by Paul Hess

New Warbler Hybrids

For birders who enjoy tackling difficult identification problems, wood-warbler hybrids can be worthy opponents. At least 40 of 57 parulids on the *ABA Checklist* have hybridized, according to Eugene M. McCarthy's *Handbook of Avian Hybrids of the World* (Oxford University Press, 2006). Frank Gill, Kenneth Parkes, Gary Graves, and Sievert Rohwer have taught us famously about warbler hybridization, and many other researchers have extended our knowledge year by year.

The Blue-winged × Golden-winged, Hermit × Townsend's, and "Audubon's" × "Myrtle" (Yellow-rumped) hybrids are well-known, but unprecedented parental combinations are still being discovered. Some cannot be identified without genetic analysis. Some have such subtle signs of mixed parentage that they may not be recognized as hybrids. In many cases, the parents are inferred from morphological features with high probability but not with proof. Three recent challenges are instructive.

Researchers at the Cornell Lab of Ornithology identified a "mystery warbler" in 2007 which, thanks to the internet, became the most highly publicized new warbler hybrid in history. It is named "Junkin's Warbler" for New York bander David Junkin, who captured the bird. Before releasing it, he plucked a tail feather and sent it to Cornell, hoping genetic analysis might pin down its parentage. The Lab's experts succeeded. DNA identified its mother as a Kentucky Warbler and its father as a Mourning Warbler, the first such case known. David's wife, Sandy, photographed the bird, and her pictures made a significant contribution by illustrating a mysterious plumage aspect. A white throat bordered completely by a wide black band is not a feature of either parent and, in fact, is nonexistent in any wood-warbler. Cornell's website <http://tiny.cc/JEj7M> tells the fascinating story.

Without a close look at its yellowish rump, this bird's identity as a hybrid **Black-and-white** × **Yellow-rumped Warbler** might be missed. In the field, it could easily pass as a Black-and-white Warbler—reminding us that birders might see more hybrids than they realize. *Montreal, Quebec; May 2007. © Jean-Philippe Gagnon–Biodome.*

In another case, a warbler resembled one species so closely that it might never been recognized as a hybrid if adults of two species hadn't been seen feeding it as a fledgling. Rachel Vallender, Jean-Philippe Gagnon, and Irby Lovette reported the event in 2009 (*Wilson Journal of Ornithology* 121:298–305). The bird hatched at the Montreal Biodome, a "living museum" that reproduces ecosystems, where individual birds can be watched day after day. In behavior suggesting a mixed-species pair, a female Yellow-rumped Warbler and a male Black-and-white Warbler repeatedly fed the youngster.

Even in adult plumage, it could easily have passed as a "good" Black-and-white Warbler because the most notable indication of mixed parentage was merely a small, indistinct, yellowish patch on its rump. Two further adult features suggested a hybrid: measurements intermediate between those of the parental species and a song that combined elements of both. Finally, DNA analysis confirmed that the Yellow-rumped Warbler was its mother and the Black-and-white Warbler was its father—the first combination ever recorded.

An odd warbler in Pennsylvania exemplifies how some hybrids cannot be identified with certainty. This bird's unfamiliar plumage and song caught Barbara Dunn's attention in May 2009, and her fine video, audio, and behavioral documentation sparked lively discussions on state and international e-mail lists. See postings to the PABIRDS list for 22–24 May 2009 <http://tiny.cc/sjHF6> and on Frontiers of Field Identification for 23–25 May 2009 <http://tiny.cc/vqa1c>. Various suggestions culminated in Kenn Kaufman's educated guess of Blackburnian × Northern Parula.

If genetic proof had been possible, this would have been a first record. Those three cases embody Frank Gill's enthusiasm about hybrids in his *Ornithology* textbook (W. H. Freeman, 2006): "Deciphering their parentage can be a wonderful ornithological puzzle."

Ancient Nest Sites

Joseph J. Hickey called them "ecological magnets"—nest sites so advantageous that generation after generation of Peregrine Falcons have used them continuously for centuries. Writing in 1942, Hickey told of one site still active on a British island that was "famous in Elizabethan times" (*Auk* 59:176–204). He added, "It is certain that many others are almost ageless in their antiquity." The truly ancient nesting site of another falcon species would be ageless to our knowledge if not for an investigation reported by Kurt K. Burnham, William A. Burnham, and Ian Newton in 2009 (*Ibis* 151:514–522).

A newly fledged female **Gyrfalcon** dines on a Dovekie, photographed during a recent study of falcons' ancient nesting sites in Greenland. Dovekies occur in tens of millions in the island's northwestern region, where they are an important component of the falcons' diet. *Thule, Greenland. © Jack Stephens.*

The authors discovered a cliffside ledge in Greenland where Gyrfalcons may have been nesting for approximately 2,500 years—the longest period of use documented for a raptor nest site.

The researchers' method is as remarkable as their discovery. They used rock-climbing equipment to reach the almost-inaccessible ledge on a 46-meter-high cliff, they sampled layers of guano that were piled 30–35 centimeters thick, and then they radiocarbon-dated samples from the lowest layers to determine the oldest nesting period. Dates are calculated from the ratio of decaying radioactive carbon-14 to stable carbon-12. At a level of 95% accuracy, the age estimated for this site's use is 2,360–2,740 years.

In all, guano was analyzed from 13 nest sites in two regions with contrasting histories of glaciation. Patterns of glacial advance and retreat have left the areas with different present-day environments depending on how long ago the ice sheets receded. Gyrfalcons' first use of a cliff in each area is associated with a period of glacial retreat.

Kangerlussuaq in central-west Greenland is a Low Arctic tundra landscape where nest sites are as far as 78 kilometers from the current ice sheet. Nest sites' distances from the current ice margin suggest that cliffs suitable for Gyrfalcons may have been uncovered by deglaciation starting as long as 6,500 years ago. Besides the oldest nest site, three other sites show at least 1,000 years of occupancy.

Thule in Greenland's northwest is a colder High Arctic locality where deglaciation is thought to be much more recent, perhaps less than 1,350 years ago. Guano samples from the oldest Thule nest sites, 9 to 17 kilometers from the ice sheet, indicate first occupancy no longer than 700 years ago. As at Kangerlussuaq, glacial geology and avian biology coincide.

Another carbon isotope had a role in the research. Terrestrial and marine food chains have different carbon-13 levels, and the levels in old guano can demonstrate Gyrfalcons' dietary history. Birds breeding inland have fed almost entirely on terrestrial prey, such as Rock Ptarmigan and arctic hares. Diets of those breeding nearer the coast have included more marine prey, such as Dovekies and Black Guillemots, but also possibly Red Knots, Ruddy Turnstones, and Long-tailed Ducks.

For a site to be used for thousands of years, the ecological magnetism is surely strong. Hickey emphasized protection from predators and other disturbances. Burnham, Burnham, and Newton add that a nest site's superiority could involve abundant prey, a superior hunting platform, distance from other Gyrfalcon territories, and protection from inclement weather.

Current avian studies in Greenland are not limited to Gyrfalcons. Kurt Burnham directs research for the High Arctic Institute <www.higharctic.org>, a nonprofit organization supported by donations from foundations, corporations, and many private contributors. The Institute is also studying Gyrfalcons, Peregrine Falcons, seabirds, waterfowl, and other species—with special emphasis on how they may be affected by climate change.

An online Gyrfalcon photo essay accompanies this article: aba.org/birding/v42n1p29w1.pdf

Yellow-billed Magpie Decline

After West Nile virus (WNV) invaded the Yellow-billed Magpie's range in 2004, an upsurge of dead magpies suggested serious trouble for this beautiful California corvid. Researchers soon began to quantify the decline, and their findings were dramatic.

In 2007, Daniel A. Airola, Steve Hampton, and Tim Manolis analyzed eight Audubon Christmas Bird Counts (CBCs) in the Lower Sacramento Valley. Magpies had been increasing slowly since 1981 but plunged 44% between 2004 and 2005 (*Central Valley Bird Club Bulletin* 10:1–22). Updating the analysis in 2008, Edward R. Pandolfino found an even greater decline. Compared with the previous 10-year average, counts were down 63% in 2006 and 64% in 2007 (*Central Valley Bird Club Bulletin* 11:53–61).

Scott Crosbie and ten coauthors revealed a startling set of statistics in 2008 (*Auk* 125:542–550). In 2003, just before the invasion, 223 dead magpies were reported to the California Department of Health Services; of 66 tested, none was WNV-positive. From 2004 to 2006, in contrast, 12,211 victims were reported; of 1,007 tested, 78% were WNV-positive.

Crosbie's team had further evidence. Counts on nine U.S. Breeding Bird Survey routes dropped 22% from 2004 to 2005. Numbers on 12 CBCs located across the range declined 42% between 2004 and 2006. Two communal roost sites long used by hundreds of magpies were vacant by 2005 and a third was empty by 2006. The authors offered a bit of encouragement: Perhaps genetically based resistance would develop in survivors and, if inherited, could lead to lower mortality in the future.

The **Yellow-billed Magpie**, a familiar resident in California's Central Valley, has been hit hard by West Nile virus. Its numbers have declined so severely that some experts believe the species may need special government protection. *San Luis Obispo County, California; January 2004. © Bob Steele.*

Sarah S. Wheeler and seven coauthors assessed the risk of the virus to various California bird species by combining statewide analyses of Breeding Bird Survey trends and several measures of WNV prevalence. Their report in 2009 (*Condor* 111:1–20) ranks the magpie at high risk.

In 2009, K. Shawn Smallwood and Brenda Nakamoto compared surveys conducted during 1990–1995 and again in 2005–2008 along 203 kilometers of road routes in the Sacramento Valley (*Condor* 111:247–254). Maximum counts in the recent survey were 83% lower. The decline was greatest in riparian and rice-cultivation areas with wet breeding habitat for mosquitoes, which transmit the virus. Magpies actually increased in urban and rural residential areas where aerial spraying controlled mosquitoes.

Research continues, and scientists are receiving new help. California Audubon, the School of Veterinary Medicine at University of California–Davis, eBird, and a nonprofit group named Magpie Monitors <magpiemonitor.org> are collaborating to involve the public in gathering data. Participants watch nests, collect feathers for DNA analysis, and count magpies observed along walking and biking routes.

Back in 2006, the Yellow-billed Magpie Working Group, a coalition of experts led by Holly Ernest at the University of California–Davis, warned state, federal, and nongovernmental agencies that WNV "may endanger the welfare and persistence" of the species. The group urged range-wide population monitoring and advised that the magpie may need special government protection <http://tiny.cc/3pZO4>.

Even longer ago, before WNV was known to be a factor, Partners in Flight ranked the Yellow-billed Magpie among 100 Watch List Species "for which we have the greatest range-wide concerns, and which are most in need of conservation attention" because of its small population and limited range. The concern is obviously greater now.

What about the Black-billed Magpie, which is declining in parts of its wide range? Experiments reported by Nicholas Komar and eight coauthors in 2003 indicated high susceptibility to WNV (*Emerging Infectious Diseases* 9:311–322), and dead birds examined by Crosbie and his associates showed a high incidence of infection. The sample sizes in both cases were small. No one has made a large-scale study of this species.

Savannah Sparrow Dilemma

The Savannah Sparrow remains a devilish taxonomic conundrum even after nearly two decades of intense morphological, behavioral, and genetic scrutiny. The latest news—another round of uncertainty—came in July 2009 in the 50th supplement to the *American Ornithologists' Union Check-list of North American Birds* (*Auk* 126:705–714). The AOU's Committee on Classification and Nomenclature for North and Middle America (the "Check-list Committee") announced that it did not accept a proposal by James D. Rising to divide the Savannah Sparrow into as many as four species.

By policy, the committee makes taxonomic decisions based on published scientific literature, and there was much to evaluate in this case. Robert M. Zink, Rising, and associates announced major genetic analyses in 1991 (*Condor* 93:1016–1019) and 2005 (*Condor* 107:21–28). Those were summarized in *Birding* (September/October 2005, pp. 470–471). Rising, an acknowledged Savannah Sparrow expert, and various coauthors also published extensive range-wide morphological analyses of geographic variation in size and shape in 2001 (*Studies in Avian Biology* 23:1–65), subspecies distinctions in 2007 (*Ornithological Monographs* 63:45–54), and geographic variation in plumage pattern and color in 2009 (*Wilson Journal of Ornithology* 121:253–264).

Based on those studies, Rising (who is a Check-list Committee member) recommended acceptance of four species but offered alternatives for accepting two or three species:

- Savannah Sparrow (*P. sandwichensis*), which he calls the "typical" Savannah, spanning nearly all of the current range.
- Large-billed Sparrow (*P. rostratus*), a resident in saltwater and brackish marshes of northeastern Baja California, and from northwestern Sonora south to central Sinaloa. Some birds winter north to the Salton Sea.
- Belding's Sparrow (*P. beldingi*), an inhabitant of Pacific coastal saltwater and brackish marshes from central California south to Baja California Sur.
- San Benito Sparrow (*P. sanctorum*), an isolated population in dry brushy habitat on the San Benito Islands off the Pacific coast of Baja California.

His more conservative options were splits into three species, *sandwichensis*, *rostratus*, and *beldingi* (including *sanctorum*); or into two species, *sandwichensis* and *rostratus* (the latter including *beldingi* and *sanctorum*).

Rising emphasized that the saltmarsh birds, *rostratus* and *beldingi*, differ significantly from Savannah Sparrows of all other populations in size, shape, plumage, habitat, and genetic characters. One member favored the two-species option separating *rostratus*, *beldingi*, and *sanctorum* as a whole. Another member said he would have accepted species status for *rostratus* in the strict sense—that is, without *beldingi* and *sanctorum*—but this option had not been proposed.

The large majority voted against any division. Although some members agree that multiple species may be involved, they expressed uncertainty about relationships between *beldingi* and *sandwichensis* in central California coastal marshes, and between *beldingi* and *rostratus* in southernmost California and Mexico. Others noted discordance in which some saltmarsh populations relate genetically to one subspecies group but correspond morphologically to a different group. In the end, the committee called for further studies to determine more-precise taxonomic boundaries. Recommendations included additional sampling in Baja, quantitative analyses of vocalizations among all saltmarsh groups, and evidence of reproductive isolation among various populations.

The **"Large-billed" Savannah Sparrow** (*rostratus* subspecies) failed to gain species status on the American Ornithologists' Union *Check-list* in 2009. The North American Classification Committee believes that taxonomic relationships among Savannah subspecies are unclear. *Salton Sea, California; November 1990. © Kevin Karlson.*

Rising's proposal and members' responses are posted online as Proposal 2008-A-8 <http://tiny.cc/u1gNi>. They offer an instructive peek at the committee's conservative approach to a complex taxonomic dilemma.