by Paul Hess

Yellow-throated Warbler Subspecies

Add Yellow-throated Warbler to the fast-growing list of birds whose subspecies are being questioned. Nominate *dominica* east of the Appalachians and *albilora* west of the Appalachians have been classified as different races since 1873, when Robert Ridgway separated *albilora* based on a typically white rather than yellow supraloral area, smaller bill, and more white on the tail (*American Naturalist* 7:606). George M. Sutton named a third subspecies in 1951, *stoddardi* in the Florida Panhandle, based wholly on a longer and "conspicuously slenderer" bill (*Auk* 68:27–29). The question is whether the three can truly be diagnosed by supraloral color, bill shape, or any other difference.

Misgivings surfaced in 1982 when Henry M. Stevenson pronounced *stoddardi* indistinguishable from a *dominica* population on the Delmarva Peninsula which is also relatively long-billed (*Florida Field Naturalist* 10:37–38). For that reason, in 1996 George A. Hall suggested merging *stoddardi* into *dominica* (*Birds of North America Online No. 223* <bna.birds.cornell.edu.bnaproxy.birds.cornell.edu/bna/species/223>).

Hall stopped short of a proposal to merge *albilora* into *dominica*, but he noted that virtually all of their supposedly distinctive features overlap or differ inconclusively. Interestingly, his species account considers supraloral color "probably the least reliable of the principal characters that separate these two subspecies" because there is much variation in the amount of yellow.

In *A Field Guide to the Warblers of North America*, Jon Dunn and Kimball Garrett do not explicitly suggest discarding any of the three subspecies, but their taxonomic evaluation is replete with expressions that point away from diagnostic features—for example, a character is shared by "most but not all" individuals of a population, is "usually" present, or is merely an "average difference." These are familiar qualifiers that bedevil taxonomists and birders who try to distinguish any two or more extremely similar species or subspecies.

Research by Bailey D. McKay reinforced the uncertainties in 2008. Based on morphology and mitochondrial DNA (mtDNA), he recommends eliminating *albilora* and *stoddardi*, leaving *dominica* as the only continental subspecies (*Condor* 110:569–574). McKay's analysis does not include the distinctive Bahamian race *flavescens*, resident on Grand Bahama, Little Abaco, and Great Abaco islands, with no vagrant records—which Dunn and Garrett say "perhaps deserves specific rank."

For morphological analysis, McKay examined 89 specimens from 10 populations across the range. He measured seven characters: bill length, width, and depth, tarsus length, wing chord, tail length, and proportion of yellow in the supraloral area. His statistical analysis correctly assigns birds from extreme eastern and western populations to *dominica* and *albilora*; however, bill length and proportion of supraloral yellow increase clinally from west to east rather than differing sharply by subspecies. In addition, McKay finds that *stoddardi* is statistically inseparable from *dominica*. Overall, his samples show overlap in all characters among all populations.

The white supraloral area of this **Yellow-throated Warbler** is one feature of the *albilora* subspecies—but, because this and other characters vary clinally across the geographic range, it has recently been suggested that the three continental subspecies should be merged. *Galveston County, Texas; April 2007. © Alan Murphy.*

McKay's complementary genetic analysis, published in 2009 (*Journal of Avian Biology* 40:181–190), produces what he labels "a pronounced lack of differentiation" among the three subspecies. Significant variations in mtDNA control region sequences do appear within populations, but none corresponds to a division separating *dominica*, *albilora*, and *stoddardi*. Perhaps the morphological variations represent locally adaptive, environmentally induced traits that have evolved faster than mtDNA—a factor frequently suggested to explain discordance between morphological and genetic patterns.

Geese from Greenland

North American birders are increasingly interested in geese from Greenland, prompted especially by fall and winter sightings of Pink-footed, Greater White-fronted, and Barnacle Geese on our Eastern seaboard. Some observers also see Canada Geese wearing black-and-yellow neck collars coded with the letter G. These birds were banded (collared) in Greenland, and records of their occurrence in migration and winter are needed for a long-term study coordinated by Denmark's National Environmental Research Institute.

Researchers are investigating interactions between breeding populations of "Greenland" (subspecies *flavirostris*) Greater White-fronted and "Interior" (*interior*) Canada Geese occurring in Greenland. The *flavirostris* population has declined severely since the early 1990s, while numbers of *interior* have increased exponentially in Greenland during the same period <jncc.gov.uk/worldwaterbirds>. The goal is to learn whether competition with the behaviorally dominant Canada Goose is a significant factor in the Greater White-fronted Goose decline. Determining the migration and winter ecology of these Canada Geese is important to understanding their life cycle. The study is described at <greenland08.wikispaces.com/Request+for+resightings+of+Canada+Geese>.

The **Greater White-fronted Goose** population in Greenland has declined at the same time the **Canada Goose** population has increased there. A neck-collaring project is part of a study to find out whether more-aggressive Canada Geese are responsible for the decline. *Isunngua, Greenland; July 2008. © Rachel Stroud.*

Results of the first two banding projects were announced by J. Nyeland Kristiansen, A. D. ("Tony") Fox, and N. S. Jarrett in 1999 (*Wildfowl* 50:199–203). Of 135 geese banded in 1992 and 1997 on their breeding grounds, 45 were reported southward in Labrador, New Brunswick, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania—evidence that these Canada Geese migrate down the Atlantic waterfowl flyway and winter in the Maritime provinces, New England, and the mid-Atlantic states.

Fox tells *Birding* about the latest project, in which 123 Canada Geese were banded in Greenland in July 2008. Twenty-six of them were reported in New Brunswick, Maine, New Hampshire, Massachusetts, Connecticut, New York, Pennsylvania, Delaware, and Maryland in fall and winter 2008–2009—further indicating the migration route and winter range.

Fox would like to know of unreported observations. Adults wear large yellow collars with black letters or letters and numbers, all starting with G, and have a similarly coded leg ring. Young of the year have only a leg ring.

Report sightings to him at <tfo@dmu.dk> with as much information as possible: collar code; whether the bird was sighted or shot; date and location (farm or wetland, nearest town, county, state/province, latitude and longitude if known); whether it was associating with other marked or unmarked geese; estimated flock size; observer's name and e-mail or postal address; and details such as food or habitat used by the geese.

Opportunities to record the geese may continue. The researchers plan to band more in the summers of 2009 and 2010. "All such reports are highly valued, and all will be fully acknowledged," Fox says.

ABA publications in 2008 embody the great interest in Greenland's geese. Dominic F. Sherony discusses five species in a feature article in *Birding* (May/June, pp. 46–56; available at <aba.org/birding/v40n3p46.pdf>. Sherony and Michael L. P. Retter exchange views about Barnacle Geese and breeding "white-cheeked" geese in the *Birding* letters department (November/December, pp. 10–15). Edward S. Brinkley points to increasing reports of Pink-footed, Greater White-fronted, and Barnacle Geese in *North American Birds* (62:205–206).

Sherony concludes his article with advice as appropriate for the collared Canadas as for the rarer species: "The time has come to pay more attention to potentially extralimital geese."

Cuckoos and Gypsy Moths

As careful observers know, cuckoos suddenly congregate at sites of caterpillar outbreaks. Tent caterpillars and fall webworms are Black-billed and Yellow-billed Cuckoos' traditional diet of choice, but the cuckoos discovered more than a century ago that exotic gypsy moths are as delectable as the native species.

This European pest was imported and accidentally introduced into Massachusetts in the late 1860s. In a classic treatise *The Gypsy Moth*, available online <books.google.com>, entomologist Charles H. Fernald describes the escapees' exponentially increasing descendants in 1896 as "fast assuming the aspect of a plague." The plague to humans was a blessing to cuckoos and certain other birds, and it was not long until cuckoos made the invasive caterpillars a major prey item. In the same book, ornithologist Edward Howe Forbush lists the two cuckoo species as gypsy moths' foremost avian predators and comments that "the number of larvae they destroy is astonishing."

A recent study indicates that **Yellow-billed Cuckoos** and Black-billed Cuckoos locate outbreaks of caterpillars—a staple of these birds' diet—by wandering nomadically soon after returning in spring migration. *Jefferson County, Texas; April 2004. © Martin Meyers–VIREO.*

When and how do cuckoos locate outbreak sites so effectively? Just as waxwings travel far to seek berries and crossbills go far to seek cones, both cuckoo species apparently wander widely each spring in search of the caterpillars they crave. New evidence comes from a 2008 study by Nicholas A. Barber, Robert J. Marquis, and Wendy P. Tori at the University of Missouri–St. Louis (*Ecology* 89:2678–2683). They correlated cuckoo abundance data from more than 600 U.S. Breeding Bird Survey routes in northeastern states with locations of gypsy moth defoliation mapped by the U.S. Forest Service. Two correlations emerge for both cuckoo species:

- Their numbers surge higher within in a single year at locations with high concentrations of caterpillars. Then, just as suddenly, Yellow-billed numbers plunge in the following year and Black-billed numbers the year after that. Numbers at the site remain low for three or four years, suggesting that the birds have shifted to other areas.
- In all directions around an outbreak site, a ring of below-average cuckoo abundance extends as far as 90 miles out, leaving otherwise satisfactory breeding habitats under-occupied. This 360-degree circle of low abundance suggests to the authors that cuckoos converge on the outbreak by nomadically searching in random directions rather than by traveling straight to a site upon returning in spring migration.

Because the Breeding Bird Survey counts only adults, Barber and his colleagues suspect that the sharp one-year spike in numbers does not necessarily reflect greater reproductive success. To learn whether an outbreak's superabundant food resources result in higher production of young would require local breeding-season studies spanning a period before and after an outbreak.

The authors discuss cuckoos' predation on gypsy moths from several ecological viewpoints. For example, even as an outbreak destroys a forest, does it benefit cuckoos' productivity by increasing the availability of food? What effect does the exotic moth have on populations of native moths—and on the entire forest food web? There is no shortage of topics for further research.

Particularly for *Birding* readers, Barber shares a thought about the study's method: "I think this exemplifies how Breeding Bird Survey data—almost all of which [are] collected by volunteer birders—can be enormously useful to scientists studying populations of birds throughout North America."

Least Tern Conservation

Restoration of nesting habitat for the "Interior" Least Tern has been a conservation goal for a quarter century, and tern numbers have improved at newly created and carefully managed habitats on Midwestern waterways. Concern about the total population remains, but results are encouraging at two restoration projects on the Platte and Missouri Rivers.

The U.S. Fish and Wildlife Service listed the Interior Least Tern as endangered in 18 states in 1985, classifying it as a "population" rather than a subspecies because interior *athalassos* and coastal *antillarum* races could not be distinguished where they are sympatric near the Gulf Coast. Prospects for the population's stability and growth are important to know because the service initiated its required five-year review of the tern's listing status in 2008.

When the population was listed, nothing was known about its total numbers. The service did know that essential habitat on rivers was rapidly disappearing—and so were terns at many places where they had once been common. The primary cause was plain to see. Nesting sites on sandbars and islands were being eliminated by river channelization, dredging, and manipulated outflows from dams and reservoirs, all of which ruined the natural water regime.

The population size has been uncertain ever since surveys starting in 1975 estimated 1,250–1,800 adults. The government recovery plan in 1990 estimated 4,700 and set a recovery goal of 7,000. In the mid-1990s, Eileen M. Kirsch and John G. Sidle estimated 8,900 but suggested that some portion represented immigrants up the Mississippi River from the Gulf Coast, and not growth of the interior population (*Journal of Wildlife Management* 63:470–483). In fact, they cautioned that breeding productivity in many areas was insufficient to maintain local populations.

The American Bird Conservancy (ABC) coordinated an extraordinary survey of the entire range in 2005 and counted 17,591 adult terns at 489 colonies (slightly higher, incidentally, than recent U.S. estimates for the endangered "California" Least Tern). Casey A. Lott, the conservancy's Interior Least Tern Monitoring Coordinator, reviewed the survey in 2006 <abcbirds.org/abcprograms/science/ternsurvey.pdf>. He noted that 62% of the terns were on a 770-mile stretch of the Lower Mississippi River from Missouri to Louisiana—"the most important breeding area." Next in importance are the Arkansas River and Red River systems on the Southern Plains, where 22 percent of the terns were found.

Two reports in 2008 point to benefits from creation and management of new nesting sites. On 24 miles of the central Platte River between Odessa and Lexington, Nebraska, James J. Jenniges and Rockford G. Plettner monitored 647 nests from 1991 to 2005 at river islands built by the Nebraska Public Power District and at sandpits created as a byproduct of commercial gravel mining. Where those human-made habitats were managed for terns, nest success was substantial: 71% on the islands and 67% on the sandpits (*Waterbirds* 31:274–282). Meanwhile, the ABC announced a rebound in terns on a 58-mile stretch of the Missouri River along the Nebraska–South Dakota border. Terns using sandbars and islands built by the U.S. Army Corps of Engineers produced 55% of the area's fledglings in 2008 <abcbirds.org/newsandreports/stories/081205.html>.

Lott warned in his 2006 review that pressures continue to threaten tern habitat. He emphasizes in the Missouri River announcement that "mechanical habitat creation will continue to be an important management strategy."

Wildlife experts are attempting to restore breeding habitat for the Interior population of the **Least Tern** on Midwestern waterways. Nests such as this pair's are frequently threatened by unnatural flooding. (Look for the amazingly well-camouflaged chicks.) *Sedgwick County, Kansas; June 2005. © Bob Gress.*