CHAPTER FIVE
SPECIES SHOWING SUBSTANTIAL INCREASES IN BREEDING RANGE

In this chapter we cover five species, not already discussed in Chapter Four, that showed substantial increases in breeding range in Sacramento County between Atlas 1 and Atlas 2 (Table 5-1). Most of these species are ones we might have expected to expand, given their apparent increases in abundance both in California and throughout their North American breeding ranges. However, the nature and extent of their expansions in the county may suggest some interesting, and perhaps unexpected, behavioral adjustments. The page number for each species account in Chapter Eight is shown beside the species name.

Cooper's Hawk **110**

Cooper's Hawks (*Accipiter cooperii*), a scarce breeder in the state in the 1960s and 1970s (Gaines 1988), have increased as a breeding species at a substantial rate in California and rangewide in the past three decades (Sauer et al. 2020). Much of this increase has been fueled by this species' recent adaptation to nesting in residential and other urbanized habitats (Rosenfield et al. 2020 and many citations therein). The phenomenon was first noted in the 1970s in the U.S. Midwest and seems to have spread from there (Stahlecker and Beach 1979, Rosenfield et al. 1991, Chiang et al. 2012). The availability of ample prey, including birds attracted to backyard feeders in these urban areas, combined with a reduction of harassment and persecution of raptors, have been among the possible drivers of this trend (Rosenfield et al. 2020). While some suspected that these urban nesting areas could prove to be an ecological trap, with a net loss to the population (Bosakowski et al. 1992), subsequent studies from several locations have refuted that (Rosenfield et al. 1995, Mannan et al. 2008, Millsap 2018).

In comparing the results from Atlas 1 and 2, we can see a dramatic demonstration of this adaptation. During Atlas 1, Cooper's Hawks were confirmed breeding in only six blocks, and four of those blocks were highly urbanized (developed land cover occupying at least 75% of the block). During Atlas 2, the species was confirmed as a breeder in 22 blocks, a nearly fourfold increase. Of those 22 blocks, 17 (77%) were highly urbanized. Three of the four urbanized blocks where Cooper's Hawks were confirmed in Atlas 1 also included confirmations during Atlas 2, and the remaining block included probable breeding. Figure 5-1 shows one, not unusual, urban nest location in the city of Sacramento. This site has apparently hosted successful nesting for at least the last three years of Atlas 2. All of this suggests a healthy and growing population of nesting Cooper's Hawks in Sacramento County.

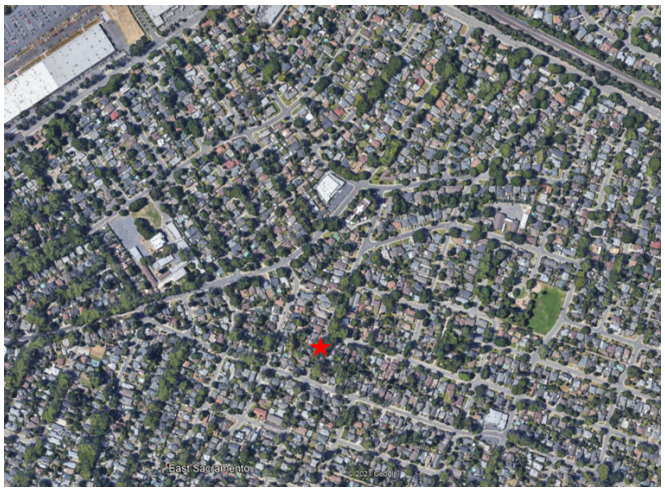
Anna's Hummingbird **80**

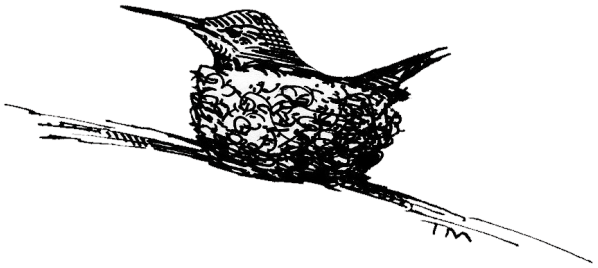
In the past century or so, Anna's Hummingbirds (*Calypte anna*) have expanded their breeding

	Atlas 1			Atlas 2		
	Confirmed	Probable	Possible	Confirmed	Probable	Possible
Anna's Hummingbird	16	12	31	27	19	52
Cooper's Hawk	6	1	18	22	8	14
Western Bluebird	22	8	4	48	22	8
Lesser Goldfinch	11	13	13	32	26	37
Hooded Oriole	3	4	4	14	8	16

Table 5-1. Five species showing large increases in breeding range between Atlas 1 and Atlas 2. The criteria for inclusion included: >65% increase in total blocks with breeding behaviors; >65% increase in blocks with confirmed breeding; and a net increase of at least 10 blocks with breeding confirmations. Numbers shown are the number of atlas blocks in which the species was observed exhibiting breeding behaviors.

Figure 5-1. Google Earth view of a nest site for Cooper's Hawks in urban East Sacramento, CA.





Anna's Hummingbird on nest by Tim Manolis

range (historically restricted to Baja California and the southern half of California) north into southern British Columbia and east all the way to Texas (Clark and Russell 2020). This expansion is generally credited to a combination of warming winters and increases in hummingbird feeders and flowering plants in urban areas of the West (Tingley et al. 2009, Greig et al. 2017, Battey 2019, Clark and Russell 2020). Both factors have helped this species expand northward in winter, and, ultimately, remain to breed (assuming that the same individuals that winter also breed locally). Comparison of the results from our two Sacramento County atlases showed that this species continues to expand locally, with Anna's Hummingbirds confirmed as breeders in 27 blocks during Atlas 2 as compared to 16 blocks in Atlas 1. In all, this species displayed some sort of breeding behavior in 98 of 136 blocks during Atlas 2. That represents nearly a doubling of the apparent breeding range in the county during the past three decades.

Western Bluebird and Lesser Goldfinch **157 & 165**

In contrast to the well-documented association between urbanization and expansions of the previous two species, the dramatic colonization of urbanized areas (relatively unused during Atlas 1) we documented in Atlas 2 for the Western Bluebird (*Sialia mexicana*) and Lesser Goldfinch (*Spinus psaltria*) has been sparsely noted elsewhere. The phenomenon is well demonstrated by Figures 5-2 and 5-3. During Atlas 2 Western Bluebird breeding was confirmed in more than twice as many blocks as in Atlas 1, and Lesser Goldfinches were confirmed in nearly three times as many blocks. For both species, most of those new breeding confirmations were in urbanized areas. Even controlling for an increase in this type of land cover in Atlas 2, it appears that these species are now finding these habitats preferable to the available nonurban ones (Table 5-2). Both species showed a slight preference for urbanized vs. nonurbanized blocks in Atlas 1, however, their preferential use of urbanized blocks

	Blocks Confirmed	Blocks Expected	Chi-Sq	p
Western Bluebird, Atlas 1	4	2.9	0.4	0.25
Western Bluebird, Atlas 2	23	5.7	53	<0.0001
Lesser Goldfinch, Atlas 1	2	1.5	0.2	0.22
Lesser Goldfinch, Atlas 2	20	2.3	139	<0.0001

Table 5-2. Results of chi-square analyses of use of urbanized blocks by Western Bluebirds and Lesser Goldfinches in Atlas 1 and Atlas 2.

Figure 5-2. Comparison of Western Bluebird breeding data between the two atlases. Gray shading shows urbanized areas.

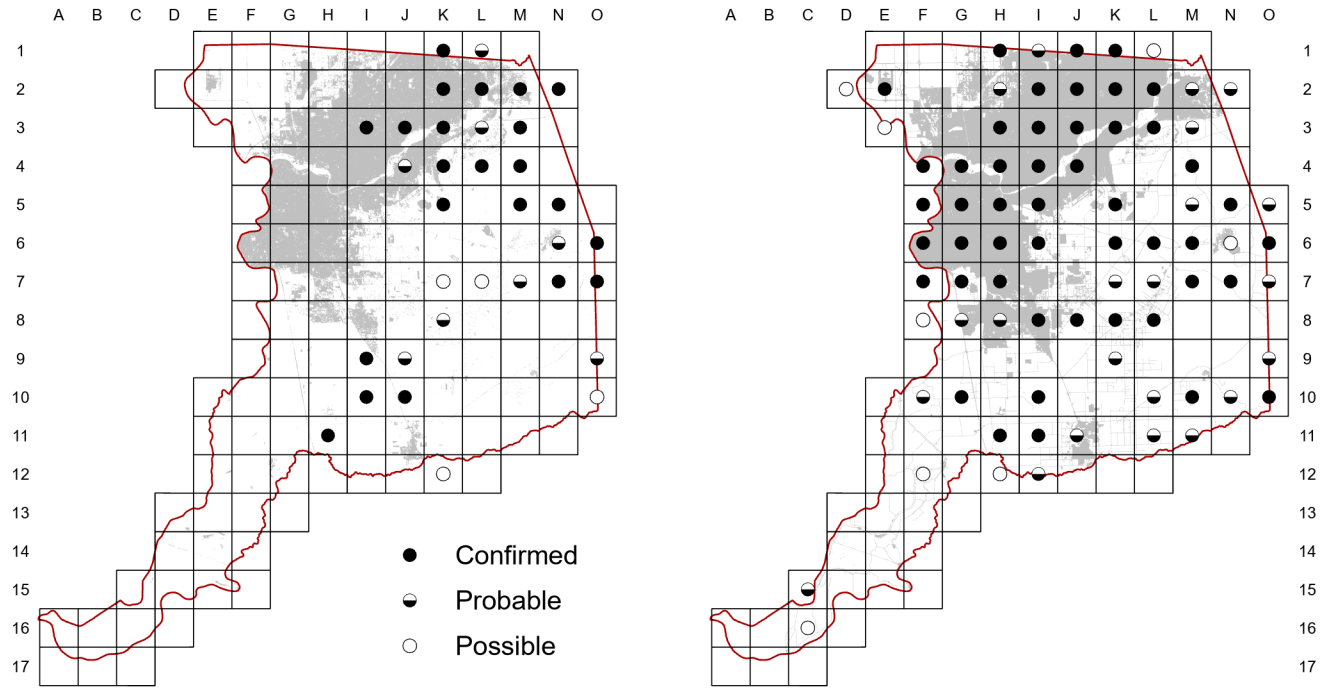
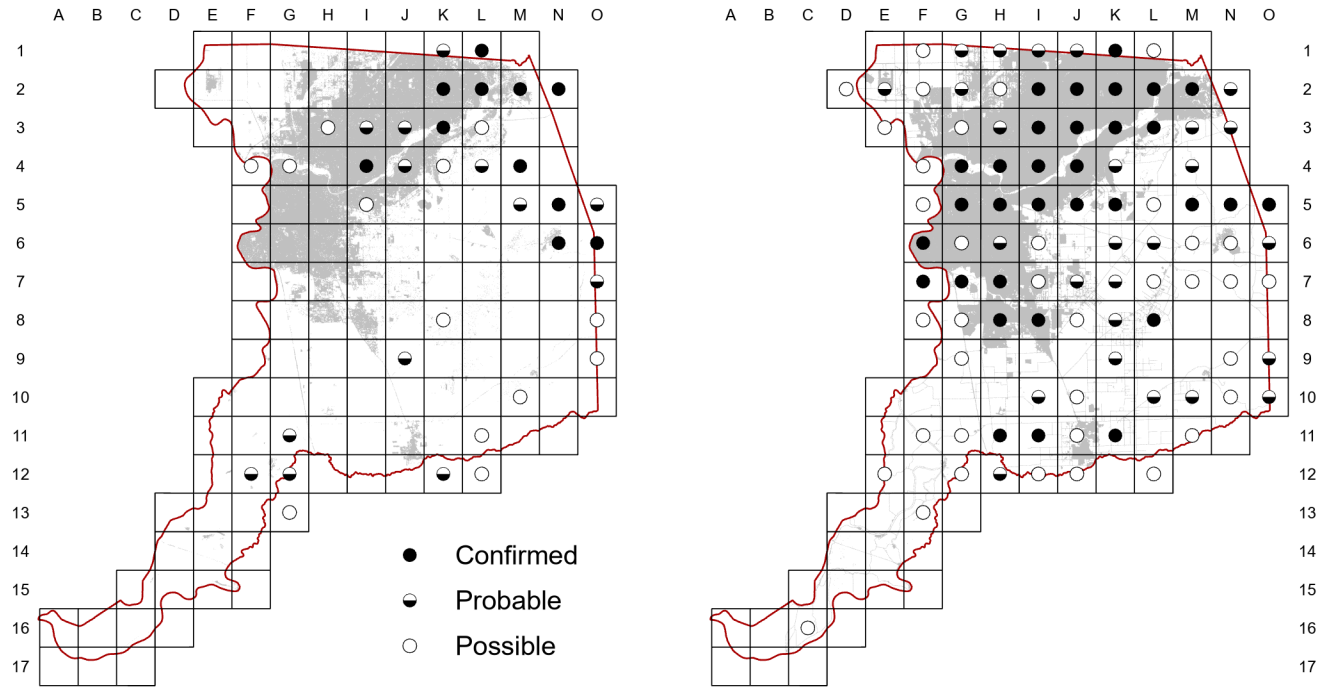


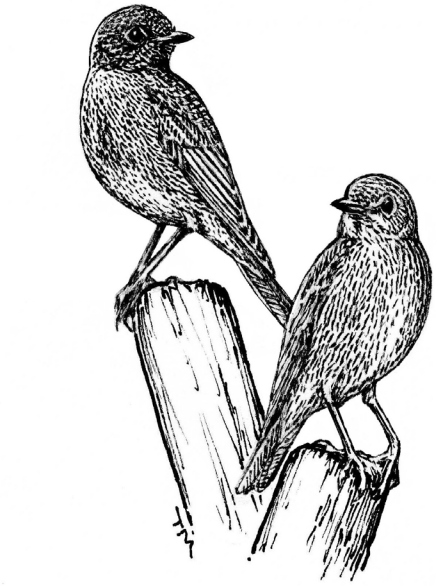
Figure 5-3. Comparison of Lesser Goldfinch breeding data between the two atlases. Gray shading shows urbanized areas.



increased severalfold during Atlas 2 (Figures 5-4 and 5-5).

Prior to, perhaps, the early 2000s, use of urbanized habitats by Western Bluebirds was not considered significant. Guinan et al. 2020 (text last updated in 2008), described breeding habitat for the species as open woodlands, with no mention at all of urbanized landscapes. Assessments of habitats used for breeding in California during the 1990s to 2002 include no evidence of urban breeding. Blair (1996, 2001) examined habitat use along a wildland-urban gradient in Santa Clara County and found that Western Bluebirds disappeared at even moderate levels of residential urbanization. The Los Angeles BBA (conducted 1995–1999; Allen et al. 2016), while noting some historical records in urban areas, found the species almost entirely absent from the urbanized low elevation parts of that county. The Contra Costa County BBA (conducted 1998–2002; Glover 2009) described the breeding status of this bluebird as "*absent from the true urban and suburban areas.*" Roberson (2002) found them absent from urbanized Monterey Peninsula and Seaside areas of Monterey County.

Perhaps the earliest mention of Western Bluebirds nesting in urban sites came from Unitt (2004) who noted that "*Western Bluebird shows signs of spreading out of its primitive range, colonizing urban areas with mature trees and wide lawns*" in San Diego County.



Pair of Western Bluebirds by Tim Manolis

Berner (2015) described this species as expanding "*into residential and suburban green spaces*" during the Solano County BBA (2005–2010) and Rose and Rose (2019), during the very recent Nevada County BBA, found them "*attracted to residential areas with open spaces.*"

One can only speculate about causes of this expansion into urbanized habitats. Perhaps more nest boxes in areas within and adjacent to urban settings has encouraged dispersal of new breeders into these areas (e.g., https://insidesacramento.com/vicki-bulter/). Within the city of Sacramento,

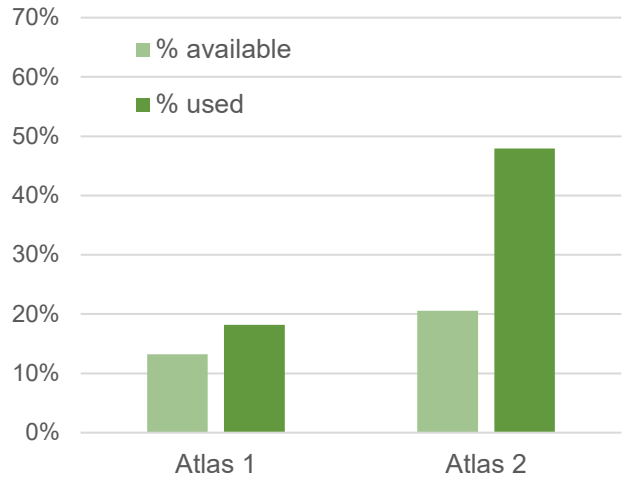


Figure 5-4. Comparing the percentage of urbanized blocks used (confirmed breeding) to the percentage of urbanized blocks available between Atlas 1 and Atlas 2 for the Western Bluebird.

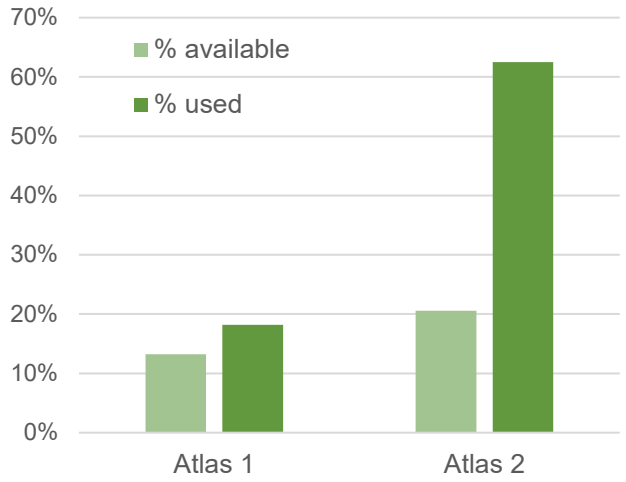


Figure 5-5. Comparing the percentage of urbanized blocks used (confirmed breeding) to the percentage of urbanized blocks available between Atlas 1 and Atlas 2 for the Lesser Goldfinch.

nest boxes have been installed in some urban parks and golf courses. Maturing urban trees may now provide more nest cavities for exploitation by bluebirds. Unitt (2004) suggests these bluebirds may be taking advantage of cavities excavated in urban trees by Nuttall's Woodpeckers (*Dryobates nutallii*). It is also possible the maximum carrying capacity of existing traditional open habitats has been reached, forcing dispersing birds into (possibly) less favorable urban habitats. Or, perhaps nesting success was higher in these developed areas, allowing urban-breeding bluebirds to increase faster than in other areas. Whether this, apparently recent, adaptation will be an ongoing feature of this species' natural history remains to be seen. At least one study of the impacts of artificial noise and light (two key aspects of urban living) on nesting Western Bluebirds produced mixed results (Ferraro et al. 2020), with increased noise associated with less nest predation, but the combination of light and noise had potential adverse impacts on the nestlings. Will these urban settings provide a source population, or will they prove to be a dead-end sink?

30 Years in Arden Park

The recent colonization of residential areas by Western Bluebirds and Lesser Goldfinches has also been documented by TM's observations from his yard over the past 30 years. His house is located in Arden Park, a typical suburban neighborhood east of the Sacramento city limits. He has kept careful records of birds visiting his yard for the past 30 years and, prior to 2006, he had no records of either species paying a visit between May and August, and certainly no evidence of breeding. He found his first May Lesser Goldfinch in 2006 and from that year on they have been regular throughout the year, with breeding first confirmed in 2008. Western Bluebirds made their first summer appearance in 2009 and were confirmed as breeders the next year. As with the goldfinch, the bluebirds are now regular breeders.

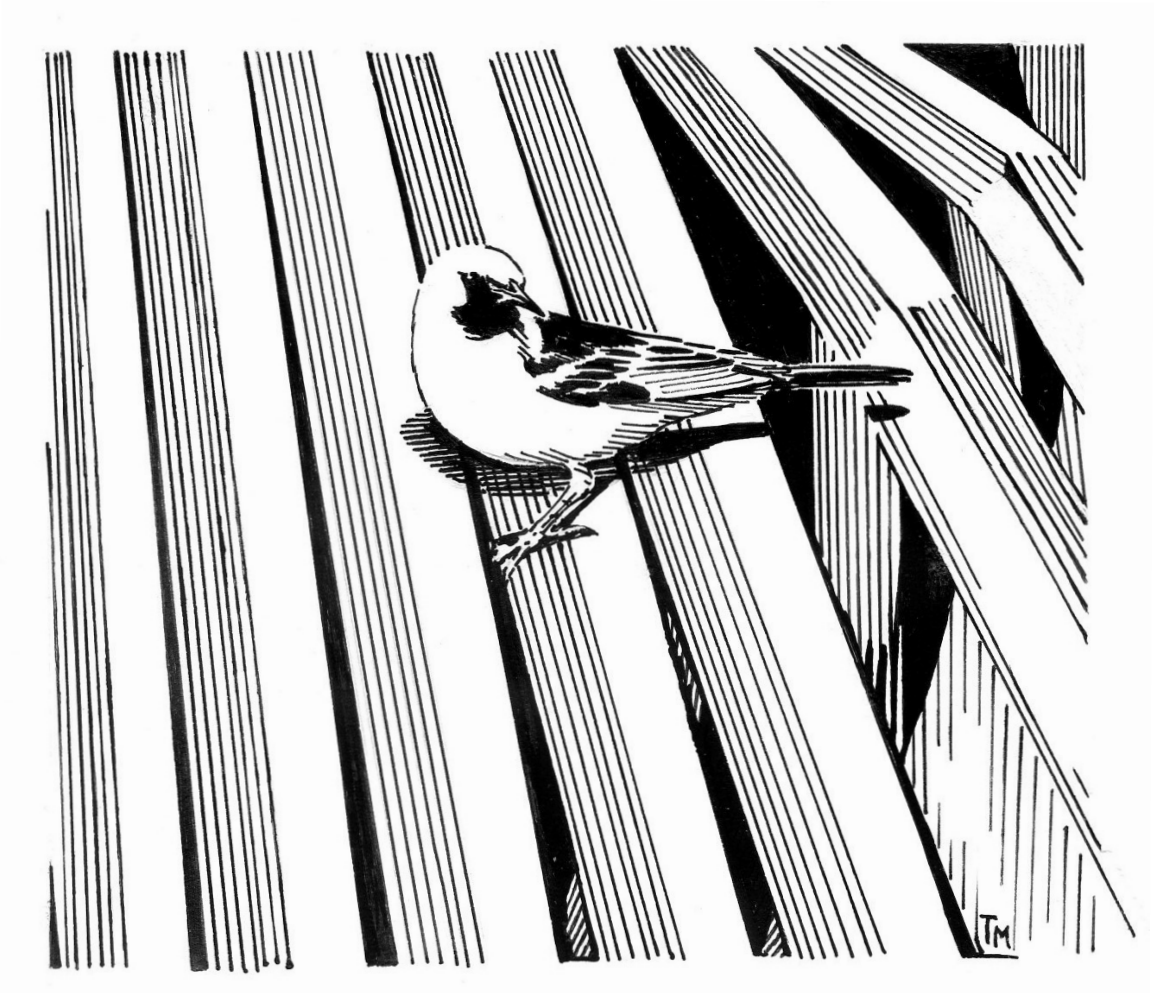
The Lesser Goldfinch breeds in a wide variety of habitats, including urbanized areas (Watt and Willoughby 2020). Indeed, breeding range studies from throughout California from the early 1990s on, all find this species a regular breeder in residential areas (Santa Clara County, Blair 1996; Orange County, Hamilton and Willick 1996; Monterey County, Roberson 2002; San Diego County, Unitt 2004; Contra Costa County, Glover 2009; Solano County, Berner 2015; Los Angeles County, Allen et al. 2016; Nevada County, Rose and Rose 2019). However, finding such a significant increase in these areas of Sacramento County in Atlas 2 compared to Atlas 1 was unexpected. Of the 25 new confirmed breeding blocks for the Lesser Goldfinch, 16 were highly urbanized. There were only two Atlas 1 blocks that included confirmations that did not also include confirmations in Atlas 2, and possible breeders were noted in both of those blocks in Atlas 2.

Here again, speculation about causes is difficult. Expansion due to a growing regional population seems unlikely because, among the six species covered in this chapter, this goldfinch is the only one to not show a significant increase in California breeding numbers in recent decades (Sauer et al. 2020); although, there has also been expanded breeding by the species in Sacramento County in nonurban habitats (e.g., the Bufferlands and Cosumnes River Preserve) between the two atlases. Increases in backyard bird feeders could have attracted more birds to stay and breed in urbanized areas, and perhaps these birds are more successful because of this supplemental food source. They may also be at lower risk from predators in urban areas; however, large numbers of domestic cats and growing numbers of Cooper's Hawks would seem to counter that possibility.

Hooded Oriole **180**

Since the early 20th century, the Hooded Oriole (*Icterus cucullatus*) has spread northward along the coast and up the Central Valley of California (Peake 1993). This expansion is primarily attributed to the planting of ornamental trees, particularly fan palms (*Washingtonia* spp.), which fray into filaments used by the orioles to build their woven nests (Grinnell and Miller 1944, Peake 1993, Bousman 2007). Other ornamental trees that provide shelter and nectar, along with sugar feeders, also provide resources

supporting the orioles in the breeding season and may have increased the likelihood of overwintering (Pleasants and Albano 2020, text last updated in 2001). The oriole's ability to exploit these urban resources is reflected in the increase of breeding observations between the two atlases. Breeding was confirmed in only three blocks in Atlas 1, all in urban locales. In Atlas 2, breeding was confirmed in 14 blocks, with an additional 24 probable or possible observations, primarily in urban areas and the Delta. Although the Atlas 2 effort did not require entry of comments along with observations, it is interesting to see that, out of 91 unique records that included comments, birds were noted as being found in palm trees in 17 entries (with palm trees mentioned nearby in an additional nine) and visiting sugar or jelly feeders in 36 records. In addition to expanding its range, and possibly aided by this expansion, this oriole's breeding numbers have increased dramatically in recent decades. California BBS data from 1993–2019 (Sauer et al. 2020) document a substantial increase (more than 5%/year statewide), one of the largest rates of increase for any native species.



Hooded Oriole by Tim Manolis