by Paul Hess

Ivory Gull in Trouble

Ivory Gull populations in the eastern Canadian Arctic may be plunging toward oblivion. In 1987, potential breeders were estimated at 2,400 in that portion of the species' Holarctic range. Only 15 years later, preliminary results from extensive aerial surveys in 2002 and 2003 showed a total of only 500–700 birds, according to two of the population researchers, H. Grant Gilchrist and Mark L. Mallory of the Canadian Wildlife Service (personal communication).

Ivory Gulls are difficult to study in eastern Canada, where they breed on barren cliffs surrounded by vast ice fields accessible only by helicopter and with some amount of danger. The gulls spend the rest of the year foraging at edges of pack and drift ice, farther north than any other bird species except the Northern Fulmar, which has occurred within a few miles of the North Pole (J.L. Dunn, personal communication; contra Haney, "A Closer Look", *Birding*, October 1993, pp. 330–338). The need for systematic population surveys became clear to Mallory and Gilchrist several years ago when Inuit residents of remote high-Arctic communities told wildlife officers that they were seeing fewer Ivory Gulls. The reports first prompted a series of interviews with Inuit hunters and lifelong residents in three high-Arctic hamlets, Grise Fiord in southern Ellesmere Island, Resolute Bay in southern Cornwallis Island, and Arctic Bay in northern Baffin Island. Mallory, Gilchrist, Alain J. Fontaine, and Jason A. Akearok reported the results in 2003 in the journal *Arctic* (56:293–298).

A troubling picture began to emerge. At Resolute Bay, where 1.5% of the known Canadian Ivory Gull population had been banded from 1982 to 1984, Inuit residents saw not a single Ivory Gull at the community dump during the 2000–2002 period. At Grise Fiord, where 10% of the gulls' Canadian population had been banded from 1982 to 1984, the Inuit said Ivory Gulls no longer occurred there. At Arctic Bay, opinions were mixed; some people said the gulls had clearly declined, others thought numbers were unchanged, some did not know what the trend was, and one thought the gulls might be increasing. A brief helicopter survey near Arctic Bay in August 2001, after the interviews, confirmed the concerned residents' view. The surveyors found only one Ivory Gull in flight and none at 13 previously known and three suspected breeding colony sites.

Why the decline? Other gulls and ravens are increasing at the local dumps, and they might have forced Ivories to go elsewhere. But "elsewhere" is a smaller and smaller place. Pack ice evidently is an essential component of this species' ecology, and Arctic sea ice cover decreased by as much as 3% per decade from 1978 to 1998, according to a report by O.M. Johannessen et al. in 1999 (*Science* 286:1937–1939). The ice pack is still shrinking, and the decrease is not confined to eastern Canada. It is worldwide, so there are fewer places for Ivory Gulls to go. Meanwhile, as ice decreases and the Arctic Ocean becomes more navigable, shipping and exploration for oil and minerals are

The Ivory Gull is a little-studied species that has never been abundant. Recent evidence suggests that the species may be in catastrophic decline in the eastern Canadian Arctic, but more population monitoring is desperately needed. *Brodeur Peninsula, Baffin Island, Nunavut; 18 July 2003. © Grant Gilchrist / Canadian Wildlife Service.*

The recently e-published *Florida Breeding Bird Atlas* confirms that bird population dynamics in the Sunshine State are highly complex. Some species have increased in number and/or expanded their ranges, while others—such as the Smooth-billed Ani, shown here—have declined sharply. *Loxahatchee N.W.R., Florida; April 1997. © Kevin T. Karlson.*

increasing—"bad news for a species that seems to thrive on isolation", writer Kevin Krajick commented in 2003 (*Science* 301:1840–1841).

Systematic aerial surveys are continuing to determine which colonies are used most, how much the annual numbers vary, and whether the gulls shift breeding locations. Further work to assess the population more widely is conditional on funding. Gilchrist emphasized the urgency of prolonging the study: "Consider that there are only three of us working full time on marine birds in all of the eastern Canadian Arctic from James Bay to the tip of Ellesmere Island. We need all the help we can get detecting population trends."

Florida Atlas on the Web

Fieldwork for the Florida Breeding Bird Atlas project, conducted from 1986 and 1991, was enormously successful, with nearly 1,900 participants confirming 196 species as breeding and another 19 as probable or possible breeders. Production of the published *Atlas*, originally intended as a traditional atlas volume, did not go as smoothly, however. Drafts of the species accounts varied so greatly in quality and such massive revisions were necessary that timely production of a typical atlas book became impossible. Fortunately, an acceptable alternative emerged: electronic publication. The atlas results finally went public in 2003 on the website of the Florida Fish and Wildlife Conservation Commission, <www.wildflorida.org/bba>, based on a final report by Herbert W. Kale II, Bill Pranty, Bradley M. Stith, and C. Wesley Biggs.

Twelve years after the field work is an inordinately long delay, but the website's wealth of data turns out to be well worth the wait. In standard atlas fashion, each species has its own account accompanied by a distribution map. The accounts do vary greatly in quality, but the best of them reflect the knowledge of experts on particular species, such as John C. Ogden for Wood Stork, Richard T. Paul for Reddish Egret, P. William Smith for Eurasian Collared-Dove, Pranty for Budgerigar, Kale for Marsh Wren, and Michael F. Delany for Florida Grasshopper Sparrow. An especially good chapter summarizes range extensions and contractions, new and "missing" breeders, and the state's extraordinarily long list of introduced and escaped birds. Mouse-clicking enables something that page-turning could not: instantaneous search and retrieval of details about every species' status by county, by geographic quadrangle, and statewide.

The avian distributional dynamics in this single state are more complex than in many larger regions of North America, and an especially important aspect of the atlas is its careful coverage of species' changes in range. We learn, for example, of the Blue Grosbeak's and the Indigo Bunting's expansions southward and the Wood Stork's and the Reddish Egret's expansions northward. We discover the surprisingly swift expansion of the Cuban Yellow Warbler along the southwestern coast of Florida and see that its new breeding area might soon be squeezed dangerously between the Brown-headed Cowbird's invasion from the north and the Shiny Cowbird's intrusion from the south. Dramatic range reductions include the Smooth-billed Ani's unexplained withdrawal to near-extirpation and the White-breasted Nuthatch's disappearance from almost all of the state, which is called "a great mystery".

The birders, analysts, writers, and editors who worked so diligently on this beleaguered project can finally take pride in the result, regardless of the delay. Having this well-done website, we really do not need a book.

Fox Sparrow Groups—Again

Yet another molecular study concludes that four morphologically distinct Fox Sparrow groups should be treated as separate phylogenetic species based on their evolutionary divergence: the "Red" (*Passerella iliaca*), the "Sooty" (*P. unalaschcensis*), the "Slate-colored" (*P. schistacea*), and the "Thick-billed" (*P. megarhyncha*). Results of the study were reported by Robert M. Zink and Jason D. Weckstein in 2003 (*Auk* 120:522–527). In an ongoing effort to resolve phylogenetic relationships among Fox Sparrow populations, the authors analyzed a large data set of 2,119 base pairs of sequence from four regions of mitochondrial DNA (genetic, not geographic, regions) and added four outgroup species for comparison. Two tests to determine evolutionary relationships among populations—maximum parsimony and maximum likelihood—produced the same four phylogenetically distinct Fox Sparrow groups found in previous smaller-scale analyses by Zink. Pointedly, these are also the four morphologically distinct groups.

The findings support previous conclusions by Zink that the Slate-colored and Thick-billed groups—though they interbreed along a narrow hybrid zone in California and Nevada—are not "sister taxa", which means that they are not their own closest relatives within the Fox Sparrow complex. The new results thus perpetuate a long-standing conundrum about whether these two groups should be split into separate species. On the one hand, by the Biological Species Concept, which links recognition of species to reproductive isolation, Zink and Weckstein said that "the logical outcome" would be to continue to classify the interbreeding Slate-colored and Thick-billed taxa as conspecific. On the other hand, by the phylogenetic species concept, the authors said that continuing to treat the two non-sister groups as conspecific "would misrepresent their evolutionary history". In the latter view, the groups are divergent, reciprocally monophyletic units, i.e., their mutually exclusive evolutionary ancestries define them as separate species—which is how Zink and various colleagues have believed for many years that the four Fox Sparrow groups should be regarded.

Questions about Fox Sparrow taxonomy almost inevitably reach a birding perspective. Classification in the American Ornithologists' Union *Check-list*, and by stipulation the *ABA Checklist*, is based on the Biological Species Concept. Whether any of the Fox Sparrow groups might someday be classified as separate biological species depends on long recommended but still awaited field research. The extent of hybridization, the proportion of assortative mating (i.e., with one's own kind), and the roles of plumage, vocalization, and other breeding behavior would need to be considered before a Biological Species classification could be established.

Exhortations to conduct field studies have been frequent. "We need this field work to bring down the curtain on The Fox Sparrow Follies," Paul A. DeBenedictis wrote in 1996 (*Birding* 28:327–330). "Additional study is needed in areas of contact of members of the groups," the American Ornithologists' Union said in 1998 (AOU *Check-list*, seventh edition). "[A] behavioral study might yield ... worthwhile information," Zink and Ann E. Kessen wrote in 1999 (*Birding* 31:508–517). Kimball L. Garrett, Jon L. Dunn, and Robert Righter emphasized a special need when they wrote in 2000 (*Birding* 32:412–417), "We suggest that birders combine plumage and structure charac-

The "species" currently known as the Fox Sparrow exhibits substantial variation throughout its extensive North American range. Indeed, the taxon may comprise at least four, separate, "good" species. Recent work has focused in particular on similarities in and differences between the western North American *schistacea* and *megarhyncha* (shown here) groups. *Yuba County, California; July 2001. © Joe Fuhrman.*

ters with close attention to call notes to fine-tune our understanding...". And a general recommendation arose again when Zink and Weckstein remarked in their 2003 report that "[p]redicting biological species status requires field observations…". Until such field work provides the AOU with convincing biological reasons for a split, the Fox Sparrow will remain a single tick on our lists.

Dawn Chorus Deconstructed

The "dawn chorus" of singing passerines is well-known among birders. But *why* do birds sing at dawn? Recent experimental evidence indicates that transmission of the song of the White-throated Sparrow varies throughout the day, with significantly less variation in acoustic degradation at dawn than at midday. *Aitkin County, Minnesota; June 2002. © Brian E. Small.*

Whether already afield before sunrise or awakened earlier than we wished, who among us in the North Temperate Zone has not been amazed by the "dawn chorus"? How could this intense cacophony of songs possibly serve so many singers? And why only at dawn? Hypotheses—some of them amusingly contrary to each another—have abounded: Predation is higher at dawn, and many birds singing make it difficult for a predator to single out an individual; or oppositely, predation is lower at dawn, so it is safer for birds to announce their whereabouts by singing. High hormonal levels increase song production, and dawn is when the levels are highest in birds; or conversely, singing increases hormonal levels, and dawn is the most important time for sexual stimulation or territorial assertion. Among other suggestions why the dawn chorus might be beneficial, the one most frequently proposed involves simple acoustics. A song can be effectively transmitted farther at dawn, when local air turbulence—which degrades a signal's quality—is less than at other times of the day.

An experiment described in 2003 by Timothy J. Brown and Paul Handford in the British journal *Ibis* (145:120–129) supported the acoustic hypothesis in general, but the results pointed toward a particular acoustical factor. The main benefit of singing at dawn might not simply be to maximize distance but rather to convey a more consistent signal that identifies an individual bird. To test that hypothesis, Brown and Handford chose two extremely contrasting song forms, the rapid trill of the Swamp Sparrow and the clear whistle of the White-throated Sparrow. They broadcast a recording of each song to a microphone representing a listener, at dawn and six hours later at various distances. The arriving signals were taped for sonogram comparison with benchmark, non-degraded songs. The tests were conducted in open fields, where signals are degraded mainly by air turbulence, and in closed forests, where degradation arises mainly from reverberations off trunks, branches, twigs, and foliage.

Brown and Handford first analyzed "mean transmission quality", which is a measure of the overall degradation of a signal when it reaches the listener. Surprisingly, the time of day did not matter. In both the open and the closed habitats, the degradation of both species' songs did not differ significantly between the transmissions at dawn and later. But for the White-throated Sparrow song, variability caused by irregularities in the amount of degradation did relate to the time of day. In both habitats the White-throated Sparrow song was significantly less variable at dawn than at midday. On the other hand, in both habitats the Swamp Sparrow song showed no significant difference in variability at dawn or later. Apparently, its rapidly trilled signal is resistant to irregular fluctuations, whereas the clear whistled signal is more susceptible to irregularities.

How might a White-throated Sparrow benefit from the greater consistency of its song at dawn? The authors suggested that it is important for birds to recognize others of their species as individuals, and that a consistent signal is essential for birds to recognize each other by song. Perhaps so, but in the end we can only marvel at how one bird might distinguish another amid the sonic chaos at dawn.