

COLOURS of the FJORD HORSE

By Tor Nestaas.

The colours of the Fjord Horse are a variety of dun colours. The central –Asian Wild Horse, the Prezewalski horse and the European Wild Horse, the Tarpan have the same types of colour and these colours are seen to be the original colours of the wild horse. The colour is also called a primitive colour or “viltfarge”. (Protective colour). The pure dun colours are brown dun, red dun and grey dun but variations such as “uls dun “ and yellow dun are also seen . These five colours are recognized as pure fjord horse colours.

Earlier these colours could have different names in different districts, but in 1922 the Department of Agriculture decided on the names that are used today. The Annual General Meeting of NFHL in 1980 agreed that these five colours are all typical fjord horse colours and should be treated equally.

Colour variations

The brown dun colour (brunblakk) is dominant, 85-90 % of all fjord horses have this colour which can be of lighter or darker shades. The body colour is pale yellow brown and can vary from cream yellow to almost light brown. The “midtstøl” “the middle darker stripe through the mane, carrying on as the dorsal stripe* to the snow -shute* (all considered as primitive markings) is black or dark brown. In paler individuals the forelock and “sides” (of the upright mane) are white but darker in darker individuals. * *Sometimes called eel or list. Fanshaped growth of hairs at the top of the tail*

Ulsdun (ulsblakk) is a variation of brown dun because of a factor which reduces the production of pigment ; so called diluted colour. In the old days this colour was widespread, the percentage is now between 3-4%. The body colour is almost white or yellow white. The “midtstøl” (see above)dorsal stripe ,snow- shute are black or grey. The mane and tail are light coloured.

In red dun (rødblakk) individuals the body colour is pale red/yellow and appears in lighter or darker shades. In some cases it can be difficult to distinguish between brown dun and red dun as the body colour. With red dun the "midtstøl", dorsal stripe and snow - shute hair is red (chestnut)or red-brown ,and is always darker than the other hair but is never black. The mane and tale is often very pale or yellowish. With the palest shades the forelock, mane and tail may be white. At birth some red dun individuals have pale hooves but the hooves generally become darker with age. 4-5% of Norwegian Fjord Horses are red dun.

Yellow dun (gulblakk) is the rarest colour,only some 0.5% having this colour which is a variation of red dun due to the same factor mentioned under ulsdun.The body colour is yellow/white or golden. The "midtstøl" dorsal stripe and snow-shute are paler than in the red dun. The forelock is always more or less white as are the mane and tail. The dorsal stripe is then indistinct. At birth, as with the red dun, the hooves may be pale.

In greys (grå) individuals may have body colour ranging from pale silver grey to dark slate coloured grey. The "midtstøl", dorsal stripe and snow shute are black. The mane and tale is paler than the body colour. The forelock and muzzle are dark in contrast to brown dun and red dun which most often have pale forelocks and muzzles .In the darkest individuals the mane and tail can be very dark. If the same pattern of colour coding had been followed as with the other colours,this colour shoul be called black dun (svartblakk)but this term has never been used. Internationally this colour is known as "blue dun " (blåblakk). About 4% of Fjords are grey.

Deciding the colour

Sometimes it can be difficult to decide which colour a foal is, especially before it has lost its foal coat. The best way is to see what the colour of the "midtstøl",dorsal stripe and snow -shute are ,as previously mentioned under the different colours. Indistinct transitions may arise between brown dun and ulsdun and between red dun and yellow dun and it can be difficult for the eye to see what the colour is. The colour may seem to "change" with the coat and the seasons.

When they have short coats they may seem to be grey or ulsdun whilst when they have their winter coat they seem to be brown dun. The state Advisor Johs. Loen, in his paper on the colours of the Fjord Horse, mentions the stallion Solungen 882 as an example. By his fenotype the stallion should be called brown dun but the genotype was ulsdun : his covering of brown dun mares often resulted in ulsdun foals.

Primitive markings.

An important part of the description of the fjord horse is the so called primitive markings. These are dark centre of the forelock, mane (midtstøl) and tail (and snow- shute) a dark stripe along the back (dorsal stripe eel, list) and horizontal stripes on the legs, especially the forelegs (zebra stripes). Some horses have stripes over the withers (grep). These are very rare. Some individuals have small brown marks on the body and on the jaw or the thigh. These are named Njål's mark from the stallion who is the forefather of the modern Fjord Horse, Njål 166. He had marks like this on his jaws.

As mentioned in "Colour Variations" the shade of the primitive markings vary with the body colour. In red and yellow dun horses the forelock, mane, tail are nearly the same light colour, the dorsal stripe is indistinct and the zebra stripes may be lacking altogether. In the palest variations of brown dun the stripes may be pale or lacking entirely.

The zebra stripes follow the colour of other primitive markings but are often paler. The markings are most distinct when the coat is short. Foals lack zebra stripes at birth, but the stripes appear after the first changes of coat. The stripes are most evident and most often seen on the forelegs and some individuals can have a broad stripe on the forearm. As previously mentioned lighter coloured horses can have pale markings or lack them altogether. Sometimes the zebra stripes are lacking completely in grey or ulsdun individuals. The limbs of grey or ulsdun can have the same colour as the body but the limbs may be darker up to the knees or hocks.

Other markings

White or flesh-coloured markings are seldom found on the Fjord horse. How these markings are inherited is not quite clear but appears that the inheritability is *recessive*.

This means that both parents, even though it is not visible, carry the disposition for markings, which then may appear on the offspring. It is probable that the disposition for white markings on the head and limbs come from the same gene but where the markings appear is random. For a stallion to be approved for breeding, it must be free from all white or flesh coloured markings. Mares may have a small star on the forehead.

Extent of the colours

The extent of the different colour variations has varied over the years. Of the earliest Ford Horses, in Norway, entered in the studbook and foaled between 1857-1880, over half were ulsdun a colour which used to be called *borket* (another word for various shades of dun). Ulsdun fell into disrepute because at that time the knowledge of inheritability was unknown, so ulsdun covered ulsdun. This resulted in a spreading of white and wall-eyed foals. In later years the brown dun has become more and more popular, especially the lighter shades, which are now dominant. The interest for preserving all the colour variations, now prevails.

The genetics of colour

One cannot decide by the looks (phenotype) of a horse what kind of genotype of colour it has. Only by studying the pedigree and the colours of his ancestors may one be more or less certain which genotype a horse may have. To be quite sure one must see the colour of the progeny. The different [Inheritability of the Vestlandshesten`s colours (Fjord Horse)] This article is based mainly on Loen`s studies.

Terminology

The terms used are those that are most often used internationally.

A - gene for limitation (distribution) of black

B - gene for black

C - gene (basic factor) for colour

C^{cr} - gene for dilution of colour

D - gene for dun or primitive colour (pale factor and possibility for markings)

The Heredity of the colours

Genes come in pairs, one half from each parent. Small letters indicate that the gene is lacking (aa-bb) and the primitive markings are brown or reddish. Greys do not have the limitation gene for black. If they did not have the gene for dun or primitive colour **D** their body colour would have been black. **C^{er}** is the gene that gives ulsdun and yellow dun. This can also occur in the genotypes of greys. In double **C^{er} C^{er}**, this factor gives white and wall-eyed horses. These white horses have light blue irises and are therefore not true albinos. An expression used to describe a brown horse which has double genes for the dilution factor is perlino (**Aa /AA, Bb/BB, C^{er} C^{er}**). The name of a red dun with a double dilution factor (aa/Aa/AA,bb,C^{er}C^{er}) is cremello with a further category "blue eyed cream" (cream, blue eyes) for those with a blue iris.

The fjord horse is homozygote for markings or dilution factor (DD) and thus has an extra gene for paler colours. A brown dun fjord horse with a double dilution factor is "agouti perlino" and a red dun of this type will be an "agouti cremello". Because the dilution factor is not visible in blacks and greys, the horses with the genotype (**aa.BB/Bb,C^{er}C^{er},DD**) called "blue dun", in Norwegian "grå" /grey.

The Fjord horses different colour genotypes follow below. All in all there are 18 different genotypes for colour: 4 for brown and ulsdun, 3 for red and yellow dun and 4 for grey. For each of these genotypes the result of the different combinations is noted.

Brown dun genotypes

1 AA BBCC DD

Individuals with this genotype covering brown dun or red dun, only produce brown dun progeny. By covering grey, ulsdun and yellow dun the result can be brown dun or ulsdun progeny.

2 AA Bb CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun and red dun. By covering grey, ulsdun and yellow dun the result can be brown dun, red dun, ulsdun and yellow dun.

3 Aa BB CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun and grey. By covering grey, ulsdun and yellow dun the result can be brown dun, grey and ulsdun.

4 Aa Bb CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun red dun and grey. By covering grey, ulsdun and yellow dun the result can be brown dun, red dun, grey ulsdun or yellow dun.

Ulsdun genotypes

Ulsdun covering ulsdun or yellow dun give a 25% risk that the progeny will be white and wall-eyed, so called *albino*. The same can occur by covering ulsdun and grey with genotype 3 and 4.

1 AA BB CC^{er}DD

Individuals with this genotype covering brown dun and red dun can give brown dun and ulsdun. The covering of grey, ulsdun and yellow dun can give brown dun, ulsdun or *albino*.

2 AA Bb CC^{er}

Individuals with this genotype covering brown dun and red dun can give brown dun, red dun, ulsdun and yellow dun. The covering of grey, ulsdun and yellow dun can give brown dun, red dun, ulsdun, yellow dun and *albino*.

3 Aa BB CC^{er} DD

Individuals with this genotype covering brown dun and red dun can give brown dun, grey and ulsdun. The covering of grey, ulsdun and yellow dun can give brown dun, grey, ulsdun and *albino*.

4 Aa Bb CC^{er}DD

Individuals with this genotype covering brown dun and red dun can give brown dun, red dun, grey, ulsdun and yellow dun. The covering of grey, ulsdun, yellow dun, can give brown dun, red dun, grey, ulsdun, yellow dun and *albino*.

Red dun genotypes

All coverings by the red dun genotypes with red duns only results in red dun. If these genotypes cover yellow dun all three genotypes will give red or yellow dun.

1 AA bb CC DD

Individuals with this genotype covering brown dun can give brown dun or red dun. Covering grey and ulsdun can give brown dun, red dun, ulsdun or yellow dun.

2 Aa bb CC DD

Individuals with this genotype covering brown dun can give brown dun, red dun and grey. Covering grey and ulsdun can give brown dun, red dun, grey, ulsdun and yellow dun.

3 aa bb CC DD

Individuals with this genotype covering brown dun can give brown dun, red dun and grey. Covering grey can give red dun, grey, ulsdun or yellow dun.

Yellow dun genotypes

All three yellow dun genotypes covering red dun, give red dun or yellow dun, covering yellow dun can in theory give all three genotypes 25% red dun, 50% yellow dun and 25% *albino*.

1 AA bb CC^{er} DD

Individuals with this genotype covering brown dun can give brown dun, red dun, ulsdun, and yellow dun. Covering grey and ulsdun can give brown dun, red dun, ulsdun, yellow dun and *albino*.

2 Aa bb CC^{er} DD

Individuals with this genotype covering brown dun can give brown dun, red dun, grey, ulsdun, and yellow dun. Covering grey and ulsdun can give brown dun, red dun, grey, ulsdun, yellow dun and *albino*.

3 aa bb CC^{er} DD

Individuals with this genotype covering brown dun, can give brown dun, red dun, grey, ulsdun and yellow dun. Covering grey can give red dun, grey, yellow dun, and *albino*. Covering ulsdun can give brown dun, red dun, grey, ulsdun, yellow dun and *albino* offspring.

Grey genotypes

1 aa BB CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun and grey. Covering grey the only colour will be grey. Covering ulsdun and yellow dun can give brown dun, grey or ulsdun.

2 aa Bb CC DD

Individuals with this genotype covering brown dun and red dun can give brown dun, red dun and grey. Covering grey can give red dun, grey and yellow dun. Covering ulsdun and yellow dun can give brown dun, red dun, grey, ulsdun and yellow dun.

3 aa BB CC^{er} DD

Individuals with this genotype covering brown dun and red dun can give brown dun, grey and ulsdun. Covering ulsdun and yellow dun can give brown dun, grey, ulsdun, yellow dun and *albino*.

4 aa Bb CC^{er} DD

Individuals with this genotype covering brown dun and red dun can give brown dun, grey or ulsdun and yellow dun.

Covering grey can give red dun, grey, ulsdun, yellow dun and *albino*. Covering ulsblakk and yellow dun can give brown dun, red dun, grey, ulsdun, yellow dun and *albino*.

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