

FIFTY YEARS AFTER GRINNELL AND MILLER: ORGANIZING FOR A BETTER FUTURE

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Patten et al. (1995) offered a stimulating overview of the current state of field ornithology in California since the publication of Grinnell and Miller's (1944) classic *The Distribution of the Birds of California*. Nevertheless, we feel compelled to expand upon their views on the level of knowledge accumulated since 1944 and the direction we see field ornithology in California moving most profitably. Beyond the great addition to the list of birds recorded in California and to the knowledge of vagrancy, Patten et al. concluded that "our current position in understanding of status and distribution is only marginally ahead of where Grinnell and Miller left us." While the accumulation of knowledge has been uneven across species and regions of the state, we are convinced that avifaunal work has made tremendous strides on many fronts in the last fifty years. What remains to be done, though, is to synthesize this knowledge in a book that updates Grinnell and Miller while at the same time promoting ongoing research in the frontiers of field ornithology.

RECENT ADVANCES

In general, recent advances in the study of nonpasserines have outstripped those for passerines. For example, seabird research in California has dramatically increased our knowledge of the size and location of breeding colonies (Sowls et al. 1980, Carter et al. 1992), breeding biology as affected by varying oceanographic conditions (Ainley and Boekelheide 1990), general patterns of occurrence at sea (Ainley 1976), and the relationships between patterns of abundance, seasonality, and community diversity and the physical characteristics of the ocean (Briggs et al. 1987). Long-term studies of year-to-year variation in the distribution and abundance of seabirds in deep ocean waters off California, collected via the California Cooperative Fisheries Investigations and other programs, are now being prepared for publication (D. Ainley, P. Pyle pers. comm.). A vast body of recent literature also exists on the distribution, habitat needs, breeding biology, and population trends of waterfowl in California (e.g., Heitmeyer et al. 1989). Surveys of all the state's key wetlands have added immeasurably to our understanding of the distribution, habitat needs, and population sizes of migratory shorebirds (Page et al. 1992). Information has been augmented for many species of diurnal raptors (e.g., Binford 1979, Hall et al. 1992) and owls (e.g., Halterman et al. 1989, Bloom 1994). Statewide surveys have been conducted for many other species, particularly

those suffering population declines [e.g., Evens et al. (1991) for the Black Rail (*Laterallus jamaicensis*)].

By contrast, no particular groups of landbirds stand out as having been studied comprehensively in the last fifty years. Nevertheless, detailed work has been conducted on many species in various families. Many of these, of course, have been species considered endangered, threatened, or as of special concern to state and federal agencies [e.g., Harris et al. (1987) for the Willow Flycatcher (*Empidonax traillii*)] or species showing range expansions [e.g., Miller and Green (1987) for the American Pipit (*Anthus rubescens*)]. Patten et al. did praise the recent breeding-bird-atlas projects in several California counties. Atlas work continues to expand rapidly; as of 1995, atlases have been initiated in 16 of California's 58 counties. Similarly, avifaunal surveys have been published for many of the state's mountain ranges (e.g., Johnson and Cicero 1986, Lentz 1993). Combine these studies with a number of books detailing county or regional avifaunas (e.g., Unitt 1984, Gaines 1988) and the great expansion in our knowledge of California's birds over the last fifty years is clearly evident. While Grinnell and Miller's maps of bird distribution to the subspecific level may still be the best available for the entire state, they covered only 60 breeding species. Even without further atlas work, the data available today, if meticulously compiled, would provide detailed maps for many more of California's breeding, wintering, and migratory species.

We agree with Patten et al. that geographic variation should be an important subject of ornithological investigation. Unfortunately, universities can't afford the time to teach identification skills at either the subspecies or species level, and research curators are disappearing from our natural history museums. These trends are dangerous as we are losing our expertise in analyzing geographic variation at a time when the techniques for such analysis are better than ever and the field of conservation biology cries out for more knowledge to preserve biodiversity at both the morphological and genetic levels.

We concur, though, with Knox's (1994) call for caution and restraint in identifying races in the field or hand. While subspecies can teach us much about migration, the recent advances in color-banding and radio-tagging of birds will surely provide complementary insight into their movements. Without such studies, who would have guessed that some Snowy Plovers (*Charadrius alexandrinus*) move hundreds of miles within one breeding season before nesting a second time (Stenzel et al. 1994), that Cackling Canada Geese (*Branta canadensis minima*) are changing their distribution at staging areas in autumn (Raveling and Zezulak 1992), that Dunlins (*Calidris alpina*) move from the coast of California to the Sacramento Valley after heavy winter rains (Warnock et al. 1995), or that Spotted Owls migrate altitudinally (Laymon 1989)? While they may be a long time coming, further technological advances in such marking techniques are likely to make possible future studies of the movements of even the smallest passerines.

Because Grinnell and Miller, of necessity, painted their abundance and distribution descriptions with broad brush strokes, it is often difficult today to determine whether various species have since changed their range or

abundance, except in extreme cases. Increasing quantification and standardization of data collection now allow some longstanding programs to assess population and range changes with a fair degree of accuracy. Examples of such efforts are the Midwinter Waterfowl Survey of the Pacific flyway (Banks and Springer 1994), for ducks, geese, and swans, the Breeding Bird Survey (Robbins et al. 1986) and Breeding Bird Census (published annually in *Journal of Field Ornithology*), primarily for landbirds, and Christmas Bird Counts (Root 1988, Root and Weckstein 1994), for all species. Although all of these methods have their limitations they are welcome complements to the mostly descriptive efforts prevalent earlier in this century. Efforts to refine methods for monitoring neotropical migratory landbirds are the primary emphasis of the recently established Partners in Flight (Finch and Stangel 1993), Monitoring Avian Productivity and Survivorship (MAPS, DeSante 1992), and BBIRD (Martin 1994) programs. A broad spectrum of papers, both quantitative and descriptive, on population trends of western North American birds has recently been published (Jehl and Johnson 1994). Such efforts would not have been possible at the time of Grinnell and Miller.

INCREASING FIELD WORK, PUBLICATIONS, AND CONSERVATION

Patten et al. also focused on the great increase in the number of field biologists hired by consulting firms since the 1970s, necessitated by the need of development firms, public agencies, and others to comply with environmental laws. While this change has been great, the number of biologists in the field has burgeoned in recent decades from a variety of additional sources as well. Biologists from a host of state and federal agencies gather data on birds, primarily to guide management of our dwindling natural resources. Similarly, a number of private research organizations, environmental advocacy groups, banding stations, and bird observatories now conduct extensive ornithological research. University research on birds in California is no longer confined largely to ornithologists from a few institutions, such as the Museum of Vertebrate Zoology at Berkeley, as it was at the time of Grinnell and Miller. Instead, ornithologists now reside at many universities and colleges and work out of numerous field stations (unfortunately there is a more recent counter trend of universities to not hire ornithologists). Add to all these the amateur birders, perhaps the single largest group, and a virtual army of field workers is active in the state in the 1990s.

Patten et al. bemoaned the large amount of gray literature and unpublished data generated by consulting firms, but this problem is widespread, leaving biologists of many stripes frustrated with their lack of time or resources to publish data in refereed journals (e.g., Bleich 1993). With the current trends of shrinking state and federal budgets and a political climate bent on removing environmental regulations, it will probably be increasingly difficult for many biologists to conduct thorough studies and publish their findings. Patten et al. rightly indicated that professional ornithologists increasingly focus on theoretical and laboratory science at the expense of descriptive ornithology. While fewer biologists conduct avifaunal work,

descriptive ornithology has been embraced by amateurs. While the importance of amateurs to this type of work cannot be overemphasized, certain trends in publications during the era of the amateur are disheartening. Books written by amateurs or targeted at amateur audiences often lack the frequent literature citations that are the hallmark of scientific publications that stand the test of time. Imagine where California ornithology would be today if Grinnell and Miller lacked suitable documentation.

Patten et al. also concluded that "researchers . . . desperately need good field data and solid descriptive ornithology, not the political strife so often associated with conservation efforts." We also strongly support the collection of useful field data, but how useful is it if this information is not presented in the political forums that decide the fate of the remaining wild lands supporting California's amazing bird diversity? A sterling example is the recent decision to save the Mono Lake ecosystem (SCWRCB 1994), where testimony by biologists played a crucial role in protecting the lake's outstanding populations of migratory and breeding birds. If biologists had shied away from the political arena Mono Lake might have gone the way of Owens Lake and Tulare Lake before it, with the only thing left flying from the lakebed being parched alkali dust. Also, without the political attention and the economic resources brought to bear, little research, published or otherwise, would have been conducted at Mono Lake or on such taxa as the Northern Spotted Owl (*Strix occidentalis caurina*) and the California Gnatcatcher (*Poliophtila californica*).

ORGANIZING FOR THE FUTURE

Clearly many of the recent advances in our knowledge of California's birdlife have been incremental, as individuals pursue their own studies and agendas. But increasingly professionals and amateurs collaborate to gather data on status and distribution via broad-scale organized studies. Beyond those noted above, these include broad-scale surveys of breeding Tricolored Blackbirds (*Agelaius tricolor*) and wintering Mountain Plovers (*Charadrius montanus*), sponsored by the National Audubon Society and others (B. Barnes pers. comm.), and breeding Burrowing Owls (*Speotyto cunicularia*), sponsored by the Institute for Bird Populations (D. DeSante pers. comm.). Beyond baseline data on distribution and population sizes we desperately need long-term trends in numbers, reproductive success, and survivorship of all birds over representative areas and habitats to allow us to get away from working only on emergency conservation problems in a knee-jerk fashion. Emergency needs could also be addressed more effectively by various agencies and private organizations cooperatively designing studies at appropriate scales, not those dictated by funding entities. Incremental advances will continue to be made, but the truly quantum leaps in our knowledge are bound to come via such organized studies. While *Western Birds* and the Western Field Ornithologists (WFO) do much to promote the advancement of descriptive ornithology, much more could be done, particularly by motivating members and cooperating with other groups. Scott (1994) has recommended various actions that societies and individuals can do to help preserve and restore avian diversity. Here we

follow his lead and make recommendations that WFO and other groups should consider that will help advance descriptive ornithology. While these recommendations focus on California they should have much wider applications:

(1) Sponsor and raise funds for publication of a scholarly, well-documented update of Grinnell and Miller.

(2) Sponsor and raise funds for publication and computerization of an updated bibliography of California ornithology (Grinnell 1939).

(3) Sponsor and raise funds for computerization of all data submitted to the regional editors of the Middle and Southern Pacific coast regions of *National Audubon Society Field Notes* (formerly *American Birds*). Attempt to make this system compatible with other avian databases currently in existence, and coordinate data collection with other organizations such as California Fish and Game and the Nature Conservancy.

(4) Encourage the development of a clearinghouse for environmental documents to ensure that good field data are not lost.

(5) Encourage the development of a photographic and video archive similar to VIREO (Myers et al. 1984) that preserves a record of the state's changing habitats by documenting colonial bird nesting sites, major roosting areas, and other sites important to breeding, wintering, or migrating birds.

(6) Initiate a monograph series to publish manuscripts too long for *Western Birds*.

(7) Sponsor symposia on specific topics (e. g., Laymon 1987), the proceedings of which can be published in *Western Birds*.

(8) Organize periodic meetings where field ornithologists discuss current and long-term research needs in hopes of keeping research and monitoring focused while staying ahead of the constant barrage of vogue issues (neotropical migrants, riparian habitat, wetlands).

(9) Make recommendations to state and federal agencies and private organizations of important research needs. Examples: breeding bird and winter bird atlases for the entire state, surveys of all colonial waterbirds breeding in the interior of the state, and surveys of various bird species of special concern in California.

(10) Encourage WFO members to participate in organized broad-based studies that will advance our understanding of status and distribution and promote conservation initiatives.

(11) Encourage all scientific and conservation organizations to spend the time and resources necessary to nurture a committed core of staff and volunteers that can help conduct long-term and broad-scale research projects.

CONCLUSIONS

Although great strides have been made in our understanding of the status and distribution of California birds in the 50 years since the publication of Grinnell and Miller, ornithologists, managers, and conservationists would benefit greatly from a scholarly update of that work. Further advances in our knowledge of the state's birdlife can most profitably be made by profes-

sional and amateur ornithologists collaborating on broad-based organized studies. Western Field Ornithologists and other private groups should take the lead in organizing their membership to help advance descriptive ornithology.

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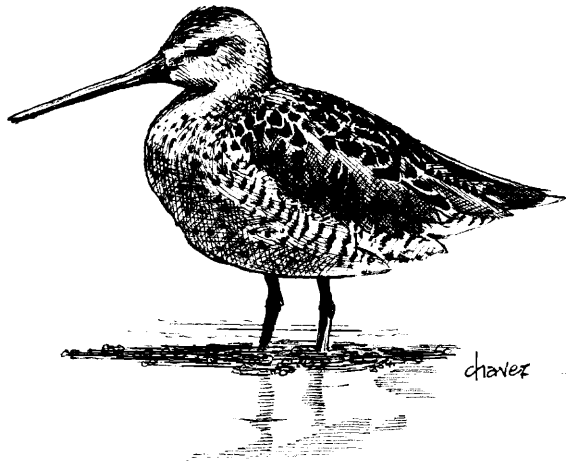
LITERATURE CITED

- Ainley, D. G. 1976. The occurrence of seabirds in the coastal region of California. *W. Birds* 7:33-68.
- Ainley, D. G., and Boekelheide, R. J., eds. 1990. Seabirds of the Farallon Islands: Ecology, Dynamics, and Structure of an Upwelling-System Community. Stanford Univ. Press, Stanford.
- Banks, R. C., and Springer, P. F. 1994. A century of population trends of waterfowl in western North America, in *A century of avifaunal change in western North America* (J. R. Jehl, Jr., and N. K. Johnson, eds.), pp. 134-146. *Studies Avian Biol.* 15.
- Binford, L. C. 1979. Fall migration of diurnal raptors at Pt. Diablo, California. *W. Birds* 10:1-16.
- Bleich, V. C. 1993. Comments on research, publications, and California's longest continuously published journal. *Calif. Fish Game* 79:42-43.
- Bloom, P. H. 1994. The biology and current status of the Long-eared Owl in coastal southern California. *Bull. S. Calif. Acad. Sci.* 93:1-12.
- Briggs, K. T., Tyler, W. B., Lewis, D. B., and Carlson, D. R. 1987. Bird communities at sea off California: 1975 to 1983. *Studies Avian Biol.* 11.
- Carter, H. R., McChesney, G. J., Jaques, D. L., Strong, C. S., Parker, M. W., Takekawa, J. E., Jory, D. L., and Whitworth, D. L. 1992. Breeding populations of seabirds in California, 1989-1991. U.S. Fish Wildlife Serv. [currently National Biol. Surv.], Northern Prairie Res. Ctr., 6924 Tremont Rd., Dixon, CA 95620.
- DeSante, D. F. 1992. Monitoring Avian Productivity and Survivorship (MAPS): A sharp, rather than blunt, tool for monitoring and assessing landbird populations, in *Wildlife 2001: Populations* (D. C. McCullough and R. H. Barrett, eds.), pp. 511-521. Elsevier Applied Science, London.
- Evens, J. G., Page, G. W., Laymon, S. A., and Stallcup, R. W. 1991. Distribution, relative abundance and status of the California Black Rail in western North America. *Condor* 93:952-966.
- Finch, D. M., and Stangel, P. W., eds. 1993. Status and management of neotropical migratory birds. September 21-25, 1992, Estes Park, Colorado. Gen. Tech. Rept. RM-229. U.S. Dept. Agric., Forest Serv., Rocky Mtn. Forest and Range Exper. Sta., Fort Collins, CO 80526.
- Gaines, D. 1988. *Birds of Yosemite and the East Slope*. Artemisia Press, Lee Vining, CA.

- Grinnell, J. 1939. Bibliography of California ornithology. Third installment. Pac. Coast Avifauna 26.
- Grinnell, J., and Miller, A. H. 1944. The distribution of the birds of California. Pac. Coast Avifauna 27.
- Hall, L. S., Fish, A. M., and Morrison, M. L. 1992. The influence of weather on hawk movements in coastal northern California. *Wilson Bull.* 104:447-461.
- Harris, J. H., Sanders, S. D., and Flett, M. A. 1987. Willow Flycatcher surveys in the Sierra Nevada. *W. Birds* 18:27-36.
- Halterman, M. D., Laymon, S. A., and Whitfield, M. J. 1989. Status and distribution of the Elf Owl in California. *W. Birds* 20:71-80.
- Heitmeyer, M. E., Connelly, D. P., and Pederson, R. L. 1989. The Central, Imperial, and Coachella valleys of California, in *Habitat Management for Migrating and Wintering Waterfowl in North America* (L. M. Smith, R. L. Pederson, and R. M. Kiminski, eds.), pp. 475-505. Texas Tech. Univ. Press, Lubbock.
- Jehl, J. R., Jr., and Johnson, N. K., eds. 1994. A century of avifaunal change in western North America. *Studies Avian Biol.* 15.
- Johnson, N. K., and Cicero, C. 1986. Richness and distribution of montane avifaunas in the White-Inyo region, California, in *Natural History of the White-Inyo Range, Eastern California and Western Nevada, and High-Altitude Physiology* (C. A. Hall, Jr., and D. J. Young, eds.), vol. 1, pp. 137-159. Univ. Calif. White Mtn. Research Sta. Symposium, August 23-25, 1985, Bishop, CA.
- Knox, A. 1994. Species and subspecies. *Br. Birds* 87:51-58.
- Laymon, S. A. 1987. Management and preservation of endangered birds in riparian ecosystems: A symposium presented in conjunction with the Cooper Ornithological Society annual meeting, 10 September 1986. *W. Birds* 18:1-2.
- Laymon, S. A. 1989. Altitudinal migration movements of Spotted Owls in the Sierra Nevada, California. *Condor* 91:837-841.
- Lentz, J. E. 1993. Breeding birds of four isolated mountains in southern California. *W. Birds* 24:201-234.
- Martin, T. E. 1994. BBIRD Field Protocol. Montana Cooperative Wildlife Research Unit, Univ. Mont., Missoula, MT 59812.
- Miller, J. H., and Green, M. T. 1987. Distribution, status, and origin of Water Pipits breeding in California. *Condor* 89:788-797.
- Myers, J. P., Cardillo, R. F., and Culbertson, M. A. 1984. VIREO: Visual Resources for Ornithology. *Am. Birds* 38: 267-277.
- Page, G. W., Shuford, W. D., Kjelson, J. E., and Stenzel, L. E. 1992. Shorebird numbers in wetlands of the Pacific Flyway: A summary of counts from April 1988 to January 1992. Point Reyes Bird Observatory, 4990 Shoreline Highway, Stinson Beach, CA 94970.
- Patten, M. A., Unitt, P., Erickson, R. A., and Campbell, K. F. 1995. Fifty years since Grinnell and Miller: Where is California ornithology headed? *W. Birds* 26:54-64.
- Raveling, D. G., and Zezulak, D. S. 1992. Changes in distribution of Cackling Canada Geese in autumn. *Calif. Fish Game* 78:65-77.
- Robbins, C. S., Bystrak, D., and Geissler, P. H. 1986. *The Breeding Bird Survey: Its first fifteen years, 1965-1979*. U.S. Fish Wildlife Serv. Resource Publ. 157.
- Root, T. 1988. *Atlas of Wintering North American Birds: An Analysis of Christmas Bird Count Data*. Univ. Chicago Press, Chicago.

- Root, T. L., and Weckstein, J. D. 1994. Changes in distribution patterns of select wintering North American birds from 1901 to 1989, in *A century of avifaunal change in western North America* (J. R. Jehl, Jr., and N. K. Johnson, eds.), pp. 191-201. *Studies Avian Biol.* 15.
- Scott, J. M. 1994. Preserving and restoring avian diversity: A search for solutions, in *A century of avifaunal change in western North America* (J. R. Jehl, Jr., and N. K. Johnson, eds.), pp. 340-348. *Studies Avian Biol.* 15.
- Sowls, A. L., DeGange, A. R., Nelson, J. W., and Lester, G. S. 1980. *Catalog of California seabird colonies*. U. S. Fish Wildlife Serv. OBS-80/37.
- State of California Water Resources Control Board. 1994. Mono Lake Basin water right decision 1631. State Water Resources Control Board, Division of Water Rights, 901 P St., 3rd Floor, Sacramento, CA 95814.
- Stenzel, L. E., Warriner, J. C., Warriner, J. S., Wilson, K. S., Bidstrup, F. C., and Page, G. W. 1994. Long-distance breeding dispersal of Snowy Plovers in western North America. *J. Animal Ecol.* 63:887-902.
- Unitt, P. 1984. *The birds of San Diego County*. San Diego Soc. Nat. Hist. Memoir 13.
- Warnock, N., Page, G. W., and Stenzel, L. E. 1995. Non-migratory movements of Dunlins on their California wintering grounds. *Wilson Bull.* 107:131-139.

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Short-billed Dowitcher

Sketch by Jamie M. Chavez