

## PLAN OF THE SPECIES ACCOUNTS

### TEXT

Each account begins with a brief introduction, including the species' habitat and general status in San Diego County. Each covers the species' breeding distribution, nesting, migration, and winter distribution in the county, with the species' primary role in the county generally being addressed first. Plants used by birds are generally indicated with an English name only, unless the botanical name is in wider local use, but the scientific names of all plants mentioned in text are listed in Appendix 2.

**Breeding distribution** interprets the maps, addresses geographical and elevational ranges within the county, abundance, annual irregularity, and habitat use in greater detail where needed. It illustrates these topics with specific records. Locations are indexed to the square of the atlas grid system. Whenever possible, the place names used are those on commonly available maps. I hope this level of specificity is adequate to compensate for this book's lack of a gazetteer.

Three areas referred to regularly are too large for their atlas squares to be given in every account in which they are mentioned:

**Campo Plateau:** elevated region of southeastern San Diego County, extending from Potrero (U20) east to the Imperial County line near Jacumba (U29) and straddling the divide between the coastal and desert slopes. Though it is crossed by many granite ridges, it is less rugged than much of inland San Diego County.

**Tijuana River Valley:** floodplain of the Tijuana River in southwestern San Diego County (V10/V11/W10/W11). The historic "Myers Ranch," site of Guy McCaskie's discovery that vagrants from the eastern United States are regular in California, lies along Hollister Road at the convergence of the four atlas squares. It is now part of the Tijuana River County Open Space Preserve.

**Warner Valley:** San Diego County's largest block of grassland, encompassing the basin north and east of Lake Henshaw. It covers all or part of atlas squares E17, E18, E19, F17, F18, F19, F20, G17, G18, G19, G20, H17, and H18.

**Nesting** provides information on the species' nest, nest placement, and nesting season, emphasizing original data recorded during field work for this atlas. It compares recent data to earlier data published or accompanying the egg collection of the Western Foundation of Vertebrate Zoology, Camarillo (WVZ), a resource vital to understanding change in the temporal, geographical, and habitat distribution of bird nesting.

**Migration** addresses arrival and departure dates, migration routes and peaks if known, and variation in migration within the county. This section emphasizes

data on spring migrants recorded during field work for this atlas. More details on fall migrants may be in my 1984 *Birds of San Diego County*.

**Winter** interprets the maps, addresses geographical and elevational ranges, abundance, annual irregularity, and habitat use for that season.

**Conservation** points to trends in the species' range and abundance, possible reasons for these trends, and makes suggestions for improving the species' conservation outlook.

**Taxonomy** lists the subspecies occurring in San Diego County. If a species has more than one subspecies in the county, the section covers the status of each subspecies, the characters distinguishing them, and what the subspecies reveal about the direction and schedule of the bird's migration. For rare birds, it lists the specimens preserved in museums. Acronyms used for museums are these: AMNH, American Museum of Natural History, New York; CAS, California Academy of Sciences, San Francisco; CMNH, Carnegie Museum of Natural History, Pittsburgh; CSULB, California State University, Long Beach; DEL, Delaware Museum of Natural History, Greenville; FMNH, Field Museum of Natural History, Chicago; LACM, Natural History Museum of Los Angeles County, Los Angeles; MVZ, Museum of Vertebrate Zoology, University of California, Berkeley; SBCM, San Bernardino County Museum; SBMNH, Santa Barbara Museum of Natural History; SDNHM, San Diego Natural History Museum; SDSU, San Diego State University; UCLA, University of California, Los Angeles; USNM, National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Subspecies of birds are a useful tool for learning about migration and evolution. Joe Marshall's explanation (in Phillips et al. 1964) is still the best ever: subspecies or races (the words are synonyms) "constitute whole populations which are 'marked' by their peculiarities of color, size, and proportions. By carefully identifying a bird to race, we can tell from which general breeding area of the species it originated, just as surely as if it were banded." Among birds, a subspecies may be defined as a population that is morphologically distinguishable, and has a breeding range that is geographically distinct, but is not reproductively isolated from, other populations of the same species. The usefulness of subspecies among birds arises because migration may take different populations—subspecies—of a species in different directions at different times, giving us a view into migration and dispersal deeper than if we could identify the birds to the species only. Though some ornithologists attack the concept of subspecies because some subspecies do not differ in some genes of mitochondrial DNA, these researchers

do not study bird distribution and migration. The usefulness of the category in illuminating these aspects of bird biology cannot be refuted.

## MAPS

The distribution of every regular breeding or wintering in San Diego County is illustrated by at least one map appropriate to its season of occurrence. Sedentary species may have the winter and breeding-season distributions combined onto one map; if the species' distribution during the two seasons differs substantially, there is a map for each. The level of certainty of breeding is shown in the three levels standard for bird atlases: confirmed, probable, and possible, corresponding on the maps to three shades of green. "Confirmed" breeding is generally based on nest building (code NB in the database), distraction display (DD), used nest (UN), occupied nest (ON), fledglings (FL), adult carrying a fecal sac (FS), adult feeding young (FY), nest with eggs (NE), or nest with nestlings (NN). "Probable" breeding is generally based on multiple singing males in suitable breeding habitat on a single day (MM), agitated behavior of adults (AB), pairs in suitable breeding habitat during the breeding season (PR), territorial behavior (TB), courtship behavior (CB), or probable nests (PN, PB). "Possible" breeding is generally based on observations of the species in habitat suitable for breeding during its breeding season (SH), a singing male in suitable breeding habitat during the species' breeding season (SM), or observations of juveniles independent of their parents, in species where the young do not migrate or disperse while still in this plumage (JV). The application of these criteria had to be modified if they were inappropriate to the species' biology (see under Reporting). Squares in which a species was observed during the breeding season but is unlikely to breed, occurring only as a migrant or disperser, are shown in gray, often lacking a border so as to put these squares in the background. In cases where the species' distribution has contracted significantly through recorded history, sites of known or presumed breeding before 1997 are shown in red. "ND" in square C4 signifies no data.

Winter distributions are based on observations December–February unless spring migrants arrive before 1 March. Examples of species whose mapped winter distributions are based on shorter intervals are the Turkey Vulture, Sage Thrasher, and Tree Swallow. If the winter distribution is based on an interval ending before 28 or 29 February, the defining dates are specified. For species represented by a winter map only, additional squares in which the species was recorded as a migrant are shown in orange. For most species the orange squares represent spring migration only, but for the shorebirds, arriving in midsummer, they include some fall migrants as well.

Because atlas participants counted or estimated bird numbers, the maps also show relative abundance. This may be based on a calculation of numbers reported versus time spent in the field (for species dispersed widely

through their habitat), or it may be based on the maximum number reported in the square per day (for localized, flocking, or colonial species). In some cases either means of portraying abundance could have been used, requiring an arbitrary decision. Because for most species these figures give just a rough idea of a bird's abundance, the maps show no more than three levels of abundance. Only in the case of intensively studied species is any bird's numbers known with any accuracy; the goal of portraying relative abundance on these maps is to point out where a species is most concentrated. For both the breeding season and winter the estimates of relative abundance are for periods when migrants are few or none, as appropriate for each species.

For the breeding season, the three levels of abundance are shown with diagonal lines layered over whatever shade of green specifies the degree of certainty of breeding. Cross or double hatching represents the highest level; single hatching represents the intermediate level; no hatching over a green background represents the lowest level. If one or two levels are not used, "N/A" in the legend specifies that these

Except for the red squares in maps of selected species, the distributions shown are for the five-year atlas period 1997–2002 exclusively. No records after 28 February 2002 are included, though a few species have been reported nesting in a few additional squares subsequently.

## CHARTS OF NESTING SCHEDULES

Atlas participants recorded a vast amount of new information on birds' nesting schedules. This is portrayed by charts showing the daily distribution of nesting activity by behavior code (listed under Maps). Each mark on the chart corresponds to a single date (regardless of year). If the behavior was recorded for that species multiple times on the same date, the chart still shows only one mark for that date. The number of records for each type of behavior is in the legend. The scale varies to fit the season appropriate to the species. Behaviors absent from a species' chart were not recorded for that species. In the case of intensively monitored species such as the Golden Eagle, Least Tern, Willow Flycatcher, or Bell's Vireo, biologists studying those species have far more data on those species' breeding than is portrayed in these charts.

## PHOTOS

The photos were kindly donated by Anthony Mercieca primarily, with further contributions from Jack Daynes, Ken Fink, Ken Kurland, Richard Webster, Brian Sullivan, and others. Selecting photos was a balancing act. I preferred photos taken in San Diego County when possible but went with ones taken elsewhere if clearly superior in quality. I preferred photos showing plumages most typically seen in San Diego County when possible. Fortunately, Tony has an amazing archive of many species, and I thank him for his indulgence and guidance during the process of selection.