Spectra in this dataset were collected from study skin specimens from the Yale Peabody Museum (YPM) and the American Museum of Natural History (AMNH). They were measured with a S2000 Ocean Optics spectrometer and a bifurcated fiber with an Ocean Optics DH-2000-BAL deuterium–halogen light source (Ocean Optics, Dunedin, FL) in a dark room with an integration time of 100 ms. We did not use a metal block to hold the reflectance probe because it can be difficult to accurately measure plumage reflectance peaks from small iridescent patches at a normal angle of incidence to the plumage surface. Rather, we used a Keysight 3D Probe Positioner (N2787A, KEYSIGHT, Santa Rosa, CA) to hold the optical fiber stable at the appropriate angle of incidence to maximize peak reflectance and saturation while maintaining peak reflectance below 100%.

We measured six standardized patches from all specimens: crown, back, tail, wing, belly, and throat. Additional patches were measured if they were distinct to the human eye and large enough to measure reliably. Each plumage patch was measured from a different position three times. Multiple measurements were not averaged to prevent flattening of highly saturated peaks with slightly different hues. If a patch showed a gradient in color, measurements were taken at the ends and center of the gradient.

Each color patch was scored with a presumed color production mechanism, including barbule structural color, melanin (further classified as either eumelanin or phaeomelanin), or white (unpigmented). Color production mechanisms were inferred based on previous literature, visual appearance, and the shape of the reflectance spectra. Any color that showed barbule structural color as well as melanin was categorized as a barbule structural color. Structural black colors were excluded from analyses.

Spectra data were combined and converted from individual reflectance spectrum data .txt files to species spectra .csv files (with all the spectra for each species examined) using the R code provided.