



Biogeography of Napa County

By: Mike Rippey

***Reprinted from: Napa-Solano Audubon Society “Breeding Birds of Napa County, California”
An Illustrated Atlas of Nesting Birds***

Napa County is favored with a diverse breeding avifauna. It is a relatively small California county at approximately 780 square miles (ranked 49th in size of 58 counties), but its geographic location ensures a complex ecosystem. Located at the margins of three major biological regions (the northern reaches of the San Francisco Bay-Delta estuary, the western edge of the Sacramento Valley, and divided north-to-south by several extensions of the Coast Range), Napa County exhibits a high level of biological diversity. That diversity is documented by the 156 species of breeding birds found within the county’s borders over the five-year span of the Breeding Bird Atlas survey.

Along with the ecotone influence on species abundance, the county is also topographically varied. Elevations range from sea level in the south at San Pablo Bay to nearly 4,300' on the higher peaks and ridges in the northwest section of the county near Mount St. Helena. Major topographic features include three usually well-defined northwest/southeast-oriented mountain ranges and the expansive, mostly tidal, Napa Marsh, together with the river and creek valleys associated with the mountain ranges and the marsh.

The county’s western boundary with Sonoma County is marked by the ridgelines of the Mayacamas and Sonoma mountains. The world-renowned fertile grape-growing Napa Valley is bordered by these mountains on its western flank and primarily by the Howell Mountains on its eastern flank. The floor of the Valley extends from the northwest corner of the county at the base of Mount St. Helena to the northern reach of the Napa River estuary at the city of Napa. The fifty-mile-long Napa River and its nearly 50 tributaries drain the Napa Valley watershed. The Valley is also the center of the county’s population, from the cities of Calistoga and St. Helena in the north, to Yountville and the county seat of Napa in the south. The county’s fifth incorporated municipality, American Canyon, is located along the estuarine extension of the Napa River at Napa County’s southern boundary with Solano County. There are smaller unincorporated urban

enclaves in Angwin, Deer Park, Coombsville, Pope Valley, Wooden Valley and Lake Berryessa that contribute to an overall county population of 125,000 at the 2000 census.

The Palisades extension of Mount St. Helena, the Howell Mountains, Cedar Roughs, and the Napa ranges associated with Atlas Peak separate the Napa Valley from the eastern county Pope, Wooden and Berryessa Valleys. These three watersheds are drained primarily by Pope, Wooden Valley and Putah Creeks, which flow southeasterly and ultimately discharge into the Sacramento River/Delta. The largest of these valleys, Berryessa, is almost entirely inundated by the impounded waters of the largest fresh-water topographic feature of the county, Lake Berryessa. The easternmost mountains of the Putah Creek watershed also delineate the county's east boundary. This border is clearly demarcated by the distinctive north Blue Ridge, Rocky Ridge, south Blue Ridge, and Vaca Mountains from north to south respectively.

Napa County's weather can generally be described as a mild Mediterranean climate. Rainfall is sharply seasonal from November through April, while the May through October months are an essentially precipitation-free period. Rainfall is greatly influenced locally by the north/south-oriented alternating ridgelines and valleys as well as the north/south descending elevation gradient. Annual rainfall averages approach 50"-60" at the higher elevations in the Mayacamas-Sonoma mountains in west Napa County and fall off to about 20"-25" in the east from the rain shadow effect of the intervening ridgelines. The decreasing elevation gradient from north to south is also reflected in precipitation patterns. The lowest rainfall totals in the county are near sea level in southern Napa County, where annual averages are on the order of 18"-20".

Countywide temperature averages can be represented by looking at a higher elevation northern site (Angwin, at 1,800' on Howell Mountain) and the lower elevation site of the city of Napa near sea level in south Napa County. The average winter temperature in Angwin is 45°F. and in Napa it is 49°F. Their respective summer averages are 69°F. and 66°F. Summer temperatures in the city of Napa are moderated by the cooler air of nearby San Francisco Bay. On rare occasions the county has experienced extreme lows of 9°F. and highs of 115°F.

Not surprisingly, vegetative cover, variety and complexity (see Vegetation Map) also generally correlate with areas in the county that experience higher precipitation and fewer temperature extremes.

The dominant extensive vegetative types clothing the county, however, are those associated with the broader dryer areas on the south slopes of the ranges and in the rain-shadowed eastern

mountains. Almost 335,000 acres are covered to a greater or lesser extent by broad-leafed woodlands, broadleaf/pine woodlands, or chaparral. Oak woodland (broadly defined) and oak savannah comprise about 160,000 acres and chaparral about 175,000 acres. Broadleaf woodland/forest can include areas of relatively dense associations of live oak, California laurel, and big-leaf maple, for example, but also areas of rather low-density combinations of deciduous oak, California buckeye, foothill pine, and madrone. **The oak woodlands also encompass the increasingly less common valley oak/savannah assemblages. A wide range of birds nest in these diverse, moderately wet to dry woodlands. Some examples are the Red-tailed Hawk, California Quail, Western Screech-Owl, Acorn Woodpecker, Nuttall's Woodpecker, Western Scrub-Jay, Oak Titmouse, White-breasted Nuthatch, Western Bluebird, California and Spotted Towhee, and Black-headed Grosbeak.**

Common plants of the **chaparral and chaparral/mixed hardwood habitats** of Napa County include chamise, manzanita, various species of Ceanothus, and small, drought-limited species of oak. Moderate patches of chaparral are found throughout county areas of thin soil, south or southwest exposure, and high summer temperatures. The most extensive areas of chaparral, however, are found in the eastern mountains, where winter rainfall is low to moderate and summer temperatures are persistently high (many days higher than 100°F.) **Breeding species of birds typically found in these dry, hot, and exposed habitats include Western Scrub-Jay, Wrentit, House Wren, Bewick's Wren, Rock Wren, Blue-gray Gnatcatcher, California Thrasher, California and Spotted Towhee, Sage Sparrow, and Lazuli Bunting.**

Grassland habitat has been greatly reduced by cultivation and urbanization. Today, fewer than 10,000 acres remain, mostly in fragmented patches. Some areas of native perennial grasslands persist in the foothills around Napa and Berryessa Valleys. Some relatively large areas of mostly non-native annual grasslands remain in southern Napa County in the Carneros, Jamieson Canyon, and American Canyon vicinities. **Some recorded breeding species in these grassland habitats are Loggerhead Shrike, Grasshopper Sparrow, Savannah Sparrow, Western Meadowlark, and Red-winged Blackbird. Birds nesting in nearby woodlands and foraging in the grassland areas include Red-tailed Hawk, American Kestrel, Golden Eagle, Western Bluebird, Western Kingbird, and Mourning Dove.**

The **Napa Marsh**, at the estuarine confluence of the Napa River and San Pablo Bay, is a complex of historic brackish tidal marsh; diked, seasonally wet former marshlands; diked former

commercial salt evaporation ponds; and low-lying surrounding grasslands or cultivated vineyards. This approximately 20,000-acre marsh habitat supports a large host of aquatic and marsh-inhabiting birds, including many rare or endangered species. The list of birds found in or adjacent to the Napa Marsh grows on an almost annual basis since the area has become public land, more accessible to birders and scientists. The years of Atlas fieldwork documented new breeding birds for the county as well as identifying new areas of breeding for better known or common species. The list below includes **representative species of some of the more prominent bird groups. Water birds include Pied-billed Grebe, Double-crested Cormorant, Black-crowned Night-Heron, Great Blue Heron, Great Egret, Canada Goose (increasing dramatically), Mallard, Cinnamon Teal, Gadwall, Northern Pintail, and Ruddy Duck. Raptors include White-tailed Kite, Northern Harrier, Red-tailed Hawk, and American Kestrel. Ring-necked Pheasant was recorded breeding only in the Napa Marsh. The endangered Clapper Rail and the rare Black Rail breed along the tidal sloughs in emergent intertidal bulrushes, cord grass, cattails, and pickle weed. Of the shorebirds, the rare Snowy Plover nests on dredged sediment islands in the salt ponds, as do Killdeer, American Avocet, and Black-necked Stilt. Forster's Tern nests in small groups on the dredge spoil islands as well. Caspian Tern was also suspected to be nesting but was not confirmed. Breeding songbirds include Tree Swallow, Cliff Swallow and Barn Swallow, plus Marsh Wren, Horned Lark, Common Yellowthroat, Savannah Sparrow, Song Sparrow, Western Meadowlark, Red-winged Blackbird, Tricolored Blackbird, and Yellow-headed Blackbird.** The marsh is changing rapidly with more recent intensive wildlife management and large-scale restoration efforts. It is expected that breeding birds will increase in variety and abundance as the marsh returns to its more vibrant historic state.

Fresh-water habitats in the county are confined almost entirely to human-made ponds and reservoirs. There are no naturally occurring fresh-water lakes in Napa County. Agricultural and municipal impoundments are dispersed throughout the county, providing **nesting habitat for waterfowl like Mallard and Canada Goose, for water birds like Common Moorhen and American Coot, and for songbirds such as Song Sparrow. The 25,000-acre Lake Berryessa, confined by Monticello Dam, creates the largest fresh-water environment in Napa County. The waters of Putah and Pope Creeks, held behind the dam since 1957, provide aquatic and shoreline habitat for numerous water birds and water-associated species. In the Atlas**

survey years, **Bald Eagle** was first recorded breeding at Lake Berryessa and has subsequently been confirmed breeding at several locations there. **Osprey** was also confirmed breeding at the lake during the Atlas survey. **Canada Goose** is abundant at the lake, as are other common waterfowl such as **Mallard** and **Gadwall**. The Atlas fieldwork also found **Prairie Falcon** nesting only in the mountains adjacent to Lake Berryessa. The surrounding oak woodland/chaparral complex was also the only area in the county where **Greater Roadrunner** and **Yellow-billed Magpie** were found breeding.

Urban environments account for about 25,000 acres of the county landscape, limited primarily to the five incorporated municipalities. Most of the urban habitat consists of older plantings of mixed native/exotic vegetation, which, when viewed from the air, appear to be islands of semi-dense, fragmented woodlands among the vineyards. Atlas work in the cities revealed an expected mix of early successional invasive species such as House Finch, House Sparrow and European Starling. Exotic plantings attracted several species, including Northern Mockingbird, Hooded Oriole, and Allen's Hummingbird. Many local native birds have adapted to mature urban habitats. Among the many species found breeding in these human-created habitats are Red-shouldered Hawk, California Quail, Common Barn-Owl, Western Scrub-Jay, Bullock's Oriole, Brewer's Blackbird, Black Phoebe, Cliff Swallow, American Crow, and Oak Titmouse.

The other large human-created habitat in the county is nearly 50,000 acres of cultivated vineyards. The majority, about 30,000 acres, lies in the Napa, Pope, Chiles, and Wooden Valleys. More recently, an additional 20,000 acres have been planted in areas at higher elevations, concentrated mainly in the western mountains. **Breeding birds found in or adjacent to the farmland include Red-tailed Hawk, American Kestrel, California Quail, Killdeer, European Starling, and Western Meadowlark. In recent years, some grape growers and wineries have increased ground cover plantings and have actively encouraged birds to nest in the vineyards for pest management. Barn Owl boxes, Red-tailed Hawk perch poles, American Kestrel, Western Bluebird, and Violet-green/Tree Swallow nest boxes have become widespread.**

Although only a small percentage of the county's landmass, **riparian corridors** provide critical breeding habitat for a multitude of birds and other species. Perhaps fewer than 500 acres of prime, intact riparian forest remain from historic times, when estimates place the number of

acres at closer to 20,000, primarily in the Napa River and Putah Creek flood plains. **Species found breeding and nesting in these rich habitats of oaks, alders, willows, elderberry, cottonwood, and tangles of wild grape include Wood Duck, Red-shouldered Hawk, Great Horned Owl, Belted Kingfisher, Downy Woodpecker, Western Wood-Pewee, Black Phoebe, Tree and Violet-green Swallow, Yellow-breasted Chat, and Lesser Goldfinch, to name but a few. There are currently efforts underway to increase, restore, and enhance riparian zones throughout the county.**

Napa is a biologically diverse county. Its great variety of habitat presents challenges to biologists and birders, but many rewards as well. Human alterations have been substantial and continue to impact the land. However, much of Napa County remains productive native habitat. Let us work today to ensure that when the next Breeding Bird Atlas is completed, those future bird atlasers find as rich an avian population as presently exists.