



# HORSE COLOR EXPLORED

Over 150 Breeds, Types, and Variations



Featuring  
Hundreds of Color  
Photos from Around  
the World

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Table 3.

| Base Color | C <sup>cr</sup> /C | C <sup>cr</sup> /C <sup>cr</sup> |
|------------|--------------------|----------------------------------|
| Bay        | Buckskin           | Perlino                          |
| Black      | Smoky Black        | Smoky Cream                      |
| Chestnut   | Palomino           | Cremello                         |
| Seal Brown | Smoky Brown        | Perlino                          |

## COLORS DETERMINED BY THE DUN GENE

### “Primitive” Markings

The color determined by the Dun gene (Dn<sup>+</sup> allele) in combination with the bay base color is genetically close to the color of the ancestors of the domestic horse, as well as contemporary wild representatives of the species. They are also typical for aboriginal species. Including this group of colors in the category of dilutions is only relative: The main characteristic of the color *dun* is the presence of the so-called “Wild” or “primitive” markings. The dilution of hair is only an additional feature, and it is not present or obvious in all cases.

The following primitive markings are seen in horses with the Dun gene:

- The *dorsal stripe* is a dark stripe that runs along the horse’s spine from the withers to the dock of the tail. Its main characteristic is clearly defined boundaries (Photos 26 & 27). It is possible to liken it to a wide line drawn on the horse with a fat-tipped marker. Sometimes you can also see short transverse stripes, which is called *fishboning* (or *barbs*) due to the similarity with a fish’s spine. Occasionally in horses with strong color dilution you can also find a zigzag-shaped or discontinuous dorsal stripe.
- *Zebra bars* or *zebra stripes* are short, dark, transverse stripes on the horse’s legs, located in or above the region of the knees and hocks (Photo 28). Zebra bars are frequently present only on the backside of the legs.
- Often on the backside of the lower part of the horse’s legs, you will see a line of *lighter hair*, known by some as a *zipper* (see Photo 109).
- *Cobwebbing* or *lacing* is a net of dark lines, which converge in the center of forehead of some dun horses, resembling a cobweb. This marking rarely involves the eye area.
- Many dun horses have dirty yellow, pale yellow, or even white strands of hair concentrated on the edges of the mane (Photo 29). Sometimes there can be so



much *frosting*, as it is called, that the mane looks white. Although the latter scenario is rare, it can create difficulty in determining the color of the animal. Frosting is frequently dark in summer and becomes more noticeable in winter.

- Frequently in addition to frosting in the mane, there is also light hair in the tail (*light guard hair*). It can be white or pale yellow and is located along the sides of the tail dock, concentrated at the base (see Photos 26 & 27).
- *Dark ear rims and white tips* are present in almost all dun horses, spanning the perimeter of the ears (see Photo 29). In contrast to the bay and brown horses, this primitive marking is wider and has clearer boundaries.
- When the lower part of the horse's head, from the eyes to the nostrils, is darker than the forehead, neck, and body, he is said to have a *mask* (Photo 30). This is most noticeable when the horse is observed from a distance, and in bay- or black-based horses. It can be less obvious when the horse has white head markings.
- Many horses have more or less noticeable darkening on the withers and shoulders in the form of a *stripe* or *shadow* ("wing") perpendicular to the spine with poorly defined boundaries (Photo 31).
- A noticeable concentration of *dark hair* is often found on the neck near the mane.
- A *ventral stripe* along the horse's underbelly resembles the dorsal stripe (see p. 22), but it runs down the middle of the abdomen parallel to the spine.

Of all the primitive markings described here, the dorsal stripe is the only one "required" for the categorization of dun color. Zebra bars on the legs are common, but they may not be always noticeable against dark background hair. The remaining markings I've mentioned are encountered in different combinations and can be poorly visible. The color of primitive markings varies and depends on the color of a particular horse. They are usually the color of the horse's guard hair.

## Bay Dun

Like the bay base color on its own, the Dun gene in combination with bay (*bay dun*) has many shades. The horse's body color can vary from brownish red to almost yellow with light reddish or ochre tinges (Photo 32). The mane and tail and lower legs are black or sometimes dark brown. In dun horses, the tips of black hair frequently lose their color, and therefore the tail and mane can appear "rusty" due to sun exposure. Primitive markings are black or, less frequently, brown-colored.

The following distribution and color of markings is most often observed: The mask is dark red or brown, and cobweb markings and any other admixture of dark hair on the body is black. The dorsal stripe and zebra bars can be either of these two colors. The hooves and skin are pigmented, the eyelashes reddish, and the eyes hazel, or sometimes light hazel or yellowish. Some horses show the *pangaré* trait (sometimes called “mealy”) with lighter hair along the flanks, belly, inner legs, muzzle, and around the eyes (Photo 33 and see p. 72).

It is possible to find bay dun horses with a color that is practically indistinguishable from the usual bay color. Bay dun color is the most common “Wild” color and is often seen in Quarter Horses. It is also frequently encountered in such breeds as Vyatka and Bashkir Horse, as well as other aboriginal horses. The color is rare in some breeds, such as the Andalusian and Lusitano.

### **Grullo**

*Grullo* (sometimes called *grulla*) is a color resulting from a combination of the Dun gene with the black base (Photo 34). These horses have ashy, grayish body color, sometimes with a distinctive bluish tone. All the body hairs have the same color—a major distinction from the gray and the black *roan* colors (see p. 44). The mane and tail are black, and the head is dark or almost black because of either cobwebbing or a mask, which when present together are superimposed on each other. The lower part of the legs is black, or sometimes dark ashy with a tone close to the body color, just darker. Primitive markings are black. The skin and hooves are pigmented, the eyes are hazel or (rarely) light hazel.

The grullo color can be subdivided based on its shades. *Dark grullos* are almost black, sometimes with an inconspicuous brownish tinge on the body, while the mane, tail, head, and lower parts of legs are black. Primitive markings are difficult to observe against such a dark background, and the horse can be mistaken for black or faded black (see p. 11). This color shade is very rare. *Light grullos* are characterized by a pale ashy color to the body hair and black or dark ashy guard hair (Photos 35 & 36). The eyes can be dark-blue with a blue ring around the iris, especially at a very young age, and from a distance they may appear hazel. Some breeders of Quarter Horses consider this trait an indication that the horse is carrying the Cream Dilution gene.

Sometimes the body hair can have a light yellowish tone, which according to some Polish scientists studying the Konik breed, becomes stronger in winter (2004). It is true that the overall color can change its tone depending on the season, and it tends to be most noticeable in horses that live outdoors. Mares are usually lighter than stallions. Interestingly, frosting is more often observed in the mane and tail of horses with this light shade of grullo.

Grullo foals are born ashy colored. Light grullos are born yellowish or cream, and very seldomly, light reddish.

Grullo color is common in Polish Konik Horses (up to 95 percent of the breed), Quarter Horses, Vyatka, Heck, and Bashkir Horses. Occasionally it occurs in Norwegian Fjords. Light grullo color is common in Sorraia Horses, Connemara Ponies, and Yakutian Horses.

## Red Dun

The body color of a *red dun* horse can have various shades, but as a rule it is lighter than in standard chestnut horses (Photo 37). Primitive markings are of red color. Often the head is darker than the body, showing a mask or cobwebbing. The lower legs, mane, and tail are also darker than the body. The skin and hooves are pigmented.

*Dark red duns* are almost indistinguishable from ordinary chestnut horses in terms of body color, but they will have noticeable primitive markings. *Light red duns* are almost yellow or sand color and resemble palominos (see p. 19). This color is common in the Norwegian Fjord breed (Photo 38). In 2013, Russian scientist Tatyana Zubkova found examples of light red duns in two breeds where it was not previously considered present: the Budyonny and Russian Don. Their colors were confirmed by DNA analysis.

## Other Colors Determined by the Dun Gene

Besides the colors just described, there are others determined by the Dun mutation.

The combination of dun and buckskin (*dunskin*) results in a very light yellow or pale sandy body color with black or dark brown primitive markings (Photos 39–41).

Palomino horses carrying the Dun gene (*dunalino*) resemble light palominos (see p. 19), and their primitive markings have a rusty or dark yellow color (Photo 42). The mane and tail can be practically all white with only the middle part of the tail containing colored hair as a continuation of the dorsal stripe.

One of the rarest colors in this group is double cream dilute ( $C^{cr}/C^{cr}$ ) combined with the Dun gene. Such horses have a cream body color with a pale caramel dorsal stripe and zebra bars, and also pink skin and blue eyes (sometimes called *wall eyes* or *china eyes*). Dun horses carrying *one* Cream Dilution gene often have light-brown eyes.

Another rarity is the smoky black plus Dun gene color (*smoky grullo*). Visually it is closest to light grullo color with a yellowish tone (see p. 24), but it is impossible to distinguish the two colors without DNA testing. Such horses have dirty-brown or dirty-ashy, yellowish color, lighter toward the underbelly, and the mane, tail,

and lower part of the legs are dark brown (Photos 43 & 44). They have a remote resemblance to faded black (see p. 11). Foals are born an ashy color that is lighter than grullo.

These colors are all fairly rare, and when found, are often in the Norwegian Fjord, Quarter Horse, and Bashkir Horse breeds.

### Inheritance of Colors Determined by the Dun Gene

The dun colors are controlled by a dominant allele of the Dun gene (abbreviated as  $Dn^+$ ). This allele is considered the "Wild" version of the gene, while its mutant form ( $nd2$ , which means non-dun2) in a homozygous state defines the usual, ordinary non-dun colors. The result of its action is dilution of eumelanin, resulting in bluish or ashy hair color, and pheomelanin, resulting in light red, apricot, or pale caramel. However, the mane, tail, head, and lower part of the legs are diluted to a lesser degree, which may indicate the involvement of a temperature-sensitive biochemical mechanism. An integral part of the action of the Dun allele is the manifestation of primitive markings, and these have an unclear mechanism of formation.

According to a hypothesis made by Nancy Castle (2008), primitive markings are created in *all* horses during embryogenesis. However in color-diluted horses carrying the Dun gene, the markings are visible, whereas in non-Dun-gene horses—due to a darker background—these markings are invisible. Castle bases her theory on the fact that you can observe primitive markings in foals that disappear as the animal ages. In general, the color of a horse darkens with maturity, and it is possible that primitive markings remain present. In support of this hypothesis is the presence of such markings on adult horses that are not dun. Such horses are called *false duns* (see p. 78). The specific mutation of the Dun gene responsible is abbreviated "nd1" (non-dun1). There is a DNA test for the Dun gene. The hierarchy is  $Dn^+ > nd1 > nd2$ .

**Table 4.**

| Primary Color | $Dn^+$    |
|---------------|-----------|
| Bay           | Bay Dun   |
| Black         | Grullo    |
| Seal Brown    | Brown Dun |
| Chestnut      | Red Dun   |
| Buckskin      | Dunskin   |
| Palomino      | Dunalino  |



## COLORS DETERMINED BY THE SILVER GENE

The colors of this group (Z) were defined rather recently, at the beginning of the twenty-first century. Understanding the true distribution of these colors is difficult because they are rare, although apparently this dilution *is* present in quite a few different breeds. Color identification in doubtful cases should be guided in part by whether or not a color has shown to be present in a specific breed. Therefore, I feel it necessary to provide a list of breeds in which the Silver gene occurs at the beginning of our discussion. The list includes the: Rocky Mountain Horse, Kentucky Mountain Saddle Horse, Quarter Horse, American Miniature Horse, Morgan, Appaloosa, Missouri Foxtrotter, Virginia Highlander, Paint Horse, Tennessee Walker, Mustang (particularly those found in Oregon, Nevada, and California), Icelandic Horse, Northlands Pony, Australian Pony, Connemara Pony, Shetland Pony, Swedish Warmblood, Finnish Warmblood, Dutch Warmblood, Gypsy Horse, Welsh Pony, Ardennes, Soviet Heavy Draft, and the Byelorussian Harness Horse. It has been determined by DNA analysis that carriers of the Silver gene were also found in the Haflinger breed, but there isn't a visible color effect because this breed occurs only in the red (chestnut) color. Remember that Silver Dilute horses and dark flaxen chestnuts can look similar.

Silver color displays the following characteristics:

- Many silver horses show a characteristic marble pattern on the legs called *webbing*. This has a “rusty” appearance or looks like whitish, irregular, elongated streaks with sharp boundaries (Photos 45–47).
- Ashy or black hair in the mane and tail are found frequently (Photo 48). Silver horses can have yellowish guard hair of a dim, rather dirty shade, but not red or reddish, which would be typical for flaxen chestnuts.
- Striped hooves are found in some silver horses, but they are not always present (see Photo 46). They differ from the striped hooves of appaloosa-spotted horses (see p. 55), because the stripes in silver horses are not black, but dark gray, and do not have sharp borders. Often their stripes are wedge-shaped. Striped hooves can be observed in foals, although in the process of the horse maturing, they may disappear.
- Pronounced seasonal dapples are observed in some silver horses (*silver dapple*—see p. 28), appearing in summer and vanishing in winter (Photo 49).
- Light eyelashes (white or yellowish), while not present on all silver horses, are a reliable characteristic seen on most (Photo 50).

### Silver Bay and Silver Seal Brown

*Silver bay* is often confused with flaxen chestnut (see p. 39)—for example, in the United States these colors have been recognized as separate entities only since 2002. The silver bay horse has a red or brown color to the trunk and a lighter mane and tail—from dark ashy with separate whitish and yellow locks of hair, to almost completely white (Photo 51). Sometimes the same horse can have a dark and smoky tail paired with an almost white mane, or vice versa. The skin and hooves are pigmented.

The main difference between silver bay and flaxen chestnut are the dark legs, resembling the legs of an ordinary bay horse. In flaxen chestnut animals, the lower part of the legs has a red or whitish color. In the silver bay, the color of the lower part of the legs fluctuates from light to dark brown—to sometimes black. In addition, the ears often have black rims.

A horse with the weakest manifestation of the Silver gene does not differ from an average bay, unless the guard hair is mixed with a considerable amount of light hair, making the mane and tail look ashy. The lower part of the legs is almost undiluted, sometimes showing mild leg webbing. This color may also resemble “Wild” bay or dun, but from the first it can again be distinguished by light guard hair, and from the second by a saturated red color of the trunk and lack of primitive markings. When the body hair of this horse is in poor condition, the color can also be confused with red or brown.

Sometimes you may see a horse with brown body hair and black legs, while the mane and tail are diluted, matching the brown body color. However, the most characteristic and recognizable variety of silver bay has a reddish body, a mane and tail that are nearly white or light ashy, and light brown lower legs because of the presence of leg webbing. Separate ashy or black locks remain in the guard hair.

A silver bay foal has light lower legs, similar in appearance to ordinary bay foals, and becomes darker after shedding his baby coat. Silver bay commonly occurs in the Rocky Mountain Horse.

*Silver seal brown* is very rare (Photos 52–54). It is recognizable by the dark brown, almost black color of the body, sometimes with a bluish tint to it, with characteristic red “burn marks” around eyes, muzzle, near the elbows, on the stomach, and the groin. The guard hair is diluted from dirty red to a whitish color.

### Silver Black and Silver Dapple

There aren’t well-established English terms designated to represent colors determined by the Silver gene on a black base. It is challenging to divide Silvery black color depending on the degree of dilution, because there are diverse phenotypes depending on the degree of Silver expression. *Silver black* is often a sepia color,

**Color:** A bay dun with pangaré (“mealy”) color around the eyes, muzzle, and groin. This horse is a darker color than the horse in Photo 31, but in summer the horse does lighten, although maintaining a reddish-brown or ochre shade.

**Expressed alleles:**  $E^* A^* Dn^{+*}$

**Breed:** Unknown

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 33

**Color:** Grullo with a mask, black legs with zebra bars, ears with dark rims, and a slightly shaded neck.

**Expressed alleles:**  $E^* aa Dn^{+*}$

**Breed:** Unknown

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 34

**Color:** Light grullo with a noticeable mask on the head, black legs with zebra bars, ears with dark rims, and a slightly shaded neck.

**Expressed alleles:**  $E^* aa Dn^{+*}$

**Breed:** Unknown

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 35





PHOTO 36

**Color:** A light grullo with a dorsal stripe, mask, black ear rims and tips, and dark legs.

**Expressed alleles:**  $E^* aa Dn^{+*}$

**Breed:** Heck horse

PHOTOGRAPHER: ANNA MURATOVA



PHOTO 37

**Color:** Red dun with a dorsal stripe, a mask on the head, dark wings on the shoulders, dark hair on the lower part of the legs with zebra bars. Slight frosting of the mane and tail.

**Expressed alleles:**  $ee^{**} Dn^{+*}$

**Breed:** Byelorussian Harness Horse

PHOTOGRAPHER: MARINA DMITRENOK



PHOTO 38

**Color:** A light bay dun, and an example of how the dun color often manifests in Norwegian Fjords. You can clearly see the black hair in the central part of the mane (called the midstol), with white frosting on the edges, a small mask on the face, and characteristic lightening of the legs.

**Expressed alleles:**  $E^* A^* Dn^+ Dn^+$

**Breed:** Norwegian Fjord

PHOTOGRAPHER: OLGA YEREMEEVA

**Color:** A dunskin with a yellowish shade, zebra bars on the legs, a facial mask, and with sparse strands of lighter frosting visible in the mane and at the base of the dock of the tail.

**Expressed alleles:** E\* A\* C<sup>cr</sup> C Dn<sup>+</sup>\*

**Breed:** Bashkir Horse

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 39

**Color:** A dunskin with a mane that shows strong frosting, zebra bars on the legs (especially the front legs), and a face mask.

**Expressed alleles:** E\* A\* C<sup>cr</sup> C Dn<sup>+</sup>\*

**Breed:** Byelorussian Harness Horse

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 40

**Color:** A gray horse on a very light dunskin base with strongly expressed frosting in the mane, while the tail is almost completely white. There are zebra bars on the legs, although the rear legs are more pale. Around the age of 12, this horse turned completely white gray.

**Expressed alleles:** E\* A\* C<sup>cr</sup> C Dn<sup>+</sup>\* G\*

**Breed:** Unknown

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 41





PHOTO 42

**Color:** A dunalino with a star extending into a blaze. There are weak zebra bars on the left hind leg, a head mask, and a slightly noticeable wing on the withers.

**Expressed alleles:** ee\*\* C<sup>cr</sup> C Dn\*\*

**Breed:** Trakehner-Byelorussian  
Harness Horse cross

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 43

**Color:** Smoky grullo with a star and strip, zebra bars on the front legs, and a mask on the face. This color can be confused with a bay dun, light grullo, or buckskin (see pp. 23, 24, and 17). However, any reddish tint is completely absent.

**Expressed alleles:** E\* aa C<sup>cr</sup> C Dn\*\*

**Breed:** Latvian Horse-Byelorussian  
Harness Horse cross

PHOTOGRAPHER: VERA KURSKAYA



PHOTO 44

**Color:** Smoky grullo with a white star, dark neck, ear rims, shoulder wings, and a face mask.

**Expressed alleles:** E\* aa C<sup>cr</sup> C Dn\*\*

**Breed:** Unknown

PHOTOGRAPHER: VERA KURSKAYA