



SIERRA
CLUB
FOUNDED 1892

#28
Draft
owmp

California Native Plant Society

December 12, 2007

Draft Oak Woodland Management Plan Comments
Attn: Monique Wilber
2850 Fairlane Court
Placerville CA 95667

Sent via email to: oaks@edcgov.us

Re: Comments on the Revised Public Review Draft of the Oak Woodland Management Plan

To Whom It May Concern:

These comments are submitted on behalf of the El Dorado Chapter of the California Native Plant Society, Center for Sierra Nevada Conservation, Sierra Club, and El Dorado County Taxpayers for Quality Growth. We have reviewed the Revised Public Review Draft of the El Dorado County Oak Woodland Management Plan (October 2007; hereinafter referred to as "DOWMP") and the various staff reports posted at the County's website. We appreciate the opportunity to comment on the DOWMP and offer the following for your consideration.

The purpose of the DOWMP is to implement all or portions of several general plan policies relating to the conservation of oak woodland habitat. We strongly support the general plan policies that address conservation of oak woodland habitat. We view the commitments made by the County in the various environmental and decision making documents that accompany the general plan as providing the basis for understanding and interpreting the intent of the existing general plan policies. We ask the County to adopt a plan and mitigation program that implements fully the intent of these policies.

To that end, we note that the Final Environmental Impact Report (FEIR) for the general plan stated that the intent of Option B (replacement) for Policy 7.4.4.4 is "to preserve (through acquisition or conservation easements) existing woodlands of equal or greater biological value as those lost." (FEIR, Chapter 4, p. 4.1-51). As we will discuss in our comments below, we believe the DOWMP as currently drafted does not meet the direction "to preserve...existing woodlands of equal or greater biological value as those lost" nor does the proposal achieve the direction in Policy 7.4.4.4 to "fully compensate for the impact to oak woodland habitat."

#28
pg 2

I. Fragmentation of oak woodland habitat

The potential for fragmentation of oak woodland habitat as a result of residential and commercial development was clearly identified in the environmental impact report (EIR) for the general plan that stated:

Most of the development pressure in El Dorado County is likely to occur in the foothills near the U.S. 50 corridor (refer to the Section 5.1, Land Use and Housing, for more specific information on development trends). Through the 2025 planning horizon, it is likely that wildlife habitat below the 2,000-foot contour line and closest to the highway corridor would be most affected.

(El Dorado County General Plan EIR, May 2003, Biological Resources, 5.12-39) The EIR also referenced research studies on the effects of land use policies on habitat fragmentation in El Dorado County as a result of the development proposed in the 1996 general plan. The EIR found that:

Saving and Greenwood calculated habitat loss and fragmentation incorporating the effects of 1996 General Plan policies that were adopted to preserve and protect habitat. An in-depth description of the methodology used for this study has been published on the CDF-FRAP website (Greenwood and Saving 1999). The following paragraphs summarize the study results.

Saving and Greenwood concluded that implementation of the 1996 General Plan would have a substantial adverse effect on wildlands and that General Plan policies only marginally mitigated habitat loss and fragmentation. The authors found that much of the impact on wildlands was associated with habitat fragmentation.

(Ibid.) Further, the EIR highlighted the finding of Saving and Greenwood (1999) that:

Connectivity between northern and southern wildlands was raised as a particular concern because increased urbanization along the corridor threatens to create a separation between large areas of contiguous habitat in the northwest and southwest portions of the county.

(Ibid.) The recognition and concern about fragmentation also was stated in the environmental analysis that evaluated the mitigation measures adopted in the final approval process for the general plan. Specific measures were included in the final adoption process to address concerns about fragmentation and the FEIR found that “the measures with the proposed modifications would still substantially reduce the severity of the significant and unavoidable impacts to wildlife habitat.” (El Dorado County Environmental Assessment of General Plan Mitigation Measure Changes, July 2004, p. 32) In sum, the County recognized that fragmentation of wildlife habitat, including oak woodland habitat, required specific mitigation. The policies adopted in the general plan were intended to address such mitigation and in specific instances to “to fully compensate for the impact to oak woodland habitat.” (General Plan Policy 7.4.4.4).

The proposal in the DOWMP does not include areas for oak woodland conservation (i.e., Priority Conservation Areas (PCAs)) within approximately 2.5 miles of Highway 50, yet this is the very area identified in the EIR for the general plan where significant impacts will be occurring. Research by Saving and Greenwood (2002) found that a land acquisition or conservation approach could be applied that would retain connectivity of oak woodland habitat from north to south and across Highway 50.

The staff reports imply that connections between PCAs will be addressed in a different process (e.g., INRMP) at a future time. A delay in addressing the issue of fragmentation of oak woodland habitat is not appropriate since the very actions that will be permitted and mitigated using this DOWMP are contributing to the fragmentation of oak woodland habitat. Failing to address the fragmentation of oak woodland habitat now will result in a lost opportunity to mitigate the impacts of development on oak woodland fragmentation.

We ask that PCAs be proposed for the area between the town of El Dorado and north towards Pilot Hill. This is the area in which Saving and Greenwood (2002) found there were opportunities to maintain north-south connectivity. Underpasses along Highway 50 at Greenstone Road and South Shingle Drive may contribute to the connection of land from north to south. Further, we observe that there is a degree of “connectedness” represented in the PCAs to the south of Highway 50. This is in contrast to the PCAs to the north of Highway 50. We ask that the additional areas crossing Highway 50 and north of Highway 50 be identified as priority areas for conservation in order to reduce the isolation and fragmentation of oak woodland habitat that is present in the proposed PCA map.

II. Mitigation for Oak Woodland Habitat Value Lost

The DOWMP is unclear about exactly how the character of the woodland to be lost will be determined. The plan also does not specify how the oak woodland value that is lost will be replaced in a manner that preserves “existing woodlands of equal or greater biological value as those lost.” (FEIR, Chapter 4, p. 4.1-51). This is the case for both Options A and B of the plan.

We are very concerned about the approach the County is taking to evaluating the loss of oak woodland for each project. The global replacement of the term “oak woodland” in the August 2007 public review draft of the DOWMP by the term “oak woodland canopy” or more succinctly, “canopy,” in the October 2007 public review draft of the DOWMP at the direction of the Board of Supervisors does not fulfill the requirements of the general plan. General plan Policies 7.4.2.8, 7.4.4.4, and 7.4.4.5 clearly direct the protection of “oak woodland habitat” and not simply canopy or individual oak trees. Circling oak canopy in a development area and using that area to determine mitigation requirements minimizes the oak woodland area to that of individual trees being removed. The DOWMP should be changed to refer specifically to “oak woodland habitat.”

A. Characterizing the Oak Woodland Habitat Lost

The DOWMP does not define how the lost woodland habitat will be characterized nor does the plan describe how those “lost” biological values will be replaced by the mitigation options. Several biological characteristics of the woodland need to be evaluated and addressed to ensure that woodlands will be replaced in a manner that preserves “existing woodlands of equal or greater biological value as those lost.” (FEIR, Chapter 4, p. 4.1-51). Characteristics that should be considered are described below.

#28
pg 4

Density of woodland canopy

The quality of the woodland is defined in part by its canopy cover. The plants found in the understories of oak woodland habitats vary with changing canopy cover and tree density. The animals associated with these woodlands also vary with tree density and understory plant species.

Species mix

Oak woodland habitat in the county can be of one species or a mixture. The species composition is driven by a number of factors including site condition, microclimate, and topography. Some species in the county are fairly uncommon (e.g., valley oak) and other species (e.g., live oak) are more widespread. Further, some species are found primarily east of Placerville (e.g., black oak) whereas other species (e.g., blue oak) are found primarily west of Placerville. Further, understory species associated with different woodland types also vary. Attachment 1 to these comments lists plants found associated with the blue oak series and the black oak series statewide. These lists show that there is some similarity in species associated with each series as well as many differences. Thus, development projects that result in a loss of oak woodland in specific areas will have a localized effect on oak woodland values and the mitigation of these specific values must be addressed.

Important habitat elements

The California Wildlife Habitat Relationship (CWHR) system identifies major habitat categories and the elements that are important to them. These habitat elements include a number of attributes such as water, understory plants, snags, down logs. These elements add biological value to the described habitat types. Snags are a particular habitat element that was identified by the California Department of Fish and Game in their comments on the general plan. In responding to comments on the general plan, the County stated that "inclusion of snag protection is noted for the record and is an appropriate subject for consideration in the development of the Oak Woodland Management Plan and Oak Tree Preservation Ordinance." Snags and other important habitat elements need to be addressed in the DOWMP.

Woodland connectivity

The specific location of the woodland to be removed in relation to adjacent woodlands has biological importance. The effects of fragmentation on oak woodland habitat were highlighted in the DEIR for the general plan. Further, the general plan has a specific policy that addresses maintaining connectivity of stands with a specific reference to density as a quality of the stand to be managed:

Policy 7.4.4.5

Where existing individual or a group of oak trees are lost within a stand, a corridor of oak trees shall be retained that maintains continuity between all portions of the stand. The retained corridor shall have a tree density that is equal to the density of the stand.

The characteristics above should be included in any evaluation of impacts a development project would have on existing oak woodland values. This information is also necessary in order to

#28
pg 5

develop mitigation measures that “fully compensate for the impact to oak woodland habitat” and “compensate for fragmentation as well as habitat loss” as directed by Policy 7.4.4.4.

B. Option A

Option A requires that a certain amount of oak tree canopy be retained on the property and that when allowable canopy is removed, it be replaced on site at a 1:1 ratio. The ability to effectively replace the woodlands lost depends on suitable growing space being available on the property. If the available growing space is already occupied by oak woodland, then additional planting of trees in this habitat is not necessarily a benefit nor does it mitigate loss of habitat since that habitat already exists. This concern was raised in the DEIR for the general plan:

Harris and Kocher also questioned the practice of planting to mitigate oak tree impacts. Site reviews revealed that oak trees were inappropriately planted underneath existing woodlands, in road median stripes, along property lines, and on cut-and-fill slopes. These plantings were often aimed at mitigating losses of stands or groves but seldom met that objective from an ecological standpoint.

(El Dorado County General Plan EIR, May 2003, Biological Resources, 5.12-39) The planting of oaks within existing stands, in an effort to mitigate for the loss of oak woodland habitat elsewhere on the parcel, should be avoided. On-site replacement of oak woodland habitat lost should be limited to those areas that do not infringe on existing oak woodland habitat and to those areas that biologically can support such woodlands.

Oak canopy is not equivalent to oak woodland. Oak canopy by definition is the area under the canopy of an oak tree. Oak trees in a natural setting are randomly placed, with some canopies meeting and overlapping, and some canopies isolated. Oak canopy by definition excludes open spaces outside of canopy area.

Oak woodland refers to an oak stand with greater than 10 percent canopy cover or that may have historically supported greater than 10 percent canopy cover (Oak Woodlands Conservation Act, Fish and Game Code Section 1361). Oak woodland is a habitat and includes the oak trees, the open space between, and the plant and wildlife communities that live therein. While the Option A retention standards in Table S-1 are stated in terms of oak canopy cover retention values, the overall intent of Option A is to implement General Plan policies relating to the conservation of oak woodland. Option A contains both canopy retention standards and a 1:1 oak woodland replacement requirement. Calculations of canopy cover before and after development are only for determining compliance with Table S-1.

The calculation of the area requiring replacement at the 1:1 ratio should be based on the total woodland removed and not on a tree or canopy basis. For example, removal of two acres of oak woodland requires replacement of two acres of oak woodland. The woodland removed should be based upon the area of overlap between the oak woodland existing on-site prior to development and the development footprint. The area of oak woodland within the development footprint is calculated and considered “lost”, i.e., woodland functions are irretrievably impaired. The footprint should include all structures, infrastructure, grading, landscaping, and pavement, plus a buffer circumscribing the entire area.

C. Option B

Option B allows for the replacement of oak woodland habitat removed at a 2:1 ratio off-site. The calculation of the area requiring mitigation at the 2:1 ratio must be based on the total woodland habitat removed and not on a tree basis. This requirement is clear in the reference to “total woodland acreage” in Option B. As mentioned above, oak woodland is defined as an area with 10% canopy cover or greater. Therefore, a development project with 10 acres of oak woodland with 10% canopy or greater that proposes to develop all 10 acres (i.e., does not intend to permanently dedicate conservation areas on site) must provide off-site mitigation for 20 acres of oak woodland that is of equal or greater biological value. This is similar to the approach taken in Placer County.¹

The County’s response to comments on the general plan EIR stated that “existing woodlands of equal or greater biological value as those lost” would be preserved under Option B. The DOWMP needs to address how the proposed mitigation fee program will compensate for the biological values lost consistent with the statement in the EIR.

III. Implementation of Mitigation Needs to be Implemented Concurrent with Development

The DOWMP does not address how the mitigation fee program will maintain concurrency with development. On its face, the plan appears to prevent concurrency since the fee structure is based on land values derived from the purchase of large (40 acre) parcels of land. Many of the developments that would occur in woodland areas and require mitigation are likely to be 20 acres or less. Given the fee structure proposed, there would not be sufficient funding to acquire conservation easements in step with the loss of oak woodland on these smaller development projects.

The DOWMP also does not identify the specific agency that will be responsible for ensuring that acquisition of the conservation easements occurs. Also, there appears to be no funding to support the identification of willing sellers, negotiation of the purchase price, and oversight of the land transaction. Each of these steps requires an investment of time and expertise. These costs need to be factored into the overall fee.

Lastly, the fee program needs to specify the approach that will be taken annually to access the actual fees collected and adjust them for changes in land values. The rare plant fee program now administered by the County serves as an example of why this is necessary. When originally approved in 1998, land values in some areas targeted for conservation were about \$18,000 per acre. In 2004, lands adjacent to these areas sold for about \$120,000 per acre and recent conversations with nearby land owners indicate their expectation that land values in the area now approach \$200,000 per acre. Acquisition of the land with values approaching \$200,000 per acre is needed to prevent the extinction of the rare plants, but insufficient funds are being collected by the County’s fee program to raise the funding necessary to acquire this significant

¹ See for example, an article on assessing oak woodland habitat in Placer County (<http://danr.ucop.edu/ihrmp/Oaks%20N%20Folks%20Final%200807.pdf>) or contact Placer County directly for the specific procedures they use to assess oak woodland habitat.

#28
pg 7

habitat. The existing ordinance for the rare plant fee program (Chapter 17.71) says that fees will be reviewed annually, but such a review has never occurred. This situation with the rare plant fee mitigation program illustrates the various steps that need to be addressed in the DOWMP. A specific process for reviewing fees with criteria to direct adjustments needs to be included in the DOWMP.

IV. The Proposed Mitigation Fee is Too Low

The proposed mitigation fee is based on land values for rural properties 40 acres or greater in size with a conservation easement value of 25% of fee title. The proposed fee of \$7,300 per acre is too low for a number of reasons.

First, the land values are limited to rural lands. As stated above, areas critical to the conservation of oak woodland habitat, that address issues of fragmentation and connectivity, occur in areas closer to community regions. These areas allow for higher intensity uses and as a result are valued at a higher cost per acre. During the general plan adoption process, the high cost of land for mitigation was considered and found to be feasible to implement for residential and commercial development.²

Second, the land values themselves are based only on properties that are 40 acres or larger. Mitigation areas that preserve “existing woodlands of equal or greater biological value as those lost” (FEIR, Chapter 4, p. 4.1-51) may only be located on smaller parcels or parcels where the seller is only willing to participate in a fee title acquisition. For such cases, higher per acre land values need to be factored into the fee structure.

Third, there is no evidence provided to justify setting the conservation easement value at 25% of the appraised value. The prohibited and allowable uses on a conservation easement that protects oak woodland habitat will necessarily prohibit residential and commercial building, road construction, mining, most agriculture, and other land disturbing uses. Limitations also will need to be placed on livestock grazing to ensure that practices do not adversely affect the integrity of the oak woodland habitat. These restrictions significantly reduce the opportunities to “use” the property and therefore significantly reduce the appraised value of the remaining use on the land. Conservation easements that are upwards of 80% of the appraised value are not uncommon. This phenomenon needs to be factored into the fee structure.

The fee structure should be revised upwards to address these points.

² See the general plan Findings of Fact (pp. 123-124) for a discussion of anticipated land values and the finding that such costs were feasible: “For example, undeveloped land prices in the southern part of the County can range as high as \$30,000 per acre.”

V. The Plan Does Not Address Policy 7.4.4.5

General plan Policy 7.4.4.5 specifically addresses on-site conservation of oak woodland connectivity. This policy identifies that:

Policy 7.4.4.5

Where existing individual or a group of oak trees are lost within a stand, a corridor of oak trees shall be retained that maintains continuity between all portions of the stand. The retained corridor shall have a tree density that is equal to the density of the stand.

The DOWMP should identify how this policy is to be implemented in the context of on-site and off-site mitigation for the oak woodland habitat.

VI. The DOWMP Does Not Address All Elements in Measure CO-P

The general plan identified implementation measures for many of the policies. Measure CO-P was adopted to implement Policy 7.4.4.4. One aspect of Measure CO-P – “Thresholds of significance for the loss of oak woodlands” – has not been addressed in the DOWMP. Thresholds of significance need to be established now since oak woodland currently is being lost to development and off-site mitigation allows the wholesale removal of woodland value.

“Important” woodlands need to be defined now since the mitigation ratio may be different than established for Options A or B. Linkage of woodlands across Highway 50 and ongoing fragmentation is “important” and needs to be addressed in the DOWMP. This is especially the case since the general plan requires that the loss of important oak woodland habitat be “fully” mitigated. See also FEIR, Master Response (p. 4.1-50):

In a more general context, Mitigation Measures 5.12-1(d), 5.12-1(e), and 5.12-3(a) direct the County to develop an Integrated Natural Resources Management Plan (INRMP) and to adopt a no-net-loss policy for important habitat. These policies would apply to oak woodland habitat and other biological resources inventoried and mapped as important habitat under the INRMP.

The DOWMP is a subset of the Integrated Natural Resources Management Plan and must, therefore, be consistent with that plan. The County also recognized that the DOWMP was a subset of the INRMP when they signed the settlement agreement on the general plan lawsuit, which stated that:

The County may require development projects to undertake mitigation Option B ...only after the County has adopted the oak woodland portion of the Integrated Natural Resources Management Plan described in General Plan Policy 7.4.2.8.

Deferring the evaluation of “important” oak woodland habitat and assessing their significance while development continues could result in “important” oak woodland habitat being lost. This would be a violation of the general plan since it adopts a no-net-loss standard for protection of important oak woodland. See, for example, Response to Comments on the DEIR for the general plan (p. 4.1-51):

In addition, Mitigation Measures 5.12-1(e) and 5.12-1(j) would require development projects to avoid or, where avoidance is not feasible, to fully mitigate impacts to any oak woodland habitat designated as “important habitat” under the INRMP.

VII. The DOWMP Does Not Comply with General Plan Policy 7.4.2.8

Policy 7.4.2.8 was adopted to mitigate the anticipated impacts from the general plan (Findings of Fact, p. 117). As mentioned above, the DOWMP is a subset of the INRMP that is required by Policy 7.4.2.8. As such, the DOWMP must address the sections of that policy that are relevant to the conservation of oak woodland habitat. As noted below, several aspects of Policy 7.4.2.8 have not yet been addressed by the DOWMP.

Component “A. Habitat Inventory”

It is recognized that the DOWMP is part of the as-yet-to-be completed INRMP; however, there is no explanation of how the DOWMP will be integrated into a future INRMP. Also, in the development of the DOWMP, we are not aware of any coordination or consultation with the County Plant and Wildlife Technical Advisory Committee (PWTAC), California Department of Fish and Game, or U.S. Fish and Wildlife Service. Representatives from our organizations are members of PWTAC. The committee was never consulted about the DOWMP.

Component “B. Habitat Protection Strategy”

The policy states that “The goal of the strategy shall be to conserve and restore contiguous blocks of important habitat to offset the effects of increased habitat loss and fragmentation elsewhere in the county.” Further it identifies that “When feasible, natural undercrossings along proposed roadway alignments that could be utilized by terrestrial wildlife for movement will be preserved and enhanced.” The DOWMP does not provide for contiguous blocks of habitat, but instead proposes a plan that will promote fragmentation of oak woodland habitat. There has been no provision in the current plan to conserve “contiguous blocks of habitat.”

Component “D. Habitat Acquisition”

The policy directs the County to develop “a program for identifying habitat acquisition opportunities involving willing sellers.” The DOWMP has not identified any method for coordinating with potential partners or other organizations on habitat acquisition and management, nor has it identified any potential transaction-related features or regional considerations that would enhance the ability of the County to protect oak woodland habitat. The specific direction to “preserve natural wildlife movement corridors such as crossing under major roadways (e.g., under US Highway 50 and across canyons)” has not been incorporated in the DOWMP.

Component “G. Public Participation”

As noted previously, we are not aware of any consultation during development of the DOWMP with other governmental organizations charged with wildlife protection.

The DOWMP should be revised specifically to address these components.

28
pg 10

VIII. The DOWMP Does Not Comply with General Plan Policy 7.4.2.9

Policy 7.4.2.9, which establishes an Important Biological Corridor (IBC) overlay, also was adopted to mitigate the anticipated impacts from the general plan (Findings of Fact, pp. 127-128). The IBC is intended to address “lands identified as having high wildlife habitat values because of extent, habitat function, connectivity, and other factors.” The policy specifically references areas where the IBC is intended to address the conservation of oak woodland habitat:

higher canopy-retention standards and/or different mitigation standards/thresholds for oak woodlands

standards for retention of contiguous areas/large expanses of other (non-oak or non-sensitive) plant communities

building permits discretionary or some other sort of “site review” to ensure that canopy is retained

Furthermore, several of the elements of this policy identify limitations on development proposals (e.g. “increased minimum parcel size”; “lower thresholds for grading permits”; “more stringent standards for lot coverage, floor area ratio (FAR), and building height”; and “no hindrances to wildlife movement (e.g., no fences that would restrict wildlife movement)”).

Even though the IBC overlay was specifically adopted as a measure to conserve oak woodland habitat and reduce the significant impacts of development on oak woodland habitat, the DOWMP does not include implementation of the IBC in the plan. The DOWMP should be revised to address implementation of the IBC for the conservation of oak woodland habitat.

IX. Restrictions for the Conservation Easements Need to be Specified

The success of the off-site mitigation depends on selecting the appropriate location and on developing the appropriate management. The conservation easement is the tool that will be used to establish the appropriate management of the conserved areas. Conservation of woodlands will require the prohibition of a number of uses such as road construction, subdivision, structural building, agricultural development, and mining. Conservation also depends on limiting practices such as grazing to those times and intensity that benefit the conservation of the woodland habitat.

The oak woodland plan should clearly specify those practices that are generally prohibited or that require intensive management. This statement is important so that those who are considering participating as willing sellers fully understand the limitations that would be placed on the use of their land as a priority conservation area.

X. Conclusion

As stated at the beginning of these comments, we support the policies in the general plan that address conservation of oak woodland habitat. The oak woodland habitat around us contributes to our natural heritage and our rural quality of life. They are important for their biological and aesthetic significance. We ask that you modify the DOWMP in ways that we suggest above in order to meet the intent of the underlying policies.

28
pg 11

We look forward to working with the County to implement the general plan policies related to the conservation of oak woodland habitat. Please contact Sue Britting (britting@earthlink.net; (530) 295-8210) if you have specific questions about these comments.

Sincerely,



Amy Hoffman
President
California Native Plant Society
P.O. Box 1948
Placerville, CA 95667

Karen Pitts
Chair, Maidu Group
Sierra Club
P.O. Box 1515
Placerville, CA 95667



Karen Schambach
President
Center for Sierra Nevada Conservation
P.O. Box 603
Georgetown, CA 95634

Ray Griffiths
El Dorado County Taxpayers for Quality
Growth
P.O. Box 617
Georgetown, CA 95634

#28
/ 12
pg

ATTACHMENT 1
Plant Species Associated with Blue Oak and Black Oak woodland habitat

Plants known to be associated with the black oak series and blue oak series throughout California as described by Sawyer and Keeler-Wolf (1995)³.

Black Oak Series (statewide)

- Acer macrophyllum*
- Arbutus menziesii*
- Arctostaphylos patula*
- Calocedrus decurrens*
- Ceanothus integerrimus*
- Holodiscus discolor*
- Pinus attenuata*
- Pinus jeffreyi*
- Pinus ponderosa*
- Pseudotsuga menziesii*
- Pteridium aquilinum*
- Quercus agrifolia*
- Quercus chrysolepis*
- Quercus kelloggii*
- Quercus lobata*
- Styrax officinalis*
- Toxicodendron diversilobum*
- Triteleia laxa*
- Umbellularia californica*

Blue Oak Series (statewide)

- Amsinckia intermedia*
- Arctostaphylos viscida*
- Bowlesia incana*
- Bromus diandrus*
- Ceanothus cuneatus*
- Cercocarpus betuloides*
- Collinsia sparsiflora*
- Delphinium parryi*
- Ericameria linearifolia*
- Eriogonum elongatum*
- Erodium moschatum*
- Euphorbia spathulata*

³ Sawyer, J. O. and Keeler-Wolf, T. 1995. A Manual of California Vegetation. California Native Plant Society.

Galium andrewsii
Hordeum leporinum
Juniperus occidentalis
Lithophragma affine
Lithophragma cymbalaria
Lotus subpinnatus
Lupinus concinnus
Pentagramma triangularis
Phacelia imbricata
Pinus sabiniana
Plagiobothrys nothofulvus
Plantago erecta
Quercus
Quercus agrifolia
Quercus douglasii
Quercus lobata
Quercus wislizenii
Ribes californica
Rigiopappus leptocladus
Stipa lemmonii
Stipa pulchra
Trifolium ciliolatum
Viola pedunculata

Shrubs and trees known to be associated with the black oak woodlands and blue oak woodlands in El Dorado County as described by consulting botanist Annie Walker.

EL DORADO COUNTY: SHRUBS & TREES in BLUE OAK

Adenostema fasciculatum
Aesculus californica
Arctostaphylos viscida
Ceanothus cuneatus
Ceanothus lemmonii
Ceanothus roderickii
Cercis occidentalis
Pinus sabiniana
Quercus douglasii
Quercus lobata
Quercus wislizenii
Rhamnus tomentella
Salix exigua
Styrax redivivus
Toxicodendron diversilobum

28
p 14

EL DORADO COUNTY: SHRUBS & TREES in BLACK OAK

- Abies concolor*
- Aesculus californica*
- Arctostaphylos nissenana*
- Arctostaphylos viscida*
- Baccharis pilularis*
- Calocedrus decurrens*
- Ceanothus cuneatus*
- Ceanothus leucodermis*
- Eriodictyon californica*
- Heteromeles arbutifolia*
- Pinus lambertiana*
- Pinus ponderosa*
- Pinus sabiniana*
- Populus balsamifera ssp. trichocarpa*
- Pseudotsuga menziesii*
- Quercus chrysolepis*
- Quercus kelloggii*
- Quercus lobata*
- Quercus X morehaus*
- Quercus wislizenii*
- Salix gooddingii*
- Sambucus mexicana*
- Toxicodendron diversilobum*
- Vitis californica*