by Paul Hess

Savannah Sparrow Split Suggested

A new chapter has opened in the fluctuating taxonomic history of *Passerculus*, the genus whose sole currently-recognized species is the Savannah Sparrow (*P. sandwichensis*). A bit of background: When first described in the nineteenth century, Belding's Sparrow (*P. beldingi*) in southern California and Large-billed Sparrow (*P. rostratus*) in northwestern Mexico were classified as separate species. The American Ornithologists' Union reduced them to subspecies of Savannah Sparrow in 1944. Ipswich Sparrow (*P. princeps*) on Sable Island, Nova Scotia, was considered a distinct species until the AOU demoted it to a Savannah Sparrow race in 1973. California's legendary zoologist Joseph Grinnell apparently foresaw the subspecific future as early as 1939 (*Condor* 41:112–119) when he growled at Savannah-lumpers, "There seems to be a stampede among avian taxonomists toward running long series of forms that are more or less near related, into continuous series of trinomials."

Variation within the Savannah Sparrow is well known, but where do the major divisions fall? A recent study shows that the wetland races (including the distinctive **Belding's Savannah Sparrow**, shown here) of southern California and northwestern Mexico constitute a distinct group, separate from all other Savannah Sparrow populations. *Bolsa Chica Ecological Preserve, California; December 1999. © Brian E. Small.*

Fast-forward to 1991, when Robert M. Zink, Donna L. Dittmann, Steven W. Cardiff, and James D. Rising suggested that the Large-billed Sparrow might indeed merit a higher-than-trinomial status (*Condor* 93:1016–1019). They based their tentative conclusion on what they termed "considerable" mitochondrial DNA differentiation between three Large-billed individuals wintering in southern California and five individuals of "typical", continentally distributed Savannah Sparrow forms wintering in California and Louisiana. The latter five specimens "appeared to include prairie and western forms of the weakly differentiated 'typical' group," according to Rising. The authors predicted that studies of other genetic features, song characters, and morphologically intermediate forms would support their hypothesis that the Large-billed taxon, *rostratus*, was a distinct species.

Jump to 2005, when further genetic studies prompted Zink, Rising, and five colleagues to call more firmly for classification of *rostratus* as a separate species (*Condor* 107:21–28). They compared mtDNA sequences in 112 individuals from 13 breeding localities: five sites in Baja California and eight sites across the continental range, including coastal Sonora. The results revealed three main clades (sets of related taxa, each with an independent evolutionary history) within the Savannah Sparrow complex. Two of the clades comprise all of the "typical" forms as well as the morphologically distinctive Ipswich Sparrow, which showed no genetic evidence of historical isolation from mainland birds. In fact, Ipswich and "typical" individuals are known to interbreed, though only rarely, on both Sable Island and the mainland. In the authors' view, Ipswich Sparrow should remain classified as a subspecies. The third clade is more surprising. It encompasses all of the saltmarsh Savannah Sparrow subspecies in Baja California, Baja California Sur, Sonora, and San Diego.

San Diego? Yes. The fundamentally distinct saltmarsh clade includes not only the Large-billed individuals from Mexico but also a Belding's individual from San Elijo Lagoon in San Diego County that corresponds genetically to the Large-billed birds. The two forms differ so strikingly in morphology that it is hard to envision them linked together in a separate species. Belding's is small, dark brown, and heavily streaked, and it has a deep yellow supraloral area and a long, slender bill. Large-billed is bigger overall, pale grayish brown, and indistinctly streaked, and it has a whitish or pale yellow supraloral area and a disproportionately heavy bill. Based on the phenotypic differences and possibly on differences in song, Rising said (personal communication), "I personally would split *rostratus* and *beldingi*," although "this is not supported by the molecular evidence." Zink emphasized the latter evidence as an indication that *beldingi* may belong in the proposed new *rostratus* species (personal communication): “You need to have the taxonomy consistent with the evolutionary tree.” Zink added, however, “We clearly need more sampling to figure out the limits of the two groups.” Savannah Sparrow systematics remain in fascinating flux.

Golden-plover Identification

We have come far in identification since Ira Gabrielson and Frederick Lincoln told us in *The Birds of Alaska* (1959) that the *fulva* and *dominica* subspecies of the American Golden-Plover “cannot be distinguished in the field”. In a major advance toward separation in hand, Peter G. Connors reported in 1983 that he had assigned 96 percent of 369 specimens to one or the other race by a discriminant function analysis of measurements (*Auk* 100:607–620)—a method of little use to birders using binoculars and scopes, not calipers and computers. Jon L. Dunn, Joseph Morlan, and Claudia P. Wilds contributed notably to field identification in 1987, but in a resource known to very few birders (*Proceedings of the Fourth International Identification Meeting* in Eilat, Israel). It is now available on Morlan’s web site, <fog.ccsf.edu/~jmorlan/goldenplover2.pdf>. The number of primary tips exposed past the tertials—3 in *fulva*, 4 or 5 in *dominica*—was the best field character on a standing bird that was not otherwise identifiable, these authors said. They cautioned, however, that missing or worn tertials or primaries on molting birds could obscure the difference.

How does one separate Pacific and American Golden-Plovers away from the breeding grounds? A combination of approaches, factoring in both molt condition and flight-feather morphology, is required. And some birds simply cannot be identified conclusively in the field, according to Oscar and Patricia Johnson. An adult **Pacific Golden-Plover** in basic plumage is shown here. *Santa Barbara, California; March 1987. © Kevin T. Karlson.*

When the American Ornithologists’ Union split the races into Pacific Golden-Plover (*Pluvialis fulva*) and American Golden-Plover (*P. dominica*) in 1993, there *had* to be a way to identify them confidently. Unfortunately, the way was fraught with qualifiers such as “helpful but not infallible… difficult to judge… much overlap… occasionally…usually…typically…”, and the dreaded “beware”. Two articles in 2004 made new efforts to rescue observers.

Oscar W. Johnson and Patricia M. Johnson examined 602 *fulva* and 46 *dominica*, all living birds in breeding plumage (*Wader Study Group Bulletin* 103:42–49). They measured wing, bill, tibia, and tarsus lengths, along with ratios involving bill length, head size, and eye position. On folded wings, they noted the number of primary tips visible past the tertials and the distance between the two longest primary tips. Apart from differences in breeding plumage, the authors found only two visual criteria reliable in the field: the number of primary tips exposed past the tertials (2 or 3 in *fulva*, 4 or 5 in *dominica*) and the primary projection past the tail (0–9 mm in *fulva*, 12–22 mm in *dominica*). Other structural and plumage features in non-breeding and immature birds could be supportive but showed substantial variation and overlap. Because the two reliable criteria do not apply to birds in wing molt, and because all other measurements such as wing-length differences and bill overlap between the two species, the Johnsons lamented that “despite the best efforts of dedicated observers to confirm extralimital records of these plovers, some ... will be impossible to identify with certainty.”

Alvaro Jaramillo viewed wing molt differently (*Western*

Birds 35:120–123). He suggested that, rather than being a pitfall, it might help to identify adults in fall migration. American Golden-Plovers apparently molt primaries in the non-breeding range, beginning in mid-October; in contrast, Pacific Golden-Plovers are at a similar stage of primary molt from August to mid-September. "Thus, an autumn golden-plover in wing molt in California, and probably anywhere in North America, is almost certainly a Pacific," Jaramillo said. As for immature birds, Americans molt primaries in their first winter, but Pacifics do not until the following summer or autumn; consequently, a year-old bird with well-worn primaries is likely a Pacific, he said. Jaramillo encouraged observers to "fill in the blanks" about timing of body and tertial molt in both species, which might support identification of these often-challenging birds.

Yellow Rail Populations

The Yellow Rail has always held a high place in birders' hearts. In 1970, it ranked fourth on American Birding Association members' "most wanted birds" (*Birding* 2:13). Two years later it was second, trailing only Bachman's Warbler (*Birding* 4:189–190). With many more of its haunts known, it might rank lower now. Still, as Michel Robert wrote in 1997 (*Birding* 29:282–290), "For many ABA members, the Yellow Rail is more myth than reality ... It is a bird wrapped in mystery."

Despite its extensive breeding range, the **Yellow Rail** is surprisingly scarce. For example, the U.S. breeding population is estimated at only 600–750 pairs. The highest concentrations appear to be in the Hudson/James Bay region of Canada, where several thousand pairs breed. *Aitkin County, Minnesota; June 2002. © Brian E. Small.*

After surveying large coastal marshes at southeastern James Bay in Québec, Robert and four colleagues reported new data in 2004 about the rail's distribution and numbers (*Waterbirds* 27:282–288). Along line-transects totaling 75 kilometers, they found 205 calling males. Extrapolating beyond the transects, they estimated that 400 adult males were present. Most notably, the counts included the highest densities ever reported for the species, 0.08 males per hectare. "Clearly, the southern James Bay littoral is a key area for the Yellow Rail, and high-density Yellow Rail habitats currently not protected ... should be considered as potential conservation areas," the authors said.

The species is rare in much of its range, nesting locally in habitats with its preferred vegetation and substrates. Robert and his colleagues analyzed the preferences extensively at their study sites, producing a basis for managing the rail's microhabitat. The knowledge could be critical. He and Robert Alvo told the Committee on the Status of Endangered Wildlife in Canada in 1999 that perhaps a few thousand pairs were breeding in the Hudson/James Bay region, another 2,000 pairs in the rest of Canada, and possibly 600–750 pairs in the northern United States—small numbers for a bird whose summer distribution spans the continent from British Columbia to Nova Scotia. It is a species of "special concern" under Canada's Species at Risk Act. Partners in Flight ranks it as a priority species for conservation in every region where it occurs. The U.S. Fish & Wildlife Service lists it nationally as a species of conservation concern.

Working in the vast, remote marshland at James Bay was a memorable adventure. In early evening, two-person teams were dropped by helicopter at the beginning of transects and waited for darkness. Using a GPS and headlamps, the observers walked slowly on the saturated ground, stopped at regular intervals to imitate the rails' calls in classic fashion by knocking two stones together, and then listened for the birds to click in response. Asked about the fieldwork from a birder's perspective, Robert was exuberant (personal communication): "The marshes where we conducted those surveys are magnificent. It is absolutely gripping to walk in them at night, with dozens of Yellow Rails clicking all around (and Le Conte's Sparrows singing, too). It may also be a bit scary the first time you walk there during complete darkness, until you verify that you are able to walk along the transect without getting lost. It is certainly one of the best birding experiences I have had in my life." Even for someone who has found hundreds, the Yellow Rail's mystique endures.

Intelligence in Corvids

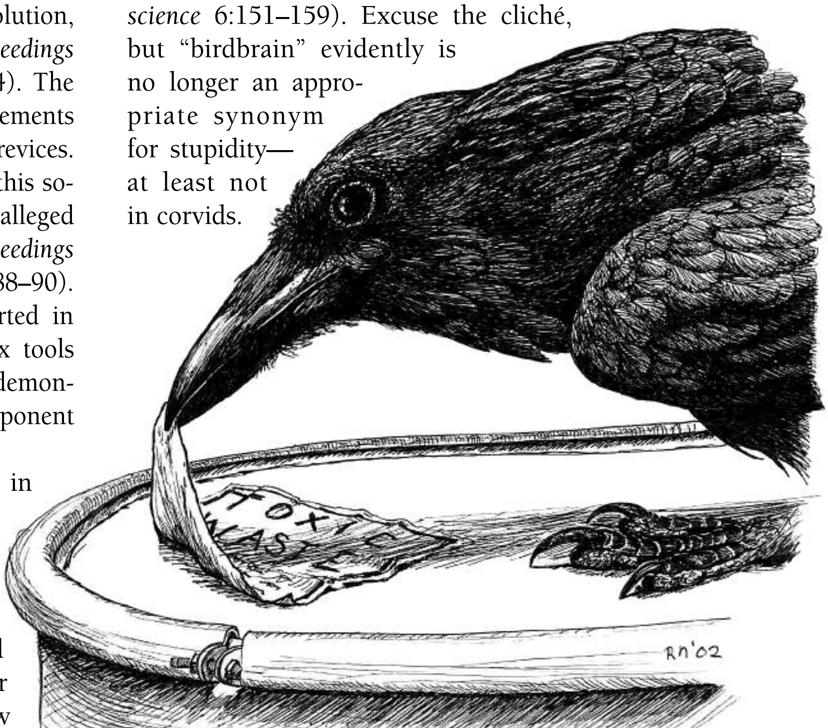
Lawrence Kilham, a keen student of corvids for half a century, echoed observers since ancient times in *The American Crow and the Common Raven* in 1989. While watching a crow closely, he sometimes said to himself, "That crow is thinking." How intelligent really are corvids? Perhaps as intelligent as apes, in some researchers' view. Reviewing recent studies of avian cognition, Nathan J. Emery and Nicola S. Clayton suggested in 2004 that crows, ravens, rooks, jackdaws, jays, magpies, and their relatives among the Corvidae may be chimpanzees' mental equals (*Science* 306:1903–1907). Emery and Clayton summarized an impressive array of avian activities that appear to require complex patterns of thought. Three of the most extensively studied behaviors involve tool-making, food-caching, and problem-solving.

Other birds and mammals use sticks they find as foraging tools, but not even chimpanzees manufacture tools so expertly as do New Caledonian Crows (*Corvus moneduloides*). These feathered artisans carefully shape stiff leaves into barbed weapons suitable for spearing various kinds of prey—an ability that reflects progressive technological evolution, Gavin R. Hunt and Russell D. Gray said in 2003 (*Proceedings of the Royal Society of London, Series B* 270:867–874). The crows also trim and sculpt twigs into hooked implements precisely shaped and sized to extract larvae from crevices. Hunt and Gray went so far as to assert in 2004 that this sophisticated manufacturing process "removes another alleged difference between humans and other animals" (*Proceedings of the Royal Society of London–Biology Letters* 271:88–90). Moreover, Ben Kenward and three coauthors reported in 2005 that juveniles of this species fashion complex tools without education from experienced adult birds or demonstration by humans, which points to an inherited component of this extraordinary avian skill (*Nature* 433:121).

In food-caching, Western Scrub-Jays are experts in sophisticated strategies to reduce pilfering of their caches by other jays. Emery, Joanna M. Dally, and Clayton described in 2004 how jays with previous experience in pilfering other birds' caches hid more food, hid it in dark rather than well-lit places, moved it and re-cached it secretly later, and used other means of deception to prevent theft when they knew that other jays were watching them (*Animal Cognition* 7:37–43; *Proceedings of the Royal Society of London–Biology Letters* 271:387–390). Common Ravens steer competitors away from hidden food with deceptive manipulation, according to Thomas Bugnyar and Kurt Kotrschal in 2004 (*Animal Cognition* 7:69–76).

Bernd Heinrich described a classic problem-solving case in *Mind of the Raven* in 1999. His Common Ravens figured out how to pull up food on a string without lengthy trial-and-error, and they countered his attempts to confuse them with novel arrangements of the food and string. Concluding that ravens consciously evaluate alternatives and use insight to make decisions, Heinrich said, "Whether that is 'intelligence' is subjective; but according to most people it is."

Physically, the corvid forebrain is consistent with more intelligence than birds in general have been credited with possessing; it is relatively large compared to that of all other birds except a few parrot species. Emery and Clayton speculated in their *Science* review that the enlargement represents an increase in primate-like mental ability and reflects convergent evolution of intelligence in corvids and apes. An international consortium of neuroscientists led by Erich D. Jarvis at Duke University expressed a similar view in 2005. The avian pallium and the mammalian cortex differ greatly in structure, the group said, but these two centers of brain power appear to be homologous in supporting advanced cognitive processes (*Nature Reviews / Neuroscience* 6:151–159). Excuse the cliché, but "birdbrain" evidently is no longer an appropriate synonym for stupidity—at least not in corvids.



How smart, really, are corvids, such as this **Common Raven**? Recent studies suggest that corvids excel in a diverse array of cognitive processes, among them memory, deception, problem-solving, tool-making, and tool-use. In the view of some researchers, corvids may actually be as intelligent as chimpanzees. *Pen-and-ink drawing by © Ray Nelson.*