

Hybrid Vigor

Every once in a while, we here at *Birding* are accused of running photo quizzes that are “unfair”. We’ve featured headless birds, hidden birds, and fuzzy, out-of-focus birds. We take perverse delight in obscure field marks, in unfamiliar plumages, in awkward poses. We have never turned up our noses at “freaks”—at albinos, runts, and other aberrations. Even hybrids—those uncountable miscreations—are fair game.

Remember the “weird” oriole in the August 1993 photo quiz? Turns out it was a hybrid (Hooded × Bullock’s). In bird clubs and internet chat rooms, there were the predictable howls of protest. *Hybrids are freaks! Hybrids are boring! Hybrids don’t count!* Understandably, the wording in the photo quiz answer (October 1993 *Birding*) was timorous, apologetic. The consensus was that this hybrid oriole was a cheap shot, a trick question.

Or how about the June 1996 photo quiz? Quiz Bird A was an *apparent* Eurasian × American Wigeon. Scandal!—The “official” identification was provisional and uncertain, and, again, tinged with apology. Maybe it was a straightforward F1 hybrid, maybe it was a backcross of unknowable lineage, or maybe it was just a pure American Wigeon exhibiting more gray on the upperparts than is typical of the species. Whatever it was, it was a freak and it wasn’t fair.

One more: The April 1991 photo quiz. The second quiz bird (rated “intermediate” in difficulty) was a duck of some sort, in female plumage and evidently in the genus *Aythya*. The original ruling (female Ring-necked Duck) was overturned as the result of a Point/Counterpoint feature published in the April 1992 *Birding*. The revised verdict?—a Redhead perhaps, and evidently a male. Or maybe a hybrid, and not necessarily a male, after all. The e-brawl that quickly ensued was equal parts entertainment and education, and smaller skirmishes were still playing out on the birding listservers several years later.

The case against hybrids is clear: *Hybrids are freaks! Hybrids are boring! Hybrids don’t count!* Let’s now examine the merits of each of these charges.



Hybrids are *not* freaks. On the contrary, they are commonplace, even prolific. If that August 1993 ori-

ole rubbed you the wrong way, then you’ll want to avoid birding in the western Great Plains, where *most* of the black-and-orange orioles (Baltimore and Bullock’s) are hybrids. Even the Orchard Orioles in Midwestern shelterbelts should be viewed with suspicion; that’s because you can’t really *prove* that they don’t carry genes from the Fuertes’s Oriole, a possible future split. And what about that wigeon hybrid in the June 1996 photo quiz? Hardly a freak, it is representative, we now know, of a not-insignificant chunk of the wigeon population wintering on both of our coasts. Meanwhile, there are other *Anas* pairings, e.g., Blue-winged × Cinnamon Teal, Mallard × Gadwall (also known as Brewer’s Duck), that are not uncommon in the wild. And hybridization is, if anything, even more rampant in the genus *Aythya*. That possible Redhead × Ring-necked Duck hybrid (April 1991 photo quiz) is just the tip of the iceberg. In Europe, nearly every *Aythya* “twit”, it seems, proves to be a hybrid: Lesser Scaup × Tufted Duck, Tufted Duck × Common Pochard, Common Pochard × Ferruginous Duck, and so forth.

It gets worse. Here in the ABA Area, we have to contend with intergeneric hybrids such as Bufflehead × Hooded Merganser and Hooded Merganser × Common Goldeneye. And waterfowl aren’t the only taxon in which intergeneric hybrids have been described. In the family Parulidae, for example, there have been credible records of Connecticut Warbler × Canada Warbler, Mourning Warbler × Common Yellowthroat, and Yellow-throated Warbler × Northern Parula (Sutton’s Warbler) hybrids. Meanwhile, wood-warbler hybrids within lower-order taxa are legion: Hermit × Townsend’s (“HeTo” Warblers), Blue-winged × Golden-winged (Lawrence’s and Brewster’s Warblers), and Myrtle × Audubon’s.

In large portions of the ranges of many North American birds, the *majority* of individuals are hybrids. Examples: *Poecile* chickadees that breed in southeastern Pennsylvania, *Sphyrapicus* sapsuckers that winter in the Great Basin, Olympic Gulls (Western × Glaucous-winged) in the Puget Sound region, *Passerina* buntings in the foothills of the Rockies, and on and on. In other instances, the full extent of hybridization has not been adequately documented; but intermediates are frequently noted, and the specter of hybridization looms large. For instance: *Brotogeris* parakeets, *Plegadis* ibises,

the “Solitary” Vireo complex, and the “Western” Flycatcher debacle.



Hybrids are *not* boring. Rather, they are altogether exciting, for two reasons.

The first reason has to do with basic biology. Far from being an evolutionary cul-de-sac (as was once thought to be the case), hybridization is suspected to have played an important role in generating a fair bit of the diversity of life on earth. In particular, heterosis, or “hybrid vigor”, favors mixed genotypes. What often results is a population (or populations) of stable hybrids, which may eventually radiate into new species. An intriguing avian case-study involves the so-called Cassiar Junco (*Junco hyemalis cismontanus*), possibly a stable hybrid population that arose from contact between the nominate *hyemalis* subspecies of Slate-colored Junco and the *shufeldti* (=montanus) race of Oregon. Whether the Cassiar Junco should be recognized as a “good” phylogenetic species is open to debate; but regardless of the final determination, the evolutionary process at work here is fascinating. (It is illogical, by the way, to place the intermediate Cassiar Junco within the Slate-colored Junco subspecies-group—a practice that was adopted by the A.O.U. in 1957.) And the story doesn’t end with the Cassiar Junco. The entire North American *Junco* complex is a sprawling canvas on which the complex and dynamic process of evolutionary reticulation has been painted, a bewildering palimpsest on which the saga of speciation is still being rewritten.

Hybrids are exciting—and important—for reasons of applied biology, too. For example, plant hybrid zones may create hotspots of biodiversity. In a well-known example from Australia, *Eucalyptus* hybrids have been shown to support unique communities of herbivorous insects. And in a less-well-known example that ought nonetheless to be of interest to birders, it has been documented that hybrid cottonwoods host higher densities of breeding birds than do pure cottonwoods. On the flip side, hybridization can present formidable challenges to wildlife managers working in human-influenced landscapes. A few examples, in passing: fertile hybrids between declining Spotted Owls and invading Barred Owls on timberlands in the Pacific Northwest; “genetic swamping” of the Golden-winged Warbler by the Blue-winged Warbler in fragmented

habitats in the Northeast; and substitution of native *Anas* genomes for Mallard genetic material, from Hawaii (*A. wyvilliana*) to New Zealand (*A. superciliosa*) and beyond.



True, hybrids don’t count, according to the official rules. But could that be more an indictment of the rules than of hybrids? In point of fact, hybridization is so pervasive in the natural world that any method of accounting (e.g., systematics, biological inventory, listing) must acknowledge the phenomenon. In the plant kingdom, some *seventy thousand* naturally occurring hybrids are known, and certain taxa (e.g., hawthorns, sunflowers, oaks) are primarily hybridized. In the microbial realm, it gets even crazier: Lateral gene transfer between archaea and bacteria (which are *much* more distantly related to one another than, say, hummingbirds and ostriches) is routine. Returning to the vertebrates, birds appear to be especially susceptible to hybridization. On average, for example,

mammals typically lose the capacity for hybridization after eight million years of evolutionary divergence; birds, in contrast, may remain capable of hybridization after sixty million years of divergence. The long and the short of it?—Ornithologist Serge Dumont had documented 2,094 avian hybrid combinations as of November 2003.

In order for hybrids to “count”, of course, we must devise methods for recognizing them as such. Unfortunately, as F. W. Allendorf and colleagues have argued, such determinations really must be based on genetic, rather than morphological, data. In other words: gel electrophoresis, not binoculars and field guides. That phenotypically “good” Carolina Chickadee in Philadelphia could well be a chimera; the vagrant Golden-winged Warbler at Santa Barbara may harbor a cache of Blue-winged genes; and every Red-breasted Sapsucker

from Reno to Salt Lake City is genotypically suspect.

Will increasing awareness of the ubiquity of avian hybrids in North America result in the final defenestration of the ABA listing culture? That is beside the point. Of broader interest is that hybrids are for real. Hybrids are everywhere. Hybrids are exciting. Hybrids are destined to occupy a large part of the thinking of the modern birder.

— Ted Floyd



An intergeneric hybrid: Berylline × Magnificent Hummingbird.
Miller Canyon, Arizona; August 2000. © Charles Melton.