

# PILGRIM GEESE IN THE UK ARE LOSING THEIR AUTOSEXING CHARACTERISTICS

Pilgrim geese, and other auto-sexing breeds such as the West of England, are often recommended as ideal geese for the beginner. The colour of the fluff indicates the sex at hatching, and indeed the feathers at any age. That's probably why there are centuries-old references to the white gander and the grey goose being preferred on the farm.



■ *Geese at the Great Metropolitan Poultry Show, London, 1854*

Continuous farmyard selection, perhaps over several centuries, produced both the pied West of England type and the whole-colour Pilgrim type in many regions of Britain, and within Europe. There is, for example, the Shetland in the northern isles, and the French Sequanian goose (Voitellier, 1918) and the Normandy. Before the evolution of the Embden and Toulouse, it seems likely that the auto-sexing breeds were the norm across most of Europe. Exported to the British and French colonies, these auto-sexing birds then turned up in Australia, the USA and even southern India. It's amazing what Facebook reveals! This basic European stock, derived from the greylag goose, populated the colonies whilst the Victorians ignored the Common goose and imported exotic types to

the UK. Breeders and shows in Britain celebrated the Hong Kong goose ('African'), the Embden and Chinese, whilst the farmyard goose quietly continued to occupy the outback of Australia and cotton fields of the USA.

Today, it is Facebook breeder groups for Pilgrims and Cotton Patch geese which are now best documenting these auto-sexing breeds. These breeds of geese are far more widespread than one would first imagine, and it is this freedom of information in the USA and Australia which is more likely to keep the breeds alive than the rare specimens of the show pen.

Yet without exhibition, exhibition standards, and reliable information, these breeds are unlikely to continue in their pure form. Breed information is crucial today because the hobby keeper often starts off in the dark and can be misled by instant expert advice. In contrast, smallholders of the past learned from hands-on experience gleaned through the generations of breeders.

These auto-sexing breeds are the distillation of specific genes extracted from the geese of the land which once existed in large numbers when farm flocks were more common than they are today. These older landraces had more genetic variability and were better adapted to local conditions than modern commercial geese; and they still have merit in smallholder flocks.

### What makes geese white?

There are two types of white geese. Firstly, Asiatic white has 'c' genes which, in the pure form, produce the white Chinese and white African, both male and female. In the heterozygous form, where a white

Chinese is crossed with a brown, the dominant wild-colour grey-brown will show. Any white wing tips or white breast probably indicate contamination with European goose genes.

European 'white' geese are different. Anyone who has hatched Embden, Czech or other breeds of 'white' geese must have noticed that the goslings are auto-sexing at hatch. The females are darker, and this is often quite pronounced in Embdens. As the auto-sexing fluff is replaced with white feathers, the obvious saddleback of grey disappears; but in the females a few grey feathers are often retained on the rump, near the preen gland.

The 'white' in this case is the interaction of two genes at different loci: sex-linked dilution (Sd) and autosomal 'spot' (sp). Both parents carry two copies of 'spot'. But for dilution, the male carries two copies and the female only one because 'dilution' is on the chromosome which determines the sex of the bird's offspring—and there is simply no room for the dilution position. Thus a female has only one dose of dilution and shows more clearly the ghost markings for 'spot' seen in goslings of white breeds.

### What is the spot gene?

'Spot' was a term used and defined by F. N. Jerome in 1953: it nicely describes the coloured saddleback pattern on the back, accompanied by grey markings on the head and coloured thigh coverts. These 'spot' markings are shown to perfection in pied (spotted) German Pomeranian geese where the strong wild-colour grey is undiluted i.e. they only have the spot gene mutation (sp) interfering with the wild-colour, and they carry no dilution.

Wild-colour	Mutation
Solid pattern Sp <sup>+</sup> Sp <sup>+</sup>	sp sp spot
No dilution sd <sup>-</sup> sd <sup>-</sup>	Sd (Sd) sex-linked dilution
<b>KEY</b>	
<i>Wild-colour shown by +</i>	<i>Capital letter denotes dominance</i>



■ *Infant white Czech goslings showing ghost grey markings in the fluff: three females on the right, three males on the left. These birds are Sd<sup>-</sup>, sp<sup>+</sup> sp<sup>+</sup> (female) and Sd/Sd, sp/sp (male)*



■ *In contrast, these German saddleback Pomeranians show no sex-linked colour variation in the plumage. They are sd<sup>+</sup>/sd<sup>+</sup> (no dilution, as in wild-colour), but have the spot mutation sp/sp*



■ *Adult white Czechs, parents of the goslings on the left.*

### What makes an auto-sexing Pilgrim goose?

The Pilgrim goose is a wild-colour goose with the added mutation of sex-linked dilution. It is as simple as that. The grey feathers of a greylag or Toulouse are diluted to a soft grey in the goose. There is one copy of Sd in the goose, making her a soft grey, and two copies of Sd in the gander, making him almost white. There are no other colour (or pattern) genes to complicate the issue.

However, in practice, pure breeds are often crossed, resulting in colour faults. Pure female Pilgrims should have no white flights, and no white breast patch. Impure females, which have been crossed with white geese (spot plus dilution), will show pale fluff on the wing tips at hatch, which will then become white flights (primary feathers). These faults are becoming increasingly common.



■ *This female (foreground) is the result of a deliberate cross between a reliable Pilgrim female and a white non-Pilgrim male. The white father has given her one dose of 'spot' (sp), resulting in a white breast patch, a white patch under the chin and white flights. (Ashton 2012). A bird pure for spot and dilution would then appear white (see the example of the Czechs above).*

Nor is spot quite as simple as a single gene. In its pure expression we see beautifully marked Buff Back and Grey back geese.

Impure, we see colour faults in Pilgrims such as white flights and white breast patch (left). Yet even when these obvious major faults have been bred out, annoying cases of white under the chin, and the odd white flight still emerge in following generations from birds which look pure for not-spot (Ashton 2012, page 98; Jerome 1959). Breeders of Brecon and American Buffs also recognise this because elements of spot are usually recessive, emerging from solid pattern (Sp<sup>+</sup>) birds which phenotypically look pure.

Serious breeders of Pilgrim geese also see these colour faults in their grey females—and in the 'white' males. These indicators of spot are often missed by the novice.

The faulty males are more difficult to check but the goslings will also look paler at wing tip (Ashton 1998, p.39). The diagnostic stage is the colour of their quills at 4-7 weeks when they are filled with blood whilst the feathers sprout. Impure males will show pink quills which will sprout dead-white feathers. Pure males will show purple/grey in the quills which will then sprout whitish, pale grey feathers.



■ **Blood-filled quills of 5-6 week-old male.**  
The quills are purple, not pink. The down and feather emerging is slightly grey; this will be more intense on the secondaries than the primaries. The primaries may have slight grizzle near the quill. He will be good for breeding whole-grey Pilgrim females.

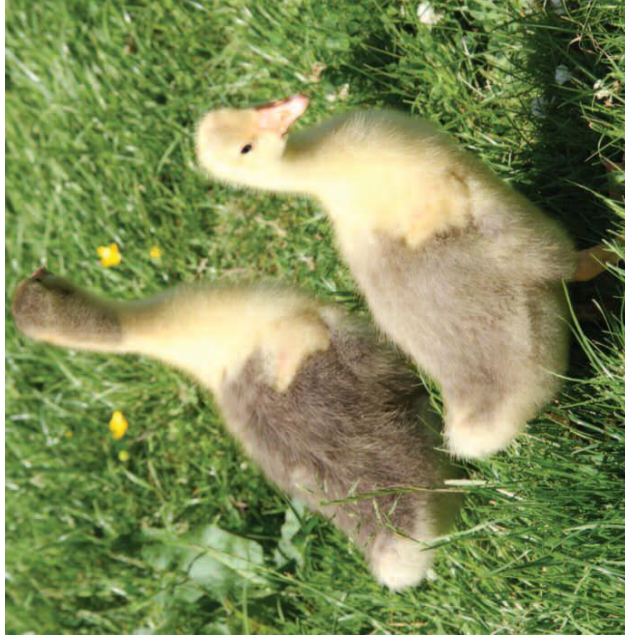
Photo - Debbie Kitchoon

Pure Pilgrim males will always show traces of grey because dilution, on its own, will not totally suppress the underlying grey wild-colour. If you think about it—it is the spot on the Grey Back pattern which gives the dead white flights and white breast. It's the same with impure Pilgrims affected by 'spot'. The test of a pure Pilgrim male is the slight grizzle in his flights, the greyish secondaries, and traces of grey on the rump. These traces of grey are written, with good reason, into the current American standard.

### What are the other autosexing breeds?

Traditional autosexing breeds include the Shetland, West of England and Normandy. In the USA there is also the Cotton patch.

The key to these breeds is that they are autosexing—yet they typically have females which are not whole grey but are marked in the pattern similar to the pied/saddleback geese. The females appear to have the spot gene - but the ganders don't, they are white! So, what is going on? This consistency of breeding indicates a different expression of the 'spot' from the all-white European geese.



■ **At hatch, and in the fluff even at 2 weeks, Normandy and Shetland goslings show the typical pied pattern of dark back, darker thigh coverts and grey head in the females. The paler male is on the right.**  
Note that both of these birds are darker than the white Czech goslings.



■ **By eight weeks, as the feathers grow, the gander's grey fluff is replaced by white feathers. The grey of the female is not as harsh as the grey of the Homanian i.e. it is diluted. As the females age, they typically lose grey on the head.**

Like the white geese (in 2 and 3), these birds appear to carry a kind of spot, and also dilution. Yet the persistence of the spot markings in the female, and its apparent loss in the male, show that this 'special spot' gene is behaving differently from 'normal spot' in white geese. (Ashton, 2010)

### The autosexing Cotton Patch Landrace

The key to the Cotton Patch Landrace is that it is also autosexing. 'The Cotton Patch goose is the remaining relic of a little known American breed of goose with parent stock that probably shares common ancestors with . . . other sex-linked geese.' <https://livestockconservancy.org/index.php/heritage/internal/cotton-patch>

The distribution of colour in Cotton Patch geese seems to be less important than the type, or shape, of goose. A rather lean goose which can fly, and can exist happily on the farm, is more important than the detail of its genetics which determines the distribution of colour. 'They are essentially a utility goose: small to medium in size, autosexing, gentle in nature yet protective of their brood. They display good parenting skills, are amazing foragers, have the ability to fly (which can be an advantage or a problem), and are excellent for culinary use'. (Denise Frye, 2018). It is probably more important to keep a wide gene pool than worry about the details of colour. But it is important to have birds registered as genuine Cotton Patch stock so that type and autosexing is retained.



■ **Cottonpatch geese—the females showing both solid pattern grey ('Pilgrim') and special spot.**  
Courtesy of Denise Frye, admin [facebook.com/groups/CottonPatchGooseBreeders](https://facebook.com/groups/CottonPatchGooseBreeders)

### Autosexing birds in the UK

In the UK, autosexing breeds have traditionally been divided into the Pilgrim and West of England, standardized in 1982 and 1999 respectively. If these two types are mixed up, then we might also end up with a mixed colour Landrace similar in colour to the Cotton patch. There will be both pied (special spot) and whole grey (solid pattern) females plus their accompanying males which

have varying degrees of slight grey. Nevertheless, the flock will be autosexing and healthy because of the wide gene pool. This suits commercial breeders and people who sell hatching eggs—for the eggs (no problem) will hatch. This also suits West of England breeders where the pattern of the grey markings in the goose need not be exact.

However—there is an unperceived problem, especially for the Pilgrim. Are the faulty white feathers of the Pilgrim goose (the white breast patch and the white flights) due to 'spot' from white geese—or to 'special spot' from autosexing geese? You cannot tell—unless the 'autosexing' flock starts to breed white females.

In the UK, Pilgrims are alleged to have bred 'white' pilgrim females. Clearly, whatever her parentage, a white Pilgrim female is not a 'Pilgrim'. She has become a rather indistinctive white goose and can no longer be classified as a breed. The bird is no longer autosexing.

The complicating factor here is that the normal spot gene in the white goose population is now inextricably mixed up in the so-called 'autosexing breeds' here in the UK. 'Spot' is recessive and thus difficult to eliminate (see also Jerome, 1959, page 140). That has been made even harder to deal with now that the Poultry Club Standard (2018) is also demanding that exhibition ganders should be 'white'. That is a problem because white birds carry normal spot genes which, as you will recall, produce white geese—and the autosexing is lost! How do you know that the pure white gander in the show, or sale, pen is indeed a Pilgrim?

The American standard has evolved over the years to state: 'White with traces of grey in the body wings and tail. Grey sometimes more pronounced in older specimens.' The American Livestock Conservancy finds that adult ganders are 'mostly white, usually with grey rumps (which are covered by the wings) and traces of color in the tail and wings.' This also tallies with the BWA Waterfowl Standards 2008. Yet the Americans go even further: they state that it is a disqualification for 'pure white males of any age displaying no trace of grey in the plumage.'

Denise Frye in her research on autosexing also states: 'Our discovery here [USA] is that the ganders without the spot gene carry the most amount of grey on their backs, primaries (sometimes secondaries) and the flanks.'

The problem here in the UK is that the Standard has now (2018) been 'adjusted' so that white ganders are the 'pure breed'. The deletion of explanations of grey in the wording and the presence of the word 'inconspicuous grey' 'permitted' may seem of little consequence—except that grey is actually needed! [Changes noted in Poultry Club Newsletter 2017, Issue 1]. The PCGB standard will be at odds with the USA (the originator), and what the birds breed.

As breeders of Pilgrims since the 1980s, we know that a 'white' Pilgrim gander in the show pen may look nice—but he will not breed true. And this breed is defined by what it breeds. Females bred from such faulty males will have white flights, and two faulty birds together can breed 'white Pilgrim females'—which is of course a nonsense since the autosexing is lost. For ducks and geese, Standards really do need to take colour genetics into account. It's over a hundred years since Mendel's discoveries were publicized.

Whatever you think about the 'whiteness' of the exhibition gander, it is the reliability of the autosexing—determined by genetics—which counts. Grey in plumage of the male is normal! This standard needs revision.

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