adults have lyre-horns, wide dewlap and marked hump in bulls.

The average age of the breeding animals is 40 months for the bulls, and 84 months for the cows, with great longevity: the average productive lifer is 9 years, but the cows can calve even 20 times in their lives. The productive maturity is 24 months for males and 20 for females. The age at first calving is on average 34 months (ranging from 20 to 48), with an average of 450 days. The young bulls are slaughtered at 15-20 months, with a live weight of 200-300 kg, and very variable carcass yield, ranging from 40 to 55%; in a test on calves slaughtered at 18 months the average weight at slaughter was 216 kg with a yield of 53.89% (*Karatosidi*, 2012). Milk production is just enough to feed the calf, and it is 400-500 kg, reaching 700 kg in optimal breeding conditions, in a lactation of 5-6 months.

Several modern breeds are derived from Katerini ancestors, such as the aforementioned Greek Red and Agrinio, derived from Katerini crossings with Vrachykeratiki (*Kugler*).

From January 2009 to May 2012, as part of the international tender for sustainable good practices, as part of the theme of Expo Milan 2015, the "*Assessment of the meat quality of Italian Podolian and Greek Katerini cattle*" initiative took place, comparing the organoleptic and analytical traits of Katerini and Italian Podolica breed. The initiative, funded with 50,000 euros, involved the Department of Agricultural and Environmental Sciences of the University of Bari Aldo Moro, the Hellenic Dimitra Agricultural Organization and the farmer Dimitrios Dimos.

Sykia

Sykia is similar to Katerini, but with morphological differences, and smaller size and horns. It takes its name from the village in Toroni municipality, in Chalkidiki peninsula, a traditional area of livestock breeding (cattle and goats), performed on plains and coniferous forests.

Even in Sykia the coat is grey, but 30% of the heads are black, with possible

reddish shades. The muzzle shows a white edge. The horns are lyre shaped and direct above. The weight of adults is 210 kg for males and 190 kg for females, and birth weight averages 30 kg. The withers height is 115 cm for bulls and 112 cm for cows. The weaning is around 6-8 months and slaughtering is on average at 16 months, with a live weight of 130 kg (*Ligda et al.*).

Until 1923 in Chalkidiki a Sykia Reproduction Center was operating, which provided draught animals and cows to local farmers, including Mount Athos monastic community. At that time there were 13,000 animals, but after 1922 the land distribution and the cultivation of grazing areas caused a decrease in the number of animals. According to the breeding center in 1936 there were only 1,330 heads, and the decline continued steadily, until almost complete replacement with foreign breeds, more fit to intensive agriculture.

At the end of the millennium, the breed was practically extinct, or at least considered as such, since, although it was included among the officially recognized breeds, there were no purebred animals registered and only about one hundred crossbreeds attributable to the breed were reported. From these animals it was assumed to rebuild a "new Sykia" by applying appropriate selection schemes, also exploiting the demand for meat from traditional systems, which followed BSE crisis. According to other zootechnicians, on the contrary, the breed was still existent, in how much there were heads matching the breed standard.

In 2001 a study was launched in the Toroni area to verify the feasibility of a local meat certification, based on traceability, which would allow the breed to be saved, guaranteeing its profitability, and applying a selection scheme. In the framework of the study a recording of production performance began, in particular of conformation, fertility, calving ease, longevity, carcass quality and morphological traits typical of the breed (*Georgoudis et al 2001b, Ligda et al.*).

At the same time, a program was launched to genotype the various Greek cattle breeds at risk of abandonment, including Sykia. The collected DNA samples were analyzed at the Faculty of Agriculture of the University of Athens and at the University of Munich.

On the whole, at present the existence of about 160 animals in four farms is estimated, although in Chalkidiki there are semi-wild herds of Sykia-type livestock, some of which have probably not yet been identified, and this could decisively increase the genetic diversity of the breed, without prejudice to the difficulty of putting them under control, since they don't have owners.

In 2008 at Stratoni, near Stagira, birthplace of the philosopher Aristotle, Amaltheia traced, after three years of research, a herd with bulls and cows, which included about 70 animals, 25 of which showing the most distinctly characteristics typical of the breed, on which a purebred nucleus was constituted. The breeder has now moved the herd, reduced to 20 animals, to Marmari-Chalkidikis, a peninsula east of Ierissos, in Chalkidiki.

The scientific partners of Amaltheia and SAVE emphasized the need to create a second nucleus of Sykia, to cope with any possible unexpected events, and to avoid the risks of contraction of the genetic heritage and consequent increase in the inbreeding of the breed. In 2011 some heads from the Stratoni group were bought, with the assistance, also financial, of SAVE, and a small nucleus of ten animals was formed at Agrelia, in the northern Thessaly mountains. This herd was then suppressed by the breeder due to financial problems.

In 2014 another breeder formed a new herd in Sochos (on the border between the

region of Thessaloniki and Chalkidiki), buying 40-50 heads from Straton herd, supplemented by at least 70 others, purchased in 2017, bringing the total to about 100 animals.

A new group of 30 animals, originally from Straton herd, was established in 2016-17 in Ierissos, in Chalkidiki, by a breeder who had his own herd of Sykia, but had to cut it down in 2015 for health reasons.

The search by the members of Amaltheia on the places of origin led to identify in 2013 a new nucleus of 15-18 animals, held in Thessaloniki by an elderly breeder who intended to abandon the activity, and wanted to get rid of the animals, slaughtering or crossing them. A collection of funds was then organized to save this bloodline, which would otherwise have been lost. Two bull calves and five cow calves were purchased, as well as two cows from the Serres area in central Macedonia.

After long vicissitudes, due to bureaucratic hindrances, on July 15th, 2014, the transport of the animals began, and after two days they arrived in Perdika, in Epirus mountains, hosted by a breeder. The herd currently has 11 animals, two males and nine females.

In April 2018 at Olympiada-Sykiyas, in Chalkidiki, Amaltheia identified a small group of probably pure animals, typically Sykia, including a well-shaped bull.

In Greece six state centers of genetic improvement (KGVZ) are established, and the herds are registered at the competent center for the territory: those of Straton/Marmari, Ierissos and Sochos are registered by Nea Mesimvria Center, near Thessaloniki, which keeps the herd book, that in 2015, according to DAD IS, included 116 adult animals, including 13 bulls and 103 cows, in two farms. The Perdika herd is instead registered at Ioannina center, in Epirus.

At present, the herds do not receive subsidies as endangered breeds, for various reasons, linked to the rules in force: for example a presidential decree guarantees subsidies only to animals raised in Chalkidiki, and therefore the herds of Sochos and Epirus are excluded. Other breeders do not have the necessary permits and facilities to obtain subsidies.

A change in legislation is expected to allow Sykia livestock to get aid regardless of their breeding area. The work of reactivating official records began thanks to Amaltheia, who brought the breed to the attention of the authorities, and received support from the Nea Mesimvria Center.

National data

According to Eurostat in 2017 in Greece 555,000 heads of cattle were reared, with a sharp decline, of about one hundred thousand units, which occurred after 2014, due to the economic crisis. The breeds are predominantly cosmopolitan: Limousine, Charolaise, Holstein and Brown Swiss, but also breeds obtained by crossing between native and foreign breeds can be found, such as the aforementioned Greek Red.

In Greece, besides the Greys and Vrachykeratiki, other breeds are reared, with very reduced census, especially in the islands (Kea, Tinos, Amorgos, Nysiros, Andros, etc.).

According to Eurostat, the number of bovine slaughterings in Greece in 2017 was 181,250, with a decrease of over 30% compared to 2007, despite an increase of 8.23% on 2016, after five consecutive years of constant decline.

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