

Detecting Toggenburg Ancestral Lines In The Burren Feral Goat

Raymond Werner, January 2009

Introduction

The Old Irish goat belongs to the Northern Breed Group, whose origin, history and phenotypic characteristics are quite distinct from those of the other breed groups of Europe as a whole.

The Northern Breed Group comprises the long-established landrace breeds and types of the northern and western peripheral of Europe, and namely the Norwegian, Swedish, possibly the Finnish, Icelandic, Old Dutch, Old Irish, Old English, Old Scotch and old Welsh. The last four named, all associated with the British Isles, are now collectively known as the British Primitive goat.

To date, 6 highly divergent mitochondrial haplogroups (or maternal lineages) have been identified in goat stock world-wide; the Northern Breed Group belonging collectively to haplogroup A. The breeds tested were the Bagot, the keilder goat (British Primitive, feral), the Icelandic landrace, Norwegian landrace, the Swedish landrace, and the 'Irish island'.

Although the sample of 207 goats tested from both northern and southern Europe almost universally belonged to haplogroup A, 0.5% belonged to haplogroup C. Of these 10 goats, 8 were Slovenia native goats (the whole sample of this breed), and 2 were Toggenburgs (21 individuals in all). All the other Swiss breeds- Chamois, Grisons Striped, Verzasco, Peacock, Saanen and Valais Blackneck- belonged to haplogroup A.

Haplogroup C does not constitute a recent intrusion into Europe. An MtDNA study of goat remains from the 2 early Neolithic layers of site Baume d'Oullen in southern France, dated to between 7,300 and 6,900 years ago, has revealed that 2 highly divergent goat lineages co-existed: A and C. Baume d'Oullen belonged to the Cardial Culture (7,700 to 7000 years ago) and was one of the earliest post-glacial Neolithic sites in S. W. Europe. It was established that this site could not have been infiltrated by the Danubian culture, both haplogroups having been brought from the Middle East by seaborne Neolithic pioneers.

The importation into the British Isles of the Toggenburg breed began in 1884. Females were brought directly from Switzerland, and became immensely popular as soon as they were shown. They won at the early goat shows, and their bloodlines were quickly disseminated amongst the pedigree goat stock of the late Victorian era. By the aftermath of the Great War, goats of Swiss type were very popular, Toggenburg breeding being very evident. In the mid-1920s, 3 breeds of Swiss type, distinguished by their colour, were recognized, these being the British Alpine, British Toggenburg and British Saanen. All three had a mixed Swiss descent, the British Alpine owing its colour pattern to the British Toggenburg and sharing a common ancestry generally; the British Toggenburg being of mixed Swiss and

Toggenburg descent, and the British Saanen being again of mixed Swiss descent with a high concentration of Saanen ancestry. There was also the 'British' goat, again of mainly Swiss ancestry with a high proportion of Toggenburg breeding.

It will be seen, therefore, that Toggenburg ancestry runs through the 4 'made-up' pedigree breeds that today underpin British goat stock. Theoretically, therefore, any one of these breeds could be of mixed haplogroup A or C descent.

Improved goats of the type mentioned above were imported into Ireland during the late Victorian period, and slowly move across the country from east to west. It has been noted that goats of Toggenburg type appear to be quite common amongst the various Burren herds of feral goats, and one wonders whether the maternal lineage C may be present. If so, then it might be possible to identify Toggenburg ancestry in a goat that otherwise isn't very Toggenburg-like.

A word of caution, however. In a study of 4 African breeds of cattle, 3 of which were very zebu-like and with evidence of a considerable input of Asian zebu genes, only taurine mitochondrial genomes were found. The lack of indicus (zebu) mitochondria in these cattle was taken to be strong evidence of zebu gene flow through male transmission, it being suggested that small numbers of males were introduced selectively and were most effective in transmitting what was thought to be a desirable phenotype. In England, the landrace breed (Old English) was improved by using a Swiss-type male on the local females. As with the African experience, the crossbred stock would have been very Swiss phenotypically, but retained Old English mitochondrial genomes. We therefore have to look at the cultural aspects of goat history to gain a full picture in relation to the Burren. Was the release of Swiss type stock on the Burren totally indiscriminate, or was there a bias to releasing males or females?

Another aspect is that populations that go through a bottleneck (a perennial problem with feral goats) may lose extensive mitochondrial genetic variability, and bottlenecking could be responsible for the loss of rare MtDNA lineages.

Having myself bottlenecked into pessimism, and come through the other side, it would be good to elicit MtDNA markers for a representative group of British Toggenburg lines associated with the Burren and the feral goats of the area, and to see if the haplogroup C is, in fact, present. If so, it might be an additional indicator of Non Old Irish maternal lineages in the stock that is being concentrated upon.