

# Vineyard/Oak Conservation Educational Program

## FACT SHEET

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Vineyard/Woodland Fact Sheet Series

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## Habitat Elements in Oak Woodlands

In simple terms, "habitat" is where an animal lives. Habitat actually is a complex juxtaposition of space, water, cover, and food that all animals require for survival. Different species require different proportions of space, water, cover, and food according to that species' needs and activities. In addition, different elements, or pieces of habitat, comprise different kinds of habitat. For example, a desert habitat contains different elements from oak woodland habitat, which contains different elements than redwood forests. In this fact sheet, we introduce you to six of the elements that comprise oak woodlands: acorns, snags, coarse woody debris, shrubs, brush piles, and structure. Some of these elements may or may not be found in your woodland.

### Acorns

Acorns, the seed produced by oak trees, are the ultimate source of regeneration for oaks. Dominant oaks of the central coast are the blue oak (*Quercus douglasii*), coast live oak (*Q. agrifolia*), and valley oak (*Q. lobata*). These oak trees produce flowers during spring. By mid-summer, pollinated female flowers begin to produce small acorns, which will develop to mature acorns by September and October. Some species of oaks require two years to produce acorns. Abundance of acorn crops varies depending on weather conditions during pollination and possibly an internal cycle in the trees. Wet, cool springs tend to be poor for acorn production whereas windy, dry spring weather tends to favor abundant acorn crops. Depending on the oak species, abundant acorn crops are produced every five to eight years. Coastal oak tends to produce a more constant supply of acorns from year to year whereas blue oak and valley oak crops are more cyclic.

Acorns are an important food source for many species of vertebrate wildlife. Deer use acorns heavily during fall. Small mammals, especially those living in very dense oak woodlands store acorns during fall and winter. Acorns are a major diet item for dusky-footed woodrats and many mice. In turn, these small mammals can be important prey items for larger carnivores,

including coyotes, bobcats, raptors (hawks, falcons, owls), and foxes (gray and kit). By affecting population sizes of prey species like small mammals, acorn crop abundance can eventually influence populations of animals that do not directly use acorns. Acorn woodpeckers are named for their extensive use of acorns and oak trees.

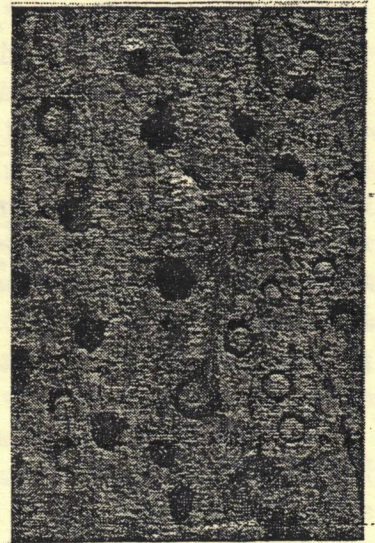
Acorn woodpeckers live in family groups and base their lives around one to several large trees, frequently oaks, that serve as acorn caches, or granaries.

Woodpeckers will drill out acorn-sized holes in the bark of the trunk and large limbs and fill these with acorns.

Thousands of acorns have been counted in individual granaries.

One exceptional granary had 30,000 acorns! Other

birds also may use acorns as a food source. Some songbirds may break into acorns to eat acorn weevils and other insects that feed inside the acorn.



Acorn woodpeckers cache acorns in trees called granaries and feed off the stored acorns throughout the year.



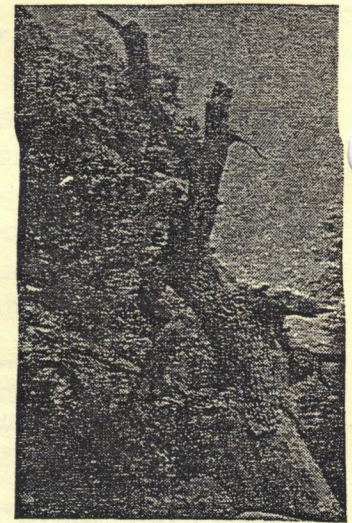
Few management practices can increase the production of acorns. Cutting down trees or shrubs that compete with others in dense stands of oaks may release suppressed trees and cause them to produce more acorns because of less competition for nutrients or better wind pollination. However, any increase in acorn production by a few trees may not compensate for the loss of acorns produced by trees that are cut. Removing competing shrubs can reduce the structural complexity of woodlands and result in a loss of animal species that require those shrubs as habitat.

## Snags and Cavity Trees

Snags are trees that have died but remain standing. Trees that have died recently and retain larger limbs and have mostly sound wood are called hard snags. Trees that died more than a few years ago, have lost most or all of their limbs, and may have large, hollow spaces along with rotted or rotting wood in their trunks are called soft snags. Different animals use hard and soft snags. Both types of snags are used as perching sites by raptors like red-tailed hawks, and other, smaller, birds. Reptiles, especially lizards, may use snags as basking sites. Crevices and rotting wood of soft snags are reservoirs for wood-eating insects, which are valued food items for many songbirds. Hollow trunks of large snags can serve as a base in which woodrats construct "houses", many-chambered mounds of sticks, leaves, and bark. If a snag has remaining bark that is loose and sloughing off, bats can use the spaces between sheets of bark and the trunk as roosts. Usually, one to five snags per acre is adequate to provide habitat for snag-using animals.

Snags and some live trees frequently are excavated by woodpeckers foraging for food and creating nesting sites. Valley oaks, possibly because of soft wood, seem to be preferred for

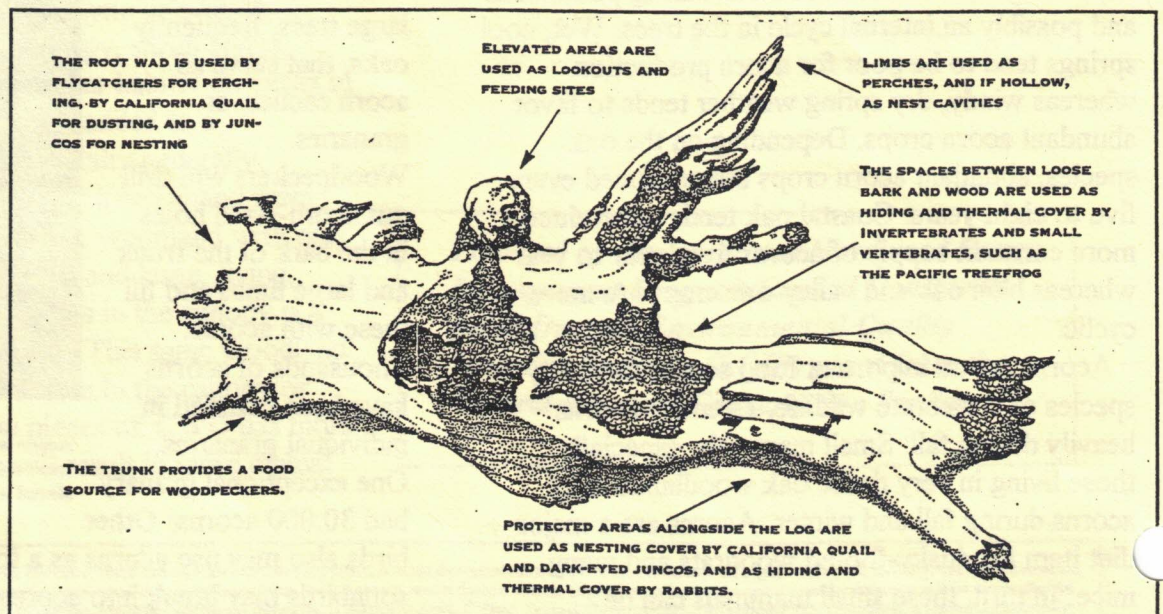
excavating cavities. In addition to naturally occurring cavities, these excavated cavities may be used by a number of other birds that nest in cavities. Natural cavities—for example those formed when the stub of a broken branch rots out, creating a hole in the trunk of a tree—may be more prevalent in coast live oaks. Older and larger oaks generally have more cavities than smaller or younger trees and therefore should be maintained to provide cavity habitat for woodpeckers and other birds that nest in cavities.



Snags are important components of oak woodlands, providing many birds, small mammals, and reptiles with

## Coarse Woody Debris

Coarse woody debris (CWD), sometimes called downed wood, typically is large logs lying on the ground. Like snags, CWD ranges from hard to soft, depending on the state of decay or soundness of the wood. CWD is most important as resting and reproductive cover for amphibians and reptiles, and small mammals. Amphibians require wet structures and moist areas to keep their skin moist during dry periods. Because CWD absorbs moisture during the rainy season and retains that moisture longer than



Dead, decaying logs should be left on the ground to provide nutrients for regenerating oaks and as habitat for amphibians, reptiles, and birds.



smaller sticks, leaf litter, and grass, amphibians will lie against CWD and wedge themselves between pieces of bark and the ground. Reptiles, including snakes and lizards, also will use CWD in this way, as well as use CWD for basking sites. Small mammals will construct nests in and against CWD, and woodrats will build their houses in larger, hollow pieces of CWD. Very large pieces of CWD also can serve as resting and denning sites for foxes, coyotes, and bears. Some species of ground-nesting birds, like juncos, will place their nest against a piece of CWD to offer more camouflage and greater protection from nest predators.

Landowners are encouraged to not 'clean' woodland by removing CWD to create an open, park-like area or to gather firewood. Removing CWD removes a useful habitat element for many kinds of animals. In addition, CWD serves as a source of nutrients that can be released slowly back to the woodland during decomposition. It may aid oak regeneration by providing physical protection for an emerging or growing seedling or sapling.

## Brush Piles

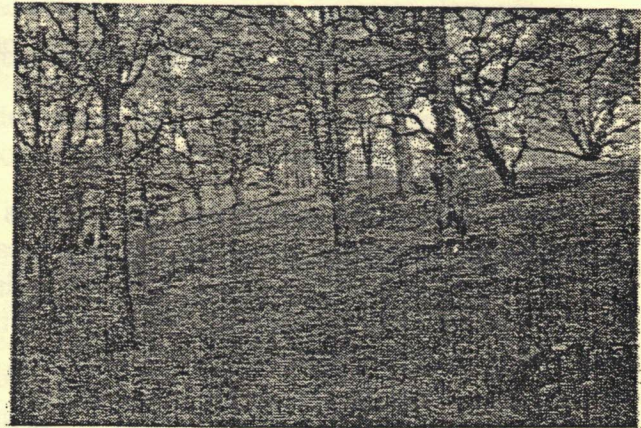
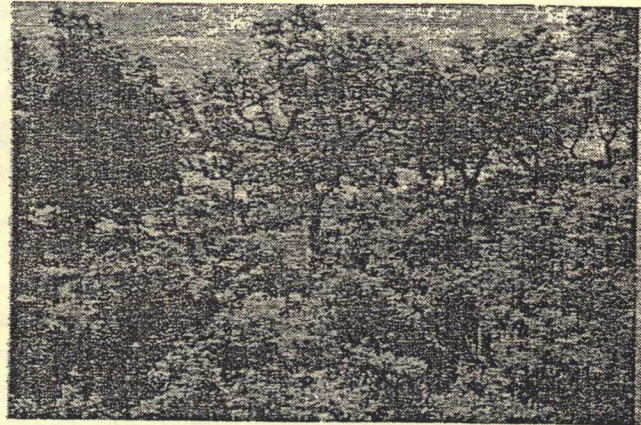
Brush piles, like CWD, offer resting places for smaller animals like lizards and snakes. Rodents and other small mammals like rabbits and hares will use brush piles as resting and reproductive cover. Quail, in particular, use brush piles extensively, especially if brushy areas or chaparral are not prevalent on the land. Brush piles, placed around planted or naturally regenerated oak seedlings, can deter or prevent damage to seedlings by cattle and deer, which may eat or trample young oaks.

Brush piles can be formed naturally by the tops of trees that have died and fallen. After firewood harvesting, brush piles can be created by piling unused tops of cut trees. Brush piles should be large, at least five feet in diameter, and open enough to permit sunlight to penetrate to regenerating seedlings and to offer easy escape routes for smaller animals like quail, but not so large that foxes or coyotes could enter.

## Shrubs

Native shrubs, including toyon, redberry, manzanita, poison oak, and coffeeberry are important habitat components in oak woodlands, especially coast live oak woodlands and mixed blue oak-coast live oak woodlands with a dense canopy

of trees. In addition to young oak trees, shrubs provide another level of vegetation between mature trees and ground plants. This 'understory' vegetation



Woodlands that contain a distinct shrub layer (top) frequently have more animal species than woodlands that lack a shrub layer (bottom).

provides songbirds and small mammals protective cover from terrestrial predators like coyotes and bobcats, as well as from aerial predators like hawks and owls. Woodrats and many species of woodland mice use shrub stems extensively as runways, rather than running along the ground. This provides them additional escape routes from terrestrial predators. Many of these shrubs produce berries that are used by small mammals as food sources. The addition of the extra layer and volume of vegetation also means greater surface area for invertebrates and consequently a greater diversity and abundance of songbirds that feed on woodland invertebrates.

Much of the land suitable for growing grapes typically has little natural shrub cover and is composed primarily of open woodlands with only a few trees per acre. Due to soils and other natural factors, these areas may be unable to support native shrubs. However, woodland with a strong shrub component harbors a greater diversity of many



species of woodland wildlife. Creating shrubby habitat by planting native shrubs may provide habitat for a great diversity of wildlife.

Removing shrubs reduces the habitat complexity of woodlands and may decrease abundance of many species and may cause some species that require shrubs to leave. Instead, enhance animal diversity and abundance in woodlands by leaving existing shrubs, creating favorable habitat for existing shrubs, and, if applicable, planting native shrubs. Most of these shrub species survive better and longer if they grow underneath a canopy of mature oak trees. Planted shrubs should be given adequate, but partial sunlight, and room to expand. Watering the shrub and controlling competing annual grasses may be necessary for the shrub to become established, but extensive watering in summer may kill shrubs and trees.

## Vertical Structure

Unlike CWD, snags, and shrubs, "structure" is not a piece of something. However, just as you can hold a piece of wood, grab a shrub, and lean against a snag, structure can be identified; woodlands with and without structure easily can be distinguished. Similarly, removing or altering the structure of a woodland can be accomplished, but reducing the structure of a woodland also diminishes the complexity of the habitat and reduces the number of habitat elements available to animals, which potentially could result in lower animal species diversity and fewer animals overall.

Structure really is the aggregate or sum of CWD, snags, mature tree canopy, shrub layers, plant species diversity, and other habitat elements in an area. As more elements are added to a woodland, animal species diversity generally increases. Imagine looking into a woodland from the edge of an adjacent field. A woodland with only grasses on the woodland floor and large, living, mature oak trees of one species in the canopy is a structurally simple woodland. This same woodland but with another species of tree in the canopy or with a few snags or a few pieces of CWD has more vertical structure, which will result in more animal

species using that woodland. Adding more layers of vegetation—especially a layer of shrubs of several species and a layer of younger trees that are shorter than mature trees but taller than shrubs—and more CWD and snags in different decay states will greatly increase the structural complexity of this hypothetical woodland. Animals that require those habitat elements should increase in abundance.

## Sources of Additional Information

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