by Paul Hess

New Splits in Britain

Canada Goose, White-winged Scoter, and Black Scoter are each split into two species, and Herring Gull into three, in a flurry of taxonomic revisions by the British Ornithologists' Union. In a shuffling of Audubon's/Little Shearwater taxa, a newly named species replaces Little Shearwater in the northeastern Atlantic. The changes took effect for the British List in 2005 (*Ibis* 147:821–826).

As did the American Ornithologists' Union in 2004, the BOU divides Canada Goose into a large-bodied and a small-bodied species: Greater Canada Goose (*Branta canadensis*) and Lesser Canada Goose (*B. hutchinsii*), which correspond to the "new" Canada Goose and Cackling Goose named by the American Ornithologists' Union. Subspecies assignments are the same as those of the AOU. The name Lesser Canada Goose is ironic because it is also the standard English name for the *parvipes* race of Greater Canada Goose. The British report points to genetic divergence and differences in morphology, migration timing, nesting habitat, and nest structure, as well as an apparent absence of interbreeding between sympatric large-bodied and small-bodied populations.

Recent taxonomic splits adopted for the British list involve three waterfowl: Canada Goose, Black Scoter, and **White-winged Scoter.** The British Ornithologists' Union has separated each into two species, while dividing Herring Gull into three. *Travis County, Texas; November 2005. © Greg Lasley.*

White-winged Scoter becomes monotypic Velvet Scoter (*Melanitta fusca*) of Europe and western Asia, and polytypic White-winged Scoter (*M. deglandi*) containing subspecies *deglandi* of North America and *stejnegeri* of eastern Asia. The BOU is considering possible species status for *stejnegeri* as well. The split rests primarily on different bill structure and pigmentation, but differences in feathering at the bill base, in tracheal structure, and in courtship vocalizations are also listed.

Black Scoter becomes Common Scoter (*Melanitta nigra*) of Eurasia, which summers widely in northern Canada, and Black Scoter (*M. americana*) of North America, both monotypic. Different bill structures, bill colors, and male courtship calls are said to be diagnostic. Moreover, no hybridization between the two is known (Jon L. Dunn, personal communication).

The Herring Gull becomes three species based on differences in morphology, vocalizations, and mitochondrial DNA patterns. One retains the name Herring Gull (*Larus argentatus*) with subspecies *argentatus* and *argenteus* of northwestern Europe. A second is Yellow-legged Gull (*L. michahellis*) with subspecies *michahellis* of the Mediterranean and *atlantis* of the northeastern Atlantic. A third is monotypic Armenian Gull (*L. armenicus*) of Armenia and neighboring areas. The subcommittee is reviewing the status of American Herring Gull, which is currently classified as *L. argentatus smithsonianus*, but which some taxonomists believe warrants status as a separate species. For a recent recommendation of species status for *smithsonianus*, see "The Beringian connection: Speciation in the Herring Gull assemblage of North America" (*Birding* July/August 2005, pp. 402–411). The subcommittee is also examining the status of Caspian Gull of eastern Europe and Asia (*L. argentatus cachinnans*). We now face a trans-Atlantic muddle of names: "Yellow-legged Gull" in the AOU and ABA checklists is *L. cachinnans*, but it is *L. michahellis* in the new BOU nomenclature. The AOU *Check-list* Committee is expected to soon review the taxonomy of *smithsonianus* and "Yellow-legged" (Dunn, personal communication).

In the shearwater shuffle, Little Shearwater (*Puffinus assimilis*) disappears as such from the northeastern Atlantic Ocean. Based on a study of mitochondrial DNA sequences, this population is reclassified as a new species named Macaronesian Shearwater (*P. baroli*), which breeds in the region called Macaronesia comprising the Azores and Canaries, Madeira, and the Cape Verde islands. This new taxon contains subspecies *baroli* (for which there are specimen records from South Carolina and Nova Scotia) and *boydi*, both formerly assigned to Little Shearwater. Unchanged is the BOU's classification of Audubon's as *P. lherminieri*, the common small shearwater seen off the U. S. Atlantic and Gulf coasts. How does a Little Shearwater in Monterey Bay

on 29 October 2003—the first documented for the U. S. West Coast—fit the picture? The BOU report does not assess Audubon's/Little Shearwater taxonomy worldwide. However, it cites a recent molecular analysis that divided taxa in the Pacific and Indian oceans and taxa in the southern Atlantic and Australia/New Zealand seas into two monophyletic groups (i.e., having independent evolutionary ancestries), both separate from the North Atlantic populations (*Auk* 121:847–864).

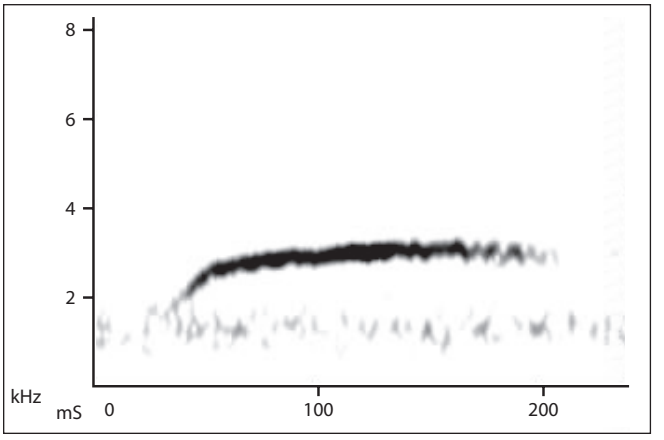
Flight Call Research

Few of us imagined, until a decade ago, that distinguishing a Gray-cheeked Thrush from a Bicknell's Thrush in migration could be easier in the dark than in the daylight. After many years of studies on the Gaspé Peninsula, Stanley C. Ball had speculated in 1952 that these two thrushes' nocturnal flight calls might be diagnostic, but confirmation was elusive. Will Russell and Davis W. Finch cautioned in the September/October 1973 issue of *Birding* that the only "totally unambiguous" thrush flight call appeared to be the *heep* of Swainson's Thrush. Russell and Finch urged birders to rise above speculation by investigating flight calls seriously with methodical use of tape recordings.

Along came Bill Evans in 1990. His famous cassette tape of nocturnal flight calls of thrushes and other species was bootlegged throughout North America, leading birders to discover that the night sky was a fabulous aural frontier. Evans soon revisited the Gray-cheeked and Bicknell's Thrushes with advanced technology, demonstrating with sonograms in 1994 that the nocturnal flight calls of the two species were separable (*Wilson Bulletin* 106:55–61). Then came the historic CD-ROM produced by Evans and Michael O'Brien, *Flight Calls of Migratory Birds: Eastern North American Landbirds*, covering 211 species. Since its release in June 2003, Evans's nonprofit corporation named Old Bird <www.oldbird.org> has sold more than 1,200 copies. For hundreds of birders: Epiphany!

Such advances rest on a tradition of research reaching back to 1899 when O. G. Libby quaintly suggested that the migrants' calls he heard in Wisconsin "expressed a whole range of emotions from anxiety and fear up to good-fellowship and joy" (*Auk* 16:140–146). Flight calls, of course, carry a lot more meaning than that. Andrew Farnsworth, who has studied nocturnal calls at the Cornell Laboratory of Ornithology, recently reviewed the history of flight call research, summarized the state of knowledge in 2005, and pointed toward paths for future discoveries (*Auk* 122:733–746). He recounted a century of attempts by researchers to identify species, to quantify migrants' numbers, to determine timing of seasonal and hourly passages, and to delineate migration routes, all by analysis of flight calls. Farnsworth discussed flight-calling behavior associated with atmospheric conditions, altitude, and topography, and he explained many functions that have been proposed as adaptive benefits of the calls. He listed "major gaps in our understanding" as opportunities for future research: Why are some species silent during nocturnal migration? Are flight calls learned? What factors constrain their characteristics? Over what distances are they effective? How variable are they within species?

Farnsworth and Evans emphasize that birders can contribute valuable scientific data on migration routes, density, and timing of various species. "I think it is of the greatest importance to have amateur ornithologists pointing microphones at the sky. In fact, I think this is the most important venue of all for flight call research," Farnsworth said (personal communication). He recommends the microphone designs and free analytical software available on Evans's web site. Also on the site is an article Evans wrote in 2005 explaining how to outfit your house as a flight call monitoring station (*Passenger Pigeon* 67:15–24). "By comparing their calling data, especially the proportions of different species going over their recording sites, birders can really be the pioneers in mapping gradients of nocturnal migration density across the continent for many species of songbirds," Evans said (personal communication). Even old birders who cannot hear calls overhead can share the excitement by seeing the notes as sonograms on their computer screens.



The flight calls of passerines and other land birds are most frequently given by birds on nocturnal migration. Despite the challenge of identifying birds by their nighttime flight calls, there has been a recent flurry of basic interest in and applied research on nocturnal migration. *Sonogram of the flight call of a* ***Swainson's Thrush.*** *Figure courtesy of © Bill Evans / Old Bird.*

Marsh-nesting Oystercatchers

Ornithologist Frank M. Chapman needed only a few words to characterize American Oystercatchers a century ago. "They are strictly maritime birds ... true beach birds," he said in his *Handbook of Birds of Eastern North America*. When T. Gilbert Pearson, C. S. Brimley, and H. H. Brimley sought nesting oystercatchers in 1939, they knew where they needed to go. The nests were "invariably ... on a dry beach within sound of the roaring surf," they wrote in *Birds of North Carolina*.

Since then, building development and disturbance by humans have severely threatened or destroyed the traditional nesting habitat on surfside sands along much of the Atlantic coast. Fortunately, many oystercatchers have adapted their breeding behavior to avoid the dangers. They nest in salt marshes, where they are largely free from development and disturbance, and are safer from predators as well. From the 1960s to the 1990s, more and more pairs

Sandy beaches were once thought to be the only nesting habitat of the **American Oystercatcher**, but increasing numbers of oystercatchers are breeding in coastal marshes. In a recent survey in Virginia, 38% of all breeding pairs were found in marshy lagoons between barrier islands and the Delmarva Peninsula. *Cape May, New Jersey. © S. Greer / VIREO.*

were discovered in salt marshes of North Carolina, New Jersey, and New York. Brook Lauro and Joanna Burger, who studied the phenomenon in all three states, emphasized in 1989 that such flexibility in nesting habitat is critical to birds' reproductive success (*Auk* 106:185–192).

A breeding-season survey in Virginia in 2003 found remarkably high proportions of oystercatcher pairs away from outer beaches, even though Virginia's barrier islands have remained largely free of the development seen in other states. Nearly half of 588 pairs encountered were using alternative habitats: 38 percent were in marshy lagoons between the barrier islands and the Delmarva Peninsula, and 11 percent were on the shores of Chesapeake Bay. Alexandra L. Wilke, Bryan D. Watts, Barry R. Truitt, and Ruth Boettcher reported the findings in 2005 (*Waterbirds* 28:308–315). Most notable was the large number of pairs occupying the lagoon system, an environment of small low-lying islands separated by shallow creeks and bays. There the pairs were found breeding on patches of storm-deposited oyster shells ("shell rakes") and dead grasses ("wrack"), sandy fringes of islets, and salt pans. Oystercatchers have declined by at least 50 percent on the barrier islands since 1979, but it is not known how much of the decrease reflects the birds' shift to the lagoons and how much represents an actual population loss on the islands—perhaps from increased predation by raccoons and foxes (A. L. Wilke and B. Williams, personal communication).

Quite evident is the significance of ownership and management in habitats occupied by Virginia's oystercatchers, including the still-vital barrier beaches. Survey teams found 87 percent of pairs in areas managed or regulated for protection of nesting birds, primarily by federal and state agencies and by The Nature Conservancy. The authors emphasized this status as "encouraging for the overall stability and protection of suitable nesting habitat in Virginia." Even the private lands that hosted 13 percent of pairs were encouraging; although many of these areas provided no active protection, they are unsuitable for development and have little human disturbance.

Wilke and her associates said the census results (1,337 birds including unpaired individuals) suggest that Virginia supports the largest American Oystercatcher population of any East Coast state during the breeding season. As a "species of high concern" in the U. S. Shorebird Conservation Plan, the oystercatcher is clearly a major stakeholder in Virginia's managed lands and marshes.

Taxonomy for Birders

If contemporary taxonomy sometimes seems bewilderingly arcane, blame the befuddlement on scientific advances. Gone are the days when calipers, color charts, and study skins were usually considered sufficient for taxonomic confidence. Many splits and lumps today are instead based partly or wholly on analyses of complex molecular patterns. To understand these, a non-specialist must have at least an elementary grasp of genetics, evolutionary biology, and species concepts. An informative essay published in 2005, "Taxonomy for birders: A beginner's guide to DNA and species problems", strives to improve our understanding (*British Birds* 98:512–537). The authors are Norman Maclean, professor

emeritus of molecular ecology at the University of Southampton, Martin Collinson, lecturer in biomedical sciences at the University of Aberdeen, and Richard G. Newell of Cambridge, a prominent British expert in ornithology.

Focusing on species boundaries as defined primarily by genetic structures, the authors explain phylogenetic classification, fundamentals of DNA, analytical methods, mechanics of molecular evolution, and limitations of interpreting DNA data. While emphasizing the values of genetically based taxonomy, Maclean and his colleagues confront a contentious point: "If DNA methods are so powerful, we should ask why answers to all of the taxonomic questions are not quickly forthcoming." Their answer: "DNA analysis is in practice possibly no more objective than other analyses ... DNA is not a panacea." By this, they mean that no unarguable criteria exist for determining when genetic divergence should equate with species status, or for deciding what to do when molecular and morphological characters are not concordant.

Birds' taxonomic relationships are not always clear, even after extensive genetic analysis. For example, **Pomarine Jaeger** and Great Skua are species whose relationship remains in dispute. A recent treatise for birders explains how DNA comparisons can—or sometimes cannot—answer such questions. *Paloma Ranch, Arizona; October 1999. © Jim Burns.*

One-third of the paper is a detailed commentary on cases where DNA, in the authors' opinion, "has provided a clear phylogenetic signal, and cases where it has not". They judge the signal to be relatively clear for the splits producing Eurasian Teal (*Anas crecca*) and Green-winged Teal (*A. carolinensis*) on the British List and separating large and small "Canada Geese" on the American and British lists. Viewing skua relationships as less clear, the authors agree at least temporarily with the American and British mergers of large-bodied *Catharacta* species and small-bodied *Stercorarius* species (the three "jaegers") into a single genus, *Stercorarius*. An unresolved question involves the extremely close genetic similarity of Great Skua (formerly *C. skua*) and Pomarine Jaeger (*S. pomarinus*), possibly a result of ancient hybridization, which appears to connect the large-bodied and the small-bodied groups. What of the Greenish Warbler (*Phylloscopus trochiloides*), whose forms intergrade clinally in subspecies fashion along a geographic "ring" through Eurasia but behave as two species where the ends of the ring overlap? Maclean and his colleagues see this as "a case of a rigid nomenclature being unable to describe what is going on in the real world". About the much-debated taxonomy of large white-headed gulls, the authors assert, "These gulls demonstrate that any simplistic approach to analy[z]ing their DNA is not going to reveal their true phylogeny. Much more work needs to be done, perhaps with nuclear DNA, before there is any chance of uncovering the whole story."

Vexing problems involving wagtails, Galapagos finches, crossbills, and cuckoos further embody the authors' view that "perpetual flux" in taxonomy is desirable if it reflects new discoveries of relevant facts. Maclean, Collinson, and Newell summarize their taxonomic philosophy this way: "Stability becomes stagnation when it stifles the application of relevant research ... We would argue that, while unnecessary change is to be avoided, unnecessary stability may be equally harmful to ornithology."