AN OVERVIEW OF THE INDIGENOUS GOAT OF THE MALTESE ISLANDS THROUGH VARIOUS LITERATURE

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REQUEST: To officially recognise the critically endangered Traditional Population of Indigenous Goats in the Maltese islands as a Local Breed at Risk.

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This review is a first attempt to give a comprehensive historical account on the evolution and true morphological traits of the indigenous goat of the Maltese islands. The initiative consolidates available literature to propose hypothesis on the origins of this unique traditional population, and to develop a breed standard in conformity with other published Breed Standards. These indigenous goats have never been systematically characterised and documented in terms of their observed phenotype and genotype. During the last five decades, the overall population of indigenous goats has decreased at an alarming rate. This indigenous population should be valued and maintained for the benefit of biodiversity. Considering the growing consensus on the need to safeguard native breeds, this is an attempt to retrieve, analyse and combine information to characterise the remaining indigenous goats of the Maltese islands, identify the current status and size of the population, and to develop comprehensive criteria that may serve as a basis for future breeding and selection programs.

Introduction

The Maltese islands have a long history of human inhabitants prior to the arrival of the first Phoenician colonists (Evans, 1977). There is sufficient evidence to show that due to the limited size of the islands and the relative density of the population, the people could not have subsisted mainly on the products of chase. Borg (1915) suggested that the inhabitants must have been dependent almost entirely on the produce of the farm and of herds of domesticated animals. Ovaska (2017) pointed out that the domestication of farm animals altered the course of human history, as societies changed from nomadic hunter-gatherers to more permanently settled agriculturalists.

Numerous skeletal remains of domesticated livestock were uncovered during excavations in the cave known as *Għar Dalam*, a relic of the bygone ages (Despott, 1923). Numerous representations in stone or clay of animals and charred bones of sacrificed animals such as sheep and goats can be seen in various temples, notably in Tarxien (Evans, 1959). Besides, old names given to localities such as *Imrieħel* in Malta, referring to pastureland for large herds of animals (Borg, 1915), and sites such as the cave *Bur Megħeż*, *bur* meaning an open space, and *megħeż* meaning goats (Zammit, 1930), all testify to the inhabitants' early acquaintance with animals and livestock husbandry on the islands.

This long association with animals since the time of the Phoenicians (Gray Porter & Weber, 1885) and the traditional agricultural practices used during these remote periods gave rise to peculiar native livestock breeds, such as the traditional population of indigenous Maltese goats.

Historical background of the goat industry in Malta

During the Knights of Saint John era (1650-1798), livestock production mainly involved small ruminants such as goats since these animals could survive with little grazing in areas of limited agricultural value (Blouet, 1963). Land classified as wasteland or *xagħra* are areas defined by their lack of soil cover (Caruana Galizia, 2017).

Contrary to other livestock such as cattle, goats can easily be reared with inexpensive nourishment by grazing in marginal land (Ballou, 1893) such as roadsides (MacGill, 1839) and hill slopes (Simmonds, 1877), thus referred to as the "poor man's cow" (Hall, 1909). When the herd was driven back to shelter, they were supplemented by carob beans (Anon., 1903), broad beans and prickly pear leaves (Thompson, 1905). This adaptability of goats reflects their ability to suit harsh environments (Patbandha et al., 2018) and survive under low input systems (Tefiel et al., 2018).

Goats were the chief milk producers in the Maltese islands (MacGill, 1839; Andrew, 1860; Godwin, 1880; Hogg, 1883). Grout (1902) affirmed that the population of Malta relied almost wholly upon the goat. Phillips (1841) concurs, reporting that sheep were scarce while Andrew (1860) wrote that the few cattle present on the islands were used solely as beasts of burden as their udders were small and provided insignificant milk yields. Blouet (1963) states that in the nineteenth century, large herds of goats were reared in Żejtun, Żabbar and Qormi to supply daily raw milk to the rapidly growing population of the harbour side towns of Birgu, Bormla and

Senglea. Goats were numerous (Porter & Weber, 1885; Hogg, 1883) and were driven by their owners along the streets (Thompson, 1905) from door to door (Godwin, 1880) and milked at the doorstep of the consumers (Ballou, 1893; Cassar, 1965).

In his travel accounts, Ballou (1893) describes Malta as a country with an abundance of milk. Badger (1838) reported that goats in Malta were of a superior quality as they produced large amounts of milk. Goat yields were the most impressive from 1839 to 1938 (Caruana Galizia, 2017). Holmes Pegler (1886) claimed that such a shift towards more efficient production must have been driven by herdsmen carefully breeding goats only from good milking stock. Thompson (1903) agreed that goat breeding for milk production was brought to a degree of perfection in the Island of Malta.

Grout (1902) claimed that despite no special attempt being made by the locals to preserve strains, the Maltese goat still manages to keep up its reputation for productiveness.

Fascinated by the strong affection of the Maltese towards their goats, Swan (1826) recounts how an old goat keeper who had lost his cherished goat burst into tears of extreme joy and embraced the animal when he found it.

MacGill (1839) mentions that Maltese does were used by families to suckle their infants, and remarks that sometimes the same goat suckled up to six children. In his journal, the author also reveals that these native goats were so intelligent that they even learned how to nurse children unattended, lying down and positioning teats near the infant's mouth.

The origins of the true indigenous goat of the Maltese islands

Holmes Pegler (1886) remarked that polled goats where mostly prevalent in the Maltese islands. The hornless goat has an ancient origin (Auld, 1887). Biblical manuscripts of the Old Testament provide enough evidence that hornless goats were among the first animals to be domesticated (Portolano, 1973). A French writer claims that the hornless goat is of Spanish origin (Anon., 1700). Considering the proximity and strong commercial links with Spain, when Malta was part of the Spanish Empire (Holmes Pegler, 1886), livestock including goats could have been introduced into the Maltese islands from Spain (Attard et al., 2014).

Thompson (1903) contradicts this theory, alleging that that Spain imported many pure Maltese goats from Malta during the last century, and later referred to these goats as of the Spanish-Maltese breed. Wickersham (1917) also agrees with this notion and states that the Spanish-Maltese goats are native to the Island of Malta.

It is interesting to note that Holmes Pegler (1886) put forth a different hypothesis on the origins of the Maltese goat, claiming that pendulous or lopped ears attributed to these goats are generally betoken of Middle Eastern origin, thus suggesting possible importations of livestock from the East. Compellingly, Wilson (1873) suggests that pendulous ears in goats are an indication of prolonged periods of domestication.

Crepin (1906) agrees with Holmes Pegler (1886) and affirms that the Maltese race arose by breeding goats of Spanish descent, either of Murcia or La Mancha together with Nubian and Syrian goats. Moreover, the author suggested that the dropping ears with the slightly bent tips of the Maltese goat emanate from one of its ancestor, the Syrian goat. Auld (1887) maintains that similarly, like the Maltese goat, the Syrian, also referred to as the Damascus goat is generally without horns. The genetic link with the Syrian goat is documented by numerous writers.

Dohner (2001) claims that Syrian goats possibly made their way to Malta from Syria during Phoenician, Greek, Roman, Arab and Norman times with traders and conquerors. The existence of Syrian parentage was further supported by Portolano (1973) in his book 'La Capra Maltese', stating that the Maltese goat originated from the Syrian goat, brought over from the Middle East by merchants during the Roman Empire (around 2 BC) and subsequently by the Arabs (AD 800).

The once flourishing livestock markets in the cities of Damascus (Syria), Caesarea (Israel), Alexandria (Egypt), Leptis Magna (Libya), Cyrene (Libya), Carthage (Tunisia) and the islands of Cyprus, Crete and Malta witnessed the entry of goats from the Asian continent (Portolano, 1973).

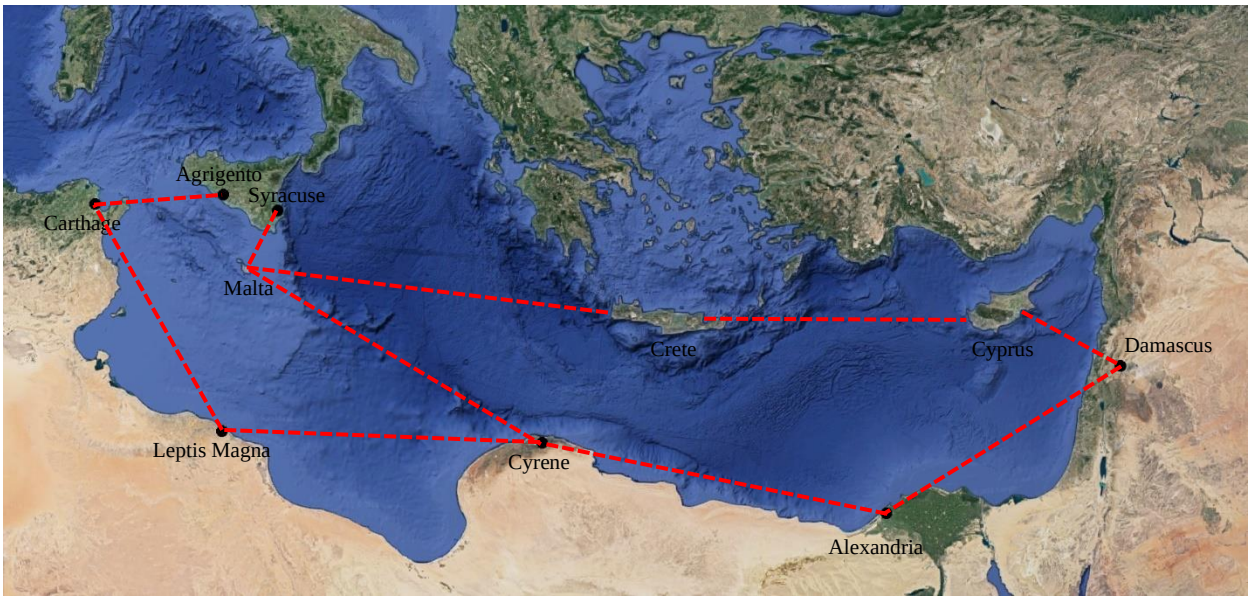

Figure 1. Goat trade routes during the Roman Empire (around 2 BC). Reproduced from *La Capra Maltese* (p. 7), by N. Portolano, 1973, Bologna, Officine Grafiche Calderini. Copyright 1973 by Edizioni Agricole.

In addition, Portolano (1973) claims that Syrian goats can be traced back to the Northern and Central provinces of India as these goats descended from Indian goats of Punjab and Hyderabad.

On the other hand, Borg (1907) proposed that the Maltese probably derived from the Theban or Egyptian goat as it bears a resemblance to this breed, a suggestion that goes in line with the fact that the Syrian goat was introduced into Egypt (Holmes Pegler, 1886; Auld, 1887).

Porter (2016) supports the fact that the Maltese goat possibly originated from other Mediterranean goat breeds such as those found in Italy, Spain and France and crossed with Middle Eastern or North African animals, such as the Nubian goat.

A goat population native to the Maltese islands

The Maltese goat, referred to as *Capra melitensis* (Crepin, 1906) is native to the island of Malta (Wilkinson, 1869; Shaw 1918) and has been bred for milk in this country for centuries (Anon., 1908). In fact, the appellative 'Maltese' is rightfully well founded as these goats have been raised in these islands since ancient times (Portolano, 1973).

Ballou (1893) asserts that these goats are specially adapted to the local necessities, yielding milk profusely. Martin (1837), Badger (1838) and Shaw (1918) state that goats present on the Maltese islands are of a very fine breed. Several authors consider the Maltese goat as a special race (Voogt, 1907), second to none in its milk production (Crawford, 1908) and the best milking goat in existence (Borg, 1907). Thompson (1905) considered the Maltese goat among the best breeds for milk production. Godwin (1880) and Mohler and Hart (1908) refer to the Maltese goat as an exceedingly prolific breeder.

The first written detailed description of the Maltese goat appeared in Holmes Pegler's book entitled 'The Book of the Goat' (1886, p. 47-48). According to the author, Malta was one of the few countries where goats where carefully being bred for milking purposes. The Maltese goat is described as predominately hornless, of a white or greyish white colour with brown or black spots, long-haired and having pendulous ears.

Fig. 1 - Maltese goatherd with goats native to the Maltese islands.

Photograph from the private collection of the Agrarian Society of Malta, also archived at The National Archives of Malta.

Fig.2 – Ġiużeppi Farruġia exhibiting an indigenous goat in the village square of Siġġiewi, on the 6 of December 1945, the feast day of Saint Nicholas.

Photograph from the private collection of Josef Farrugia, nephew of Ġiużeppi Farruġia, also archived at The National Archives of Malta.

The following table summarises published morphological traits of the indigenous Maltese goat by several authors along the years.

Table 1 Published morphological traits of the indigenous goat of the Maltese islands

Morphological traits	MacGill (1839)	Andrew (1860)	Godwin (1880)	Holmes Pelger (1886; 1917)	Ballou (1893)	Hook (1896)	Grout (1902)	Thompson (1903; 1905)	Voogt (1907)	Mohler (1908)	Shaw (1918)	Int. Inst. Agriculture (1923)	Zammit (1926)	Ponder (1930)	Portolano (1973)*	Mason (1996)	Porter (2016)
Head				Long and narrow									Dainty				Small and elegant
Neck				Long													
Face				Straight facial outline													Profile usually straight
Body				Small, bony, thin, flat-sided				Low, stocky and compactly built	Narrow behind								
Skin				Pigmented with large black spots interspersed.											Pigmented black		
Coat				Long-haired			Short and long haired varieties	Long-haired and short-haired	Short-haired	Hair of some is short while in others it is long	Hair is rather long	Hair is long		Hairy creatures	Mostly long-haired	Long or short coat	Long or short coat
Hair				Straight hair, often short and smooth on the head and neck			Long-haired variety; hair is often 10.16 cm to 12.7 cm in length		Moderately fine			Fine and silky	Clean, glossy		In adults hair is 18 cm in length, except for the head and neck regions (short hair).		
Coat Colour				Greater proportion white or greyish white in colour and with brown or black spots		Almost invariably white, with more or less red markings	Red, white, brown and black	Predominating colour is white, although there are many other colours such as red, brown and black	Somber in colour, generally brown or snuff-coloured varied with white	Of all colours, but brown predominates	White and reddish brown or black	White, or sorrel, or has reddish-white patches	Either white, red or black	All shades of white, brown and black	White coat with a raven black head, ears and neck or white coat with red brick marks. Some have an entirely	Usually chestnut or brown, often cream with black patches on head and neck, also black, white, grey or pied	Usually chestnut-red or brown but can also be black, white, grey or pied

															reddish coat		
Ears				Are of considerable length and width, carried horizontally, semi-pendulous and a few have extra-long ears with a slight outward curl at the extremities				Moderately long and horizontal		Very long pendulous ears	Rather long and are carried horizontally			Long ears flap	Long, dangling ears	Horizontal or lop ears	Ears are usually horizontal but may also be lop with up-turned tips
Tassels															Have while tassels situated in the neck region		Many have tassels
Beard				Free from beard								The chin is beardless					Most are beardless
Horns				Practically hornless, naturally polled, but few are horned, when present horns are small and curl back over the head				Usually hornless but presence of horns is not an uncommon sight, many that grow horns are dehorned	Without horns, most of them have small horns but the island also possesses a long-horned variety	Quite a number of these animals have horns, but the majority are hornless		Horns are small			Hornless	Usually polled	Most are polled, if present horns are short, thin and sickle-shaped
Udder	When full is rather unsightly, it hangs down to nearly the ground	Enormously developed udders, trail on the ground during progression	Of unusual size	Long instead of round and hanging down between the thighs, thin-skinned, nearly touches the ground, peculiar orange-red colour	Singularly well-developed udders which reach nearly the ground			Udder is large and is carried low, oftentimes nearly touching the ground as the animal walks		Very large low-hanging udder, in animals above 4 years of age the udder will almost touch the ground as the goat walks	Rather large and in many instances almost touch the ground			Often dreadfully distended that they make it very difficult for the animal to walk			
Teats				Large like little udders themselves,				Touch the ground		2 well developed teats							

				which when full of milk nearly touch the ground, unshapely													
Legs								Short-legged									
Height				Standing about 66.04 cm or 68.58 cm high at the shoulder			About 76.20 cm	76.20 cm		Average height about 76.20 cm							
Weight							45.36 kg	45.36 kg		Ranging from 36.29 kg to 40.82 kg					Live weight 50-60 kg		

*author referencing solely to the phenotype of the later standardised ‘Capra Maltese’ breed.

Morphological traits

Holmes Pegler (1886) remarks that no animal exhibits a greater range of variety as the goat. The published morphological descriptors show that these animals represent a relict population of mostly unselected goats.

Intriguingly, Portolano (1973) defines Maltese goats as having a white coloured coat with their head, ears and neck of black colour, but states that Maltese goats exhibiting a wholly red coat, or reddish markings are still to be considered as a variety of the Maltese race. The author commented that these animals bear a closer resemblance to the Syrian goat both in terms of their characteristics and milking capabilities.

In 1971, a number of goats classified as derivatives of the Maltese breed were presented to the public in the first national goat market held in the town of Martina Franca, Italy. These goats were documented as having a wholly white coloured coat, some caped black or red, while others exhibited a light brown coat. Indeed, Simmonds (1887) pointed out that the coat colour of the Maltese goat varies considerably. Additionally, goats were either polled or had horns, curved and tilted backwards or spiral and tilted laterally. Consequently, Portolano (1973) concluded that the long and pendulous ears betoken of the Maltese race, was the only common and evident characteristic among these goats.

The Maltese goat has varied characteristics that herdsmen have attempted to preserve rather than eliminate. A testament to this is the fact that herdsmen employed several adjectives to denote certain traits (Cassar-Pullicino, 1967).

The following terms given hereunder, together with their English equivalents and definitions as given by a number of authors, are still used or familiar to goatherds today.

Fartasa is used to denote a goat without horns while the term *qarna* or *muqrana* is used to describe a horned goat (Zammit, 1932; Psaila, 1937; Cassar-Pullicino, 1967).

A number of adjectives are used by herdsmen to denote distinctive ears types and colours of their goats. In relation to ears, one may refer to a goat as *torka*, having long pendulous ears extending beyond the muzzle with rounded tips (Psaila, 1937; Gatt, 2001); *mżiewed*, folded ears (Gatt, 2001); *barżakka*, medium sized ears reaching the middle of the face (Psaila, 1937; Gatt, 2001); *garruwa*, short pointed ears (Psaila, 1937; Gatt, 2001); *mondija*, short-eared (Psaila, 1937; Cassar-Pullicino, 1967; Gatt, 2001); *mejxa*, having very small ears (Zammit, 1932; Cassar-Pullicino, 1967; Gatt, 2001).

A long-haired goat is referred to as *midliela* (Zammit, 1932; Cassar-Pullicino, 1967; Gatt, 2001), while if short haired, *milgħuqa* (Gatt, 2001).

The principle coat colour terms are *belqa*, white with red/brown or black patches (Psaila, 1937; Cassar-Pullicino, 1967; Gatt, 2001); *żunnara*, black with white coloured head and ears (Gatt, 2001); *xaqra* or *għaslija*, having a reddish coat (Gatt, 2001); *wiżgħija*, spotted (Gatt, 2001); *kaħla*,

pied having hair of white and black colour (Psaila, 1937); *tal-merek*, having a blackish head with thin yellow stripes below the eyes (Gatt, 2001).

Analysing the above documented terms, one gets an insight into the phenotypic variations of the indigenous population of Maltese goats.

Fig.3 – Grech, D. (2018) A herd of indigenous goats grazing in Malta.

Fig. 4 – Grech, D. (2023) Indigenous goats exhibit noticeable phenotypic variations.

In-situ conservation of the indigenous Maltese goat on Tulliera Farm in Delimara, Malta.

Fig. 5 – Grech, D. (2018) Indigenous goat exhibited for show at Buskett, Malta.

Fig. 6 – An indigenous doe in the show ring for the traditional Imnarja 2024 show.

The below is the complete breed standard compiled in line with the already published descriptors (morphological traits) from the above research, and established following on-site individual phenotypic evaluation of several indigenous goat specimens for the past eight (8) years.

This breed standard will act as the bench mark for the traditional population of the indigenous goats of the Maltese islands, against which all future breeding and selection programs are compared.

Breed Standard **for the Traditional Population of Indigenous Maltese goats**

Body hair coat colour pattern	Usually plain, patchy or caped (hooded), sometimes belted and in rare instances few express the Swiss marked pattern.
Body hair coat colour type	Several types and combinations of colours are prevalent. Most are often of reddish colour. When having a plain coat colour, can be either solid black; dark red; light red; brown; fawn; cream (gold) grey or white. Red is the most prevalent coat colour type followed by black. When grey, usually the base coat is interspersed with varying amounts of white hairs (more roan than solid colour). A scarcity nowadays, solid white has also been recorded. When having a patchy coat colour pattern, a combination of red or black with white are the most prevalent, with irregular patches and random markings. When caped (hooded), body is white with a solid concentration of colour protecting the head area either light red; dark red; brown; fawn; cream (gold) or black around the eyes, ears and/or muzzle, and usually have a single facial white stripe (from the forehead, along the bridge of the nose to the nostrils); blaze or bald face (white colour extending past the eyes or muzzle on the sides). Colour sometimes reaches the neck to shoulder blade area and on occassions even below the withers. Sometimes leg areas below the knees, hocks and the tail are also coloured. Few also exhibit a speckled body with red or black speckles accordingly. When belted, are usually either solid red or black with a full or partial white coloured band around the barrel. When exhibiting the Swiss marked pattern, body is usally of solid colour such as black or black with a rusty sheen with tan markings in the facial area, legs and belly. No preference should be given to any hair colouration or colour pattern.
Body skin colour	Pigmented
Hair coat type	Usually glossy; straight long hair but can also be short
Hair length	When long (>2mm)

Horn presence	Absent (naturally polled)
Horn shape	When present scurs or curved
Horn orientation	Backward
Ear orientation	Usually carried horizontally; semi-pendulous; pendulous. Pendulous ears can be curled upward at the tip. A scarcity nowadays, very short erect ears have also been recorded.
Facial (head) profile	Straight to gentle convex profile. Bucks possess a strong; masculine head while does maintain a feminine more narrow appearance about the head.
Wattles	Usually present
Beard	Absent

Source: Qualitative variables adapted from FAO Guidelines.

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