

TULEYOME TALES

SAVING BIODIVERSITY BEGINS AT HOME

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We increasingly know we need to save the world's great biodiversity hotspots like coral reefs and tropical rainforests, but how many Californians know our own state is also regularly on inventories of top world biodiversity hotspots? When compared to other states, California's biodiversity is truly outstanding. It is first in diversity of native plants, mammals, and all species; fourth in breeding birds; fifth in all vertebrate species; sixth in reptiles; twelfth in amphibians; and thirty-first in freshwater fish. Unfortunately, California ranks much higher for endangered and threatened species. It is first for plants, mammals, amphibians, all vertebrates, and all species; second for breeding birds; third for reptiles; and even eighth for freshwater fishes.

California's great biodiversity reflects a similarly immense environmental diversity. Its topography extends from North America's lowest point to our country's highest point outside Alaska. Its climates range from some of the world's hottest and driest deserts to evergreen rain forests, cool fogbound coasts, icy peaks, and coastal islands where spring seems eternal. Even California's geology is among the most diverse in North America.

Several rare species survive in central Yolo County near Davis and Woodland because it's a special place. One quality making it special is its soil, which is derived from material transported here by Putah and Cache creeks. Like most Coast Range streams, their watersheds are richer in clay and salts than those in the Sierra Nevada, which tend to have more silica because they are often underlain by granite. Consequently soils on the Central Valley's eastern side tend to be sandier and often have silica-cemented hardpans because of their sierran derivation, while west side soils usually have more clay and salts because of their Coast Range origin. Hardpans, too much sand, and salts all tend to reduce crop productivity so soils on both sides of the valley have advantages and disadvantages, which vary from place to place.

The valley's east side usually has the agricultural advantage, however, because of another critical environmental resource; water. Sierran uplift causes rainfall to increase everywhere in the valley toward the east, while the Coast Range's rain shadow causes it to usually decrease toward the west. The one exception is the valley's west side in Yolo and Solano counties, where storms pass unimpeded through the Golden Gate and are uplifted by the southern end of the northern Coast Range. Increased rainfall in western Yolo and Solano counties has immense consequences for both agriculture and wildlife. First, the salt accumulation hindering farming elsewhere on the valley's west side is largely leached away by greater rainfall and stream flow in Yolo and Solano counties. Second, Cache and Putah creeks provide more water for natural and artificial irrigation than other west side streams because of higher rainfall in their watersheds. And all this

occurs in the one part of the valley where the cooling delta breeze is strongest and thus reduces water need the most.

One consequence of this favorable combination of ecological factors in the Davis-Woodland area is some of the best conditions in the world for growing vegetable and field crops like tomatoes and alfalfa. Another is one of the largest valley oak forests that ever occurred in the Central Valley, the one that gave Woodland its name. A third is the perennial distributary streams Willow and Dry sloughs, which unite the flows, alluvial fans, and valley oak forests of lower Cache and Putah Creeks. The fourth is a resulting mosaic of crops and oaks that supports the most significant population of Swainson's hawks remaining in California.

Swainson's hawks were once widespread and fairly common in California's savannas, where they could nest and roost in valley oaks and forage in understories of perennial grasses like creeping wild-rye. Cattle grazing eliminated understory perennials and consequently Swainson's hawks from much of California, but in central Yolo County alfalfa fields near oaks provide a replacement habitat that is even better than the original.

Two other species characteristic of valley oak savannas are loggerhead shrike and yellow-billed magpie, the latter of which is the only bird species entirely confined to California. Because of their capacity to utilize introduced trees and lack of dependence on specialized understories, both these species are currently doing much better than Swainson's hawk, but the magpie's limited range makes it especially potentially vulnerable to land use changes and introduced pathogens like West Nile virus.

Nor all rare species depend on environmental conditions that exist only at a single place. At the opposite pole from the Swainson's hawk is the burrowing owl, another local bird species that is rapidly disappearing in California despite having a fairly wide historical range. It is often described as a grassland species but is ecologically quite different from the hawk, lark, and magpie. Its most critical requirements are low elevation valley bottoms, mammal burrows, and nearly bare soil lacking tall vegetation. In California its burrows are usually made by California ground squirrels, but these seldom keep vegetation as low as the owls require. Tule elk herds that historically occurred in the Central Valley may once have given them this service. Now it is usually unintentionally provided by people creating places with low or no vegetation like levees, golf courses, airports, overgrazed rangeland, and even construction sites. Owl populations currently do best in the few places like the Imperial and southern San Joaquin valleys where particular kinds of agriculture make such conditions fairly widespread and stable.

The area around Davis and particularly north toward Woodland is a very special place unlike any other on earth; an integral part of the fabric of California, one of the world's most biologically diverse places. Just as the tropical rain forests are threatened by rampant burning and conversion to agriculture, the special places of California --- including those closest to our own homes --- are threatened by urban sprawl and other encroachments on our natural resources.

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