by Paul Hess

Chipping Sparrow Songs

The dry rattle of a Chipping Sparrow has seldom won respect. F. Schuyler Mathews was especially unkind in his *Field Book of Wild Birds and Their Music* (G. P. Putnam's Sons, 1921): "As for his music, it scarcely deserves the name; it is too strident and monotonous to deserve attention." After four years of attention to Chipping Sparrows in Massachusetts, Wan-Chun Liu and Donald E. Kroodsma have an opposite view. They demonstrate in 2007 how a Chipping Sparrow "varies its simple, repetitive song to create a dynamic singing performance" (*Auk* 124:44–52).

The variations depend on behavioral context. Two different song forms, one at dawn and one during the day, have distinct social functions. The dawn song is used in close-range interactions among neighboring males, whereas daytime singing apparently serves for long-distance attraction of females. These singing patterns change as the breeding season progresses.

When unpaired males arrive in the spring and begin to establish territories, they deliver a long, relatively slow song during the day from a treetop perch. After about two weeks, they add a dawn vocalization, sung from the ground or from a low perch at the territorial boundary. This version is significantly shorter (averaging 1.2 seconds vs. 2.5 seconds for the daytime song) and significantly faster (averaging 21.6 songs per minute vs. 6.4 per minute in the daytime). The transition between the two song forms is not abrupt; the duration and the rate change gradually from before dawn to after sunrise.

Liu and Kroodsma interpret the dawn song as an assertion of territorial ownership aimed at other males. It is sung at the territorial boundary, where a male typically faces a neighbor's territory and the two often engage in what the authors call "intense countersinging duels." In one experiment, when a bird's male neighbors were removed, he ceased to sing at dawn; when the neighbors were returned, he resumed the intensive dawn singing. After pairing, Chipping Sparrows continue to sing dawn songs, which diminish in late July and end by mid-August in Massachusetts when males stop defending territories.

Circumstantial evidence supports the daytime song's function as a means of attracting a mate. Only unpaired males typically persist in singing from treetops during the day. They rarely use the song to interact with neighboring males, and they sing even in the absence of neighbors. After pairing, males seldom sing during the day—but if a male loses his mate, he resumes the daytime song. Unpaired males maintain it as long as they hold territory. Many disperse within a month if they have not attracted a mate, but others stay and sing through June and July.

Many birders are aware that **Chipping Sparrow** songs, although stereotyped in general form, are quite variable. The variations are by no means random; a recent study demonstrates that they have distinct behavioral functions. *Ogemaw County, Michigan; June 2007. © Brian E. Small.*

Kroodsma describes the songs dramatically and gives them life on the CD in his book *The Singing Life of Birds* (Houghton Mifflin, 2005). He praises Liu's dedication as a graduate student to understanding Chipping Sparrows' vocalizations. It must be particularly rewarding to discover diverse meanings within the simplest songs. Barbara Ballentine expressed similar enthusiasm after mud-covered mornings studying Swamp Sparrow songs (*Birding*, September/October 2005, p. 508): "The next time you are unimpressed by the simple trill of a Swamp Sparrow, see if you can train your binoculars on its bill and admire the athleticism that is required for song production in this species." Liu, Kroodsma, and Ballentine offer a lively contrast to Mathews' disdain.

California Parrot Project

The Red-crowned Parrot, California's most common psittacid, is the only parrot accepted to the official state list as well-established in the wild. It is also a remarkable case of ecological irony. BirdLife International estimates the Red-crowned Parrot's numbers at only 3,000–6,500 in its small native range in northeastern Mexico and lists it as endangered there. At the same time, California's naturalized population is estimated at 3,000 and growing. In other words, these remnants and descendants of birds imported until the pet trade was banned in 1992 may now represent at least one-third of the entire global population. Smaller numbers also occur in southernmost Florida and Texas.

Not so ironic, but no less interesting, are 12 additional species whose naturalized populations are being monitored in a scientific effort called the California Parrot Project—an organization operating in affiliation with the Natural History Museum of Los Angeles County and the Pasadena Audubon Society. The species are Rose-ringed, Blue-crowned, Mitred, Red-masked, Black-hooded, White-winged, and Yellow-chevroned Parakeets; and White-fronted, Lilac-crowned, Red-lored, Yellow-headed, and Blue-fronted Parrots. Populations of the 13 species combined may total more than 7,000 birds. For estimates updated to 2007, see the WebExtra accompanying this article <aba.org/pubs/birding/archives/vol40no1p33w1.pdf>.

Unfortunately, the numbers "have largely been a matter of educated guesswork," project founder Kimball L. Garrett tells *Birding*. Advancing such knowledge beyond guesses is what the organization is primarily designed to do. But the project does not stop at counting. It seeks to determine the geographic distribution of every species present, the ecological factors involved in successful colonization, and the extent of interbreeding between closely related species.

Two paramount goals are to educate the public about California's parrots and to encourage public participation in the study. In fact, the Parrot Project's success depends heavily on people's help in documenting and monitoring the parrots they see. An extensive and colorful website <parrotproject.org> is designed with those goals in mind. It contains an online form for observers to submit details about parrot species, numbers, location, and behavior. Identifying parrots is far from easy for the nonbirding public—and for some species, especially the juveniles, it is difficult even for experienced birders. Bill Pranty and Garrett provide tips far above field-guide level in the parrot-themed *Birding* issue of June 2003 (pp. 248–266). Without page limitations, the Parrot Project's website offers much more detail not only on identification but also on the history, ecology, population status, and distribution of each species.

Attention to the state's parrots is not new, but it has evolved from small beginnings such as John William Hardy's report in 1964 on Rose-ringed Parakeets nesting at a Los Angeles street corner (*Condor* 66:445–447). In concluding the report, Hardy was a prophet: "Los Angeles contains such an artificial amalgam of introduced vegetation, isolated by mountains, desert, and ocean, that in reality it is little more than a gigantic aviary wherein aviculture is heavily practiced and where individuals of any tropical or temperate bird species might escape to persist for a time and carry out its breeding cycle."

The California Parrot Project is uncovering new scientific information about the state's naturalized psittacid species. One such species is the **Rose-ringed Parakeet**, whose current population in California is estimated at 950 birds. *Kern County, California; April 2002. © Bob Steele.*

Hardy's "for a time" has become a very long time for all of the state's remarkably adapted psittacids. Forty-three years later, Garrett comments in his introduction to the website, "They are here, for better or worse, and continue to pose interesting biological questions."

Gill Nets and Murres

With a world population estimated roughly at 13–21 million, the Common Murre will not likely command high-priority conservation attention anytime soon. Consider the contrast with BirdLife International's estimates for several desperately troubled Pacific albatrosses: 109,000 Black-footed, 58,000 Light-mantled, and a meager 2,100 Short-tailed. The hooks of long-line fisheries have literally dragged those and at least eight other albatross species toward extinction. These disasters are dryly categorized as "bycatch."

A fishery danger of a different kind plagues certain populations of diving alcids, including Common Murres in Newfoundland. A short distance off Newfoundland's northeastern coast, one such population consists of 412,000 breeding pairs on Funk Island and 3,000 more pairs on nearby Cabot Island. Research reported by Gail K. Davoren in 2007 shows that substantial numbers of murres are being lost to gill-net fishing in that area (*Conservation Biology* 21:1032–1045).

The location is a biological hotspot where large aggregations of capelin, a small fish important in murres' diet, gather to spawn in the summer. The capelin attract not only hordes of hungry birds but also a remnant population of another predator, the endangered Atlantic cod, for which fishing is strictly monitored but is permitted in some areas at historically low levels. The hotspot also includes fish species that are heavily harvested. This intersection of fisheries and murres is a deadly combination where the birds feed near their nesting colonies. Diving for the capelin, murres become entangled in the fishers' gill nets and drown.

Davoren conducted highly structured regional and local surveys of the area in 2000–2003 to investigate the presence and magnitude of murre mortality. Based on counts of dead murres floating on the surface in association with gill-net floats, she estimated total mortality ranging from 3,053 to 14,054 birds per year, or 0.4–1.7% of the Funk Island and Cabot Island breeding population. Those percentages may seem too small for concern; however, Davoren cites cases in which annual mortality of that magnitude for seven years caused a 53 percent decline in a population of 229,080 murres in California and for 25 years caused a 95 percent decline in a population of 250,000 murres in Norway.

How can a population be harmed so drastically, when the vast majority of its individuals still remain to breed each year? Seabird biologists list various reasons: for example, many of the dead have dependent offspring that shortly die as well; many other victims are relatively young breeding birds whose long lives of productivity are lost to the colony; these deaths are added to mortality from pollution and other causes.

Davoren recommends a simple step to reduce Common Murre mortality at Newfoundland's hotspot: restriction of gill net use from mid-July to mid-August when the capelin are spawning. Even though the large-scale commercial cod fishery has been closed since 2003, gill nets with similar mesh sizes are used extensively in coastal Newfoundland to harvest other fish species. The step may be simple, but taking it may be difficult in an area where many people's livelihoods depend on fishing. Davoren emphasizes that effective protection of the murres will depend critically on support from local community members, especially the gill-net fishers.

As an abundant nester along North America's West and Northeast coasts, the **Common Murre** is well named. Yet a population off Newfoundland arouses concern because thousands die each year when they are entangled in fishery gill nets. *Vancouver, British Columbia; September 2007. © Glen Bartley.*

Mountain Chickadees' Genetic "Footprints"

Exactly one hundred years ago, January 1908, Joseph Grinnell formally described the "Southern California Chickadee" as a subspecies of Mountain Chickadee and named it *baileyae* (honoring naturalist Florence Merriam Bailey's contri-

butions to the ornithology of the West). He emphasized its all-gray back, rump, sides, and flanks with none of the tinge of buff that characterizes nominate *gambeli*, the wide-ranging northern and Rocky Mountain subspecies (*Condor* 10:29–30). Grinnell could not have known, but the morphological distinctions he saw correspond to genetic divisions as well.

A recent mitochondrial DNA analysis reveals a variety of geographic patterns that make up the Mountain Chickadee's genetic "footprint." Garth M. Spellman, Brett Riddle, and John Klicka examined 320 individuals from 28 locations throughout the chickadee's distribution. Their report in 2007 is the first comprehensive portrayal of Mountain Chickadee population structure and evolutionary history (*Molecular Ecology* 16:1055–1068).

Mountain Chickadee populations divide genetically into a western and an eastern group, according to a recent analysis. Part of the separation occurs along a line where the Sierra Nevada and the Great Basin meet—a pattern shown by many other bird species. *Lake County, Oregon; August 2007. © Glen Bartley.*

The most basic finding identifies two major, well-supported clades—separate groups of populations descended from a common ancestor. An "eastern" clade corresponds to populations in the Rocky Mountains, the scattered Great Basin ranges, and the mountains of eastern Oregon and eastern Washington. A "western" clade consists of populations in the Sierra Nevada, the Cascades, and the cluster of Peninsular and Transverse mountain ranges in southern California. The lineages have ancient origins. "Molecular clock" calculations point to divergence of the western and eastern populations during the Pleistocene epoch when they were isolated from each other by glacial advances. There is virtually no genetic overlap between the eastern and western clades. Slight evidence of introgression appears only in the Mono Lake region of central California, where three individuals contained mtDNA haplotypes of both clades.

Within the western clade, Spellman and his colleagues found a genetic pattern indicating more recent divergence between the Sierra Nevada populations of northern California and the geographically separated populations of San Diego, Riverside, San Bernardino, Los Angeles, and Ventura counties in southern California. Although the authors do not associate any clades directly with subspecies, this slightly divergent southern group of populations corresponds well to the limited range Grinnell described for *baileyae*.

In contrast, Allan R. Phillips in *The Known Birds of North and Middle America* (1986) merged subspecies *abbreviatus* and *grinnelli* into *baileyae*, in effect expanding the range of *baileyae* as far as southernmost Yukon, southwestern Alberta, central Idaho, and western Nevada. The Spellman team's western clade does not correspond entirely to Phillips' far-ranging *baileyae*; populations in this clade reach western Nevada but extend north only through California, central Oregon and central Washington.

Genetic patterns are more complex in the Great Basin. Unconnected mountain ranges act as biological "sky islands" where patches of suitable montane forest are separated by large valleys of unsuitable habitat. Because Mountain Chickadees are largely sedentary, populations in different mountain ranges remain isolated both geographically and genetically from one another. Levels of gene flow vary from low to high among them, but the level is very low between Great Basin populations as a whole and those in the nearest Rocky Mountain areas. Isolation by distance also appears from end to end across the Mountain Chickadee's vast distribution within the Rockies: The greater the geographic distance between populations, the greater their genetic divergence.

One pattern demonstrated by Spellman, Riddle, and Klicka in the Mountain Chickadee appears in many other birds: western and eastern taxa divided by the Sierra Nevada or across the Great Basin. Pairs of closely related species include Pacific-slope and Cordilleran Flycatchers, Cassin's and Plumbeous Vireos, Nashville and Virginia's Warblers, and Purple and Cassin's Finches. Distinctive subspecies include those of Steller's Jay, Western Scrub-Jay, Bushtit, White-breasted Nuthatch, and Fox Sparrow. The Sierra and the Basin are powerful ecological forces.