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North European short-tailed breeds of sheep : a review

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Introduction

This review paper is based on the results of a postal / e-mail questionnaire survey, information obtained through personal communications and on several references to North European short-tailed breeds of sheep in books, journals and webpages. Emphasis was placed on geographic location, distribution and present purebred population size. The economic value and importance, as well as products and role under a range of conditions, are covered but only brief references are made to crossbreeding which will be dealt with in more detail in another paper (Thomas, 2008). Although information was obtained on 34 short-tailed breeds originating in Northern Europe it should be kept in mind that several of them are now rare and endangered and continued efforts are needed to conserve their great genetic diversity (Tapio, 2006). Breeds with North-European short-tail ancestry such as the Estonian Ruhnu, the Estonian Saaremaa, the Lithuanian Native Coarsewooled and the Norwegian Grey Troender sheep (Tapio et al., 2005a; Tapio et al., 2005b), and possibly the Herdwick sheep in the UK (Ryder 1983), are not classified as short-tails, presumably due to their longer tails as a results of crossing with long-tailed breeds. Thus they could not be included in the survey.

Breed characteristics

The short - tailed sheep native of an area from Russia to Iceland, are generally considered a primitive type spread by Norse Vikings to several countries in this area from the late 8th century to the middle of the 11th century A.D. (Ryder, 1983). The Soay, the most primitive breed of sheep belonging to the Northern short-tailed group of breeds, certainly resembles the wild Mouflon sheep. As in their ancient predecessors their fluke shaped and tapered short tail is a common feature, however, varying somewhat in length. Normally, there are 8-10 vertebrae in the tail of short-tailed sheep (Hlídar, 1937) compared to 16 - 18 vertebrae in long - tailed sheep (Frandson, 1974). Comprehensive studies on microsatellite variation and genetic diversity in North European sheep breeds have been reported on in recent years (Tapio et al., 2005a; Tapio et al. 2005b; Tapio, 2006; Eythórsdóttir, 2007). These and other studies have demonstrated clearly several common characteristics of the North European short

- tailed breeds, in addition to the short tail, such as a wide range of colour patterns, dual coated wool, robustness and prolificacy (Adalsteinsson, 1970; Maijala and Österberg, 1977; Jakubec 1977; Ricordeau et al., 1978; Finnsheep, 1988; Fahmy, 1989; Kantanen, 2003; Niclasen, 2007). Both polled and horned sheep are found in these breeds, in some cases sex linked, and even fourhornedness is still known in a few of them (British Sheep, 1998; Dýrmundsson 2005). Furthermore, they vary a great deal in size and productive performance and although often found in isolated, marginal areas, thriving under harsh environmental conditions, some of the short - tailed breeds perform well in milder climates (Ryder, 1983; Villsauen, 1997; British Sheep, 1998; www.sheep-isle.dk).

The best known breeds of this group outside Northern Europe are the Finnsheep and the Romanov which have been exported to several countries in the world where their genetic merits, especially prolificacy, have been utilized through crossbreeding with local sheep (Thomas, 2008). Thus they have played an important role in the production of some new synthetic/composite breeds in several countries through hybridizations.

Distribution and size of purebred populations

Generally speaking most of the purebred North European short - tails have developed in and are confined to certain areas or countries in Northern Europe. Thus they tend to be local breeds with some exceptions, however. Several of them have become transboundary, especially in Scandinavia and the UK (Ryder, 1983; Tapio, 2006) and, for example, sheep of the Iceland breed constitute the Greenland sheep population due to exports from Iceland in the early 20th century (Sigurdsson, 1938; Dýrmundsson,1990), with minor influence from other breeds. In some cases certain sub-groups or strains are officially recorded within breeds, e.g. in the German Heath Sheep (www.genres.de). On the contrary, several small, local, populations of landrace sheep are classified and recorded as separate, heritage breeds, for example in Sweden (Svenska almogefår, 2005).

Table 1 lists the 34 breeds on which information was obtained, named alphabetically in English followed by the local name in brackets, if different. It should be noted that although the country of origin of each breed is stated with reasonable accuracy this may not be the case for the distribution in other countries. The population sizes, based on the most up-to-date information on the number of breeding sheep (ewes+rams) in each case, should be regarded as minimum values. For some of the breeds there are indications that a certain number, even whole flocks, are unregistered and in a few cases feral flocks could not be included, such as of the Boreray Sheep on the island of Boreray in the St. Kilda archipelago and Soay Sheep on the islands of Hirta and Soay in Scotland.
In general, most of the distribution of the North European short - tails has been confine to countries bordering on or close to the countries of origin. However, since the 1960s some of the breeds have gained considerable distribution, especially the Finnsheep and the Romanov, and in recent decades breeds such as the Iceland, Gotland and Shetland, especially in North-American, as indicated in **Table 1.** In summary (**Table 1),** the total number is 872.012 breeding sheep kept in purebred populations in several countries, mainly in Northern Europe and North America. The population size is less than 1000 head in 12 of the breeds, i.e. they are endangered, 13 breeds are in the range of 1.000 - 10.000 sheep, 7 are in the range of 10.000 - 100.000 and only 2 are more numerous than 100.000. Comments made by several of those replying to the questionnaire indicate that many of these short - tail populations have been declining in numbers in their countries of orgin, some over a long period of time. However, in some cases this negative trend has been reversed by conservation efforts and some of the breeds have even been introduced to new countries with some success during

recent decades. The purebred populations sizes of the internationally best known North European short - tailed breeds, the Finnsheep and the Romonov, 16.000 and 23.000, respectively, are perhaps smaller than one would expect. The relatively strong position of the Iceland breed is at least partly due to the fact it is the only breed of sheep kept in that geographically isolated country where a strong sheep-keeping tradition exists. (Eythórsdóttir et al., 2008).

Table 1 **The status of North European short-tailed breeds of sheep: distribution and purebred population size**

Name of breed	Distribution		Breeding sheep n
	Country of origin	Other countries	
Aland Island Sheep (Ålandsfår)	Finland (Aland Islands)		900
Asen Sheep (Åsenfår)	Sweden		979
Boreray Sheep	Scotland	England, Wales	276
Castlemilk Moorit Sheep	Scotland	England, Wales, Netherlands	1.042
Dala Fur Sheep (Dala pälsfår)	Sweden		200
Faeroe Sheep (Føroyskur seyður)	Faeroes	Denmark	80.000
Finnsheep (Suomenlammas, Finsk lantrasfår)	Finland	40 countries in Europe, North-America, Asia, Africa, New Zealand	16.000
German Heath Sheep (Heidschnucke)	Germany	Denmark	9.295
Gestrike Sheep (Gestrikefår)	Sweden		159
Gotland Sheep (Gotlandsfår)	Sweden	Denmark, Germany, UK, USA	14.387
Grey of Kainuu Sheep (Kainuun harmaslammas)	Finland		700
Gute Sheep (Gutefår)	Sweden	Denmark, Germany	7.000
Hebridean Sheep	Scotland	England, Wales	23.000
Helsinge Sheep (Helsingefår)	Sweden		176
Iceland Sheep (Íslenska sauðkindin)	Iceland	Greenland, USA, Canada, UK, Denmark, Norway, Germany, Switzerland	500.000
Klövsjö Sheep (Klövsjöfår)	Sweden		97
Manx Loaghtan Sheep	England	Scotland, Wales, Belgium, Netherlands	3.000
North Ronaldsey Sheep	Scotland	England, Wales	900
Norwegian Pelt Sheep (Norsk pelssau)	Norway		8.000
Norwegian Speal Sheep (Moderne spælsau)	Norway	Denmark, Sweden	120.000
Old Norse Sheep (Villsau)	Norway	Denmark	20.700
Old Spael Sheep (Gammelnorsk spælsau)	Norway	Denmark	3.500
Polish Heath Sheep (Wrzosówka)	Poland	Lithuania, Belarus	4.295
Romanov (Romanovska Ovce)	Russia	Several countries in Europe, North America, Africa, Asia	23.000

Roslag Sheep (Roslagsfår)	Sweden		675
Russian Viena Sheep (Viena Ovce)	Russia (Karelia)		100 (estimated)
Rya Sheep (Ryafår)	Sweden	Norway	1.000
Shetland Sheep	Scotland	England, Wales, USA, Canada	13.000
Skuddy Sheep (Skudden)	Germany	Poland	3.700
Soay Sheep	Scotland	England, Wales, Germany, USA	2.000
Svårdsjö Sheep (Svårdsjöfår)	Sweden		55
Swedish Finewool Sheep (Svenskt finullfår)	Sweden	Finland	3.669
Ushant Sheep (Moutons d'Ouessant)	France (Brittany)	Netherlands, Belgium, Germany, UK	8.493
Värmland Sheep (Värmlandsfår)	Sweden		1.814
			Total = 872.112

Breed utilization, breeding practices and products

There is a great deal of variation in the national or regional economic importance of the North European short - tailed breeds in the countries where they are kept. This may range from the value of niche production of endangered populations of conservation breeds, such as in Sweden, Finland and the UK, to substantial production, mainly of lamb, in Iceland, the Faeroes and Norway. In some areas the browsing ability of such breeds is of great value in landscape management and conservation grazing. Overall, the results of the survey **(Table 2)** show that comparing the importance of the North European short-tailed breeds to other breeds in respective countries on the scale of **little, considerable great and vital**, show the numerical values **26, 3, 3 and 2**, respectively. This reflects very strongly on the weak position of several of the breeds in economic terms leaving open the question of the value of the genetic, cultural and societal resources involved which should not be overlooked.

The incidence of crossbreeding classified as **none, low, considerable and high (Table 2)** is low in 28 of the breeds and in 1 none at all, at least in the country of origin. In 3 out of the 34 breeds is crossbreeding regarded as being considerable but in only 2 is the incidence high. The breeds crossed with are mainly meat types, i.e. lowland and terminal sire breeds of European origin. The priority ranking of the products of the North European short-tailed breeds shows in fact clearly **(Table 2)** that meat production is most important in 20 out of the 34 breeds with wool and skins being by-products. Although market trends have favoured lamb production and the economic returns of wool and skins have declined, especially during the last 20 years, it is interesting to note that still in 9 of the breeds first priority is given to wool and in 5 to skins. Out of the four products meat, wool, skins and milk, milk ranked lowest overall in all the breeds included in the survey. A few cases are known, however, of such sheep being kept in specialized dairy units.

Table 2 **The status of North European short-tailed breeds of sheep: importance, breeding practices and products**

Name of breed	Importance compared to national sheep population	Incidence of crossbreeding and breeds involved	Priority ranking of the products meat, wool, skins and milk
Aland Island Sheep (Ålandsfår)	little	low Finnsheep	wool skins meat milk
Asen Sheep (Åsenfår)	little	low	wool skins meat milk
Boreray Sheep	little	low	meat wool skins milk
Castlemilk Moorit Sheep	little	low UK lowland breeds	meat wool skins milk
Dala Fur Sheep (Dala pälsfår)	little	low	skins wool meat milk
Faeroe Sheep (Føroyskur seyður)	vital	low Scottish Blackface	meat wool skins milk
Finnsheep (Suomenlammas, Finsk lantrasfår)	great	High Texel, Oxford, Down and several other breeds in 40 countries	meat wool skins milk
German Heath Sheep (Heidschnucke)	little	low	meat wool skins milk
Gestrike Sheep (Gestrikefår)	little	low	wool meat skin milk
Gotland Sheep (Gotlandsfår)	great	low Leicester, Texel and other breeds	skins meat wool milk
Grey of Kainuu Sheep (Kainuun harmaslammas)	little	low	skins wool meat milk
Gute Sheep (Gutefår)	little	low Texel	meat wool skins milk
Hebridean Sheep	considerable	considerable Suffolk, Texel, Charollais and other terminal sire breeds	meat wool skins milk

Helsinge Sheep (Helsingefår)	little	low	wool skins meat milk
Iceland Sheep (Íslenska sauðkindin)	vital (only breed in Iceland and Greenland)	none in Iceland, low in other countries	meat wool skins milk
Klövsjö Sheep (Klövsjöfår)	little	low Gute Sheep	wool skins meat milk
Manx Loaghtan Sheep	little	low UK terminal sire and long-wool breeds	meat wool skins milk
North Ronaldsey Sheep	little	low	meat wool skins milk
Norwegian Pelt Sheep (Norsk pelssau)	little	low	skins meat wool milk
Norwegian Speal Sheep (Moderne spælsau)	great	low Iceland Sheep, Finnsheep	meat wool skins milk
Old Norse Sheep (Villsau)	little	low	meat skins wool milk
Old Spael Sheep (Gammelnorsk spælsau)	little	low	meat wool skins milk
Polish Heath Sheep (Wrzosówka)	little	low Polish and other lowland breeds	skins meat wool milk
Romanov (Romanovska Ovce)	little	high mainly several meat breeds in many countries	meat wool skins milk
Roslag Sheep (Roslagsfår)	little	low	wool meat skins milk
Russian Viena Sheep (Viena Ovce)	little	low	meat wool skins milk
Rya Sheep (Ryafår)	little	low Texel and other meat breeds	wool meat skins milk
Shetland Sheep	considerable	considerable North Country Cheviot, also Suffolk and other terminal sire breeds	meat wool skins milk

Skuddy Sheep (Skudden)	little	low	meat wool skins milk
Soay Sheep	little	low UK lowland breeds	meat wool skins milk
Svårdsjö Sheep (Svårdsjöfår)	little	low	wool skins meat milk
Swedish Finewool Sheep (Svenskt finullfår)	considerable	considerable Texel, Oxford Down and other terminal sire breeds	wool meat skins milk
Ushant Sheep (Moutons d'Ouessant)	little	low	meat wool skins milk
Värmland Sheep (Värmlandsfår)	little	low	meat wool skins milk

Discussion and conclusions

In spite of the fact that purebred populations of the North European short-tailed breeds have been declining over a long period of time, and are now endangered in several cases, they should not be looked upon as relics from the past. Although adapted to certain local / regional conditions in the Northern Hemisphere, at least some of these breeds have much to offer in the international context and a few have already done so, especially in relation to prolificacy and mothering ability. They can improve the efficiency of production of both quality food and fibre, not least in grassland-based, low-energy input and easy-care systems. Even the short tail, eliminating the need for docking, has its value, at least from an animal welfare point of view. Then there are certain genetic traits of less obvious economic value such as the unique ability of North Ronaldsey sheep to feed almost entirely on seaweed (Ryder, 1983) and the leadersheep behaviour which has evolved in a strain of the Iceland breed (Dýrmundsson, 2002). Let us keep in mind that genetic diversity is now recognized internationally as a valuable resource (Finland, 2003) and this is reflected in the work of the EAAP and the FAO in Europe and elsewhere, in harmony with sustainability criteria. Comprehensive data banks are being established, such as the EFABISnet, and cryopreservation is also in progress. As far as the North European short-tailed breeds are concerned there are certainly cases of endangered breeds being saved from extinction, such as Old Norse Sheep (Villsau) in Norway, Grey of Kainuu Sheep (Kainuun harmaslammas) in Finland, Polish Heath Sheep (Wrzosówka) in Poland and Castlemilk Moorit Sheep in the UK. Individual breeders, breeders groups and bodies, such as the Nordic Gene Bank for Domestic Animals in the Nordic Countries and the Rare Breeds Survival Trust in the UK, have indeed contributed significantly to the conservation of these and other breeds. Research bodies have also made valuable contributions, unusual qualities have been revealed from recorded data (British Sheep, 1998), single genes inhancing production have been discovered (Eythórsdóttir et. al., 2008) and there is a good reason to believe that a larger number of valuable traits will be identified through scientific studies thus making the breeds more attractive and competitive in modern sheep farming. Dýrmundsson, (2006) has pointed out that sheep production systems

in Northern Europe fulfil most criteria of sustainability in agriculture. The North European short - tailed breeds certainly fit well into that picture. The results of the survey presented above may somewhat simplify the status of the North European short-tailed breeds. However, it is a matter of concern how small most of the purebred populations are. Many of these breeds, parhaps all of them, or genetic material derived from them, should have a future role to play in sustainable grassland-based production systems. Therefore we conclude by proposing that we should discuss, amongst other things, how best the genetic resources of the North European short-tailed breeds can be managed and utilized, both in pure - and crossbreeding, because this is the most effective way of preserving and delivering them to future generations of sheep farmers.

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