

True Colors

The Brambling at a backyard feeder in Wisconsin brought birders from afar to claim it as one of their lifers. Peering out a small, kitchen window, they discussed the plumage in detail to determine the bird's age and sex.

I was looking at something else. The orange-yellow hue at the bird's side seemed identical in color to that of the recently fallen maple leaf, lying about five feet away from it. I was witness to one of the many miracles of color echoes in nature.

To be sure, I am not the only one who finds color a primary reason to bird. Indeed, many birds have been named to describe the hues of their plumages—Turquoise-browed Motmot, for example, or Indigo Bunting, Sulphur-bellied Flycatcher, and Vitelline Masked Weaver.

But are we sure that brow is turquoise and not maybe, well, wild chicory blue? The Indigo Bunting truly looks indigo, if the sun is shining on it at just the right angle. Otherwise, you might call it a black bunting. Vitelline refers to the color of an egg yolk. But what constitutes the color sulphur? And how is it different from vitelline or from buff, as in the Buff-breasted Sandpiper? I guess the buff has a little more brown or orange than the sulphur (though I can hear the arguments now—it's really got more yellow in it).

Bird blogger Mike Bergin writes, "Buff is a soft, subtle color that walks a fine line between yellow and brown, often complicated by hints of pink or gray." A beautiful description, but did you see all that on the bird's breast last time you glimpsed a Buffie during migration?

Bergin also tells us that at room temperature, the element sulphur looks pale yellow or bright yellow—like an egg yolk? The Sulphur-crested Cockatoo has a bright yellow crest. But is that sulphur color the same as that of the belly on a Sulphur-bellied Flycatcher or the overall hue of the Sulphury Flycatcher of northern South America?

Although I love the colorful names of all these birds, and even enjoy just saying those names out loud, I'm not looking for that specific color when I'm birding. I'm looking for a comparison of that color to what's around it. That's what makes birding blissful for me. If I saw a Sulphur-bellied Flycatcher in a woods where sulphur-colored mushrooms were growing, that would be heaven indeed.



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Remarkably, bird feathers attain their colors in only two primary ways—pigmentation and the reflection of the structure within the bird's feathers. Myriad combinations of these two mechanisms account for the astounding diversity of plumage colors.

Sometimes I look at an Eastern Bluebird to see if it is wearing the sky on its back. Often it is not. The bluebird wears only a particular sky on its back, the medium blue we



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see on a cloudless, sunny day, and in the morning, not at high noon. What color would the sky be on a cloudy day? Is there a bird who has that color on its back—the Cloudy-sky-backed Phoebe, for example?

Maybe I'll find a blue delphinium in a garden colored like the back of a male Eastern Bluebird. So the bluebird wears the delphinium on its back—at least to my eyes. It makes me laugh when I say, "Look at the yellow color of that bird's legs," and I get corrected: The legs are, according to my critic, yellowish orange. Yet light reflects the color of a bird's plumage, including its legs, in different ways and at different times. So we are really not all seeing the same color anyway.



Robert Ridgway developed a *Color Nomenclature for Birds*, a scientific system for determining the color of every hue on a bird. Ridgway created a wheel of 36 basic colors, with tints and shades of grayed colors adding up to 1,115 named colors. For a guide, Ridgway used a collection of Japanese silks along with color standards for identifying mushrooms created by the American Mycological Society. In a sense, Ridgway was matching bird

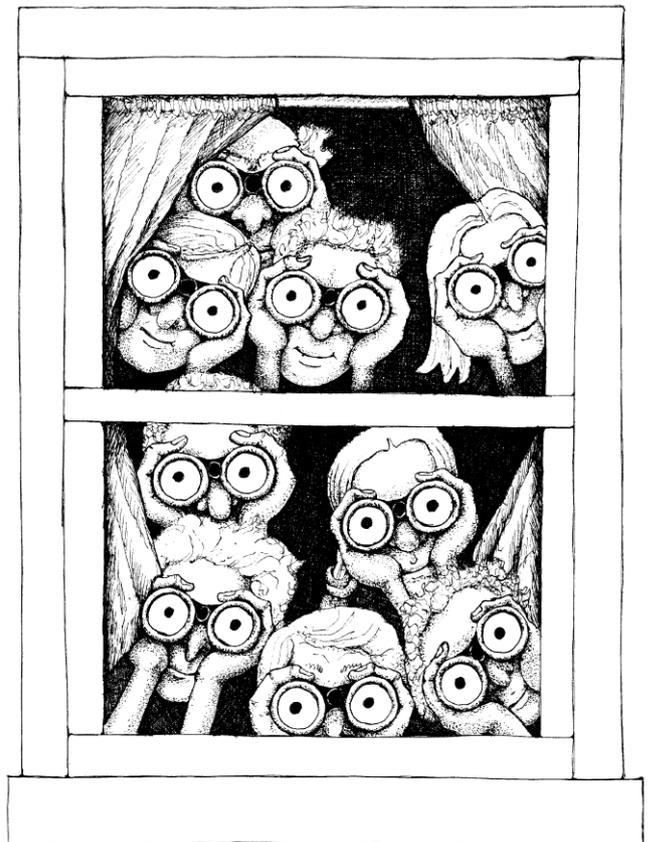
colors to nature just as I am. His system, however, is much more precise than my fancy-free comparisons in the field.

One of the more recent examples of how scientists use the Ridgway color wheel comes from an account by Maria Mudd Ruth in the fall 2005 issue of *Boston College Magazine*. Mudd Ruth describes how ornithologist Laurie Binford used Ridgway's color scheme to determine the identity without a doubt of a Marbled Murrelet chick found in a nest.

"The feathers on the chick's head and neck were Light Ochraceous-Buff marked with 27 spots of Sooty Black," Mudd Ruth writes. Its throat and upper parts were Pale Ochraceous-Buff. Its sides and flanks were shaded in feathers colored Pale Smoke Gray at the base, Deep Mouse Gray at the middle, and Light Ochraceous-Buff at the tip. Next time I see a young Marbled Murrelet, I will ponder whether there is a mouse lurking in the feathers of its flanks.



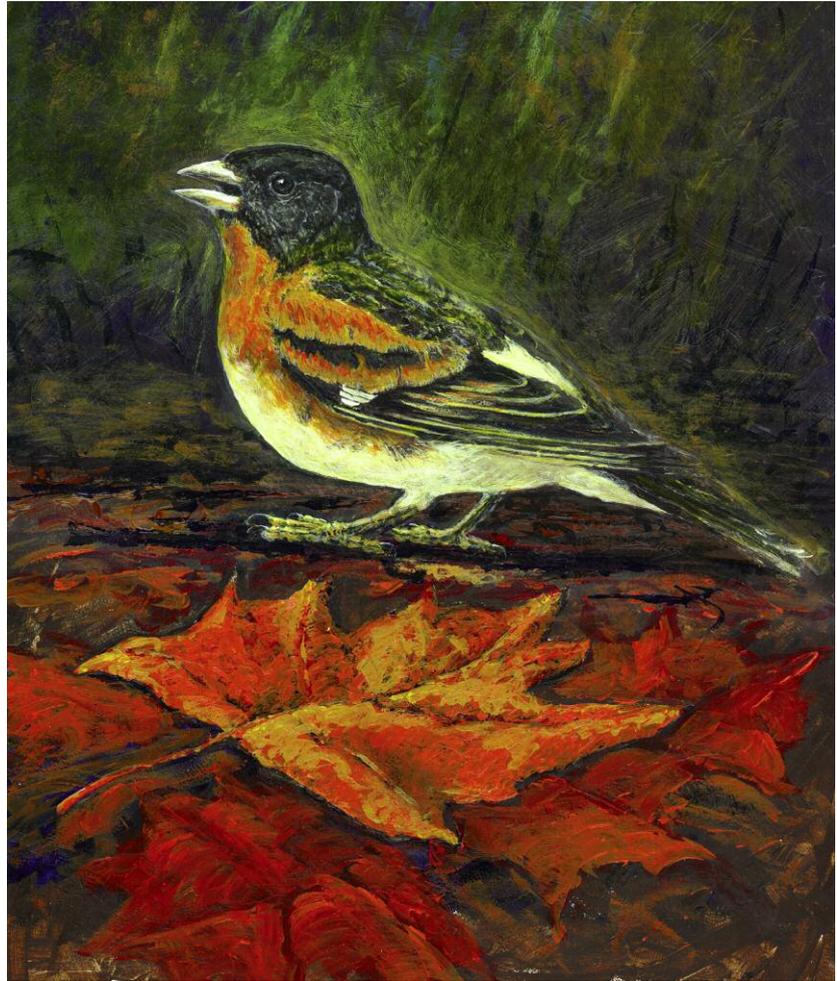
Sometimes I look at a bird and compare the various shades of one primary color. One snowy morning, I



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gazed at a female Northern Cardinal outside my window drinking some snow from the shrubs. I noticed at least five different shades of red. The darkest red appeared on her cheek just below her eye. It was just a smidgeon, as if a painter had inadvertently dripped a bit of color on her plumage. I had never noticed that shade of red on a cardinal before. Then there was some pinkish red under her belly. And her bill looked orangish-red.

When I looked at Kaufman's and Sibley's bird identification guides, both showed those five colors I noticed. But neither photo nor drawing accurately represented what I saw outside my window. The colors, which are alive in nature, lose that vividness in photographs or drawings. Don't get me wrong: Artists create wonderful portraits of birds, and being surrounded in an art gallery with works all of your favorite bird species is as close as you can get to being out in the field with the living creatures.



Acrylic on paper. © Ray Nelson.

Birds, of course, display color and color patterns for various reasons: attracting mates, fending off competitors, camouflaging themselves in the nests, and making the gape of a young songbird easy for the parents to find. Birds also use color to deter predators; for example, the Black Turnstone has what is called a disruptive color pattern, in which the bold and contrasting markings on its back disrupt its outline and thus can foil a fox (or other hungry mammal). And consider the Willow Ptarmigan's ability to change from white to brown to gray with the seasons. Then there are the remarkable vivid and varied hues of birds that live year-round in the tropics. Their color patterns create shadows in the trees—color patterns that attract mates but deter predators, not to mention the birder who wants to see all of the finely colored plumage of the Turquoise Cotinga unobscured by foliage.

We are now learning how birds use color in ways early ornithologists might never have imagined, and how remarkably well birds see. Many songbirds can see into color realms that humans cannot. Their eyes contain a

much larger number of cone receptors than humans have, enabling them to see ultraviolet light. For example, female European Starlings rank males differently depending on the presence or absence of ultraviolet wavelengths in the males' plumages. And even if we can't tell which Cedar Waxwing is a male or female in the field, the birds can. Cedar Waxwings as well as other birds whose male and female plumages appear the same use ultraviolet light to help them differentiate between sexes.

Humans see the skin of young starlings as pink. But starling skin also reflects ultraviolet light. The skin of nestlings with stronger immune systems reflects more UV light than that of nestlings with weaker immune systems.

Though we can't see what birds see when it comes to color, we are lucky we can go into the field and describe the myriad hues of a bird's plumage in any way we want. Paintings, drawings, and photographs can capture the color of birds and our imaginations. But I'll take a bird in the field any day to explore the wide, wide world of color.