

## **Donkeys in Greece: A review of current status and future trends**

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### **Abstract**

The aim was to review the status of donkeys (*Equus asinus*) in Greece by outlining the basic concepts of using them. Donkeys are kept for a variety of reasons and have had different tasks depending on who has been using them and where. Considering that the population of donkeys decreased by 96% between 1955 and 2005 (508,000 to 20,472), current and future trends resulting from social and economical developments in rural areas of Greece are discussed. We argue that the lack of any breeding program for donkeys, the importation of jacks from foreign breeds, the lost of interest and underappreciation together with the ignorance of health and welfare needs of such animals were the main reasons that shaped the current status. Donkeys in Greece are characterised by a large diversity in phenotypes as well as significant variation in their morphological characteristics with body height ranging from 80 cm up to 150 cm and body weight from 90 kg up to 180 kg.

Here, the most common types of animals are described. Virtually no information is available on the epidemiology of any donkey disease. The notion is that many problems are associated with diseases originating in malnutrition, parasites, infections and bad husbandry management. We discuss also the occurrence of health and welfare problems together with the factors, which need to be considered when designing a monitoring programme. Their feeding and management practices differ enormously across different areas of Greece, reflecting differences in the cultural, economical and “emotional” importance of individual animals. It is the style of ownership that dictates the spending patterns (e.g. on veterinary care, feeding, shoeing etc). In the last part of our paper we address issues concerning research in donkey welfare, health, nutrition and management. Given the trends currently affecting the status of donkeys in Greece it is concluded that a conservation policy should be adopted at both national and European level because the number of donkeys in Greece will continue to fall.

**Keywords: Donkeys, Greece, welfare, health**

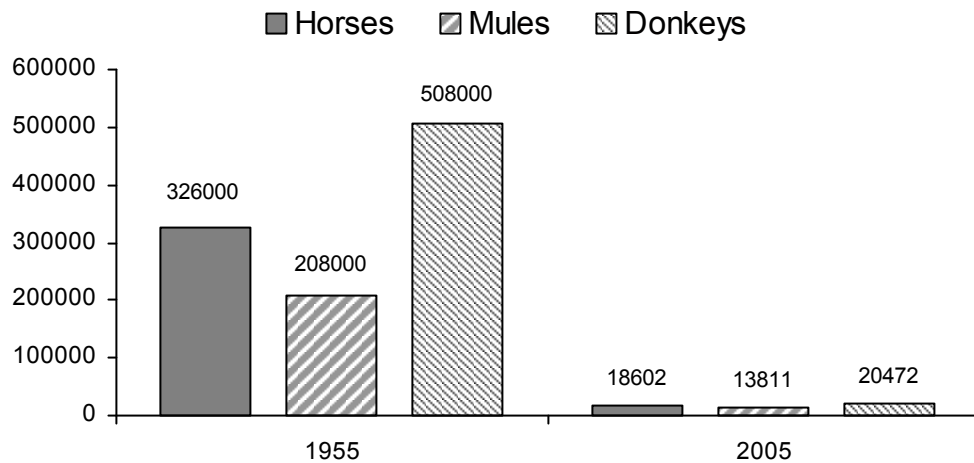
### **Introduction**

Donkeys as well as mules and horses have traditionally been part of agricultural systems in Greece providing an essential transport, pack and draught resource as working animals. They played a major role in the evolution of Greek agriculture, which is evident in the development of animal husbandry in Greece. However, their contribution to the rural economy has generally been ignored. The introduction of mechanization in agriculture resulted in a general underappreciation of equines between working rural communities. It was only a small number of animals that were somehow excluded from such treatment due to the fact that they were considered as companion animals, whose emotional value is significantly higher than their actual economic value. In Greece, as in the rest of the world, human relationships or interactions with equines have varied in the course of history according to human needs (Kaushik, 1999; Arsenos, 2005). From a historical point of view the horse was retained as a noble animal with mules and donkeys serving as draught animals and beasts of burden. Of course, there are still people in the rural areas that are using equines in agriculture, for instance pulling ploughs and transportation of goods, but this happens less and less often. Donkeys have been subject to bad

management under harsh conditions and there is an increasing awareness about their health and welfare (Pritchard *et al* 2005). Our aim here is to review the status of donkeys (*Equus asinus*) in Greece by outlining the basic concepts of using them.

### Donkey Numbers

Donkey numbers should be considered together with those of other equines such as horses and mules. It should be noted here that estimates of numbers of equines in Greece have varied between sources. Figure 1 shows the differences in the numbers of horses, mules and donkeys in Greece between 1955 and 2005.



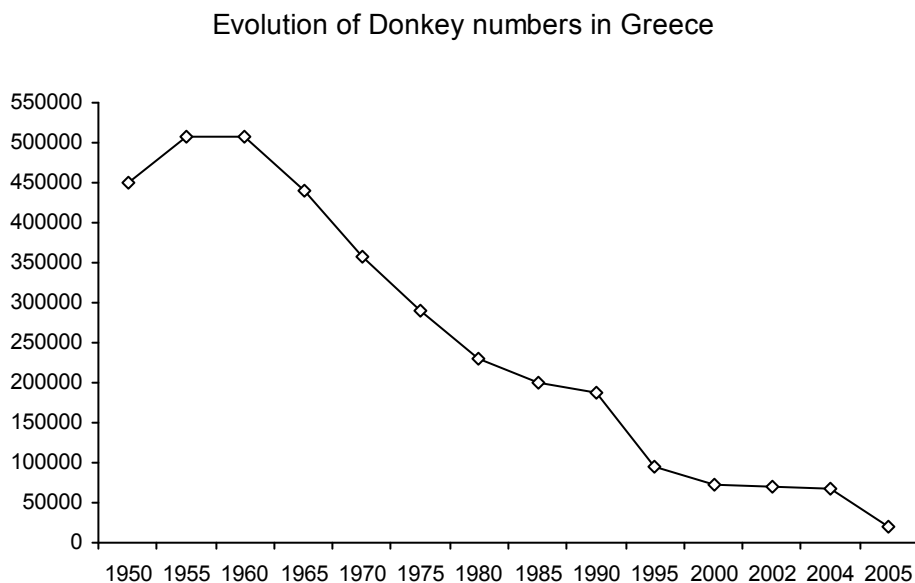
**Figure 1.** Number of equines in Greece between 1955 and 2005.

As stated above, donkey numbers in Greece are not reliable since there is a considerable variation between different sources. For example, according to FAO data the population of donkeys in Greece is estimated to be about 68,000 animals (FAO, 2004). Such numbers are unrealistic because according to our research and the information from the Greek ministry of Agriculture the actual number of donkeys in Greece is just 20,472 animals allocated at different areas of the Country as described in Table 1.

**Table 1.** Donkey numbers in different areas of Greece in 2005

Area of Greece	Number of Donkeys
Thrace	1367
Macedonia	1,686
Thessaly	1,043
Epirus	1,149
Stereia Ellada (including Attiki)	1,724
Peloponissos	8,688
Islands of Aegean sea	2,621
Crete	1,856
Islands of Ionian sea	338
<b>Total</b>	<b>20,472</b>

Over the last 50 years the population of donkeys in Greece has decreased dramatically; about 96% between 1955 and 2005 (from 508,000 to 20,472). That decrease is depicted in Figure 2, which shows the decline of donkey population in Greece over the last 50 years, a trend that has not yet ended. Such trend has led us to believe that there is urgent need of protection, preservation and perpetuation of the indigenous Greek donkeys.



**Figure 2.** Evolution of donkey numbers in Greece over the last fifty years

### **Breeds of Donkeys**

The common practice in any breeding program for donkeys was the importation of jacks from foreign breeds, imported from Cyprus, Sicily and France (Poitou). Such practice led to numerous crosses of donkeys (Arsenos 2005). Hence, it is believed that breeds thought to exist are possibly now under threat of extinction. The notion regarding donkeys is that a decision as to whether individual animals of a population are the result of cross breeding or inbreeding cannot be based just on phenotypic traits since it is restricted by their phenotypic diversity (Jordana *et al* 1999; Aranguren-Mendez *et al* 2001). The evidence in the literature suggests that there is large variability in phenotypic characteristics of donkeys (Eley and French, 1993; Pearson and Quassat, 1996). However, there is not such information in the genetic structure and variation among Greek donkeys.

On the basis of their phenotypic traits the donkeys reared in Greece today are characterised by a large diversity in phenotypes as well as significant variation in other morphological characteristics with body height ranging from 80cm up to 150 cm and body weight from 90kg up to 180 kg. The prevalent colours are light colours (such as grey and crulla) but also common are the bay or bay-brown (Figure 3). In most cases there is line of dark hair along the back crossed with a similar one on withers.

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**Figure 3.** Examples of the large variability of phenotypic characteristics amongst Donkeys in Greece.

One of the most distinctive breeds of Donkeys encountered in Greece is the Arcadian donkey. The Arcadian donkey originates from Arcadia region in Peloponissos. It is one of the most important indigenous donkey breeds. The aforementioned practice of using foreign jacks in breeding practices together with the decline in donkey population has resulted in the survival of a very small number of animals that share common characteristics and could be considered as a true breed. It is medium in size with body height ranging from 95 cm up to 120 cm and body weight from 90kg up to 120 kg. In Arcadia and Peloponissos in general there has been a tradition of keeping donkeys. Even today Arcadia prefecture hosts the largest number of donkeys (3,118 animals), whereas in the whole of Peloponissos there are 8,688 donkeys (about 42.4% of total population in Greece).

In our view it is very difficult to distinguish any other true breed of donkeys in Greece and therefore it is preferable to talk about types of donkeys instead of breeds since there are no data on body weight, height, heart girth, umbilical girth, cannon bone, live weight, age, markings or any other phenotypic characteristic of donkeys. Therefore studies of population phenotypic variation and genetic structure of donkeys seems absolutely necessary.

#### **Donkey ownership and use**

A significant part of information regarding donkey ownership as well as donkey management were collected from interviews of donkey owners during the course of a study where skin samples were randomly collected from donkeys located at different parts of Northern and Central Greece. The research was part of a collaborative project with the 'Université Joseph Fourier' in France studying the «Genetics of domestic cattle,

Horses and Donkeys from Mediterranean countries». Today, the number of donkey owners in Greece is estimated to be similar to that of the actual number of animals. It was revealed that the donkey is an animal, which does not seem to fit with today's cultural beliefs of modern Greeks. The latter is illustrated in donkey ownership where the average age is above 60 years (Figure 4).

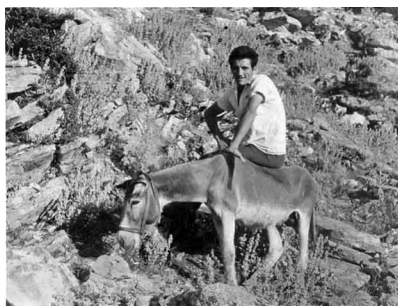


**Figure 4.** Representative of donkey ownership

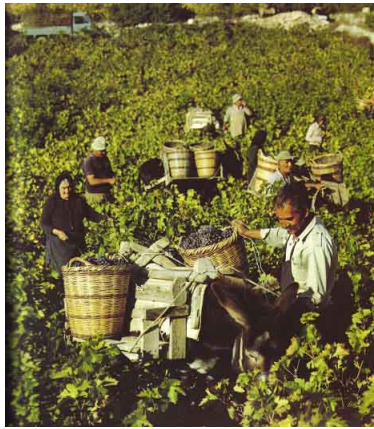
Methods for keeping donkeys vary depending on the type of ownership. Most owners have just one donkey to cover transport needs of goods and themselves and in general those animals are in good condition. Owners that are involved in agrotourism enterprises in mainland Greece as well as those in islands usually keep more donkeys to accommodate the needs of tourists transport. Our knowledge of how these animals are kept and managed is very limited. Hardly any research has been done about the latter aspects in Greece, but in general there is a dearth of available data worldwide (Kaushik, 1999). This lack of information sometimes makes it very difficult to get an appropriate view of donkey status.

#### **Donkey use and management**

Donkeys are kept for a variety of reasons. The social and economic developments during the last decades changed their role (Figure 5). The donkey has evolved from draught and pack animal to companion animal with a spectrum of uses such as leisure, recreation and companionship. However, in some part of Greece, particularly mountainous areas and the islands the donkey still holds an important position in the rural economy whereas in islands it is mainly used for touristy and recreational purposes.



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**Figure 5.** Uses of Donkeys in Greece in the past and today starting from the top left corner: transportation of people, as pack animal in small agricultural holdings and for transportation of building material to archaeological sites.

Donkeys use and management reflects the culture and activities that are characteristic of a given geographical region. Regardless of type of donkey use there are four different aspects that can be distinguished in each category:

- behaviour and welfare of donkeys
- feeding
- maintenance and management
- veterinary care

Their feeding and management practices differ enormously across different areas of Greece, reflecting differences in the cultural, economical and “emotional” importance of individual animals for their owners. There are now some suggestions in the literature about nutrient requirements of donkeys (Ram *et al* 2004). The feeding practices range from feeding traditional home cereal based mixes to feeding manufactured feeds by a limited number of owners. The common diet is a diet including mainly roughage (alfalfa hay, straw, etc) plus small amounts of grain or compound feed. Of course, the type of diet varies according to the type of ownership and there are seasonal variations in feeding practices associated with the weather conditions and the availability of pasture. Some owners devote a lot of resources to their donkeys and it is the style of ownership that dictates the spending patterns (e.g. on veterinary care, feeding, shoeing etc). Donkeys used in agrotourism enterprises as well as those used by farmers as pack animals are usually fed insufficiently.

Moreover, the donkeys are used for the production of mules, which are still used in mountain regions of Greece for timber transport. The introduction of vehicles specifically designed for timber transport from forests minimized the need for mules and hence for donkeys. The Institutes of Artificial Insemination in Thessaloniki and Athens where imported jacks were kept as part of national programs for genetic improvement of local breeds stopped such activities in the mid 70’s. Subsequently, there has been a remarkable stagnation in donkey reproduction, which is reflected in the evolution of donkey numbers described earlier in Figure 2.

### **Behaviour and welfare of donkeys**

The prevailing view is that donkey health and welfare should satisfy the following five freedoms (FAWC 2005):

- Freedom from hunger and thirst implying free access to fresh water and a diet to maintain full health and vigour.
- Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area.
- Freedom from pain, injury or disease by prevention or rapid diagnosis and treatment
- Freedom to express normal behaviour by providing sufficient space, proper facilities and company of the animal’s own kind.
- Freedom from fear and distress by ensuring conditions and treatment which avoid mental suffering.

One aspect regarding the implementation of the above five freedoms that remains very uncertain is that relating to resources. There is currently no central policy and available funding to support the wide range of necessary activities such as education of owners and initiation of monitoring and epidemiological studies. Social attachment is important for donkeys and since most donkeys live in some kind of social relationship with humans, it is important to look at specific aspects of Donkey husbandry that influence the development of such relationship. A broad term for any human interaction with donkeys is handling that is associated with a spectrum of actions from grooming and feeding to shoeing and actual physical training. Most of the donkey we have encountered in Greece had foot and dental problems whereas leg-tethering and absence of any vaccination program raised concerns about their welfare status. In our view the health and welfare status of donkeys reflects the value that the modern Greek society puts on animals in general.



### **Health and veterinary care of donkeys**

Virtually very little information is available on the epidemiology of any donkey disease in Greece. The notion is that many problems are associated with diseases originating in malnutrition, parasites and bad husbandry management. Parasites represent one of the most important causes of disease and reduced welfare. Here, based on existing surveys on parasitic diseases of equines in Greece (Kinis *et al.* 1985; Sotiraki *et al.* 1997; Papadopoulos *et al.* 2000) and in other countries of the Mediterranean basin (Bliss *et al.* 1985), we speculate that the occurrence of health problems of Donkeys is similar to that of other equines. In studies carried out on the prevalence of parasites in equines (mostly horses and less in donkeys, ponies and mules) in Greece, strongyles (small and large) vary from 37.8 to 95.2% (73.0% and 37.8% in donkeys). The prevalence is particularly high since strongyles (larval stages) may cause severe colitis resulting to the animal death. Other parasites reported include *Anoplocephala perfoliata*, *Strongyloides westeri* (5.4% in donkeys), *Dictyocaulus arnfieldi* (2.7% in donkeys), *Eimeria leuckarti* (8.1% in donkeys), *Setaria equina* (2.7% in donkeys), etc. Horses used for pleasure receive more frequently than working equids anthelmintic treatments. Therefore anthelmintic resistant worms can develop fast since the frequent use of anthelmintics select for resistant parasites. Nevertheless, anthelmintic resistant worms can expand and infect more equines including donkeys. Benzimidazole resistant worms were found in 20% of the horse studs tested by Papadopoulos *et al.* (2000). In the course of our work with donkeys there were animals demonstrating limb and hoof deformities and abnormalities of gait. The latter is probably the result of leg-tethering of donkeys at pasture, a common practice by many donkey owners in Greece, due to their ignorance about the health and welfare implications of such practice and proper management interventions as shown in studies in other countries (Matthee *et al.* 2002; Leeb *et al.* 2003).

### **Conclusions and future trends**

Research in donkey welfare, health, nutrition and management has had a very low priority and the present state of knowledge for donkeys is poor. The lack of scientific information with regard to research on Donkeys in Greece but also at European level was one of the problems we faced while writing this paper.

Recently, it appears that some issues such as welfare and genetics have again given priority. Donkeys have become an “attractive” animal for promotion by charities and animal welfare groups. They try to improve the health and welfare of working donkeys by educating owners and providing healthcare. However, it is clear that more research will be needed in the future. A European regional description of the number, uses, breeds and strains could provide basic information about the current roles of donkeys. Once, such information is available, it needs to become available to people interested in it. Such data will form the basis for designing any epidemiological study or conservation program. Bearing in mind that the vast majority of Donkeys population in Europe is allocated in countries of the Mediterranean basin (Portugal, Spain, France, Italy and Greece) that have similar climatic conditions and landscape, it is reasonable to expect that any research data will be valuable at both national and international level. On the other hand, there is evidence suggesting that the donkey can be used in research for important horse diseases such as equine infectious anaemia (Cook *et al.* 2001). Cook *et al.* (2001) showed that individuals of *Equus Asinus* remained asymptomatic over 365 days to infection with pathogenic strains (EIAV<sub>PV</sub> and EIAV<sub>WV</sub>) of equine infectious anaemia virus, while individuals of *Equus caballus* were clinically diagnosed with the disease.

Our experience, based on personal observations suggests that even donkey owners are not fully aware about the potential of their animals. Given the trends currently affecting the status of donkeys in Greece it is concluded that a conservation policy should be adopted because the number of donkeys in Greece will continue to fall.

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