

Birds and Eucalyptus on the Central California Coast: A Love – Hate Relationship

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Geographic Focus

I'm going to speak generally about the relationship between birds and eucalyptus, expanding the focus out from Elkhorn Slough to include the Monterey Bay region of Santa Cruz and Monterey counties. Much of this will apply more generally to central California, as well.

Within the Monterey Bay region, it is principally birds of near coastal areas and lowland valley areas that have been most affected by eucalyptus.

What Has Eucalyptus Replaced?

Within the Monterey Bay region, eucalyptus stands have come to occupy land that formerly supported several different native habitats, although the natural habitats in many areas where eucalyptus now grow were already significantly disturbed or converted to other uses before eucalyptus were planted or otherwise became established.

The most significant type replacements of eucalyptus for native habitats in the region have been with coast live oak woodland, deciduous riparian woodland, grassland, and various scrub and chaparral communities. There has been relatively little impact on native mixed evergreen or conifer forests.

The loss of grassland communities in the coastal region and lowland valleys has been tremendous, but in this extensively agricultural and urbanizing region, the replacement of grassland with eucalyptus is somewhat moot in the larger geographic picture, as the great majority of former grassland area is now occupied by agriculture and urban development. So here I focus on comparing bird communities and habitat values in eucalyptus to those in coast live oak and deciduous riparian habitats.

Eucalyptus As Bird Habitat

Eucalyptus stands have earned a bad rap as bird habitat. It is often stated that they offer little for birds, are bereft of birds, and in no way compensate for the native communities they replace. This is the paradigm. Many people love to hate eucalyptus, or they hate to love them. In some regards the bad rap is well deserved, but in others it is not. There is the love – hate relationship of birds and eucalyptus.

As I'll elaborate on shortly, the resource values and functions of eucalyptus stands, and their bird communities, most closely approximate native conifer and mixed evergreen forests, and less the coast live oak and riparian communities they have replaced. In certain situations eucalyptus trees provide key resources and habitat functions for birds that are not otherwise well provided for by native communities, particularly in the urban agricultural context in which eucalyptus stands often occur.

Eucalyptus grows in a variety of situations and settings, and its value for birds varies accordingly. Stands of eucalyptus range in size from one to a few trees, to those occupying over 100 acres, and there are many stands in the range of one to 25 acres. Stands may occur in a matrix with native woodland or forest habitats, such as oak woodland and riparian, and often other non-natives too, such as planted Monterey pine and cypress. Sometimes eucalyptus stands are more “isolated” and surrounded by non-woodland cover types, such as scrub, grassland, or agricultural and urban land uses.

The habitat quality of eucalyptus stands for birds varies with the surrounding habitat and land use matrix, and with other factors. Among the most important factors are tree size, stand density, canopy closure, understory development, and the presence of adjacent natural habitats and other exotic trees.

Habitat values for birds are highest in stands with a diversity of ages that especially include large mature specimens, with large spreading limb structures. Low to moderate tree densities are best, while dense growths of small stems, or even closely spaced mature trees are worst. Stands with lower tree densities and older trees also tend to support better understory development, particularly of blackberry, poison oak, coffeeberry, and some other plant species important for birds. Bird use of eucalyptus stands is greatly enhanced where they occur adjacent to natural woodland habitats, and when other exotic tree species (especially conifers) occur with the eucalyptus. Stands adjacent to bodies of water may be of particular value to colonial nesting waterbirds.

Eucalyptus stands may offer several special features. Large specimens growing at lower densities develop large and complex limb structures that may provide key nest sites for raptors and colonial waterbirds. With age, the large specimens may also develop snag features, such as dead limbs, and over time older stands include standing dead trees. However, snag resources and tree cavities are generally much less available in eucalyptus

stands than in oak or riparian woodland. The loose bark of blue gum eucalyptus, and crevices and cracks in the bark provide foraging substrate and nest sites for some species. The flowers of blue gum, red gum, and other species provide a bounty for many different birds during the winter and spring. Birds visit the flowers for the copious nectar, and to eat insects that are attracted to the flowers. This nectar resource may not be without its downside, however, as I shall discuss below.

The Bird Community In Eucalyptus And Important Uses

Over 90 species of birds make *regular use* of eucalyptus in the Monterey Bay region during the course of the year, in addition to a wide variety of rare migrants that have been found where eucalyptus stands grow in situations that attract migrant birds. For example, the large blue gum stand along Elkhorn Slough on the Vierra property, near Moonglow Dairy, supports many regular species of the region, but is also well situated to attract migrants. Don Roberson (2004) estimated that some 120 species of birds, including many rare migrants, have occurred just in that stand.

To my knowledge, at least 59 species of birds have been found nesting in eucalyptus trees, or within eucalyptus stands, in the Monterey Bay region. That is equivalent to about 40% of all the species known to nest in Santa Cruz County. Of these 59 species, 40 (68%) nest regularly in eucalyptus, or nest in them uncommonly but are known to do so from multiple localities in the region. The remaining 19 species nest in eucalyptus only rarely in this region. Of the 40 regular nesters, only about half breed widely or commonly in eucalyptus. Many species that nest in eucalyptus appear to do so at densities that are lower than in native habitats.

The nesting bird community in eucalyptus is most closely affiliated with the community typical of the region's native conifer and mixed evergreen forests. For example, 80% of the species nesting in eucalyptus are also characteristic of conifer or mixed evergreen forest, while 62% of the eucalyptus nesters are also characteristic of riparian, and 56% of coast live oak woodland. This affinity with conifer and mixed evergreen forests is perhaps to be expected, given the tall growth form of eucalyptus, and the similarities in shading and understory development. Some eucalyptus stands bear a noted structural resemblance to stands of coast redwood.

Some of the species documented to nest in eucalyptus stands in the Monterey Bay region are rather unexpected, and in some cases are only recently known to use them. One is the Golden-crowned Kinglet, which has begun nesting in some groves near Corralitos, north of Watsonville. It is very closely allied to redwoods and firs, and I'm not aware of other occurrences of its use of eucalyptus. The large grove at Moonglow hosts nesting Winter Wrens, but they occur there quite isolated from their other areas of local occurrence in the Santa Cruz and Santa Lucia Mountains, and I don't know of any other eucalyptus stand that has nesting Winter Wrens. Brown Creepers have only been discovered to nest in eucalyptus in Santa Cruz County since 2000, but the practice is already fairly wide spread.

The nesting bird community in eucalyptus is depauperate in at least two ways. The decay-resistant wood of eucalyptus provides limited opportunities for nesting woodpeckers, and the several species that use woodpecker holes for nests. Woodpeckers do nest in eucalyptus, but they are relatively scarce in eucalyptus stands in this region. Some other cavity-nesting species that excavate their own holes, like Chestnut-backed Chickadee and (rarely) Pygmy Nuthatch, are also known to nest in eucalyptus trees. Use of eucalyptus by cavity-nesting species in the nesting season is much greater in stands that also have exotic softwood species, such as Monterey pine.

Another group that is poorly represented in the breeding avifauna are those species that glean insects from foliage, such as warblers and vireos. Species that fly out after insects, or hunt for them on bark of limbs and trunks are better represented. Among those that fly out from a perch to catch insects, two Neotropical migrants (Olive-sided Flycatcher and Western Wood-Pewee) are of conservation concern and have shown population declines in the region, but both nest in certain tall groves of eucalyptus, and at those localities they are not found nesting in the adjacent oak and riparian habitats.

Several species choose eucalyptus for nesting to a greater degree than native trees in the urban and agricultural areas of the Monterey Bay region. These include Red-shouldered Hawk, Red-tailed Hawk, Great Horned Owl, Great Blue Heron, Great Egret, Double-crested Cormorant. It is possible that some of these species would not nest in our developed areas in the absence of eucalyptus. The tall growth pattern and large limb structure are the most important features for these birds, compared to the native trees.

Great Blue Herons, Great Egrets, and Double-crested Cormorants currently nest in Santa Cruz County only in eucalyptus groves. From 1992-1994 I gathered information on raptors nesting in the city of Santa Cruz, and found that over 85% of all known nests of Red-shouldered and Red-tailed hawks and Great Horned Owls were in eucalyptus ($n = 22$ nests; unpubl. data). A study conducted in urban areas of Santa Clara County found that 61% of Red-shouldered Hawk nests found over two years were in eucalyptus or other exotic trees, with tree height and diameter being the most significant predictors of suitability for nesting (Rottenborn 2000). Rottenborn found that hawks nesting in eucalyptus and other exotic trees were found to have higher breeding success, due to better stability and cover provided by those trees compared to native species.

Double-crested Cormorants only began to nest in the Monterey Bay region in 1997 (Roberson 2002). All of the three known colonies in Santa Cruz County are in blue gum stands, and one at Elkhorn Slough is in a stand of Monterey pine with Eucalyptus.

Eucalyptus are also used extensively as preferred roost sites by many raptors and Double-crested Cormorants in the non-breeding season. At that season they are also used by species that do not nest in them, such as Peregrine Falcon and Merlin. The only night roosts for Double-crested Cormorants presently known in Santa Cruz County are in stands of blue gum.

While they are flowering, individual blue gums attract dozens to hundreds of landbirds that come to feed on nectar or insects at the flowers. Prominent among these are common wintering species such as Yellow-rumped and Townsend's warblers, Anna's Hummingbird, Ruby-crowned Kinglet, House Finch, Chestnut-backed Chickadee, and several others. These in turn attract the raptors that eat them, such as Cooper's and Sharp-shinned hawks. But the flowering trees also harbor many rare wintering species that might not linger locally without the food resource provided by eucalyptus. These include Western Tanager, Bullock's Oriole, and a variety of truly rare winter landbirds. The larger flowering specimens provide an impressive foraging resource, and they are often a focus of local bird activity. Stands of winter-flowering trees even just an acre or two in size can harbor well over 100 Yellow-rumped Warblers and dozens of hummingbirds at a time. Migrants, such as Western Tanager and orioles, and nesting species, such as Allen's Hummingbird, target the flowering trees in the spring.

The great attraction of flowering eucalyptus for foraging birds may have its downside, though. As the birds spend time feeding amid the flowers, the feathers on their faces become matted with a black pitch-like residue (or gum) from the nectar. This affects their ability to maintain those feathers, and in some cases the gum may plug their nostrils or bills, and prevent breathing or feeding. Australian birds that regularly feed at Eucalyptus flowers in native settings have longer bills than North American species that feed at eucalyptus flowers, apparently permitting them to feed there without being affected by the gum.

Articles published in the Point Reyes Bird Observatory newsletter (Stallcup 1997) and in Audubon magazine (Williams 2001) have suggested that the effects of this black pitch cause substantial mortality among the North American species that feed at eucalyptus flowers. It seems to be a reasonable conclusion, and Stallcup (1997) cites some instances of mortality. But in my experience, and the experience of a number of other long time field ornithologists, we have seen very little evidence of such mortality. It has been argued that the bird carcasses do not last long on the ground before they are scavenged. However, when observers spend hundreds of hours under these trees over many years but find hardly any evidence of such mortality, then it seems fair to question whether the incidence of mortality is as high as has been suggested. Not all bird carcasses are scavenged rapidly, and large amounts of time under the trees should produce observations of dead birds, if such mortality were a frequent event. I'm not making a judgment either way, but I just think more evidence is needed.

I pointed out some of the positive features of eucalyptus, and resources they provide that are used by a variety of birds. But eucalyptus stands do not provide an equivalent trade off for the oak woodland and deciduous riparian that they have replaced. The breeding bird communities in these native habitats have much better representation by cavity-nesting species, foliage-gleaning species, and those that nest on the ground or in understory vegetation.

Many of the breeding species that are most representative of oak and riparian habitats make little or no use of eucalyptus in the Monterey Bay region. In live oak woodland

these include Western Screech-Owl, Acorn and Nuttall's woodpeckers, Ash-throated Flycatcher, Hutton's Vireo, Oak Titmouse, House Wren, Western Bluebird, Orange-crowned Warbler, and Lark and Chipping sparrows. Characteristic breeders in our local riparian woodland that do not nest in eucalyptus, or do so only rarely, include Downy Woodpecker, Warbling Vireo, Tree Swallow, Violet-green Swallow, Swainson's Thrush, and Yellow, Orange-crowned, and Wilson's warblers.

Summary

Habitat quality for birds varies widely among stands, especially with age, tree density, understory development, and the presence or absence of adjacent native woodland and other exotic trees. Eucalyptus are used by many species, providing some important resources for nesting, roosting and foraging, and they are selected preferentially by nesting raptors and some colonial waterbirds. For some nesting species, they appear to be a critical resource in the Monterey Bay region. On the other hand, the bird community of eucalyptus is lacking some of the species characteristic of the native woodland communities they replace, and in general, many native birds that do nest in eucalyptus do so at reduced densities. Some groups of nesting birds, such as cavity-nesting species and foliage-gleaning insectivores, are poorly represented in eucalyptus stands.

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