



BRISTOL AQUARISTS' SOCIETY
GOLDFISH COLOUR TYPES



This table of goldfish colour types (published in January 2014) has been produced jointly by breeders in BAS, GSGB and GFSA (see [Useful Links](#)), working in cooperation.

You are advised to read this table in conjunction with our main section on goldfish colour in [Background Information about Goldfish](#).

Colour type	Appearance	Guanine present (silvery, reflective scales)	Guanine partly present (nacreous [dull mother-of-pearl] scales)	Guanine absent (transparent, matt scales)	Melanophores (containing melanin: black pigment)	Erythrophores (containing carotenoids and pteridines: red pigment)	Xanthophores (containing carotenoids: yellow pigment)	Varieties in which seen	Breeding outcomes
Wild type	Brown upper body surface (adaptive for camouflage when viewed from above) and silvery-grey flanks (adaptive for camouflage when seen from the sides and below)	Well-developed guanine (silvery) layer in the skin, giving fully reflective scales		N/A		Abundant		Wild type goldfish	Wild type x wild type = 100% wild type
Gold, orange or yellow metallic	Metallic fish may be either all the same colour (self-coloured), the range of colours being red, orange, yellow, bronze/brown and black, or a mix of colours (variegated), the colours being as before with the addition of silver and arranged in a pleasing pattern similar on each side. Metallic fish have reflective scales owing to the guanine layer present in the skin; pigment cells are on the surface of the skin and colours appear as burnished metal on the body and should be spread throughout the fish including the fins.	Well-developed guanine (silvery) layer in the skin, giving fully reflective scales		N/A	Present in fry and juveniles; fades during first year as melanophores are gradually lost as fish mature into adults. In some individuals black persists locally into adulthood, giving a variegated appearance including areas of black, as seen in pandas.	When melanophores are absent (as a result of genetic mutation), the fish is gold, orange or yellow, depending upon the position and number of erythrophores and xanthophores present	Goldfish with red colouration have abundant erythrophores present	All singletails All twintails except the western (dorsalless) pompon, but taking a special colour form in the jikin	Yellow metallic x yellow metallic = 100% metallic. Mainly yellow but red, orange, gold and whites can appear
Red metallic				N/A		Absent			Metallic x metallic = 100% metallic. Depth of colour (red, gold, orange) can be influenced by husbandry, including diet
White metallic				N/A	Absent (white goldfish have no pigment cells)				Whites are normally a by-product from spawnings of coloured metallics but presumably pure white x pure white = 100% pure whites (but not tested). Generally, white is not regarded as a desirable colour and therefore pure white strains are unknown.

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Black	Black goldfish have abundant melanophores lying close to the skin	Metallic black appearance if guanine is present. Metallic fish with less abundant melanophores are grey, although this is often marketed as 'blue'.	Rare; available as black mock metallics / bluebellies.		Present	Absent		Broadtail moor Oriental moor Panda (variegated)	Metallic black x metallic black = 100% metallics. Some will decolour to black but other metallic colours, both self and variegated, can be produced.
Calico	Calico fish have a varying pattern of a few fully reflective scales (guanine present) and mostly matt scales (guanine absent) and nacreous scales (guanine partly present). Where matt scales are present, the following effects are seen: ~ if there are no pigment cells then the body appears pink; ~ if pigment cells are present at depth within the skin then melanophores appear to give a background blue colour (rather than black) and other colours appear more subtle including violet, grey and brown; ~ if pigment cells are present on the surface then matt (rather than reflective) colours are seen.	Fully reflective scales, usually few in number, and fully reflective gill covers and irises (termed 'irised eyes' by breeders)	Translucent, mother-of-pearl appearance to the scales and colouration	Completely transparent scales (often in the past mistakenly termed 'scaleless'); transparent gill covers reveal the deep mauve-red colour of the gills underneath; transparent irises take the colour of local pigmentation, often black	In nacreous/matt fish, when there are very few melanophores and these are located deep within the skin (in areas where there are no overlying xanthophores or erythrophores), the apparent colour to the observer is pale blue. This background pale blue colour is highly prized.	Present in varying proportions giving an infinite range of colour and pattern. Colours vary in appearance according to the positioning of the pigments in the skin and the presence or absence of guanine (see Appearance, left).		All (but rare in the jikin, wakin, tosakin and celestial)	Calico x calico = metallics, calicos and matts normally in the proportions of 25%, 50% and 25%, but it is often difficult to segregate all calicos and matts by sight and breeding tests may be required to ensure correct identification
Shubunkin	A balance of colours and reflective properties with an overall blue background is regarded as the ideal calico combination, and has a special term: shubunkin (which means red brocade in Japanese, the name coming from the overall red-on-blue colour pattern). The term seems to be used for singletail fish only.							Bristol shubunkin London shubunkin Japanese ('comet') shubunkin	As above (calico), except that Bristol shubunkin strains carry mock metallic genes and mock metallics and pseudo-matts are produced as well as normal metallics, calicos and matts
Pink	When there is no pigmentation at all, under transparent scales the body appears pink. Such 'pinkies' are generally considered to be of no ornamental quality.	N/A		Pink body colour shows through transparent scales	Absent		Pinks produced when breeding calico fish		Pinkie matt x pinkie matt = 100% pinkie matts but a lethal gene may be present here, hatch rates are generally low and very few offspring live to maturity

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Bronze	Melanophores mixed with xanthophores all over the body surface (as distinct from the wild-type pigment distribution) give different hues of bronze and iron, including chocolate brown. Some (such as chocolate orandas) are sought after; others ('bronzes') are produced when breeding calico fish and are generally considered to be of no ornamental quality.	Typical burnished metallic appearance	N/A		Present in varying amounts	Absent	Present in varying amounts	Chocolate orandas Bronzes produced when breeding calico fish	Bronze x bronze = 100% bronze
Matt	Normally as pink (above), but exceptionally matts with calico colouring are produced	N/A		Transparent scales		Present in varying amounts		Rarely seen but in theory could occur in any variety which has a calico form	Matt x matt = 100% matt
Pseudomatt	Erroneously referred to as coloured matts. Calico coloured.	N/A		Transparent scales		Present in varying amounts		Mainly Bristol shubunkins and veiltails	Pseudo-matt x pseudo-matt is said to produce mock metallic, calico and pseudo-matt
Coloured Matt and Midnight	Visually indistinguishable from calicos. The midnight is initially a calico coloured matt but as the fish age the colour turns black.	Some fully reflective scales	Some translucent scales	Some fully transparent scales		Present in varying amounts		Camelot shubunkins (these possess the full range of calico colours)	Coloured matt x coloured matt = 100% coloured matt
Bluebelly and Mock Metallic	Bluebellies can be any metallic colour. Mock metallics are generally uncoloured (wild type).	Some fully reflective scales. Area covered by guanine on mock metallics often increases with age and can make them virtually indistinguishable from normal metallics.	Some translucent scales	Some fully transparent scales		Present in varying amounts		Mainly singletails	Mock metallic x mock metallic = 100% mock metallic. Bluebelly x bluebelly = 100% bluebelly. Mock metallic x bluebelly = 100% mock metallic / bluebelly. (They seem to combine, suggesting that they are genetically very similar, possibly the same).