

Blackbird – Whitebird!

Individual birds sometimes have plumage that is different in colour from the 'norm' for that particular species. In some instances these plumages are so different that the bird looks totally unlike what it should.

Many individuals can show variation in the colour of their plumage that is outside the normal range for a particular bird species. In some instances the degree of 'abnormal' colouration is only slight (a few feathers) but in others the bird may be completely white (albino/leucistic) or completely black (melanistic). Such abnormalities can cause identification problems for the Garden BirdWatcher, not to mention problems that the bird itself may encounter in avoiding predators, finding a mate or giving the correct display to a rival.

White plumage – albinism

The term 'albinism' covers both pure albinos and partial albinos. In pure albinos the plumage is white, while the feet, legs and bill appear pink or yellow-white and the eyes are pink. Partial albinos show a range of variation in the degree of albinism displayed. The amount of white on the plumage may be only one small patch or a single feather, or the bird may be completely white, with pink legs and bill but still retain a dark (normal coloured) eye. One interesting aspect is that a partial albino may show symmetry in the pattern of white feathers, such that, for example, the corresponding feather on each wing is white.

It is the lack of coloured pigments that gives rise to albinism and this in turn is triggered by the absence of an enzyme (called tyrosinase) that is involved in the production of melanin. It is melanin that gives your skin colour when exposed to the sun, your sun-tan and freckles! If the process of melanin formation is disrupted a complete or partial absence of colour can result. In some individuals the normal plumage pattern and colour may be discernable but appears very pale or washed out. This is caused by a reduction in the strength of colour across the entire plumage and an individual showing such characteristics is called leucistic.

The genetics behind albinism and melanism

In some instances, albinism may have a genetic basis. There are two forms of the gene (one resulting in the expression of normal colour and one resulting in a lack of pigmentation) and it appears that the one for albinism is recessive. Since each individual carries two copies of the gene (one from each parent), the recessive nature of the gene means that an individual has to have two copies of the one for albinism for the colour to show up. If a bird has one copy of each gene, it will show normal colour.

The genetic basis to melanism is more complex and there is some suggestion that the gene responsible for the expression of melanism may be dominant in some circumstances, hence the clusters of melanistic grey squirrels in Hertfordshire.

A common misconception is that all examples of albinism are due to a genetic mutation and that the character is always hereditary. While some instances of albinism are the result of a genetic mutation affecting the genes that control 'normal' colour, others may result from dietary deficiencies, stress or injury. Many breeders of cage and aviary birds know that an incorrect or unbalanced diet may result in an abnormal plumage colouration (sometimes white, sometimes black). Many, if not all birds, produce the coloured compounds used in plumage from common dietary components called carotenoids. If fed a diet lacking these carotenoids then the plumage may appear abnormal. The most familiar example of this is that of flamingos, which get their pink colouration from such compounds. In captivity, where they feed on a diet very different from that of their native habitat, the birds have to have compounds added to their diet to ensure they retain their pink colouration. There is even some suggestion for Blackbirds (from work carried out



A partial albino Blackbird showing an amazing pattern of black and white plumage. It is quite possible that this individual will show an increasing amount of white plumage with each successive moult.

Such a striking bird will stand out against most backgrounds and, as a result, is more likely to attract the unwelcome attentions of a predator than a bird showing the normal plumage colouration. If it does survive then there is a very small chance that it will pass on these characteristics to one or more of its offspring. Photograph by David Croman, with thanks to Garden BirdWatcher Mrs Cole for bringing this photograph to our attention.

in the 1950s) that the occurrence of white or greyish tail feathers may be produced by varying the proportion of earthworms in the diet.

It seems that albinism may gain expression with age (i.e. the amount of white displayed increases as the bird gets older). Evidence for this comes from Garden BirdWatchers and BTO ringers. One Blackbird ringed in 1952 had a mainly white head and neck. The bird was recaptured the following year (and again the year after) and each time the amount of white on the bird had increased to cover the breast, parts of the wing and tail. There are also examples where stress or injury have produced albinism. J Fennell described how a captive Blackbird, frightened by a cat, moulted into a pure white plumage. In 1961 G Wright noted that a readily identifiable Blackbird (it has a deformed leg), that used to visit the garden, became trapped by the neck in some fruit netting. The bird was released and disappeared for some weeks. When it returned in the winter it had a thin ring of white feathers around its neck exactly where it had been caught in the netting. A similar report exists for a Capercaillie (a large member of the grouse family) that was bitten by a stoat. The bird survived the attack but a patch of white feathers moulted through around the wound. It is also known that damage to the gland through which pigment passes into the feather will result in a feather lacking in pigment.

Melanism

In essence, melanism is the opposite of albinism and results from an excessive deposition of melanin. This typically produces feathers that are abnormally dark, either dark-brown or black. The literature suggests that melanism is less common than albinism but it may be that it is often overlooked. There appears to be a genetic basis to the occurrence of melanism and, what's more, there is some evidence that the genetic trait for melanism is at least partially dominant (see box). Some bird and mammal species have a well-known melanistic phase. In Africa, for example, the Little Egret (a type of heron) has several colour phases ranging from slate-grey, through sooty-grey, pale grey to white. Melanistic grey squirrels are often reported from parts of Hertfordshire and melanistic ('black') rabbits feature in some areas. In other species, instances of melanism are more sporadic. Chris Perrins, who has done a great deal of excellent work looking at tit populations, once reported a brood of Great Tits in which eight of the nine chicks were melanistic.

The implications of being different

Being different from others of your species may not necessarily be a good thing (though sometimes it can give you an evolutionary advantage). You only have to look at human society to notice the way that individuals will often show intolerance towards others who are different in some way (through their colour, race, sex, etc.). Albino birds, therefore, may find it difficult to attract a mate, in part because they may lack the visual cues (particular patterns of plumage) that are an essential component of the courtship display.

Albinos may be more vulnerable to predators, their white plumage offering little in the way of camouflage in all habitats except those dominated by snow. There is also evidence that albinos and, to a lesser extent, partial albinos may suffer from poor health. Defective vision and deafness have both been reported affecting full albinos and the lack of pigment in feathers may sometimes weaken the feather. Moorhens showing albinism may lack the all-important barbules that hold the feathers together (these are tiny hooks that link the individual feather barbs and what are 'unhooked' if you run your finger the wrong way down a feather).



This is a partial albino Blackbird. The plumage is white, the legs and soft parts pink. Interestingly, the bill appears quite orange. It is known that red and orange pigments appear resistant to albinistic change – there are reports of Robin, Bullfinch and Green Woodpecker where the red has remained when all else was white. Photograph by Garden BirdWatcher Margaret Grubb.

Finally, there are also implications for us as Garden BirdWatchers. A House Sparrow sporting large patches of white, in place of the expected browns and greys, may not look much like a House Sparrow. In fact, from a casual glance, it may look more like a Snow Bunting leading you to think you have just seen something rather rare in your garden! Not every bird you see will look like the illustration in your bird book. Albinism and melanism are just two of the conditions that may produce 'abnormal' colouration in birds. There are others and, somewhat bizarrely, there may be occasions where two conditions occur on the same bird!

Mike Toms

Some of the garden bird species in which albinism has been reported in Britain.

Sparrowhawk	Wren
Pheasant	Song Thrush
Black-headed Gull	Blackbird
Woodpigeon	Robin
Swift	Goldcrest
Green Woodpecker	Spotted Flycatcher
Great Spotted Woodpecker	Dunnock
Carrion Crow	Pied Wagtail
Jackdaw	Greenfinch
Magpie	Goldfinch
Great Tit	Chaffinch
Blue Tit	House Sparrow
Nuthatch	Tree Sparrow

Some of the garden bird species in which melanism has been reported in Britain.

Collared Dove
Great Spotted Woodpecker
Swallow
Magpie
Great Tit
Blue Tit
Song Thrush
Pied Wagtail
Bullfinch



Partial albino Blackbird by Garden BirdWatcher Peter Grimshaw