

Final call: The critical population status of the Faroese horse breed

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Introduction

This paper is written to describe the current critical status of the Faroese horse breed and as an attempt to underline the crucial importance of acting now if the Faroese horse breed is to be saved from extinction.

Background

Some people believe that the Faroese horse was brought to the Islands by Irish monks in the 8th century, while other think they were brought later around the 9th and 10th century by the Norse settlers. They lived free up in the mountains all year without any human involvement except from the occasional need for farming work or transportation. This shaped them to the strong and agile horses we see today as they have been allowed to adapt to the Faroese environment with steep landscapes, harsh winters, and a scarce supply of food. Late in the 18th century the horses were exported to Britain to be used in coal mines to such a degree that it almost led to their extinction, however, the extinction of the Faroese horse was fortunately avoided thanks to the work of volunteers. The Faroese Horse Association (Felagið Føroysk Ross) and other volunteers achieved an increase of the number from 4 founding mares and 1 stallion to the 43 mares and 31 stallions that we have today ^{1,2}.

Value

The genetic material of the Faroese horses has been investigated by researchers such as Dr. Sofia Mikko and Dr. Carl-Gustaf Thulin from SLU (Svensk Landbruksuniversitet). At a conference for international society for animal genetics held in Tokyo 2004, it was announced that the Faroese horse breed is a unique breed (Appendix 1).

In Europe there has been a high report of extinctions of local livestock and the numbers are still decreasing ³. A similar pattern is found in the Faroe Islands where the cow breed has gone extinct ⁴ while the local horse has largely been replaced by breeds from abroad, mainly Icelandic horses, thus being one of the reasons making it a threatened breed. The Faroese horse is still valuable to today's society, it has great historical value and is one of the last local domesticates on the isles. It is a part of a living cultural heritage. It can also be of value to many different stakeholders with its recreational potential, and it has proven ideal as a horse for children and as support animals for socially vulnerable people. As tourism has started to increase in the Faroe Islands, it has created the opportunity for agritourism to develop where the horses are used to take tourists on trips in the natural settings ².

The breed is also valuable in regard to genetic diversity, which is acknowledged by the Nordic Genetic Resource Center (NordGen). In the Nordic countries NordGen functions as a gene bank and knowledge center for genetic resources. Farm animals carry a genetic diversity that is invaluable and the vision of NordGen is a society where genetic diversity is one of the fundamental elements of the work for a sustainable future ⁵.

As regards to the Faroese horse breed they strongly recommend that immediate action should be taken to organize a structured plan to avoid losing any individuals and genetic material. This has to be done sooner rather than later in order to preserve the genetic material that is found in the current population and to prevent developing serious bottle necks that may further affect the health and fertility ⁶.

Current status

There has been an increase in the number of the Faroes horse population; however, there is still a very long way to go before the breed can be said to be out of risk of extinction. The number of breeding mares (aged 4-16 years) is currently 25 and the number of breeding stallions (older than 2 years) is 34. According to FAO the criteria for degree of endangerment can be evaluated as the following ⁷:

Extinct	no females and/or males for breeding remaining
Critical	Breeding females < 300; breeding sires < 5
Endangered	Breeding females 301-2999; breeding sires 6 - 20
Vulnerable	Breeding females 3000-6000; breeding sires 21-35
Not at risk	Breeding females > 6000; sires > 35

According to these criteria the Faroese horse breed is in a critical state and has been since the breeders began their work. The goal of any breed is to be at the stage of being “not at risk” and we can thus state that it leaves a lot of work to be done in order to increase the population size of the Faroese breed and save it from extinction. The graph below (Figure 1) illustrates the number of breeding mares since 1960-2021, and a line has been added to show the number of breeding mares necessary to bring the breed out of a critical status to an endangered status.

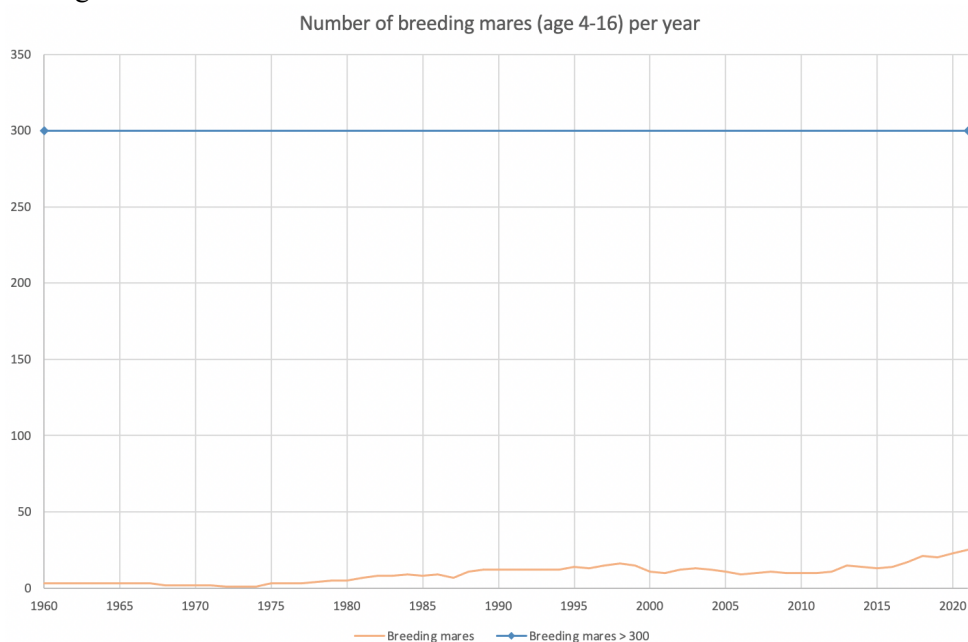


Figure 1 The orange line illustrates the number of breeding mares from 1960 to 2021 while the blue is the baseline for an endangered breed. Graph from Elisabet Thomsen, 2021.

Getting the Faroese Horse breed out of the critical status is our current goal but to reach it we need politicians to take immediate action. It has been attempted to make politicians realise how bad the situation is and the need for immediate action, but the answer has been that other tasks are more important, that there is a lack of financial aid for this, and that it therefore is not possible to put a time frame on when a solution will be accessible. It has also been commented, that if the status gets distinctly worse the case will be re-evaluated ⁸.

Agricultural consultant at the Faroese Agricultural Agency (Búnaðarstovan), Jens Ivan í Gerðinum, agrees with politicians as to how some cases and projects must be prioritized above others. However, it must be acknowledged, that in order to save the remnants of the Faroese horse from extinction it is critical to assess the means of subsidies, as the sole body of work to preserve the horse has been done mainly voluntarily and we have by far exhausted those resources by now. If the horse is to be saved from extinction, a much greater amount of subsidies has to be granted with a steadfast national plan describing the goal and span of the plan in order to save the horse breed from extinction ⁹.

With your help we hope to make politicians understand that the Faroese horse breed is still at a critical stage and that immediate action is needed if the breed is to survive.

Sources:

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I agree with the description of the current status of the Faroese breed as being very critical and that actions must be taken immediately to prevent extinction of the breed.

Name and occupation: _____

Date and signature: ____/____-____

Further comments: _____

Thank you for your time and participation.

Genetic diversity of the Faroe pony and the relationship to other breeds

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Abstract

The Faroe pony is a unique breed of the Faroe Islands, that are situated in the North Atlantic. These horses were presumably brought to the islands by Celtic or/and Scandinavian settlers after the settlement which occurred circa 500 - 800 AD, respectively. The population has recently passed a bottleneck from where a few animals founded the present population. The genetic diversity of the Faroe pony population was investigated using 12 microsatellite loci. To evaluate the genetic status of this breed the results were compared with 12 other breeds. As expected from the bottleneck, few alleles were detected among Faroe ponies. When compared to other breeds, the lowest degree of population differentiation was estimated between the Faroe pony and the Icelandic pony ($F_{ST}=0.18$). When compared to the other breeds, the F_{ST} estimates ranged from 0.22 - 0.34. Thus, the Faroe pony appears to be a unique breed, with the Icelandic pony as the closest relative.

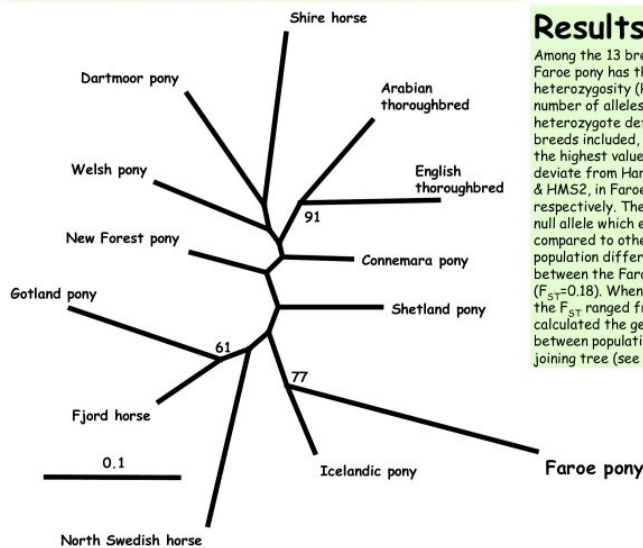


Background

The Faroe ponies were presumably brought to the islands by Celtic or/and Scandinavian settlers after the settlement which occurred circa 500 - 800 AD, respectively. The ancestors of these ponies are thus believed to be mainly Scandinavian and/or Celtic (i.e. from the British Isles) horses. Over the years some crossbreeding has taken place, and as late as in the 1960th there were only 4-5 purebred Faroe ponies left. In 1978 the association "Breeders of Faroe Ponies" started to register the remaining purebred ponies and organized a breeding program. Today the population counts to about 50 individuals. The degree of inbreeding is 0.22 and 0.21 for mares and stallions, respectively (1). There are however no signs of inbreeding depression in the present day population. Our main goal with this study was to estimate the amount of genetic variation within the Faroe pony breed, and the genetic differentiation from other breeds. Finally, we wish to define the breeds that are most similar to the Faroe pony.

Materials & Methods

A total of 1213 blood- or hair samples were collected from 13 different breeds. Genomic DNA was extracted from blood using the QIAamp blood kit (2). A crude DNA-prep from hair was done by lysis of hair bulbs and proteinase K treatment. PCR was performed using the Equine Stockmarks kit (3). Genotyping was carried out on ABI310 or MegaBACE. Genetic analysis was performed using the softwares Genepop on the Web 3.1c-3.4 (4), Genetix 3.3 (5), Population 1.2.28 (6), and Treeview (7). The P-values were corrected for multiple comparisons by a strict Bonferroni procedure (8).



Results & Discussion

Among the 13 breeds included in this study the Faroe pony has the lowest level of heterozygosity ($H_{obs}=0.40$), as well as mean number of alleles ($n=3.50$). There is no overall heterozygote deficiency (F_{IS}) for any of the breeds included, although the Faroe ponies show the highest value ($F_{IS}=-0.096$). Only two loci deviate from Hardy Weinberg equilibrium, HTG10 & HMS2, in Faroe ponies and Shetland ponies, respectively. The locus HTG10 contains a known null allele which explains this deviation. When compared to other breeds, the lowest degree of population differentiation was estimated between the Faroe pony and the Icelandic pony ($F_{ST}=0.18$). When compared to the other breeds, the F_{ST} ranged from 0.22 - 0.34. We also calculated the genetic distance ($Nei's D_A$) (9), between populations and constructed a neighbor joining tree (see Figure 1).

Figure 1. Neighbor joining tree with bootstrap values (50% minority consensus based on $Nei's D_A$) (9).

Conclusions

As a result of the recent population bottleneck the Faroe pony breed has a low degree of genetic variation.

Our genetic analysis show no apparent signs of inbreeding, despite the low amount of genetic variation present in the Faroe pony breed.

Because of a successful breeding strategy which has aimed to include all available specimens, the present alleles are evenly distributed in the Faroe pony population.

The Faroe pony appears to be a unique breed, and the Icelandic pony seems to be the closest relative when studying these 12 genetic markers. To further evaluate these preliminary results, additional pony breeds, e.g., Exmoor pony, will be included in our study.

Table 1. Summary of the results from the genetic analysis performed. *) F_{ST} values represent pairwise comparisons with the Faroe pony breed.

Breeds	No. of individuals	Heterozygosity		Mean no. of alleles	F_{ST}^*	F_{IS}	HWE dev.
		Exp.	Obs.				
Faroe pony	38	0.44	0.40	3.50	-	0.096	1
Dartmoor pony	11	0.62	0.74	4.25	0.333	-0.134	0
Fjord horse	51	0.65	0.63	5.83	0.260	0.040	0
Icelandic horse	230	0.67	0.68	7.50	0.176	-0.001	0
New Forest pony	18	0.74	0.73	6.25	0.239	0.039	0
Arabian thoroughbred	136	0.70	0.67	7.17	0.293	0.036	0
Shetland pony	214	0.65	0.63	6.92	0.256	0.043	1
Welsh pony	10	0.68	0.69	5.00	0.335	0.038	0
English thoroughbred	386	0.67	0.67	5.92	0.291	0.001	0
Gotland pony	36	0.59	0.59	4.17	0.316	0.023	0
Shire horse	23	0.65	0.66	4.75	0.328	0.013	0
North Swedish horse	18	0.64	0.66	4.92	0.291	0.006	0
Connemara pony	42	0.74	0.75	6.42	0.221	-0.003	0

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