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RANGELAND COVER TYPE DESCRIPTIONS

FOR CALIFORNIA HARDWOOD RANGELANDS

REVIEW DRAFT

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STATE OF CALIFORNIA

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TABLE OF CONTENTS

Executive Summary ii
Acknowledgements iii
Introduction 1
Project Methods and Accomplishments by Task 2
Task 1: Literature Review 2
Task 2: Classification Criteria 3
Task 3: The Classification System 4
Introduction 4
Methods 6
Discussion 12
Task 4: Peer Review/Field Trials 13
Task 5: Publication of the Descriptions/Recommendations for Updating the Classification System 14

Overview of the Types by Oak Series 15
Keys to the Types 60
Hardwood Rangeland Site Descriptions 77

Literature Cited 305

Appendices
Appendix 1: Comparison of Existing Classifications....310
Appendix 2: Vegetation Codes.....312
Appendix 3: Vegetation/Environmental Attributes used in Classification.....315

EXECUTIVE SUMMARY

This hardwood rangeland classification system for California provides private landowners, land managers, and researchers a unifying framework from which known ecological and management information can be retrieved. Standardization of type names facilitates the exchange of information on hardwood rangelands between and among agencies, landowners, and universities. The dichotomous keys to the type descriptions ensure that the system is field oriented, and user-friendly.

The classification system consists of 57 subseries arranged hierarchically within 7 Series. The oak series are defined by the dominant oak species present on the site. A Mixed Oak Series is also defined from sites which contain 3 or more species of oak at constancies of greater than 30 percent. This system does not include subseries descriptions for Engelmann or garry oak types.

The classification system was developed from approximately 4300 plots collected as part of the Vegetation Type Map (VTM) survey conducted during 1919-1940's by the USDA Forest Service Pacific Southwest Station, and approximately 500 plots collected as part of the Forest Inventory conducted by the USDA Forest Service Pacific Northwest Station in the 1970's and 1980's. The base information on species composition, percent cover by species, tree stand structure and environment was collected on 1/5 acre plots. Species cover was determined from two line transects on each plot.

The classification structure was developed using TWINSPAN, a polythetic, divisive classification program developed by Hill (1979). Further analyses were done using DECORANA, and frequencies, regression, and analysis of variance. The information contained in the final type descriptions was developed from VTM data only.

The classification is designed to be user friendly. At a site, the user will use the appropriate key to determine the type, and read the type description to determine if the information provided in the description matches what the user is observing.

The keys and type descriptions have been field tested and verified at several locations in the State, such as Hopland Field Station, Sierra Field Station, Hastings Reserve, and the San Joaquin Experiment Station. The tests were conducted by individuals familiar with hardwood rangeland ecosystems and those who were not. Ongoing use of the keys and descriptions in other parts of the State will provide information for further refinement of keys and descriptions. Additional information on potential productivity and response to management will be incorporated into the descriptions by users as they identify the types that they are working in by the classfication subseries names.

ACKNOWLEDGEMENTS

It has been a 2.5 year project to develop an ecologically based hardwood rangeland classification system for California. The project could not have been completed without the dedicated help of many people. I offer my heartfelt thanks to all of them.

Irene Timossi provided the continuity in data base management. Her programming skills, willingness to write new, crucial programs, and willingness to train us over and over again on how to manipulate the data allowed the data analysis to proceed.

Others helped with the project early on. Wilde Legard, now with East Bay Regional Parks, provided excellent and crucial initial data base management and programming skills. Stephanie Fulton, currently with Pacific Meridian Resources, entered data from the VTM sheets to the computer for about 5 months. Gene Forsburg, also of Pacific Meridian, provided input on the public meeting for review of classification criteria. Students Claudio Gonzales, Fred Hempel, and David Lopez did initial transcribing of old VTM plot records to new ones in preparation for computerization, a thankless task that they and the authors did over a period of 7 months. Tom Jimerson, student and Forest Service employee, provided interim, and again crucial because of timing, TWINSPAN data analysis of Forest Survey and Soil Veg Survey plots through the USDA Forest Service Pacific Southwest Station and Ft. Collins computer facility.

I would also like to thank Charles Bolsinger and the USDA Forest Service Pacific Northwest Station for use of their Forest Inventory plots. Robert Powell, Univ. California, Davis, provided us with the California list of the National Standard EDP codes for plant species, which we have used throughout the document. The Jepson Herbarium, University of California, Berkeley, provided us with access to the VTM plot data.

I would like to thank the many field reviewers listed on page 13, and James Bartolome and Mark Borchert for editing and reviewing manuscripts as well. Their attention to the descriptions and keys helped make the document even more user friendly. Finally, I would like to thank David Diaz, my husband, colleague, and friend, who provided useful insight, criticism, and laughter at almost all the appropriate times.

INTRODUCTION

Hardwood rangelands occupy approximately 3 million hectares in California. They occur in 52 of the state's 58 counties, and span fully eight degrees of latitude west of the Sierra Nevada (Mayer et al. 1986). As might be expected in a state as ecologically diverse as California, hardwood rangelands support at least a dozen major tree species and many shrub and herbaceous species which occur in a myriad of combinations.

Since 1980, a number of trends have increasingly focused public attention on hardwood rangelands. These include:

* continuing population growth which has resulted in conversion of wildlands to urban or semi-urban uses or agriculture,

* increasing fuelwood use by households and industry,

* loss of wildlife habitat in hardwood rangelands,

* increasing oak cutting by ranchers to compensate for declining beef prices,

* recognition of recruitment problems in riparian, valley oak, Engelmann oak, and blue oak ecosystems,

* recognition of potential environmental impacts associated with the unregulated removal of hardwood trees, and

* increasing allocation of research effort to study of the hardwood rangeland type.

Given the extent, diversity and increasing importance of California's hardwood rangelands, a classification system was developed to identify and array opportunities for sound land management. The system is ecologically based, developed from over 5000 plots collected during the Vegetation Type Map program beginning in the 1920's, the Soil Vegetation Survey program of the 1940's, and the USDA Forest Service Pacific Northwest Station's Forest Inventory program beginning in the 1970's.

The proposed system is field-user oriented, but is linked to existing statewide systems used on public rangelands. The identification and description of hardwood rangeland cover types provides land owners and managers with a unifying framework from which known ecological and management information will eventually be accessed. In addition, the cover type framework provides logical units for aggregating information developed through other ecological site description efforts (such as the Forest Service), research, and landowner experience. Also, the cover type

classification provides standardized names to facilitate the exchange of information between agencies, landowners and universities. The classification system, with keys for field use, provides landowners and agencies with a tool to improve predictions about site capabilities. Secondary benefits from use of this system are in mapping and policy analysis.

Objectives of the classification project are:

1. Develop rangeland cover type descriptions for California's hardwood rangelands, which would allow landowners, advisory agencies, and resource managers to classify and map hardwood rangelands.

2. Examine and incorporate current ecological and management information in rangeland cover type descriptions, as available.

3. Provide dichotomous key, in field handbook format, for field identification of cover types by local landowners, researchers, and resource managers.

4. Develop hierarchical links, based on cover types, that will serve as a unifying framework and allow application, in general format, to hardwood rangelands throughout the state.

5. Provide a plan for a statewide hardwood rangeland data base, by providing methodology for further evaluation, testing and refinement of the cover type classification.

The project includes 5 tasks. Task 1 required a review of existing classification systems meeting objective 4. Accomplishment of tasks 2 and 3, selecting classification criteria and developing the classification system, meets objectives 1, 2, and 3. Task 4, which required field testing and review of the system, provides sound feedback on the utility of the proposed system. Finally task 5, publication of results and recommendations for updating the system, meets objective 5. In the following section, each task will be stated as given in the original contract, and the methodology and results of task accomplishment are discussed.

PROJECT METHODS AND ACCOMPLISHMENTS BY TASK

TASK 1: Existing classification systems, data bases, and ecological literature for California forest and rangelands will be reviewed and arrayed.

Twenty-five existing classification systems for hardwood rangelands were reviewed and compared for the attributes each system used to distinguish types as well as attributes authors used in their type descriptions (appendix 1). Existing systems

are diverse, some apply only to local geographic areas within California (Howitt 1964), others are statewide systems (Barbour and Major 1977), while still others are global in scope (UNESCO 1973). Some systems are strictly descriptive, others include quantitative data, i.e. forage quality. Most of the existing systems are based on existing vegetation, but a few are based on potential vegetation. At one extreme, Passof et al. (1985) distinguished 32 types based on dominant species cover, geographic location, and slope. Plumb and McDonald (1981), on the other hand, described only 3 types for a statewide system, and based their classification on present vegetation dominant species, geographic location, and elevation range. They also included information on frost free period, mean annual precipitation and mean temperature.

Some systems, such as Weislander (1935) and Jensen (1947) were developed as part of statewide mapping projects and are not included in appendix 1. Other data bases, such as Wildlife Habitat Relationships (Timossi 1989) may provide useful supporting information to expand the currently proposed type descriptions.

TASK 2: Select the classification criteria.

The classification criteria used to distinguish hardwood rangeland types were developed after (1) a review of the literature on existing classification systems; (2) an examination of attributes available in the existing data sets; and (3) a full day meeting of hardwood rangeland experts, who reviewed existing systems and the available data bases.

During the meeting, primary discussion revolved around 1) the spatial and compositional level of resolution that would be possible in the classification system given the level of detail in the data sets, and 2) the lack of successional and productivity information available to be incorporated in classification descriptions. During the discussion of existing classification systems, advantages of the Passof et al. (1985) system were clearly identified. These included: 1) the system uses a few easily recognizable variables; 2) it is easily tied to management objectives; and 3) common sites are easily agreed upon. The disadvantages centered on the system's broadness and lack of predictive information from which a manager could predict management outcomes.

Meeting participants concluded that an ideal system would 1) consist of a few variables and be easy to use, 2) adequately predict the effects of management activities, and 3) be ecologically based.

The environmental/vegetative attributes finally selected for classifying the cover types are listed in appendix 3. The primary classification variable was percent cover or basal area (as an index to cover) of the dominant plant species. Secondarily, environmental variables were used to refine initial types based on species cover. Thus, significant differences in kinds/proportions of plant species, elevation, geographic location, slopes, and aspects were the main variables used to distinguish cover types.

Even though, many variables were used to distinguish the classification units, the final product is simple to use because each type can be identified through the use of accompanying dichotomous keys. Use of each key requires that the field user know about a dozen plant species. The system is ecologically based, incorporating all known plant species and attributes of the environment in which they live. Finally, the framework will allow for the collection, storage and retrieval of research and anecdotal information on community response to management activities.

Task 3: The Classification System

Introduction

Classification systems of vegetation, soil, habitats, and ecosystems are used by resource managers to group information by some unit. The units are labelled and described so that managers can use them to measure land area, plan treatments, conduct inventories, and aggregate information. Classification units can be broad or site specific, oriented to a single resource or to multiple resources, used widely or locally, or be based on multiple factors or on a single factor (Allen 1987).

All classifications are artificial, but should describe or distinguish natural units. Units are typically identified and described to meet a specific need and are distinguished from each other by specific criteria. Natural classification units, such as habitat types or ecological types, as a subset of artificial classification, are generally based on natural relationships and serving a larger number of purposes (Pfister and Arno 1980).

Cover types are groupings of similar vegetation that are either stable or transitory in nature. Some cover types have occupied an area for long periods, while others are temporary occupants of disturbed sites, and through succession gradually give way to more stable cover and ultimately to a potential natural community.

An ecological type is defined as "a kind of land with a specific potential natural community and specific physical site

characteristics, differing from other kinds of land in its ability to produce vegetation and to respond to management" (RISC 1983). Ecological sites are site specific units based on late seral, stable vegetation and identified by the application of the following criteria: significant differences in kinds and proportions of plant species in the potential natural community, significant differences in production, and significant differences in soil properties, slope, and topographic position reflecting different use potentials (RISC 1983). The creation of an ecological site classification system requires sophisticated and lengthy field data collection and analysis techniques, and is beyond the scope of this project.

However, the identification and description of hardwood rangeland cover types will provide land owners and managers with a unifying framework from which known ecological and management information can be assessed. In addition, the cover type framework will provide the logical units for aggregating information developed through ecological site description efforts, research, and land owner experience. Also, the cover type classification will provide standardized names to facilitate the exchange of information between agencies, land owners, and universities. The classification system, with keys for field use, will also provide land owners and agencies with a tool to improve predictions about site capabilities.

Previous classification efforts have developed broad level descriptions of hardwood rangelands as part of efforts to classify California vegetation (Weislander 1935, Jensen 1947, Munz and Keck 1968, Cheatham and Haller 1975, Barbour and Major 1977, Eyre 1980, and Paysen et al. 1980 to name a few). Such cover type descriptions are broad, have varying amounts of ecological information, and provide reasonable potential for establishing a hierarchical framework. For example, Eyre (1980) describes 4 hardwood cover types: California Black Oak (SAF 246), Canyon Live Oak (SAF 249), Blue Oak-Digger Pine (SAF 250), and California Coast Live Oak (SAF 255). Griffin, in Barbour and Major (1977), provides additional information on oak woodlands in his description of 7 types: foothill woodland, valley oak, blue oak, north slope, interior live oak, Engelmann oak, and coast live oak.

However, none of the existing classification systems covering hardwood rangeland types provide a statewide, ecologically based, unifying framework with keys to identify types. The attached classification of California hardwood rangelands provides that framework.

Methods

The development of the classification system was accomplished through a series of steps. Although three data bases were used (table 1), the classification structure relies most heavily on original field plots from the Vegetation Type Map project taken during the 1920's and 30's.

Initially, the USFS Pacific Northwest Station's Forest Inventory (FI) plots were examined to identify major hardwood rangeland types throughout the state. The forest inventory plots were collected throughout California by Charles Bolsinger of PNW, and his field crews. The plot records contain detailed information of species composition, as well as information on tree growth, and environmental conditions, such as elevation, slope, aspect, etc. The plot data for the state was received on floppy disks and subsequently reduced to approximately 750 plots containing Quercus species.

The distribution of FI plots is displayed in figure 1. Most of the oak plots are distributed in the northwest portion of the state, although a fair number are found in the northern Sierra Nevada.

The second data set, which was initially evaluated, was supplied by the Soil Vegetation Survey (SVS). This set contained approximately 125 records containing information on species composition and environmental variables. This set was recoded to standardize codes between the FI plots and the SVS plots. Then both data sets were combined for joint analyses. The distribution of SVS plots is displayed in figure 1.

Finally, field plot records from the Vegetation Type Map (VTM) project of the 1920's and 1930's were used as the basis for classification of hardwood rangeland cover types. The plots were collected as part of the statewide effort to map vegetation (Jensen 1947). The plot records contain information on plant species cover of the understory, tree stand structure (number per diameter class), elevation, slope, aspect, parent material and other environmental variables. Table 2 compares the variables contained in the three data sets.

All plant species were coded using national standard codes based on the first two letters of the genus and first two letters of the species (Powell 1987). A number is given after the four letters to distinguish between species having the same letter code. All plant species by scientific and common name, and their code are listed in Appendix 2.

Table 1. NUMBER OF PLOTS BY DATA BASE WITHIN EACH COUNTY.

COUNTY	DATA BASE FOREST INVENTORY	SOIL-VEG	VTM	COUNTY	DATA BASE FOREST INVENTORY	SOIL-VEG	VTM
Alameda	2	-	38	Orange	-	-	9
Alpine	-	-	-	Placer	15	-	69
Amador	10	-	83	Plumas	8	2	20
Butte	26	9	30	Riverside	1	-	7
Calaveras	22	10	314	Sacramento	-	-	7
Colusa	-	-	-	San Benito	4	-	155
Contra Costa	2	-	57	San Bernadino	1	-	69
Del Norte	15	3	-	San Diego	6	-	29
El Dorado	25	-	269	San Francisco	8	-	-
Fresno	10	11	56	San Joaquin	1	-	9
Glenn	-	3	-	San Luis Obispo	6	-	487
Humboldt	136	10	-	San Mateo	6	-	57
Imperial	-	-	-	Santa Barbara	-	-	143
Inyo	-	-	-	Santa Clara	6	-	343
Kern	14	-	68	Santa Cruz	11	-	109
Kings	-	-	6	Shasta	71	21	242
Lake	7	3	-	Sierra	3	-	21
Lassen	6	-	-	Siskiyou	28	-	2
Los Angeles	-	-	20	Solano	-	-	23
Madera	5	-	40	Sonoma	33	2	13
Marin	1	-	16	Stanislaus	1	-	42
Mariposa	9	-	297	Sutter	-	-	25
Mendocino	133	3	16	Tehama	18	21	3
Merced	-	-	19	Trinity	33	1	-
Modoc	1	-	-	Tulare	9	1	24
Mono	2	-	-	Tuolumne	13	1	468
Monterey	5	-	360	Ventura	-	-	34
Napa	9	-	50	Yolo	1	-	-
Nevada	11	-	89	Yuba	-	-	-

Figure 1. Number of Plots by Data Base within each County

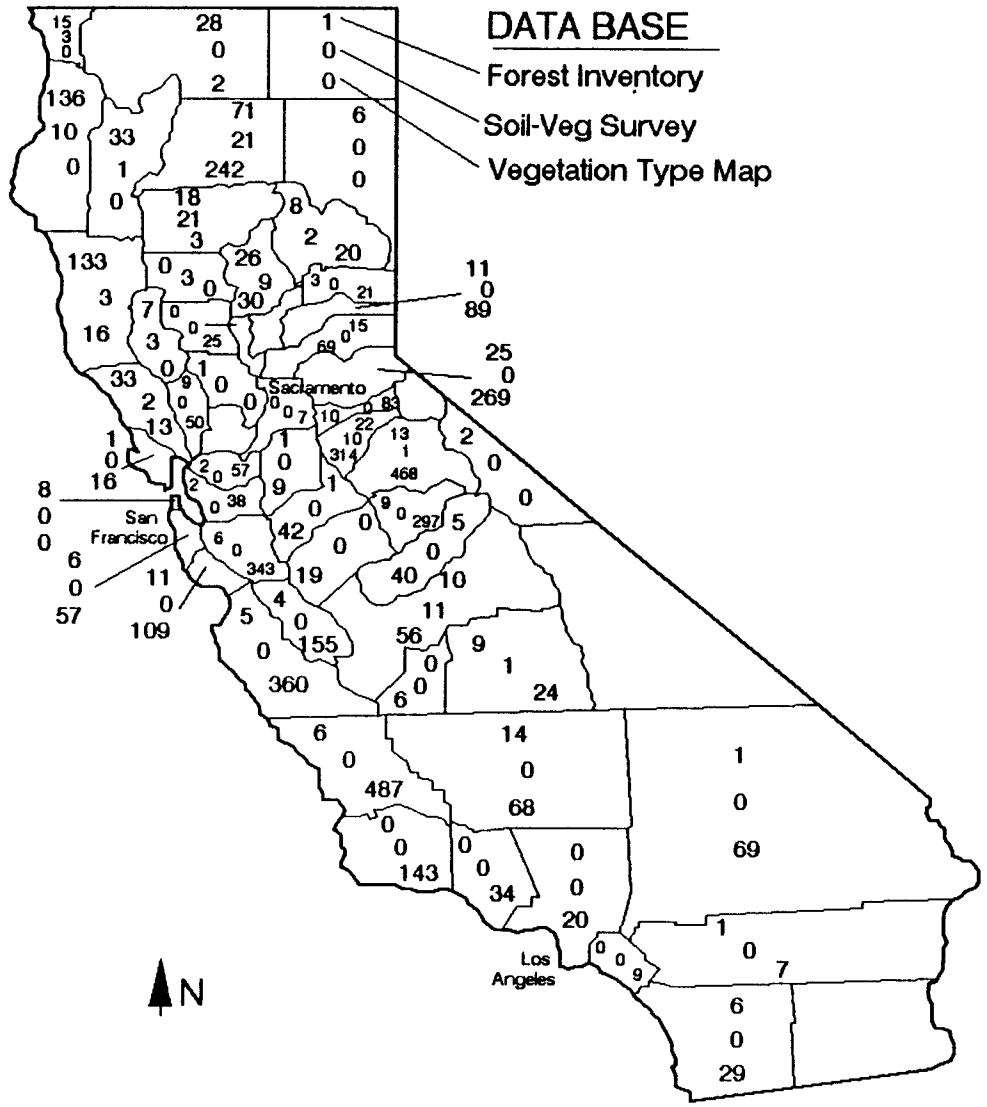

Table 2. Data Elements contained within a specific data base. (X = has information, - = no data, s = spotty)

Variable	Forest Inventory (PNW)	Soil/Veg Survey (SVS)	Vegetation Type Map (VTM)
Quad	X	X	X
Plot	X	X	X
County	X	X	X
Township	X	X	X
Range	X	X	X
Section	X	X	X
Plot Date	-	-	X
Elevation	X	X	X
Aspect	X	X	X
Slope	X	X	X
Precipitation	-	X	-
Topography	X	X	-
Soil Series	-	X	-
Parent Material	-	X	X
Permeability	X	X	X
Drainage	-	X	-
Surface stoniness	-	X	-
Exposed bedrock	-	X	-
Plant species code	X	X	X
% species cover	X	X	X
Layer	-	X	X
DBH class	X	-	X
Year since burn	-	-	s
Site index	-	-	s
Species Ht	X	-	s
Number of plots	725	127	4300+
(# includes LIDE2)	Yes	Yes	No

Approximately 5000 plots from the VTM data set contained Quercus species. The plots are widely distributed in oak types throughout the state (figure 1), although few plots exist in Engelmann oak or garry oak types. Again the first step was to standardize the coding of the VTM plots to match the FI and SVS plots, and convert the plots from paper records to the computer. Plant species on VTM plots were also recorded using an old and currently unused system, and thus had to be carefully recoded to current national standard plant species codes. This process took approximately 7 months to search the 8000+ paper VTM records, pull out plots with oaks (approximately 5000), find the species name and convert old codes to new, and computerize and clean the data base. The original VTM plots are on file at the Jepson Herbarium, University of California, Berkeley.

Once the data bases were established on RBASE (1985), analyses could begin. Later the data base was converted to DBASE IV (1988) to facilitate manipulation of the huge number of plot records. A computer programmer worked part-time on the project and wrote specific PASCAL programs to facilitate downloading of plot records to use in different analyses packages.

The FI/SVS and VTM data sets were analyzed separately and then compared visually. Initially both data sets were treated the same as described below. In later analyses, however, we concentrated on the VTM data set.

The analysis strategy was to first look for patterns in plant species distribution to be able to identify plant communities. TWINSPAN (Hill 1979), Two-Way Indicator Species Analysis, was the analytical tool used in this first step. Because of the large number of plots in the VTM data set, the plots were initially divided into 4 large geographical regions; the central-south coast range, the lower elevation central and southern Sierra Nevada, the higher elevation central and northern Sierra Nevada, and the northern Sierra, Klamath mountains, and north coast range. TWINSPAN was used to examine each of these geographic regions and the FI/SVS data sets independently.

Results indicated patterns in plant communities at the Series level, that is based on dominance of individual oak species. The FI/SVS data set consisted of primarily tanoak, some garry oak, and conifer types and thus was not analyzed further, until the VTM set was analyzed in detail. The VTM data sets (4 geographical regions) were then re-analyzed using TWINSPAN, combining plots that contained similar oak species dominance regardless of their original geographical region.

At this stage, DECORANA (detrended correspondence analysis, Hill 1979) was used to array plots from the vegetation types distinguished in TWINSPAN to examine relationships between types,

through environmental gradients. Simultaneously, regression and discriminant analyses in SPSSPC+ (Norusis 1986) were used to evaluate the environmental characteristics of the types that could be used to explain the community distribution. Major oak series were distinguished including coast live oak, interior live oak, blue oak, black oak, valley oak, scrub oak, and a mixed oak series that contained 3 or more oak species.

A period of continuous feedback analysis began as each oak series was then reanalyzed independently using TWINSPAN, DECORANA, regression and discriminant analysis techniques and plots were juggled between types making individual types became more homogeneous. Oneway ANOVA (Norusis 1986) was used to compare mean differences in species basal area or cover, and other environmental attributes between types. Finally, several individual counties were analyzed separately to see if the same patterns in community types would hold true.

Plant species coding problems became apparent throughout the analyses as unusual "types" appeared. Often, the species codes were traced back to the original VTM plot cards, and errors in identification were corrected. The "unusual type" plots were then correctly classified. However, other errors in the data set originated from original data collection and coding problems, our conversion of old codes to new plant species codes, and data entry errors. Field testing, re-analysis, the large number of plots, and common sense have minimized any impact on the classification system from coding errors.

Plant community type keys were constructed for each oak series. The primary objective of key construction was to develop an accurate, easy-to-use key to aid field users in the correct identification of cover types. Thus, a few characteristic species and environmental attributes were used in the keys for each series. A key to the series was also constructed.

Descriptions were written for each rangeland cover type or subseries. The term subseries is used to describe the appropriate hierarchical level of the described hardwood types. Since site specific response to management has not been used as a criteria in classification, nor was a complete species list (including all herbaceous species) available, the cover types described in this report cannot be called ecological types. However, the types described in this report incorporate more ecological information than any other system to date, and are thus at a finer level of resolution than Series. Subseries, though unused before, is the appropriate classification level.

Each description contains the type name, number of plots used to describe the type, location information, environmental setting, and plant species. Additionally, a stand table is given for the

tree species. Since the descriptions are founded on old plot data, the original units are used, without conversion to metric.

Keys and descriptions were then field tested as described in Task 4. Difficulties in use of the keys, format problems in the description, and errors in plant species coding were evaluated, discussed, and corrected as appropriate. This process often resulted in additional analyses of several subseries types within an oak series. The analyses may have included TWINSPAN and DECORANA analyses, and combining or splitting of types.

DISCUSSION

The keys and descriptions for hardwood rangeland cover types follows an overview of each oak Series. The document does not contain garry oak, Engelmann oak, or tanoak plant community types. In addition, users may find themselves in oak cover types that are not described within the classification system. This may be because the data set used to develop the classification did not contain examples of the type. Specific examples are described in the overview of types.

Field checking and discussion with oak woodland experts indicate that the classification should apply to at least 80% of the oak woodland series that exist. New types will be added to the system as appropriate, as documented by field work and analysis. Information on tree and understory productivity, wildlife habitat, and potential responses to management treatments for existing types will be added as information becomes available from the literature and research.

Users must know approximately a dozen plant species to use the keys to the hardwood rangeland subseries. Since keys are only a tool in identifying the type, users must also read the type description to verify that he/she has correctly identified the type. If the description does not fit with what the user is seeing on the ground, he/she should go back through the key and check alternative routes.

The rangeland cover types have all been given a name (and number). The name is composed of the dominant species of the tree, shrub, or herbaceous layer. The species having the greatest constancy (presence) across all plots representing the type is used in the name. A slash (/) is used to separate species of different life forms, and a dash (-) is used to separate species of the same life form.

Scientific species names, common names, and codes come from Munz and Keck 1968, and Powell 1987. Appendix 2 lists the plant species and codes used in this report. Notations on elevation and soils are given in feet. Basal area is given in square feet

per acre. Appendix 3 displays the codes for environmental variables.

Constancy is expressed in percent as the number of plots in a type which contain a specific number of species divided by the total number of plots used to describe the type.

Task 4: Peer review and field trials of the classification system.

The classification system was reviewed by a number of hardwood experts as well as individuals unfamiliar with hardwood rangeland ecosystems in several areas in the state. The review consisted of a discussion of the classification structure, instructions on how to use the system and keys, and field review and evaluation of the keys and type descriptions.

After field review, the classification was refined as appropriate by re-working the keys and carrying out additional analysis if necessary. The process of field review took place from January through May, 1989.

The keys and descriptions were reviewed and tested by the following individuals/groups and areas:

Robert Schmidt (UC Ext.) Robert Tim (Director) Pam Muick (UCB) UCB Forest ecology class UCB Rangeland assessment class	Hopland Field Station
Mike Connors (Director) Doug McCreary (UC Ext.) Mel George (UC Davis) Ted Adams (UC Ext.) Randy Godden (USFS) Jerry Rio (SCS)	Sierra Field Station
Ken Fulgham (Humboldt) HSU Rangeland assessment class UCB Rangeland assessment class	Sierra Field Station
James Griffin (Ecologist) Mark Borchert (USFS) David Diaz (USFS)	Hastings Reservation (UCNRS)
William Frost (Director) Neil McDougald (UC Ext.)	San Joaquin Experimental Range
James Bartolome (UCB) Rick Standiford (UC Ext.)	San Luis Obispo county/Bay area

Task 5: Publication of the Descriptions/Recommendations for Updating the Classification System

The written report includes an introduction to classification, accomplishments by task, methods, the classification system itself, dichotomous keys to the types, and interpretive materials. According to the contract manager, this entire report will be available through CDF FRRAP as part of the Integrated Hardwood Program publication series. In addition, the keys and type descriptions be available to users throughout the state in a separate document, too.

I intend to publish sections of the keys and type descriptions in refereed journals, with as much management response information attached to the descriptions as possible. In addition, these articles will fully integrate existing research information on a particular series, which can serve as a model for updating the type descriptions.

I suggest that initially the type descriptions should be updated annually as oak research continues. For example, information that I collect as part of ongoing research on vegetation change in oak woodlands will provide important information on specific subseries. If other researchers conducting projects with Integrated Hardwood Program monies are required to label their research sites with the classification system labels, their results will be able to be incorporated into the subseries description.

Right now data on tree productivity, understory productivity, and wildlife species are available for certain types, but the researchers did not have this classification system available to label their sites when they conducted their research. For example, Rick Standiford and Norm Pillsbury may have tree productivity data for specific subseries. Similarly, Mike Morrison has large amounts of wildlife information that could be tied to these subseries. Mel George's understory productivity data base is another potential source of important information that could be tied to the current type descriptions. I suggest that these researchers and data sets be canvassed for incorporating important management information into the classification system subseries descriptions.

OVERVIEW OF THE OAK WOODLAND SERIES

The hardwood rangeland of California is divided into 57 subseries arranged hierarchically within 7 Series. The Oak Series are defined by the dominant oak species present on the site. A Mixed Oak Series is also defined by sites which contain 3 or more species of oak at constancies of 30 percent or more. Sometimes in order to facilitate user friendliness, a subseries is listed in two Series and can be keyed from either Series' key. The seven Series and their associated subseries are listed below:

QUAG SERIES (common name and code name)

Coast Live Oak-California Bay/Toyon-Scrub Oak
QUAG-UMCA1/HEAR2-QUDU2
Coast Live Oak/Blackberry/Bracken Fern
QUAG/RUVI2/PTAQ
Coast Live Oak-Maple/Coffeeberry-Ocean Spray
QUAG-ACMA/RHCA2-HODI
Coast Live Oak-Madrone/Hazelnut-Blackberry
QUAG-ARME3/COCO5-RUVI2
Coast Live Oak
QUAG
Coast Live Oak/Grass
QUAG/GRASS
Coast Live Oak/Toyon-Poison Oak
QUAG/HEAR2-RHDI
Coast Live Oak/Poison Oak/Grass
QUAG/RHDI/GRASS
Coast Live Oak/Poison Oak
QUAG/RHDI
Coast Live Oak/Coffeeberry-Toyon
QUAG/RHCA2-HEAR2
Coast Live Oak/Toyon/Grass
QUAG/HEAR2/GRASS
Coast Live Oak/Chamise-Black Sage
QUAG/ADFA-SAME4
Coast Live Oak/Coast Sagebrush/Grass
QUAG/ARCA7/GRASS
Coast Live Oak/Ocean Spray-Snowberry
QUAG/HODI-SYRI
Blue Oak-Coast Live Oak/Grass
QUDO-QUAG/GRASS

QUDO SERIES (common name and code name)

Blue Oak/Grass
QUDO/GRASS
Blue Oak-Understory Blue Oak/Grass
QUDO-UQUDO/GRASS

Blue Oak-Digger Pine/Grass
QUDO-PISA2/GRASS
Blue Oak-Digger Pine/Wedgeleaf Ceanothus-Mt. mahogany
QUDO-PISA2/CECU2-CEBE2
Blue Oak-Digger Pine/Whiteleaf Manzanita/Grass
QUDO-PISA2/ARVI3/GRASS
Blue Oak-Valley Oak-Coast Live Oak/Grass
QUDO-QULO-QUAG/GRASS
Blue Oak/Haplopappus
QUDO/HALI
Blue Oak-Valley Oak/Grass
QUDO-QULO/GRASS
Blue Oak-Coast Live Oak/Grass
QUDO-QUAG/GRASS
Blue Oak-Interior Live Oak/Grass
QUDO-QUWI/GRASS
Blue Oak/Wedgeleaf Ceanothus/Grass
QUDO/CECU2/GRASS
Interior Live Oak-Blue Oak-Digger Pine
QUWI-QUDO-PISA2

QULO SERIES (common name and code name)

Valley Oak/Grass
QULO/GRASS
Valley Oak-Coast Live Oak/Grass
QULO-QUAG/GRASS
Coast Live Oak-Valley Oak/Poison Oak
QUAG-QULO/RHDI
Blue Oak-Valley Oak/Grass
QUDO-QULO/GRASS
Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
MO-QULO/RHDI-RHCA2
Black Oak-Valley Oak/Grass
QUKE-QULO/GRASS

QUWI SERIES (common name and code name)

Interior Live Oak/Toyon
QUWI/HEAR2
Interior Live Oak/Whiteleaf Manzanita
QUWI/ARVI3
Interior Live Oak-Digger Pine/Manzanita
QUWI-PISA2/ARMA3

Interior Live Oak-Blue Oak-Digger Pine
QUWI-QUDO-PISA2
Interior Live Oak/Yerba Santa/Grass
QUWI/ERCA6/GRASS
Interior Live Oak-Madrone/Poison Oak
QUWI-ARME3/RHDI

QUKE SERIES (common name and code name)

Black Oak/Poison Oak
QUKE/RHDI
Black Oak/Greenleaf Manzanita-Mtn. Whitethorn
QUKE/ARPA9-CECO2
Black Oak/Deerbrush
QUKE/CEIN3
Black Oak/Grass
QUKE/GRASS
Black Oak/Poison Oak-Calif. Storax/Grass-nut
QUKE/RHDI-STOFC/BRLA2
Black Oak/Bracken Fern-Deerbrush-Poison Oak
QUKE/PTAQ-CEIN3-RHDI
Black Oak-Canyon Live Oak/Deerbrush-Poison Oak/Grass
QUKE-QUCH2/CEIN3-RHDI/GRASS
Black Oak-Coast Live Oak-Beach Pine/Ocean Spray-Poison Oak
QUKE-QUAG-PICO1/HODI-RHDI
Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon
QUKE-ARME3-QUAG/RHDI-HEAR2
Mixed Oak-Coast Live Oak/Poison Oak
MO-QUAG/RHDI
Black Oak/Poison Oak/Grass
QUKE/RHDI/GRASS
Canyon Live Oak-Black Oak
QUCH2-QUKE
Black Oak-Valley Oak/Grass
QUKE-QULO/GRASS

QUDU2 SERIES (common name and code name)

Scrub Oak-Blue Oak/Grass
QUDU2-QUDO/GRASS
Scrub Oak/Grass
QUDU2/GRASS
Scrub Oak
QUDU2

MIXED OAK SERIES (3 or more Quercus sp. @ >30% constancy)

Mixed Oak-Interior Live Oak-Digger Pine
MO-QUWI-PISA2
Interior Live Oak/Toyon
QUWI/HEAR2
Mixed Oak-Black Oak/Grass
MO-QUKE/GRASS
Black Oak-Valley Oak/Grass
QUKE-QULO/GRASS
Mixed Oak-Digger Pine/Grass
MO-PISA2/GRASS
Mixed Oak-California Buckeye/Grass
MO-AECA2/GRASS

Mixed Oak-Coast Live Oak/Poison Oak
MO-QUAG/RHDI
Mixed Oak/Poison Oak-Baccharis
MO/RHDI-BAPI
Mixed Oak/Grass
MO/GRASS
Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
MO-QULO/RHDI-RHCA2

The overview consists of a comparison of the subseries contained within each Series. Graphs provide the user with a visual comparison of the basal area of the dominant tree species between subseries within a Series. Other graphs compare the major understory species between types. Arbitrarily, 50 percent constancy of a specific species was used as the cutoff point in including it on any particular graph. The only exception is for the graphs in the Mixed Oak Series, where the 30 percent constancy rule, which defines the type, was employed. Users should note the difference in the scale of the y axis, mean basal area, between the different Series.

As much as possible, interpretation of relationships between types within a Series is given. Environmental gradients are discussed, and commonly the types are graphically displayed along an elevational gradient. Subseries whose ranges are strictly Sierra Nevada or Coast ranges are commonly separated within the Series. Some literature is cited comparing the subseries within this classification system to other types and systems.

THE CALIFORNIA COAST LIVE OAK SERIES

The latitudinal range of coast live oak in California extends from Sonoma County in the north to San Diego County in the south. It is the most coastal of California Quercus, seldom extending more than 60 miles inland from the Pacific Ocean (Griffin and Critchfield, 1972). Bolsinger (1988) estimates that the total area of this series in California is 828,000 acres, 79% of which is in private ownership. Coast live oak stands, on average, contain the greatest basal area of oaks of any of the hardwood rangeland subseries (figure 2).

The Coast Live Oak Series can be divided into at least 15 subseries which can be further divided into mesic and xeric subseries, as they are in the key. There are seven mesic subseries, three of which occur below an average elevation of 900 feet and four above an average elevation of 1250 feet. Five of the seven occupy aspects that predominately face north to northeast but there are no consistent trends in slope angle representation. Species that characterize the mesic subseries include: in the herb layer, bracken fern; in the shrub layer, coffeeberry, blackberry, creambush (ocean spray), snowberry, and hazel; and in the tree layers, big-leaf maple, California bay, madrone, and scrub oak (Campbell 1984, Bolsinger 1988).

The low-elevation (below 900 feet) mesic subseries types are: Coast Live Oak/Blackberry/Bracken Fern, Coast Live Oak-Madrone/Hazel-Blackberry and Coast Live Oak/Poison Oak (figure 3). Ecological and management information on these subseries is scarce but at least one type has been mentioned in the literature. The Q. agrifolia-dominated "oak woodland" described by McBride (1974) in a successional study in the Berkeley Hills is very similar to the the Coast Live Oak/Blackberry/Bracken Fern subseries. He suggests that in this locale coast live oak woodland is the last sere before a California bay community.

Upper elevation (above 1250 feet) subseries include: Coast Live Oak/Oceanspray-Snowberry, Coast Live Oak/Coffeeberry-Toyon, Coast Live Oak-California Bay/Toyon-Scrub Oak, and Coast Live Oak-Maple/Coffeeberry-Ocean Spray (figure 4). Campbell (1980) describes a Quercus agrifolia-Toxicodendron diversilobum subcommunity in Santa Barbara County that falls clearly into the Coast Live Oak/Coffeeberry-Toyon subseries both in species composition and environmental setting.

Xeric coast live oak subseries tend to be concentrated in the middle elevations between 1000 and 1200 feet (figures 5 and 6). Species typical of this group include: in the herb layer, grasses and forbs; in the shrub layer, toyon, chamise, coast sagebrush,

black sage, and in the tree layer blue oak. Of these eight types only the Coast Live Oak/Poison Oak/Grass and Coast Live Oak/Toyon-Poison Oak types are prevalent on north-facing aspects. The remaining six types occur on a variety of aspects and, in general, on a variety of slope angles. These subseries include: Coast Live Oak/Coast Sagebrush/Grass, Coast Live Oak/Poison Oak/Grass, Coast Live Oak/Grass, Coast Live Oak, Coast Live Oak-Blue Oak/Grass, Coast Live Oak/Toyon/Grass.

Wells (1962) provides some of the most detailed information on plant communities in the xeric coast live oak subseries. He cataloged the plant communities on fifteen different geologic substrata in the San Luis Obispo Quadrangle. In eight of these communities coast live oak had a frequency of a least 60%. Of these, the Coast Live Oak/Chamise-Black Sage subseries was represented on at least three different geological substrata, the Coast Live Oak/Toyon/Grass and Coast Live Oak/Coastal Sage/Grass types on two each and the Coast Live Oak type on one substratum. Wells discusses in considerable detail the composition of these coast live oak communities in relationship to the interaction of fire and geologic substatum. He provides some useful information on fire which could be generally applied to several of the subseries.

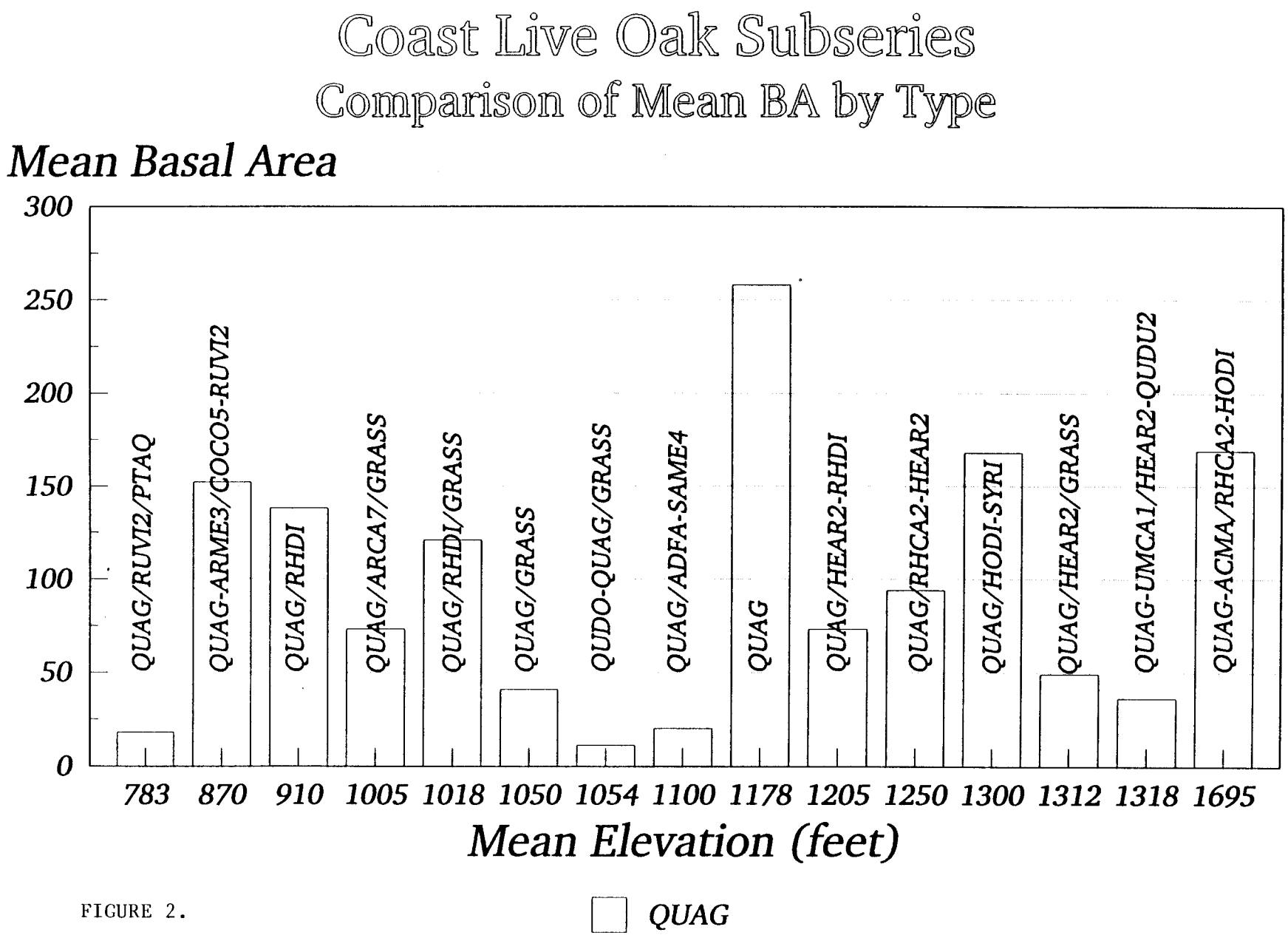
Coast Live Oak Subseries
Comparison of Mean BA by Type
Mean Basal Area
300
250
200
150
100
50
0
QUAG/RUVI2/PTAQ
QUAG-ARME3/COCO5-RUVI2
QUAG/RHDI
QUAG/ARCA7/GRASS
QUAG/RHDI/GRASS
QUAG/GRASS
QUDO-QUAG/GRASS
QUAG/ADFA-SAME4
QUAG
QUAG/HEAR2-RHDI
QUAG/RHCA2-HEAR2
QUAG/HODI-SYRI
QUAG/HEAR2/GRASS
QUAG-UMCA1/HEAR2-QUDU2
QUAG-ACMA/RHCA2-HODI
783
870
910
1005
1018
1050
1054
1100
1178
1205
1250
1300
1312
1318
1695
Mean Elevation (feet)
QUAG

FIGURE 2.

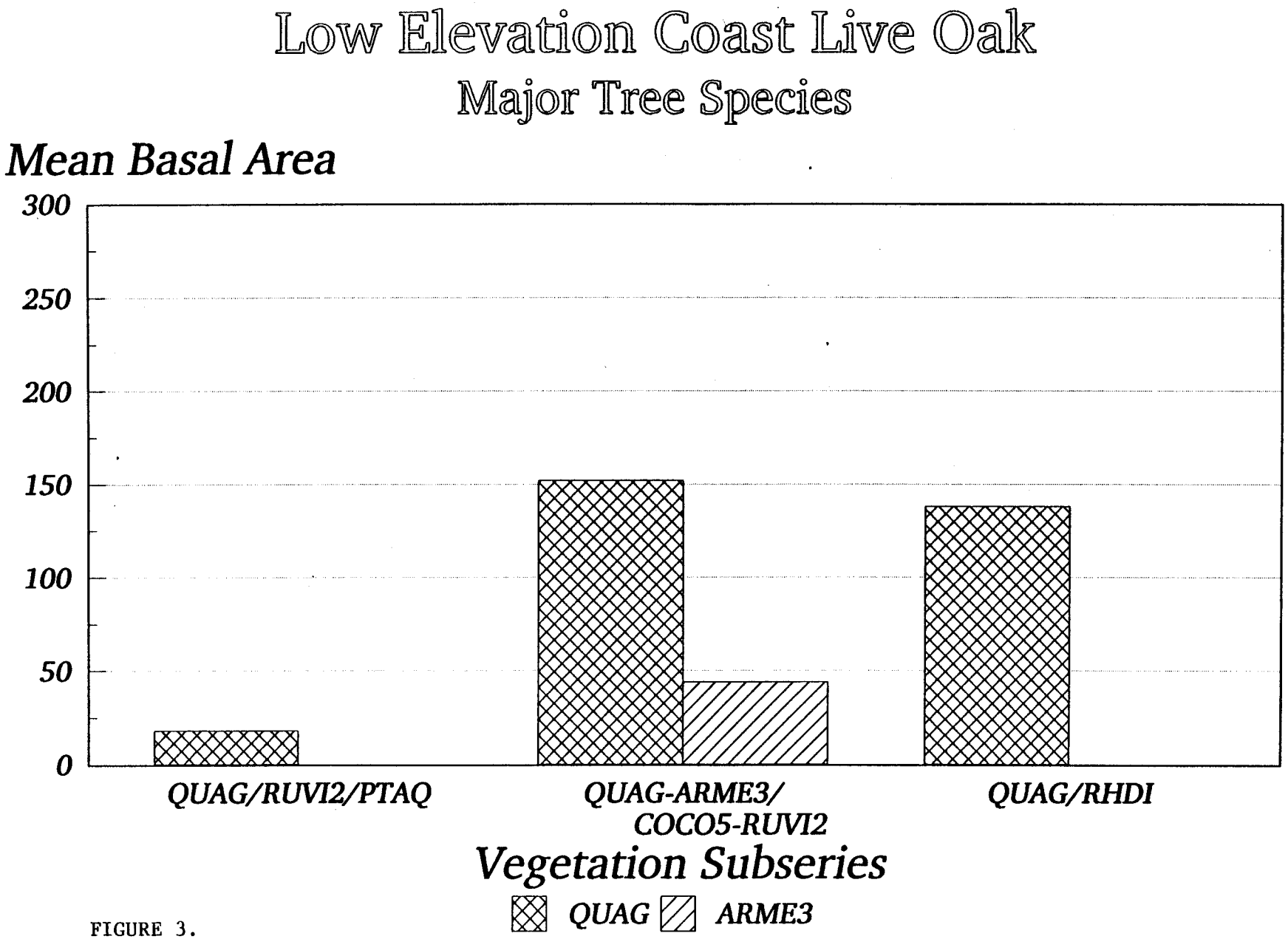
Low Elevation Coast Live Oak
Major Tree Species
Mean Basal Area
300
250
200
150
100
50
0
QUAG/RUVI2/PTAQ
QUAG-ARME3/
COCO5-RUVI2
QUAG/RHDI
Vegetation Subseries
QUAG
ARME3

FIGURE 3.

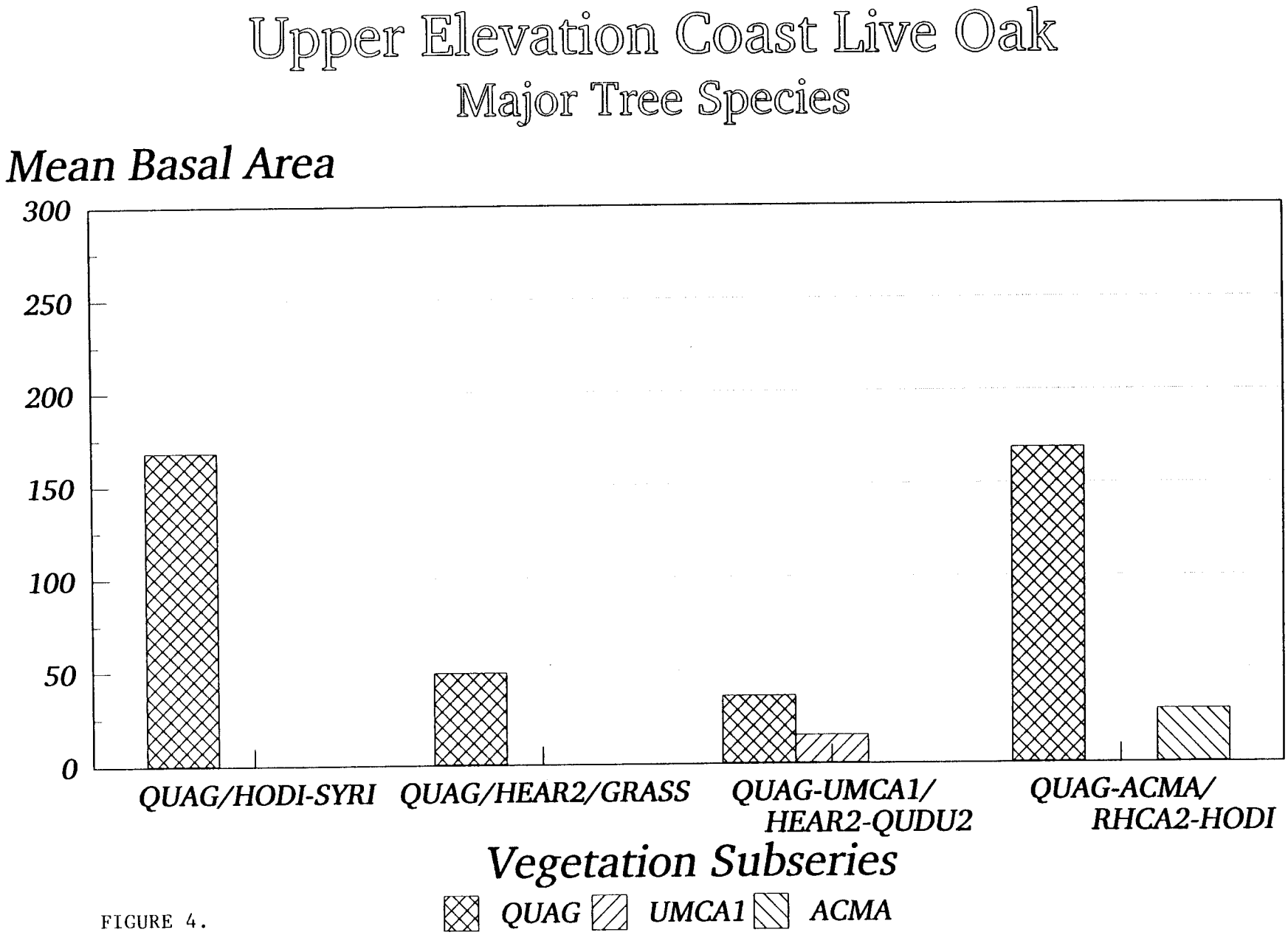
Upper Elevation Coast Live Oak
Major Tree Species
Mean Basal Area
300
250
200
150
100
50
0
QUAG/HODI-SYRI
QUAG/HEAR2/GRASS
QUAG-UMCA1/
HEAR2-QUDU2
QUAG-ACMA/
RHCA2-HODI
Vegetation Subseries
QUAG
UMCA1
ACMA

FIGURE 4.

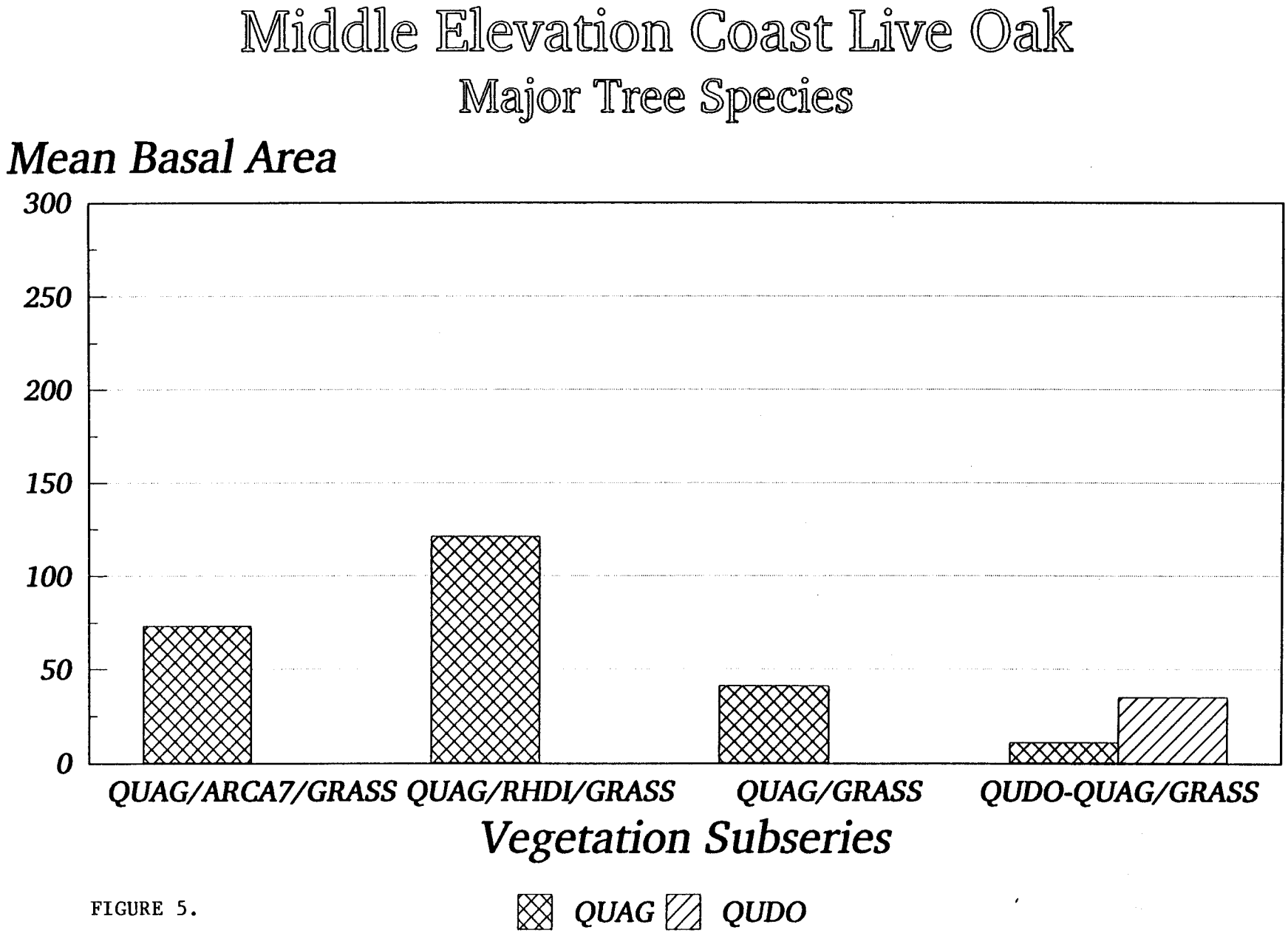
Middle Elevation Coast Live Oak
Major Tree Species
Mean Basal Area
300
250
200
150
100
50
0
QUAG/ARCA7/GRASS
QUAG/RHDI/GRASS
QUAG/GRASS
QUDO-QUAG/GRASS
Vegetation Subseries
QUAG
QUDO

FIGURE 5.

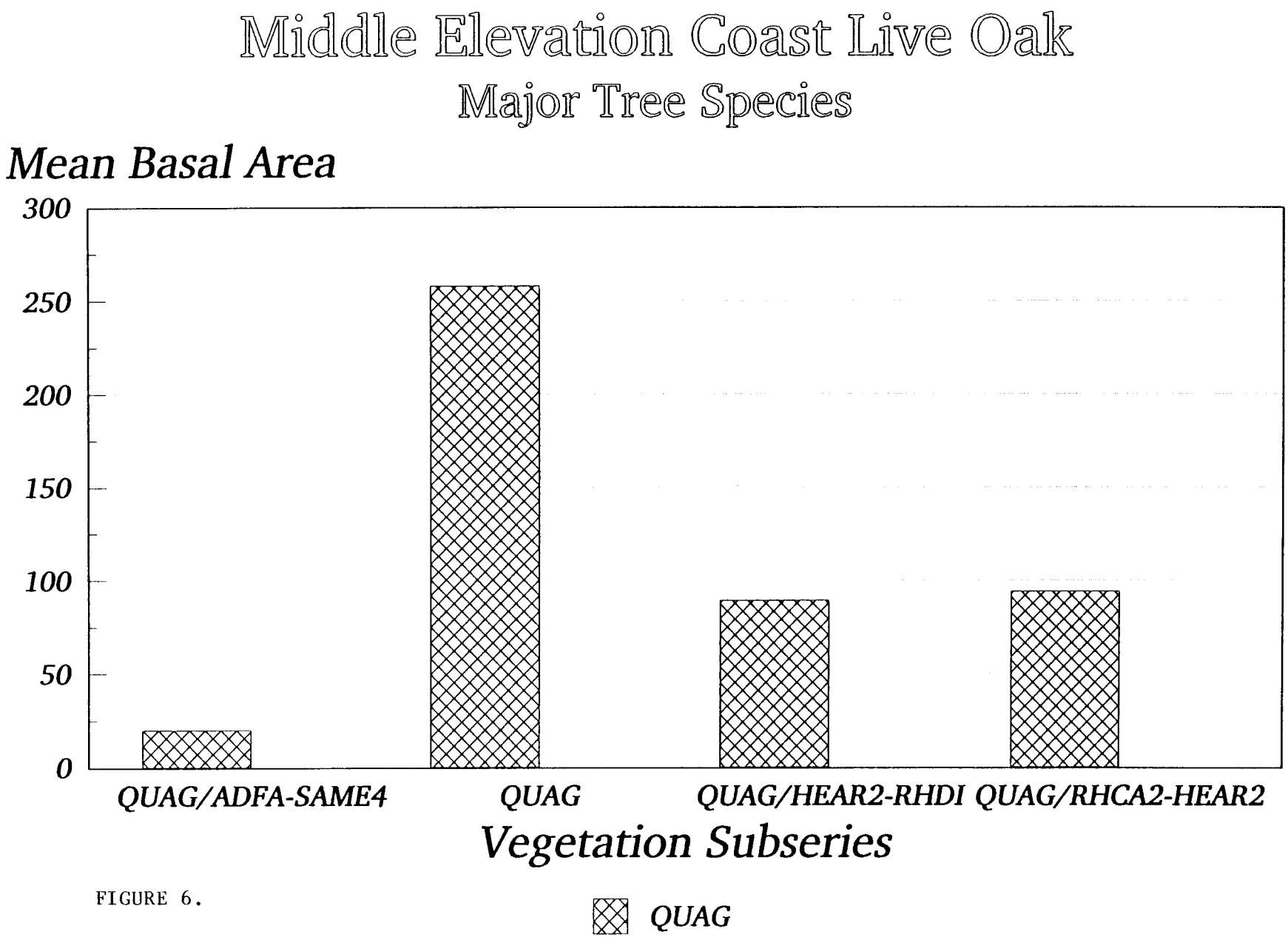
Middle Elevation Coast Live Oak
Major Tree Species
Mean Basal Area
300
250
200
150
100
50
0
QUAG/ADFA-SAME4
QUAG
QUAG/HEAR2-RHDI
QUAG/RHCA2-HEAR2
Vegetation Subseries
QUAG

FIGURE 6.

THE CALIFORNIA BLUE OAK SERIES

The Blue Oak Series most closely fits the Foothill Woodland described by Griffen (1977). He describes a blue oak phase of the Foothill Woodland dominated by blue oak and Digger pine. Associated oak species include coast live oak in the Coast range, and interior live oak and black oak in the Sierra foothills.

This Series is the most extensive of the hardwood rangeland types in California, covering an estimated 2.9 million acres (Bolsinger 1988). Bolsinger also estimates that 75 percent of the Blue Oak Woodland is in private ownership, 14% in National Forest Systems, and the remaining in other State, county, and miscellaneous federal ownerships.

The Blue Oak or Foothill Woodland is divided into twelve blue oak subseries in this classification system as part of the Blue Oak Series. The types range in mean elevation from 1054' to 2526' (figure 7). Mean basal area of blue oak also varies from an average of 23 sq.ft/ac to 47 sq.ft/ac.

Three blue oak subseries are found strictly in the coast ranges, while one type is restricted to the Sierra Nevada foothills (figure 8). The Sierra Nevada type, Blue Oak-Digger Pine/Whiteleaf Manzanita/Grass, occurs from Shasta county south in the Sierra Nevada foothills. Common understory associates include whiteleaf manzanita, wedgeleaf ceanothus, poison oak, grass, and other species of manzanita (figure 9).

The three coast range blue oak subseries are distinguished from each other primarily by the associated oak species, and are named to reflect the codominance of specific oak species. All three coastal types contain high constancies and cover of grass. In addition, the Blue Oak-Coast Live Oak/Grass type also may contain small amounts of coastal species such as coastal sagebrush and honeysuckle. The Blue Oak-Valley Oak-Coast Live Oak/Grass subseries contains the highest basal area of valley oak of all the Blue Oak subseries.

The other eight Blue Oak subseries are found ringing the Central Valley in the foothills of the Sierra Nevada and Coast ranges. As figures 10 and 11 indicate, significant differences exist in mean basal area of blue oak and other associated oak species between the types. The Blue Oak/Grass and Blue Oak-Understory Blue Oak/Grass subseries have the highest blue oak basal areas.

Grass cover varies significantly among the types (figures 12 and 13). Types with low grass cover, such as the Blue Oak-Digger Pine/Wedgeleaf Ceanothus-Mountain Mahogany type, often contain shrubs in the understory. This latter type and the Blue Oak/Narrowleaf Goldenbush also contain high constancies of narrowleaf goldenbush (Haplopappus linearifolius).

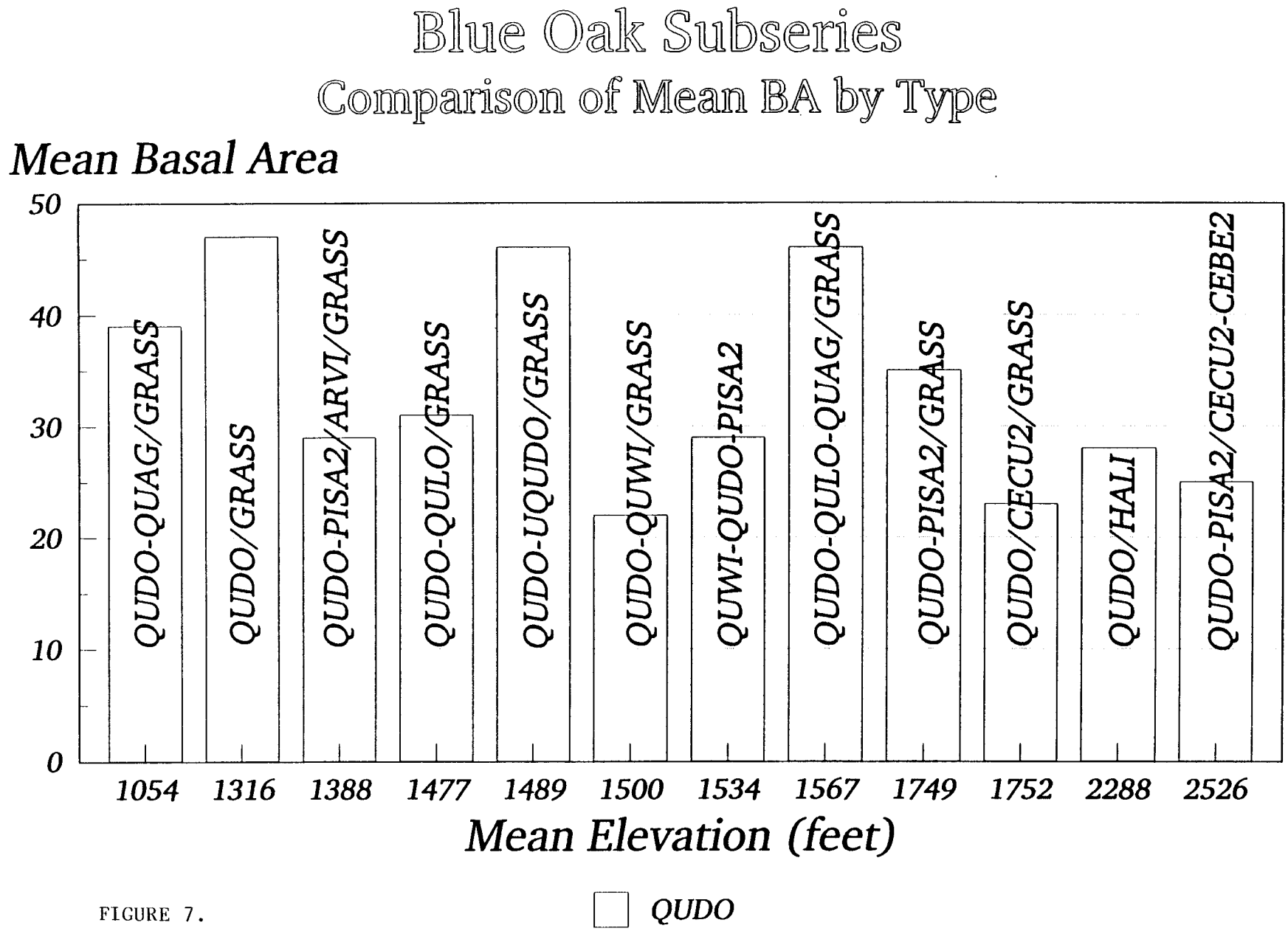
Blue Oak Subseries
Comparison of Mean BA by Type
Mean Basal Area
50
40
30
20
10
0
QUDO-QUAG/GRASS
QUDO/GRASS
QUDO-PISA2/ARVI/GRASS
QUDO-QULO/GRASS
QUDO-UQUDO/GRASS
QUDO-QUWI/GRASS
QUWI-QUDO-PISA2
QUDO-QULO-QUAG/GRASS
QUDO-PISA2/GRASS
QUDO/CECU2/GRASS
QUDO/HALI
QUDO-PISA2/CECU2-CEBE2
1054
1316
1388
1477
1489
1500
1534
1567
1749
1752
2288
2526
Mean Elevation (feet)
QUDO

FIGURE 7.

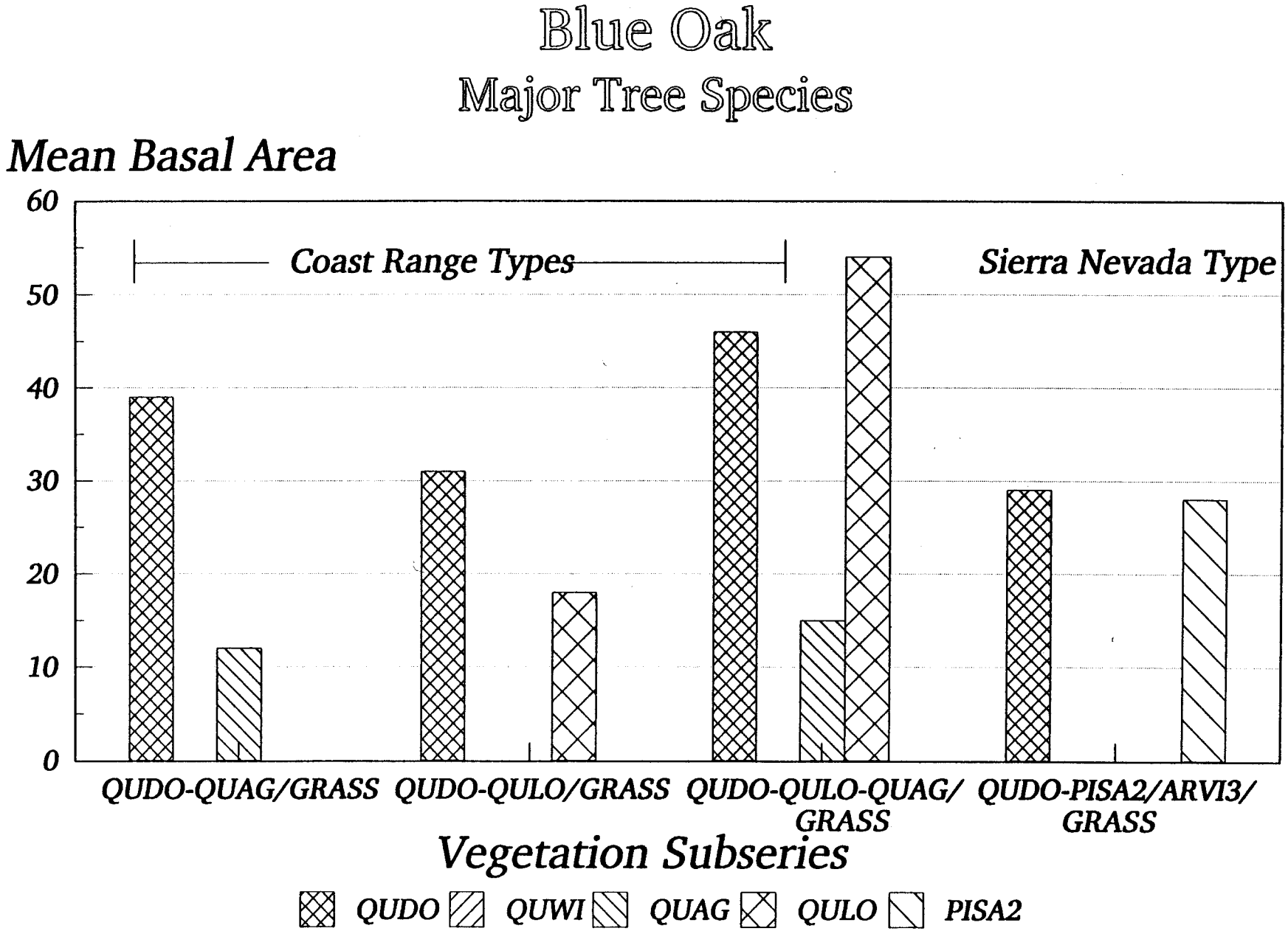
Blue Oak
Major Tree Species
Mean Basal Area
60
50
40
30
20
10
0
Coast Range Types
Sierra Nevada Type
QUDO-QUAG/GRASS
QUDO-QULO/GRASS
QUDO-QULO-QUAG/ GRASS
QUDO-PISA2/ARVI3/ GRASS
Vegetation Subseries
QUDO
QUWI
QUAG
QULO
PISA2

FIGURE 8.

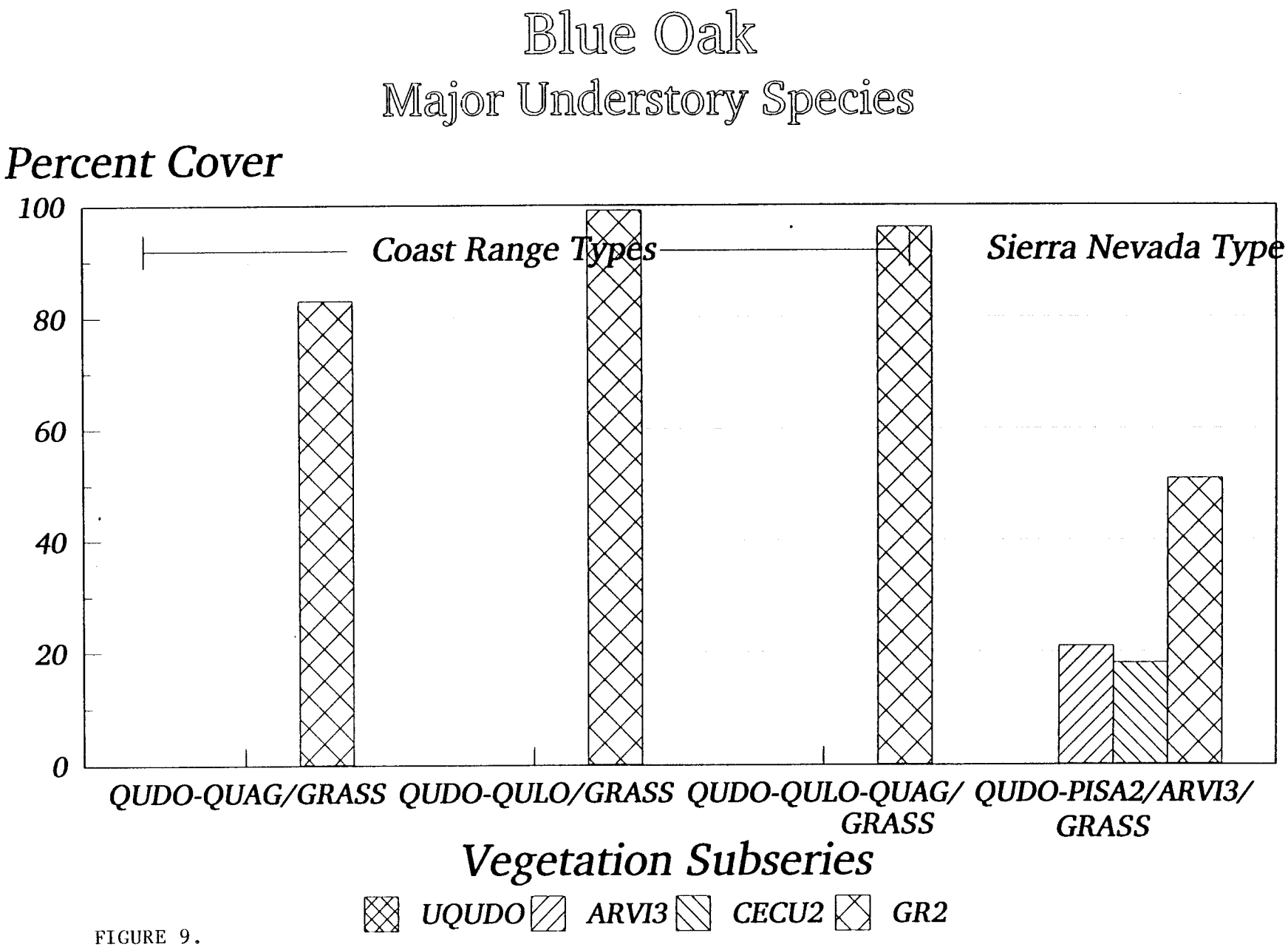
Blue Oak
Major Understory Species
Percent Cover
100
80
60
40
20
0
Coast Range Types
Sierra Nevada Type
QUDO-QUAG/GRASS
QUDO-QULO/GRASS
QUDO-QULO-QUAG/ GRASS
QUDO-PISA2/ARVI3/ GRASS
Vegetation Subseries
UQUDO
ARVI3
CECU2
GR2

FIGURE 9.

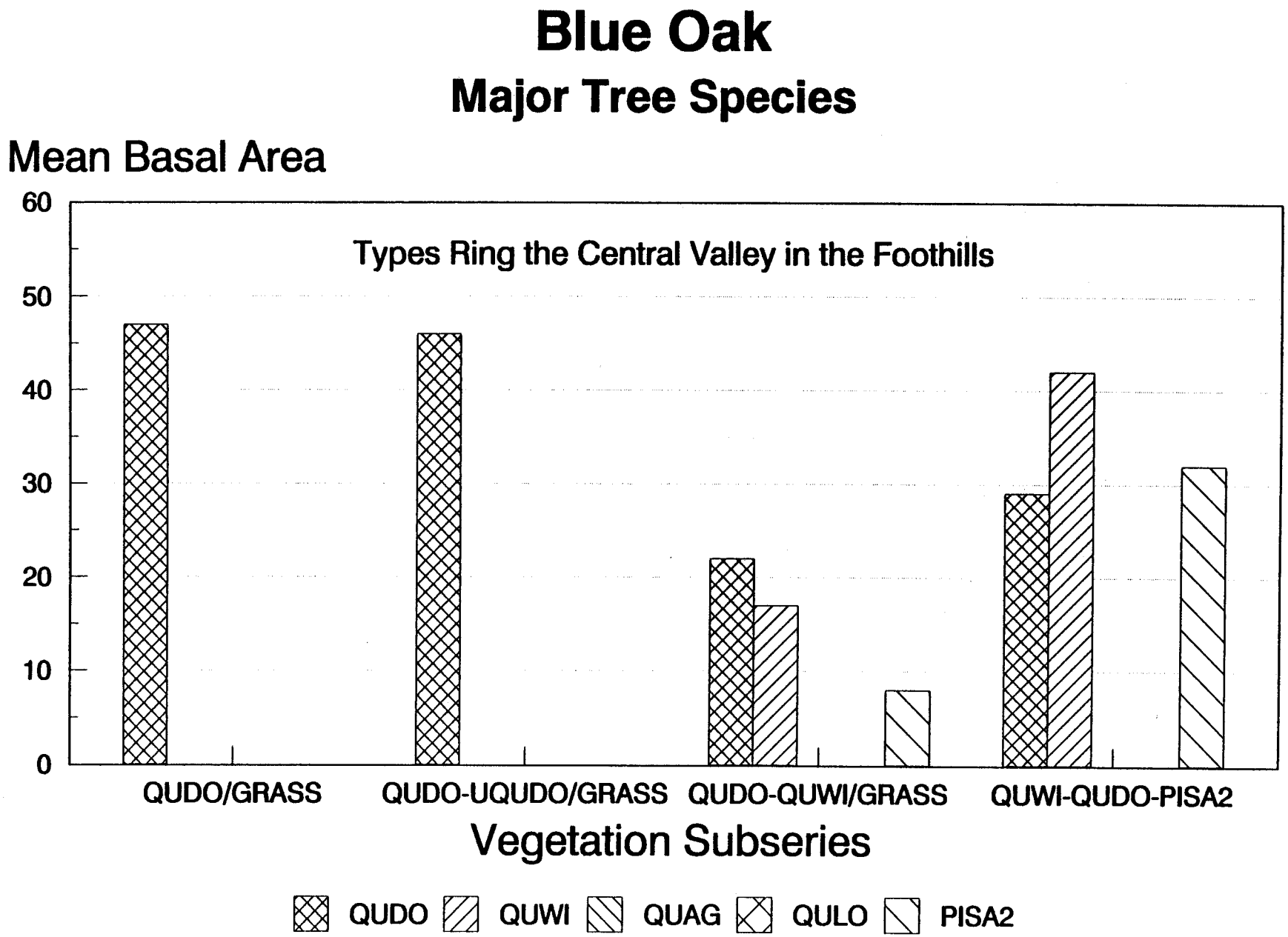
Blue Oak
Major Tree Species
Mean Basal Area
60
50
40
30
20
10
0
Types Ring the Central Valley in the Foothills
QUDO/GRASS
QUDO-UQUDO/GRASS
QUDO-QUWI/GRASS
QUWI-QUDO-PISA2
Vegetation Subseries
QUDO
QUWI
QUAG
QULO
PISA2

FIGURE 10.

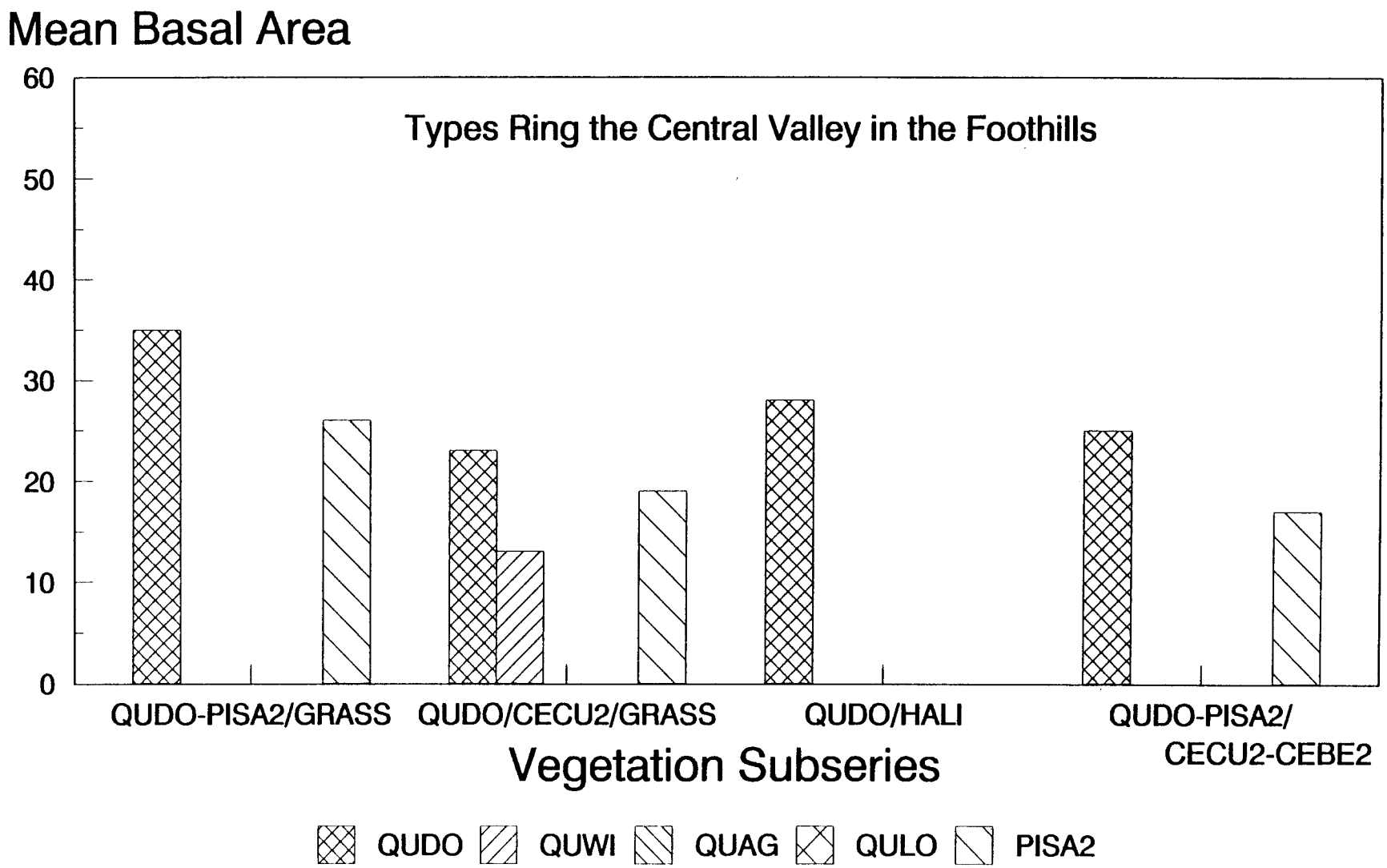
Blue Oak
Major Tree Species
Mean Basal Area
60
50
40
30
20
10
0
Types Ring the Central Valley in the Foothills
QUDO-PISA2/GRASS
QUDO/CECU2/GRASS
QUDO/HALI
QUDO-PISA2/
CECU2-CEBE2
Vegetation Subseries
QUDO
QUWI
QUAG
QULO
PISA2

FIGURE 11.

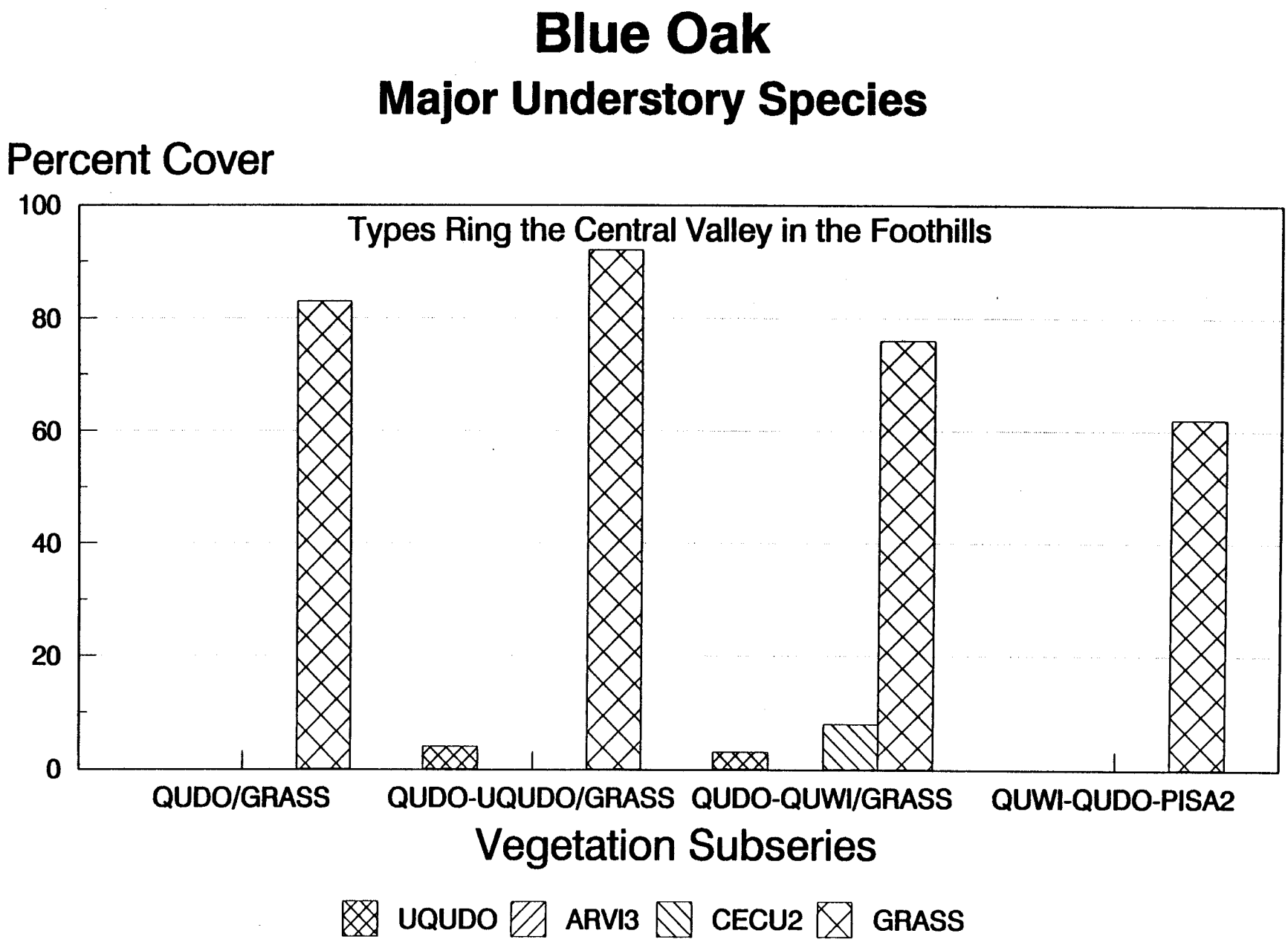
Blue Oak
Major Understory Species
Percent Cover
Types Ring the Central Valley in the Foothills
100
80
60
40
20
0
QUDO/GRASS
QUDO-UQUDO/GRASS
QUDO-QUWI/GRASS
QUWI-QUDO-PISA2
Vegetation Subseries
UQUDO
ARVI3
CECU2
GRASS

FIGURE 12.

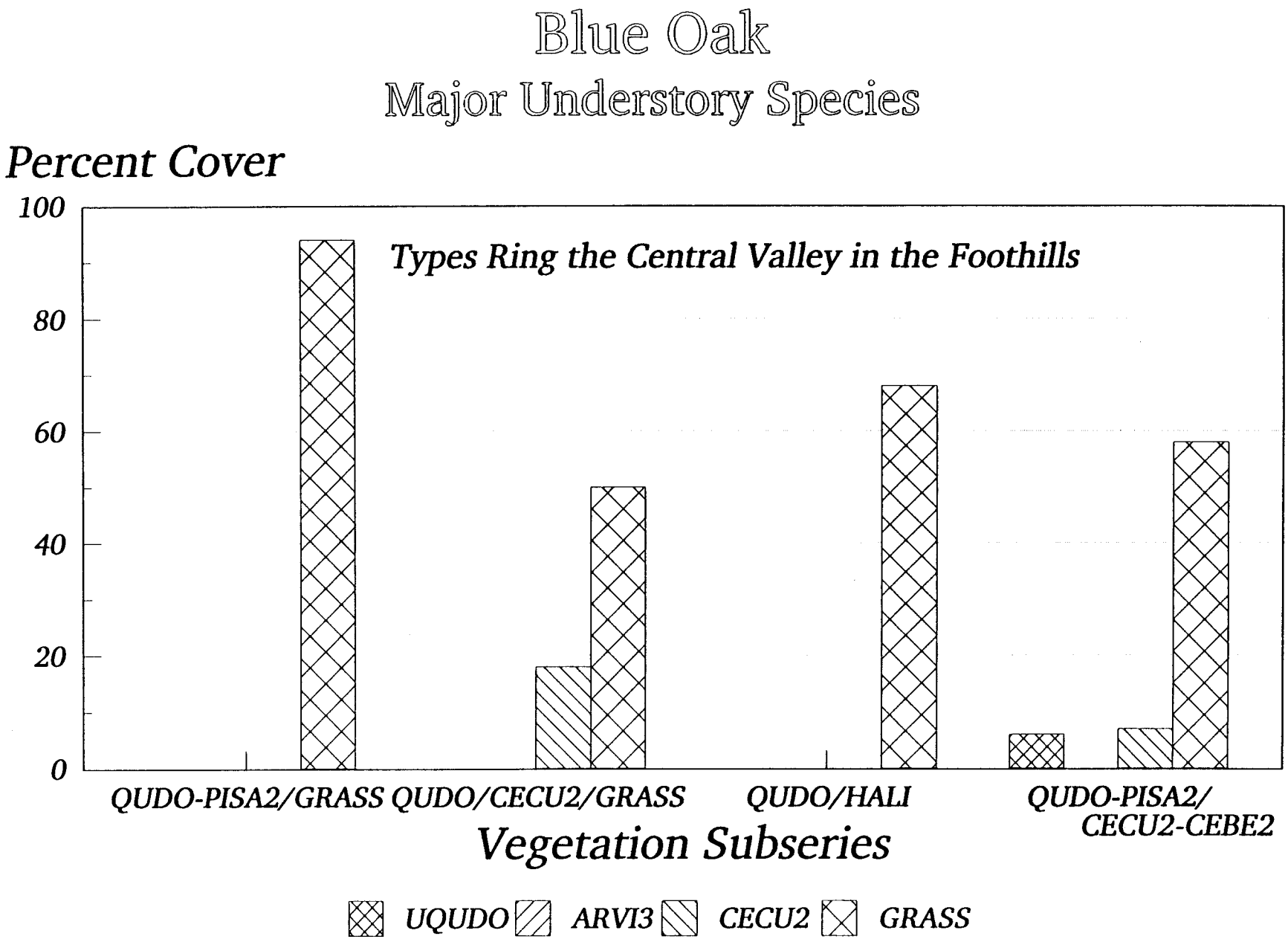
Blue Oak
Major Understory Species
Percent Cover
100
80
60
40
20
0
Types Ring the Central Valley in the Foothills
QUDO-PISA2/GRASS
QUDO/CECU2/GRASS
QUDO/HALI
QUDO-PISA2/
CECU2-CEBE2
Vegetation Subseries
UQUDO
ARVI3
CECU2
GRASS

FIGURE 13.

THE CALIFORNIA VALLEY OAK SERIES

Valley oak dominated communities cover approximately 2.7% of the area of California (Bolsinger 1988). These communities generally occur on the rich loam soils of valleys and foothills below 2400', and can be found from the foothill woodland of the Central Valley and its borders, to the inner and middle Coast Ranges to San Fernando Valley and Los Angeles County. The northern limit of the type reaches from Lakehead above the Sacramento branch of Shasta Lake west to Laytonville in Mendocino County (Griffin and Critchfield 1972).

The Valley Oak Series is comprised of 6 subseries (figure 14). All are found in the coast ranges and into the central valley, except for the Blue Oak-Valley Oak/Grass subseries, which is also found in the Sierra Nevada foothills. Two subseries, Black Oak-Valley Oak/Grass and Valley Oak/Grass, occur at significantly higher mean elevations (2375' and 2253', respectively) than their other associates, which range in mean elevation from 1101' to 1576'.

The upper elevation subseries can be easily distinguished by the presence of black oak in the Black Oak-Valley Oak/Grass type, and the significantly greater mean basal area of valley oak in the Valley Oak/Grass subseries (figure 15). The Valley Oak/Grass subseries is also the only valley oak type where valley oak is the primary, dominating Quercus species. The higher elevation subseries occur on similar parent materials, on slopes generally less than 35%, and on all aspects.

The other 4 valley oak subseries occur at similar elevations, and are arrayed along an elevational gradient in figure 14. The Coast Live Oak-Valley Oak/Poison Oak (1101') and Mixed Oak-Valley Oak/Poison Oak-Coffeeberry (1455') subseries have a higher mean basal area of coast live oak than any of the other valley oak subseries ($p<.00$). In addition, the Mixed Oak-Valley Oak/Poison Oak-Coffeeberry type has a higher mean basal area of valley oak and blue oak than the Coast Live Oak-Valley Oak/Poison Oak type (figure 15). It keys to the Mixed Oak Series because of the presence of 3 or more Quercus species at constancies of 30 percent or more. Although, the Coast Live Oak-Valley Oak/Poison Oak subseries generally contains less overall basal area than the Mixed Oak-Valley Oak/Poison Oak-Coffeeberry type, it occurs on wetter sites than the Mixed Oak-Valley Oak/Poison Oak-Coffeeberry subseries.

The Valley Oak-Coast Live Oak/Grass subseries also contains coast live oak, but at lower mean basal area (47 sq.ft/acre) and lower constancy (84 percent) than the other types with coast live oak

(the Blue Oak-Valley Oak/Grass subseries being an exception). The Valley Oak-Coast Live Oak/Grass subseries occurs primarily in the southern coast ranges along the San Joaquin valley. Like its other valley oak associates, this type has few species in the understory other than grass.

Finally, the Blue Oak-Valley Oak/Grass subseries is distinguished from its other associates by the presence of blue oak. It is the driest of the valley oak types, occurring on all aspects ringing the central valley in the foothills of the Sierra Nevada and coast ranges. This type was recognized by Griffin (1977) as a phase of the foothill woodland containing blue oak.

Grass species occur in all the Valley Oak subseries. However, the Coast Live Oak-Valley Oak/Poison Oak and Mixed Oak-Valley Oak/Coffeeberry types have significantly less cover of grass (76 and 54 percent, respectively) than any of the other Valley Oak types ($p<.00$).

This classification system lacks representatives of the valley oak riparian forest communities. As described by McBride (1974) and Griffin (1973), the valley oak community takes on a strikingly different appearance along the large rivers on the eastside of the Central Valley. Only remnants of this once larger riparian woodland dominated by valley oak, cottonwoods (*Populus* spp.), willows (*Salix* spp.), grape (*Vitis* spp.) and interior live oak (Thompson 1961) now exist. John Work, during a fur-trapping expedition in 1832, described the riparian forests of the Sacramento Valley as a belt of oak (*Q. lobata*) woods "all along the river surrounded by a plain with tufts of wood here and there extending to the mountains" (Thompson 1961). With settlement came the cutting of the riparian forests for fuel, fences, construction and flood control projects. Since the trees had little value as lumber, there was no incentive to conserve the riparian forests, and consequently, only a few traces of the formerly extensive riparian forests remain (Griffin 1973).

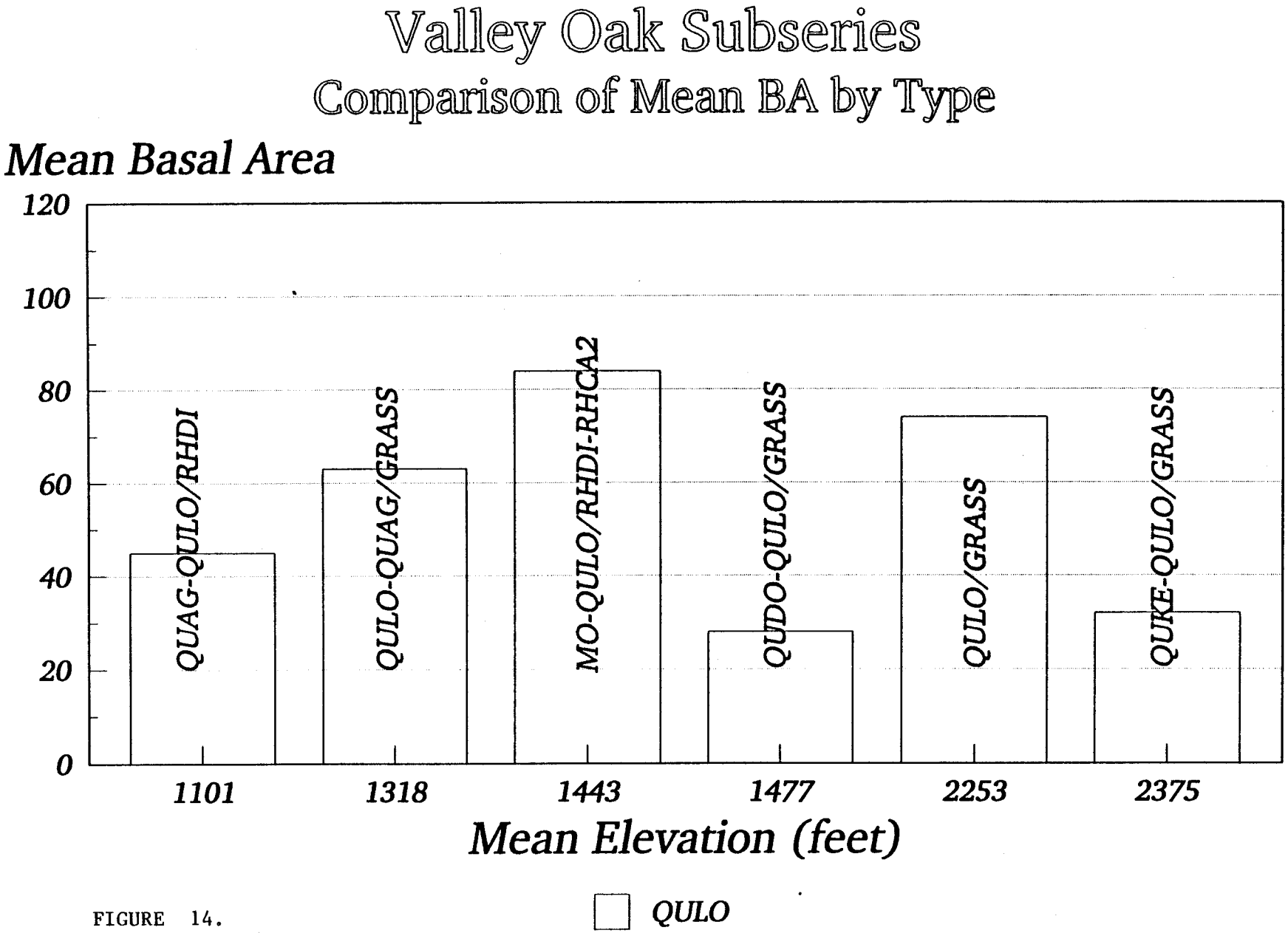
Valley Oak Subseries
Comparison of Mean BA by Type
Mean Basal Area
120
100
80
60
40
20
0
QUAG-QULO/RHDI
QULO-QUAG/GRASS
MO-QULO/RHDI-RHCA2
QUDO-QULO/GRASS
QULO/GRASS
QUKE-QULO/GRASS
1101
1318
1443
1477
2253
2375
Mean Elevation (feet)
QULO

FIGURE 14.

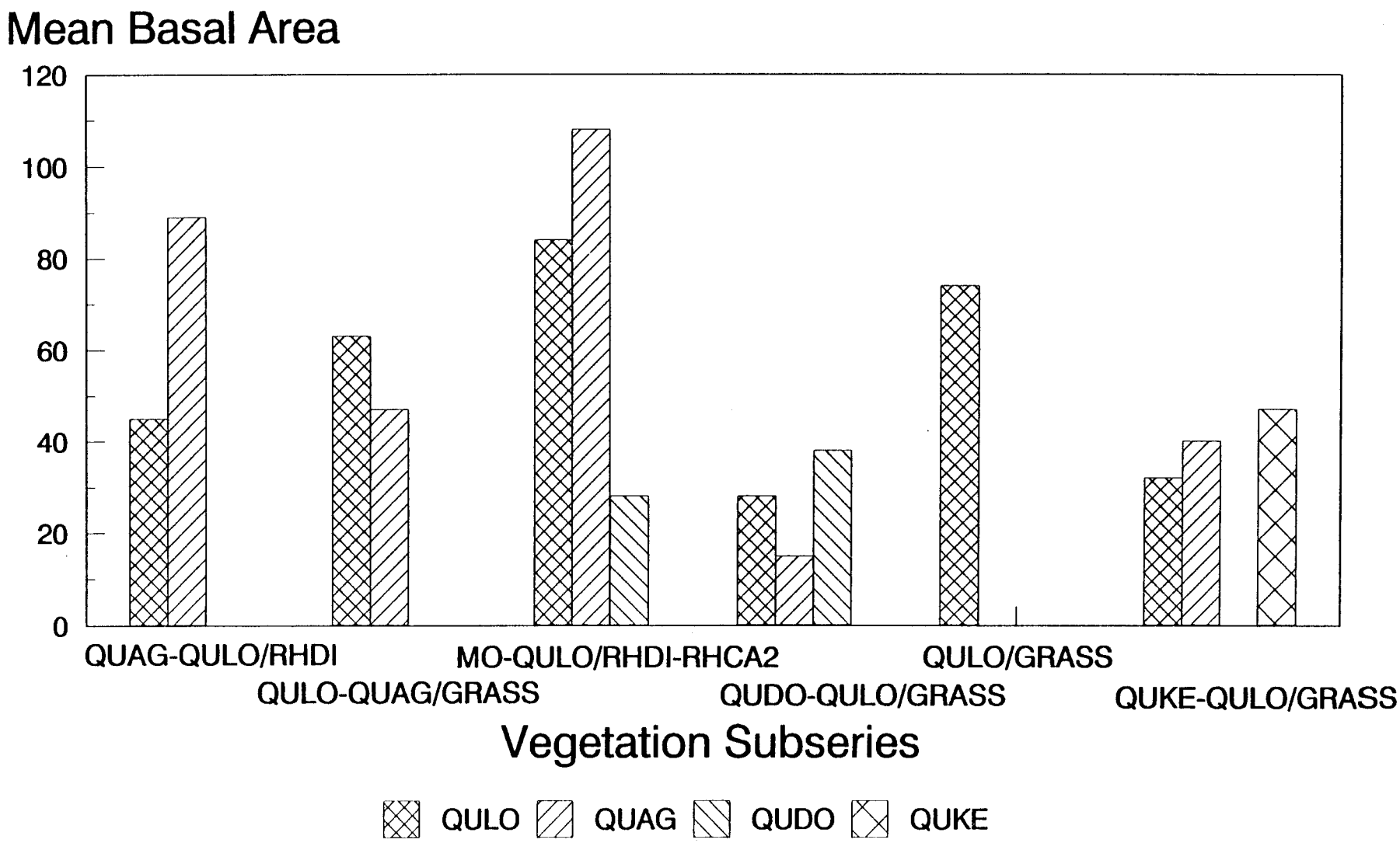
Valley Oak
Major Tree Species
Mean Basal Area
120
100
80
60
40
20
0
QUAG-QULO/RHDI
QULO-QUAG/GRASS
MO-QULO/RHDI-RHCA2
QUDO-QULO/GRASS
QULO/GRASS
QUKE-QULO/GRASS
Vegetation Subseries
QULO
QUAG
QUDO
QUKE

FIGURE 15.

THE CALIFORNIA INTERIOR LIVE OAK SERIES

The Interior Live Oak series is comprised of 6 subseries. Four subseries are found in the Sierra Nevada and foothills, while two types are found in both the Sierra Nevada and Coast ranges. Acreage of the the Interior Live Oak Series is estimated at 884,000 acres, with about 82 percent in private ownership (Bolsinger 1988).

The Sierra Nevada interior live oak types contain both the highest elevation type, Interior Live Oak/Yerba Santa/Grass at a mean elevation of 2120', and the lowest elevation type, Interior Live Oak-Digger Pine/Manzanita, at 1144' (figure 16). The other two Sierra Nevada types occur at mean elevations which are significantly different from their other two Sierra associates at 1780' and 1855', for the Interior Live Oak/Whiteleaf Manzanita and Interior Live Oak/Toyon subseries, respectively. The two types which occur in both the Coast and Sierra Nevada ranges are found at mean elevations of 1493' for the Interior Live Oak-Madrone/Poison Oak type, and 1533' for the Interior Live Oak-Blue Oak-Digger Pine type.

Mean basal area of interior live oak is significantly different within the interior live oak series (figure 17). Arrayed in order of increasing elevation in figure 17, the highest elevation subseries, Interior Live Oak/Yerba Santa/Grass, has significantly lower mean basal area than the three lowest elevation associates. Additionally, the Interior Live Oak/Yerba Santa/Grass subseries has the lowest constancy of interior live oak of all the types, although understory interior live oak is common. This type is found from Nevada to Madera counties, on all aspects on granitic, igneous, or metamorphic parent materials. Yerba santa is the dominant species, in terms of constancy and cover, distinguishing it again from its other associates.

The other three strictly Sierra interior live oak types range in mean basal area from 16 sq. ft/acre to 22 sq. ft/acre (figure 17). The Interior Live Oak-Digger Pine/Manzanita subseries is distinguished from its Sierra associates by containing significantly higher ($p<.00$) mean basal area of Digger pine and the lowest cover of grass (figure 18), occurring at a mean elevation of 1144' on granitic, andesitic, serpentine, and hard sedimentary parent materials. The Interior Live Oak/Whiteleaf Manzanita subseries contains significantly more whiteleaf manzanita ($p<.02$) and significantly less toyon ($p<.00$) than its other Sierran associates. Finally, the Sierran subseries, Interior Live Oak/Toyon, is distinguished from the other Sierran types by containing less mean basal area of blue oak and Digger pine than the Interior Live Oak-Digger Pine/Manzanita type, and

more toyon and half as much whiteleaf manzanita as the Interior Live Oak/Whiteleaf Manzanita type.

The Interior Live Oak-Madrone/Poison Oak and Interior Live Oak-Blue Oak-Digger Pine subseries occur in both the Sierra Nevada and Coast ranges. These two types have significantly more mean basal area than their other interior live oak associates ($p<.00$), and the Interior Live Oak-Madrone/Poison Oak has significantly higher mean basal area than the Interior Live Oak-Blue Oak-Digger Pine subseries (figure 17).

The Interior Live Oak-Madrone/Poison Oak type can be distinguished from all its other interior live oak associates by the presence of madrone and the absence of grass (figure 18). The Interior Live Oak-Blue Oak-Digger Pine type contains significantly higher mean basal area of blue oak ($p<.00$) and higher cover of grass ($p<.00$) than any other interior live oak associate.

The two Sierran/Coast range subseries ring the central valley. The Interior Live Oak-Blue Oak-Digger Pine type is found from Butte to Kern to San Benito counties. The Interior Live Oak-Madrone/Poison Oak subseries is found from Shasta to El Dorado and Calaveras counties, and Mendocino to Santa Cruz county.

Interior live oak is a prominent species in the Mixed Oak Series, occurring in both Sierra Nevada Mixed Oak subseries and several of the coast range Mixed Oak subseries. It is also a common associate in the Blue Oak Series, but rarely occurs in association with subseries in the Coastal Live Oak, Valley Oak or Black Oak Series.

Field testing of the interior live oak keys and descriptions resulted in the "discovery" of at least one type that is not described in the classification system. This "type" occurred in a riparian zone in the Sierra foothills, and was dominated by interior live oak, California bay, and coffeeberry. The "type" was confined to the riparian zone and abruptly changed to the Interior Live Oak/Toyon subseries on the east facing slope, and the Interior Live Oak-Blue Oak-Digger Pine type on the southwest facing slopes. As more samples are taken in this "type", it may be added to the keys and descriptions.

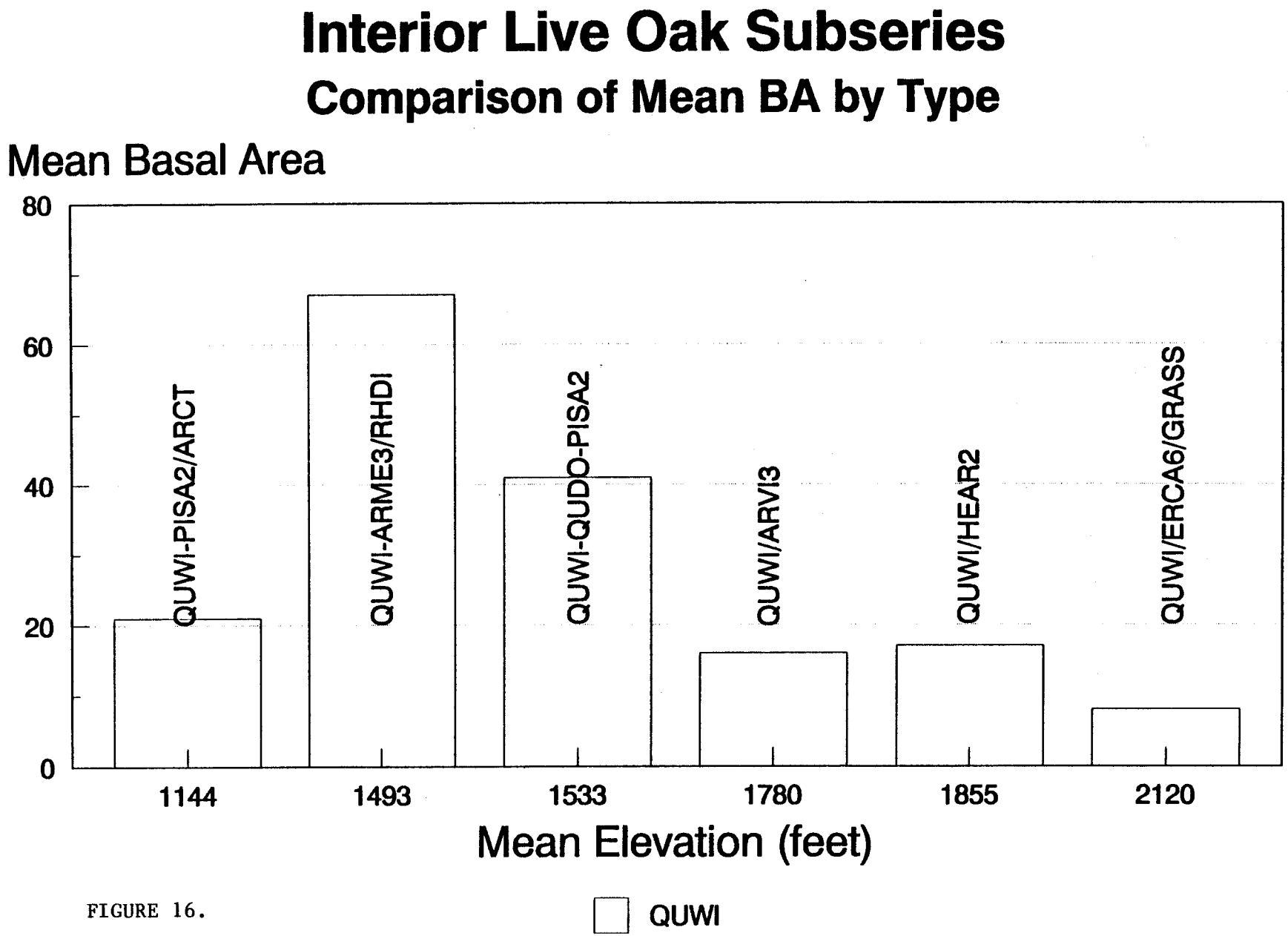
Interior Live Oak Subseries
Comparison of Mean BA by Type
Mean Basal Area
80
60
40
20
0
QUWI-PISA2/ARCT
QUWI-ARME3/RHDI
QUWI-QUDO-PISA2
QUWI/ARVI3
QUWI/HEAR2
QUWI/ERCA6/GRASS
1144
1493
1533
1780
1855
2120
Mean Elevation (feet)
QUWI

FIGURE 16.

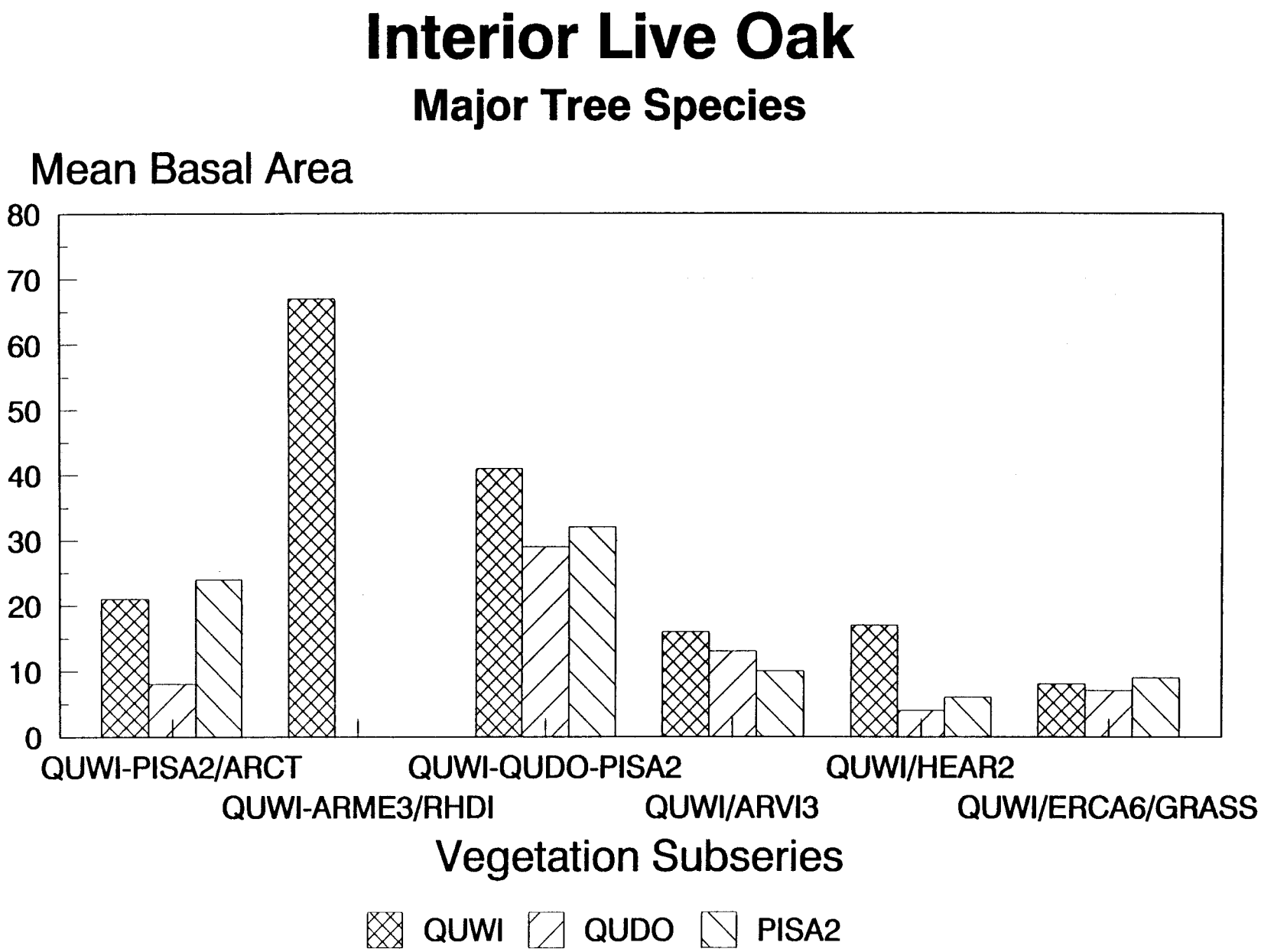
Interior Live Oak
Major Tree Species
Mean Basal Area
80
70
60
50
40
30
20
10
0
QUWI-PISA2/ARCT
QUWI-ARME3/RHDI
QUWI-QUDO-PISA2
QUWI/ARVI3
QUWI/HEAR2
QUWI/ERCA6/GRASS
Vegetation Subseries
QUWI
QUDO
PISA2

FIGURE 17.

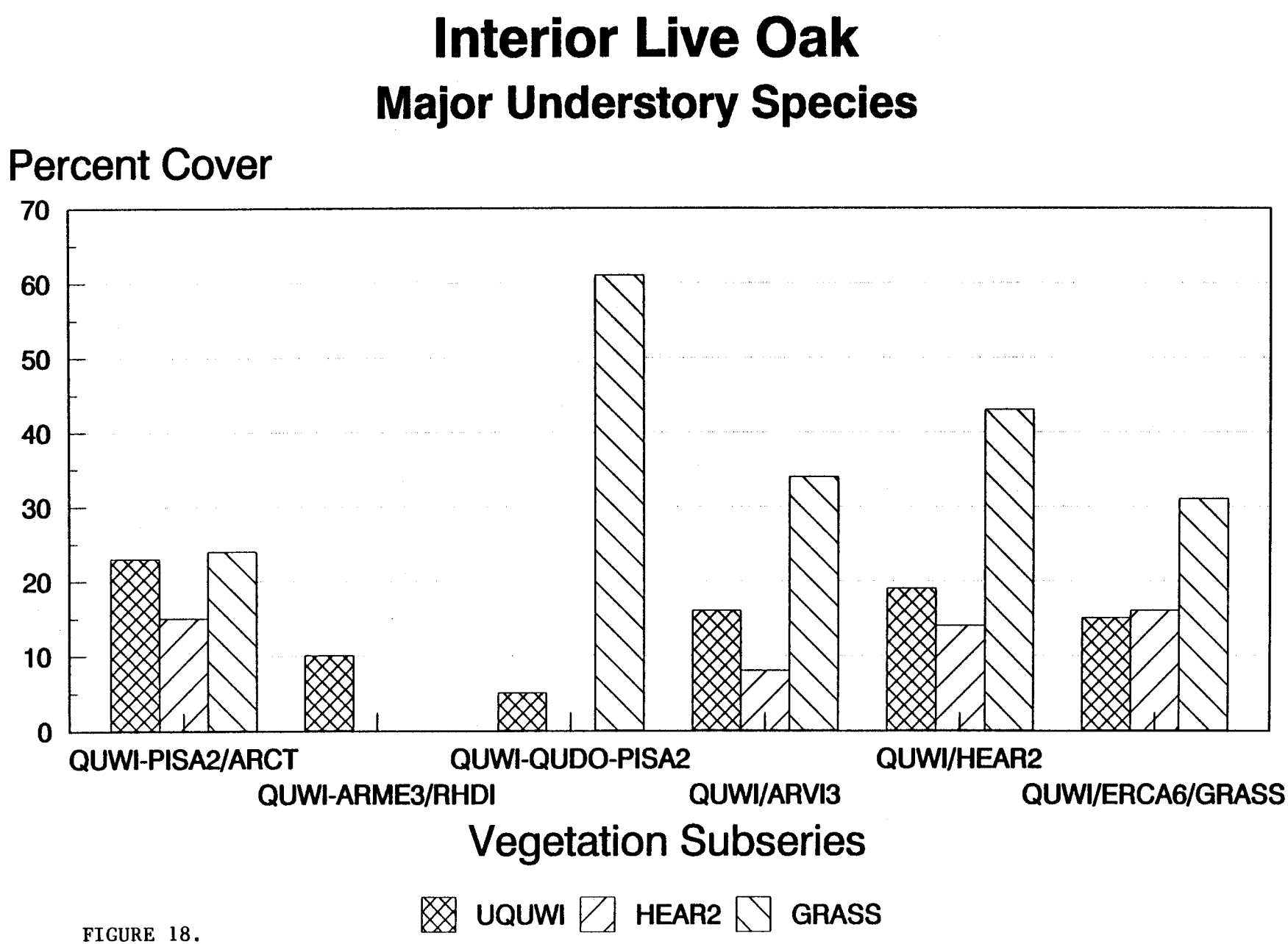
Interior Live Oak
Major Understory Species
Percent Cover
70
60
50
40
30
20
10
0
QUWI-PISA2/ARCT
QUWI-ARME3/RHDI
QUWI-QUDO-PISA2
QUWI/ARVI3
QUWI/HEAR2
QUWI/ERCA6/GRASS
Vegetation Subseries
UQUWI
HEAR2
GRASS

FIGURE 18.

THE BLACK OAK SERIES

The Black Oak Series is comprised of 13 subseries (figure 19). Four subseries are confined to the Coast ranges, while four are confined to the Sierra. Four subseries are found in both the Coast ranges and the Sierra, and one is found in both the Coast ranges and the Transverse Range.

Types that occur only in the Coast ranges are generally lower in elevation than other types. The Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon type, with a mean elevation of 1293 ft, and the Mixed Oak-Coast Live Oak/Grass type, with a mean elevation of 1465 ft, are significantly lower than all Sierran types except the Black Oak/Poison Oak-California Storax/Grass-nut type. These two types are also significantly lower than the highest strictly Coast Range type, Black Oak-Valley Oak/Grass, which has a mean elevation of 2375 ft. The Black Oak-Coast Live Oak-Beach Pine/Ocean Spray type is intermediate in mean elevation at 1691 ft but is not significantly different from the other strictly Coast range types.

Mean basal area of black oak for the four types ranges from 38 sq. ft/acre in the Mixed Oak-Coast Live Oak/Grass type to 53 sq. ft/acre in the Black Oak-Coast Live Oak-Beach Pine/Ocean Spray type, with no significant differences (figure 20). The Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon type is distinguished by the presence of significantly more madrone and significantly less coast live oak than the other coastal types. The Mixed Oak-Coast Live Oak/Grass type is distinguished by the absence of oceanspray and beach pine compared with the Black Oak-Coast Live Oak-Beach Pine/Oceanspray type and significantly less grass than the Black Oak-Valley Oak/Grass type. The Black Oak-Valley Oak/Grass type has valley oak with a mean basal area of 32 sq. ft/acre, significantly more than any other black oak types.

Four types are found in both the Coast range and the Sierra (figure 21). There are no significant differences between Coast range and Sierra plots of these four types except for the Black Oak-Canyon Live Oak/Deerbrush/Grass type, which has no deerbrush present in Coast range plots. The Black Oak/Poison Oak type occurs at a mean elevation of 2486 ft, the Black Oak/Poison Oak/Grass type at 2746 ft, the Black Oak-Canyon Live Oak/Deerbrush/Grass type at 2963 ft, and the Canyon Live Oak-Black Oak type at 3231 ft, all significantly higher than all strictly Coast range types except the Black Oak-Valley Oak/Grass type.

Mean basal area of black oak is 115 sq. ft/acre for the Black Oak/Poison Oak type and 81 sq. ft/acre for the Black Oak/Poison Oak/Grass type, both significantly higher than other Coast Range

types. These two types can be distinguished from each other by the absence of grass and significantly higher mean basal area of black oak in the Black Oak/Poison Oak type. The Black Oak-Canyon Live Oak/Deerbrush/Grass type and the Canyon Live Oak-Black Oak type can be distinguished from other types by the presence of canyon live oak as a codominant species. The Black Oak-Canyon Live Oak/Deerbrush/Grass type has a significantly higher mean basal area of black oak and significantly less cover of understory canyon live oak than the Canyon Live Oak-Black Oak type.

The Black Oak/Grass type is found in both the Coast ranges and the Transverse Range (figure 21). Mean elevation of the type is 4193 ft. Plots occurring in the Transverse Ranges have a mean elevation of 5372 ft, significantly higher than plots occurring in the Coast ranges with a mean elevation of 2425 ft. Black oak mean basal area is 97 sq. ft/acre (118 sq. ft/acre for plots in the Transverse Range and 67 sq. ft/acre for plots in the Coast ranges, significantly higher than all types occurring strictly in the Coast range. Mean grass cover is 44%, significantly different from all coastal types except for Black Oak/Poison Oak/Grass.

The four types that are found strictly in the Sierra have a wide range of mean elevation. The Black Oak/Poison Oak-California Storax/Grass-nut type averages 1484 ft, significantly lower than all other Sierra types. Mid-elevation types include Black Oak/Deerbrush-Poison Oak/Bracken Fern at 2527 ft mean elevation and Black Oak/Deerbrush at 3435 ft. The highest type is Black Oak/Greenleaf Manzanita-Mountain Whitethorn, significantly higher than all other black oak types at 5647 ft mean elevation.

Black oak mean basal area ranges from 19 sq. ft/acre for the Black Oak/Greenleaf Manzanita-Mountain Whitethorn type to 63 sq. ft/acre for the Black Oak/Deerbrush-Poison Oak/Bracken Fern type, with only these two types being significantly different (figure 22). The Black Oak/Poison Oak-California Storax/Grass-nut type has significantly more cover of poison oak than all other black oak types. The Black Oak/Deerbrush-Poison Oak/Bracken Fern type and the Black Oak/Deerbrush types are distinguished from each other by significantly higher mean cover of deerbrush in the latter, and the presence of bracken fern in the former.

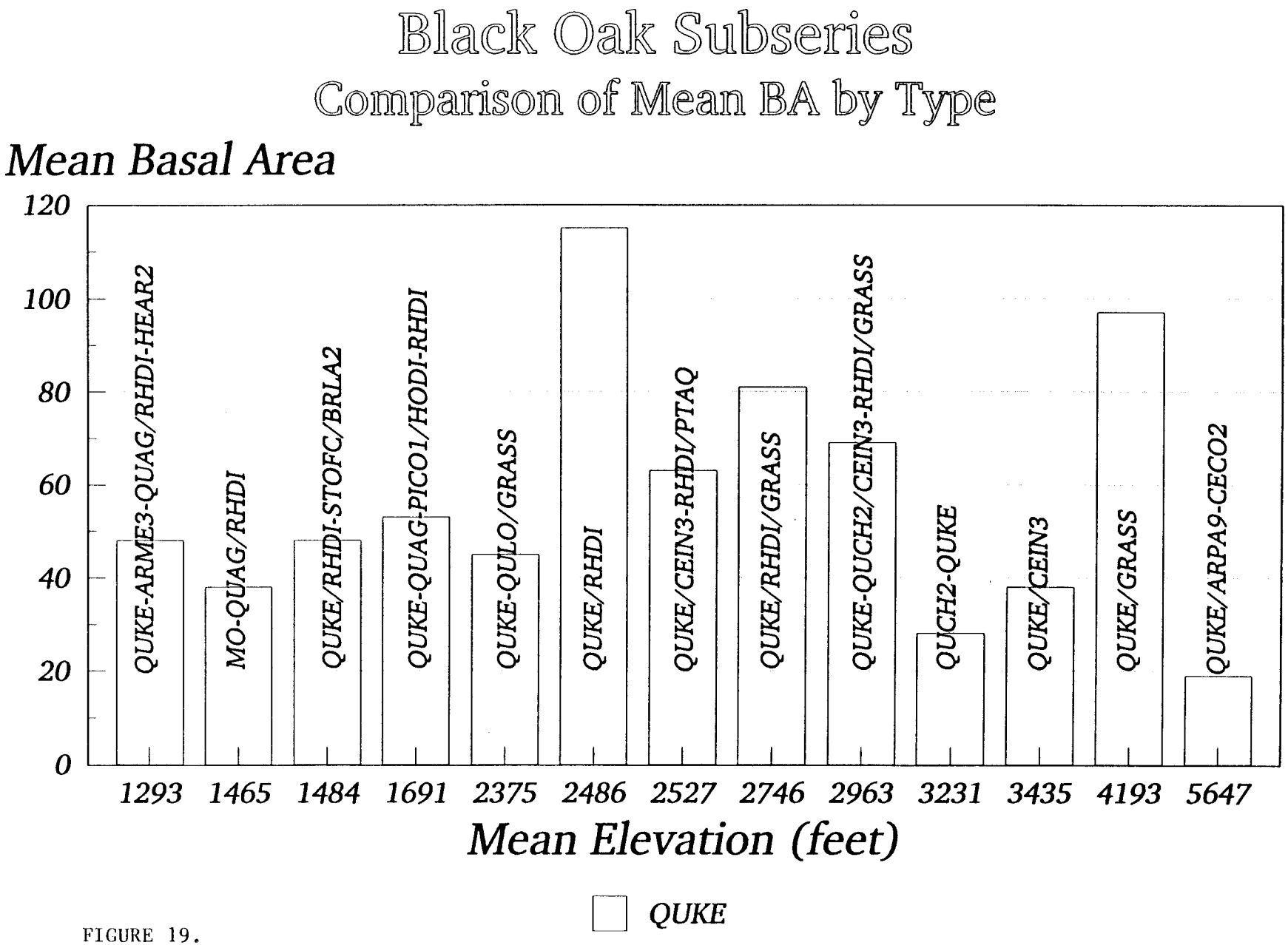
Black Oak Subseries
Comparison of Mean BA by Type
Mean Basal Area
120
100
80
60
40
20
0
QUKE-ARME3-QUAG/RHDI-HEAR2
MO-QUAG/RHDI
QUKE/RHDI-STOFC/BRLA2
QUKE-QUAG-PICO1/HODI-RHDI
QUKE-QULO/GRASS
QUKE/RHDI
QUKE/CEIN3-RHDI/PTAQ
QUKE/RHDI/GRASS
QUKE-QUCH2/CEIN3-RHDI/GRASS
QUCH2-QUKE
QUKE/CEIN3
QUKE/GRASS
QUKE/ARPA9-CECO2
1293
1465
1484
1691
2375
2486
2527
2746
2963
3231
3435
4193
5647
Mean Elevation (feet)
QUKE

FIGURE 19.

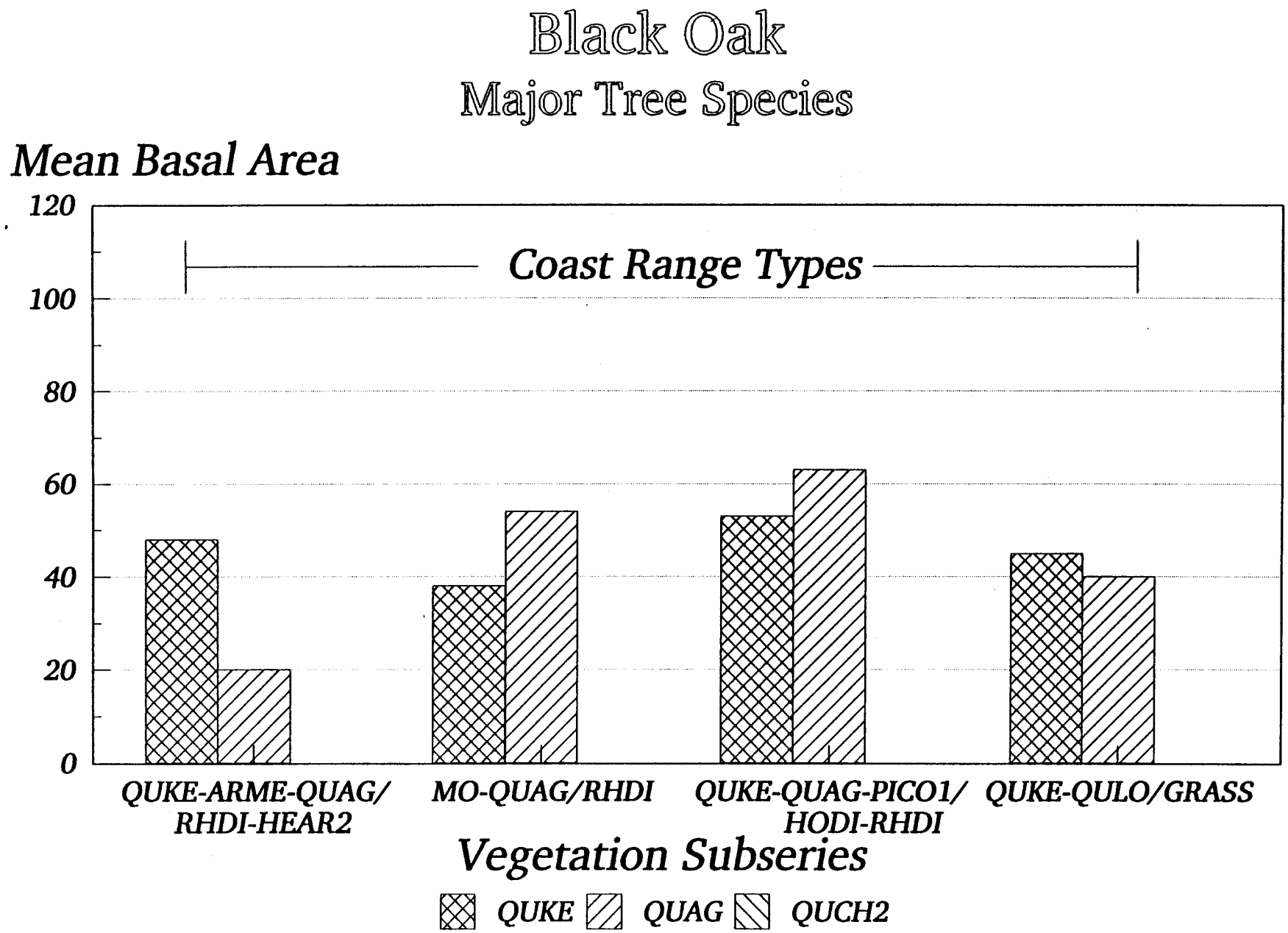
Black Oak
Major Tree Species
Mean Basal Area
120
100
80
60
40
20
0
Coast Range Types
QUKE-ARME-QUAG/ RHDI-HEAR2
MO-QUAG/RHDI
QUKE-QUAG-PICO1/ HODI-RHDI
QUKE-QULO/GRASS
Vegetation Subseries
QUKE
QUAG
QUCH2

FIGURE 20.

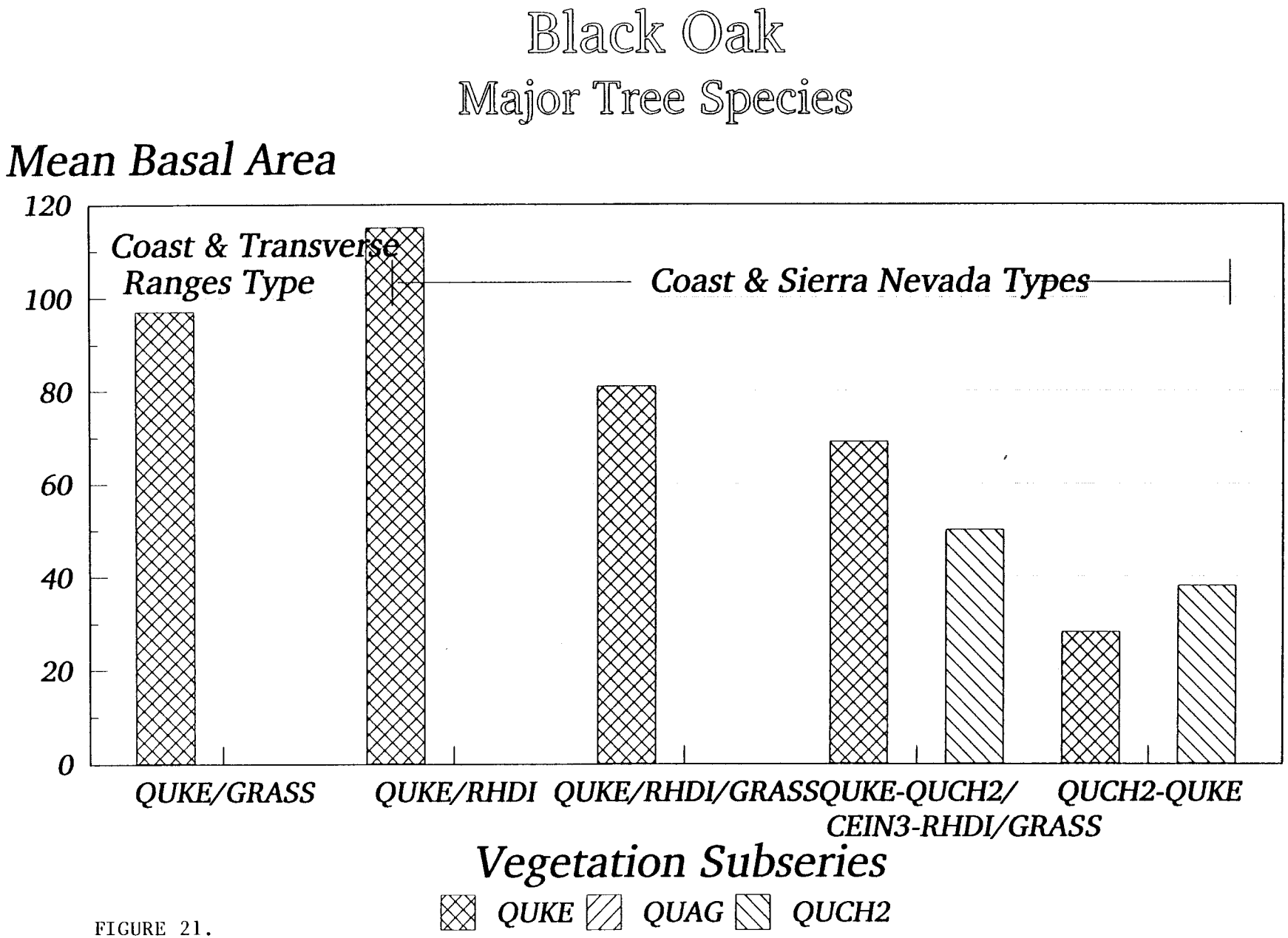
Black Oak
Major Tree Species
Mean Basal Area
120
100
80
60
40
20
0
Coast & Transverse Ranges Type
Coast & Sierra Nevada Types
QUKE/GRASS
QUKE/RHDI
QUKE/RHDI/GRASS
QUKE-QUCH2/ CEIN3-RHDI/GRASS
QUCH2-QUKE
Vegetation Subseries
QUKE
QUAG
QUCH2

FIGURE 21.

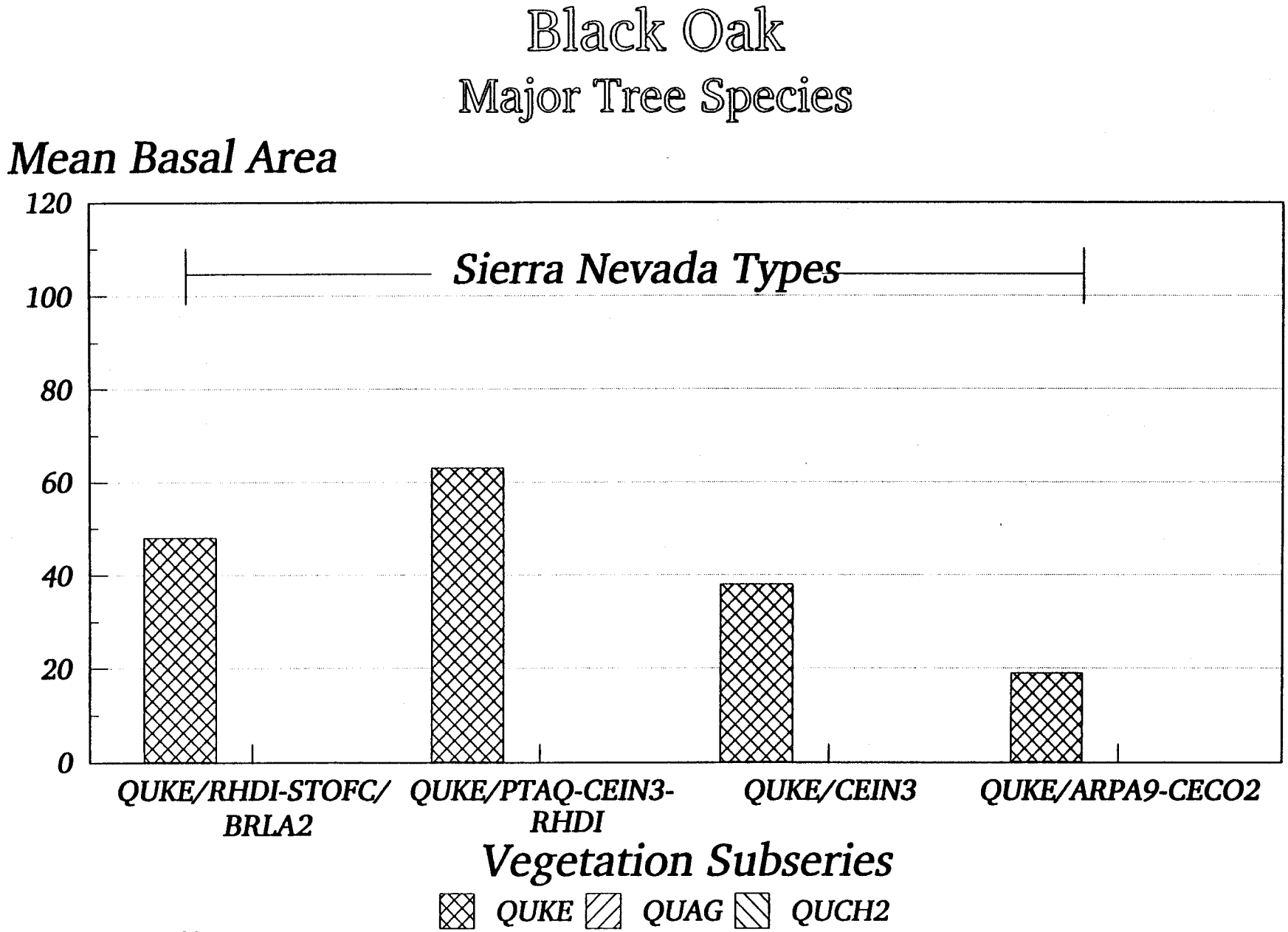
Black Oak
Major Tree Species
Mean Basal Area
120
100
80
60
40
20
0
Sierra Nevada Types
QUKE/RHDI-STOFC/ BRLA2
QUKE/PTAQ-CEIN3- RHDI
QUKE/CEIN3
QUKE/ARPA9-CECO2
Vegetation Subseries
QUKE
QUAG
QUCH2

FIGURE 22.

THE CALIFORNIA SCRUB OAK SERIES

The Scrub Oak Series is comprised of cover types that have scrub oak as a dominant or codominant species in the overstory (figure 23). This series has are 3 subseries, all found at a mean elevation of about 1400 ft on northerly facing slopes in the central coastal ranges, in San Benito, Monterey, and San Luis Obispo counties. Parent material of the soils of these sites is mostly shale, with some sandstone.

The Scrub Oak-Blue Oak/Grass subseries has both scrub oak and blue oak in the overstory, distinguishing this type from the other two types which have no blue oak. Scrub oak and blue oak are usually codominant; mean basal area of scrub oak is 34 sq. ft/acre, compared with 21 sq. ft/acre for blue oak. Scrub oak occurs in the understory with 64% constancy, but averages only 5% cover. Grass averages 85% cover with 100% constancy. This type is more likely to be found on clay loam soils than the other types.

The Scrub Oak/Grass subseries has scrub oak as the only dominant overstory species, averaging 50 sq. ft/acre of basal area. Scrub oak is usually present in the understory as well, averaging 9% with 87% constancy. Grass is the only other major component of the understory, averaging 78% with 100% constancy.

The Scrub Oak subseries has scrub oak as the only major species present. Mean basal area of scrub oak (73 sq. ft/acre) is significantly higher ($p < .02$) in this type than in the Scrub Oak-Blue Oak/Grass type. Understory scrub oak cover, averaging 21% with 91% constancy, is also significantly higher ($p < .06$) in this type than in the Scrub Oak-Blue Oak/Grass type. Grass occurs with only a 45% constancy, and averages 10% cover, significantly less ($p < .00$) than the other two types. Litter is common, with 91% constancy and 60% mean cover, while it is rare in the other types. Toyon and/or hollyleaf cherry can be found more than one third of the time in the understory. Most of the soils for this type have a gravelly or rocky component.

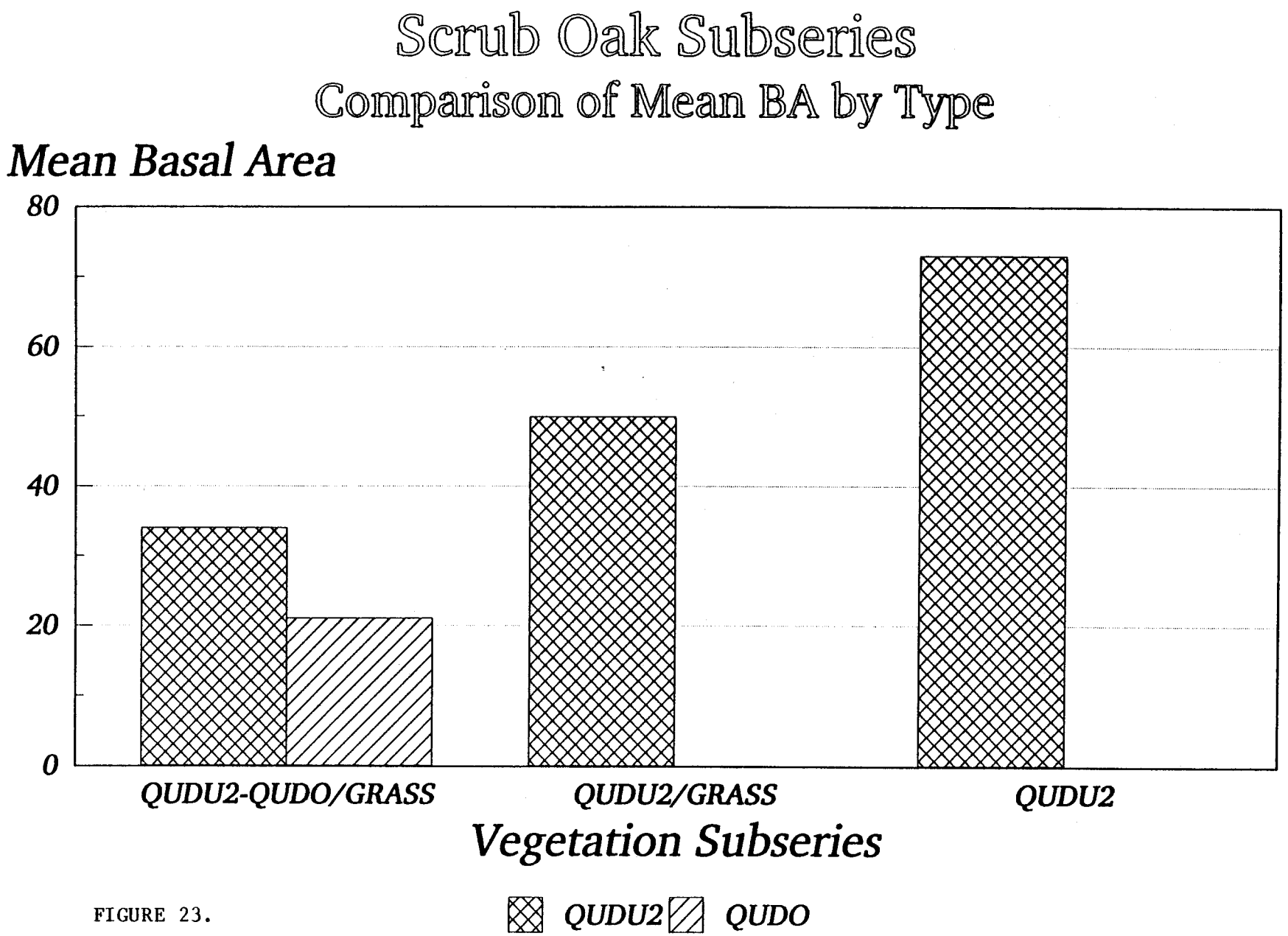
Scrub Oak Subseries
Comparison of Mean BA by Type
Mean Basal Area
80
60
40
20
0
QUDU2-QUDO/GRASS
QUDU2/GRASS
QUDU2
Vegetation Subseries
QUDU2
QUDO

FIGURE 23.

THE CALIFORNIA MIXED OAK SERIES

The Mixed Oak series is comprised of cover types that contain 3 or more species of Quercus with constancies of 30 percent or more. This series is comprised of 10 subseries; eight types are found in the coastal ranges and 2 types are found in the Sierra Nevada.

The Sierra Nevada types, Mixed Oak-Interior Live Oak-Digger Pine and Interior Live Oak/Toyon, exist at similar elevations (1900 ft) from Placer county in the northern Sierra to Madera county in the south. Both types are dominated by interior live oak, but also contain black oak, and/or blue oak, and/or valley oak (figure 24). The Mixed Oak-Interior Live Oak-Digger Pine type has a significantly higher mean basal area of Digger pine ($p<.06$) and blue oak ($p<.00$), and no understory interior live oak. Overall mean basal area is higher for this type. In addition, this type contains significantly more grass cover ($p< .00$) averaging 78 percent, compared to an average of 42 percent cover for the Interior Live Oak/Toyon type (figure 25).

There are 3 coast range lower elevation mixed oak subseries (figure 26). The Mixed Oak-California Buckeye/Grass type tends to occur on the driest sites of the 3 lower elevation subseries at an average of 937 ft elevation. The Mixed Oak/Grass type occurs in the middle of the moisture gradient at an average of 952 ft elevation, while the Mixed Oak/Poison Oak-Baccharis type tends to occur on the moister end at an average of 1020 feet. The Mixed Oak-California Buckeye/Grass type is generally found in the central coast from Napa to San Benito counties. Compared to its other two lower elevation mixed oak associates, it tends to be found on the central valley side of the coastal ranges on sandy and gravelly loams. The Mixed Oak/Grass and Mixed Oak/Poison Oak-Baccharis types tend to have a wider geographic range occurring from Napa to Santa Barbara counties.

The Mixed Oak/Poison Oak-Baccharis subseries has significantly less mean basal area of blue oak ($p<.04$), and more valley oak than its other two associates. It also has significantly more cover of coffeeberry, ($p<.01$), and poison oak, ($p<.01$) than the other two subseries (figure 27). The Mixed Oak-California Buckeye/Grass type is distinguished from its low elevation associates by its high constancy (though low overall mean basal area) of California buckeye. The Mixed Oak-California Buckeye/Grass type also has significantly more grass cover than the Mixed Oak/Grass, which also has a higher mean grass cover than the Mixed Oak/Poison Oak-Baccharis type ($p<.00$), (figure 27).

The coast range middle elevation subseries include the Mixed Oak-Digger Pine/Grass, Mixed Oak-Valley Oak/Grass, Mixed Oak-Coast Live Oak/Poison Oak, and Mixed Oak-Black Oak/Grass types (figure 28). Each subseries is named for the dominant oak species in oak species mixture. The Mixed Oak-Digger Pine/Grass type tends to be the driest of the four middle elevation types. It occurs primarily in the coastal ranges from Contra Costa to Santa Barbara and Kern counties, at a mean elevation of 1522'. Slopes are commonly less than 35 percent and this type is located primarily on sandstone and shale parent materials on northwest to east aspects.

The Mixed Oak-Valley Oak/Grass type is distinguished from its associates primarily by its significantly higher mean basal area of valley oak (92 sq ft/acre), and 100 percent constancy of this species in this type (figure 28). There is also a noticeable absence of black oak in this type. The type may be found from Marin and Contra Costa counties to San Luis Obispo county at mean elevations of 1443'. The Mixed Oak-Valley Oak/Grass subseries is found on a wide range of slopes (flat to very steep), and aspects (including 40 percent on south to west aspects). Parent material is primarily shale, but this type is also found on granitics, serpentine, and sandstones, among others.

The Mixed Oak-Coast Live Oak/Poison Oak type is distinguished from the Mixed Oak-Black Oak/Grass type by the absence of blue oak in the type, and its significantly higher ($p<.00$) mean basal area of coast live oak (figure 28). Additionally, the Mixed Oak-Coast Live Oak/Poison Oak type has significantly less ($p<.00$) grass cover than the Mixed Oak-Black Oak/Grass type (figure 29).

The Mixed Oak-Coast Live Oak/Poison Oak type tends to occur on steeper slopes than its other middle elevation associates, and occurs on all soil textures and a wide range of parent materials from Sonoma to Monterey counties. The Mixed Oak-Black Oak/Grass subseries occurs primarily on soft sedimentary sandstone parent material, although it also may occur on shales, metamorphic, and other parent materials. Although primarily a coast range type, ten percent of the samples representing the Mixed Oak-Black Oak/Grass subseries were found in the Sierra Nevada.

The Black Oak-Valley Oak/Grass subseries is distinguished from all its other coastal associates by elevation. It is the highest of the Mixed Oak Series types with a mean elevation of 2900'. Black oak and grass are always present in the type, with very few other species in the understory (figure 30).

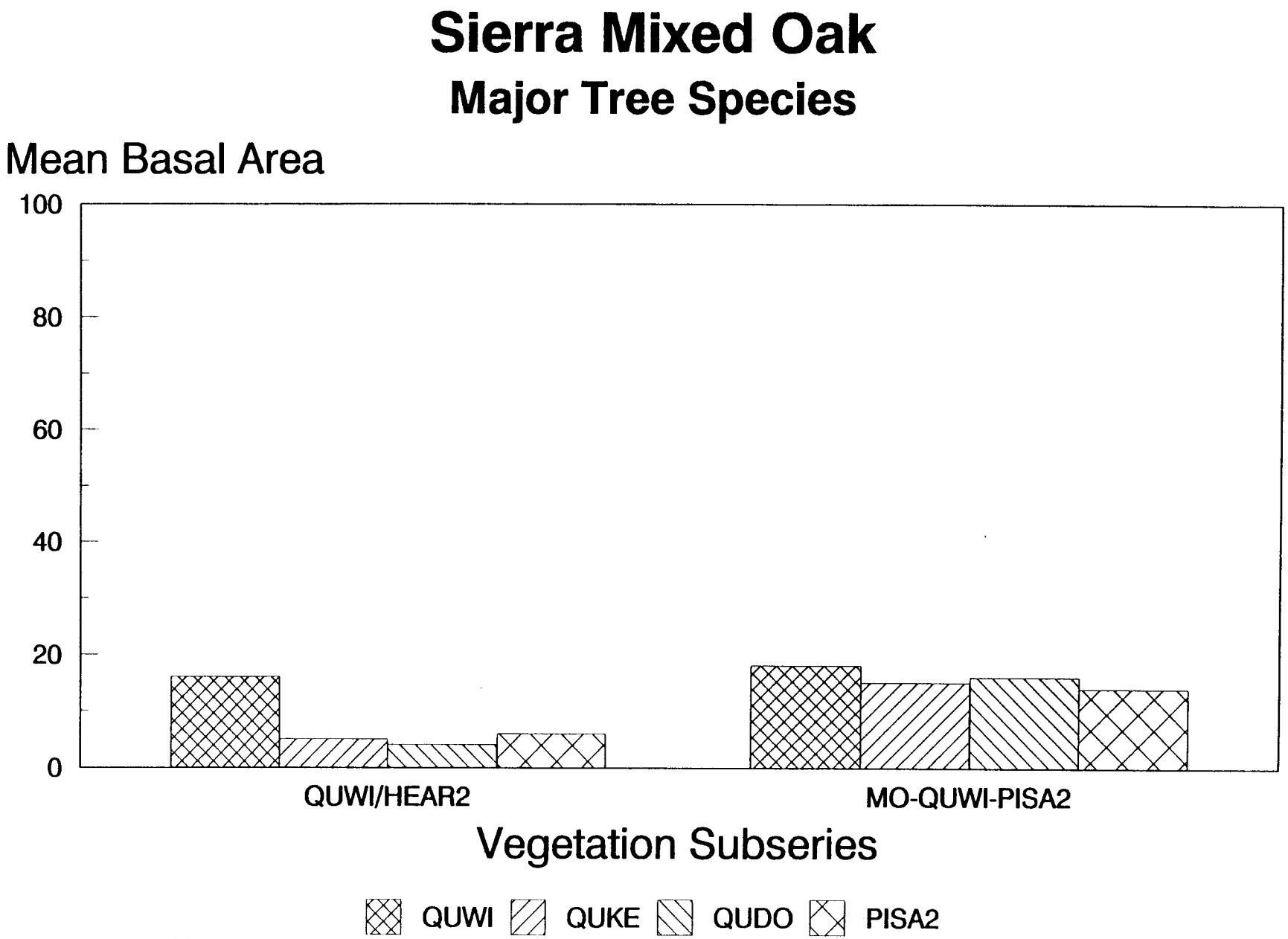
Sierra Mixed Oak
Major Tree Species
Mean Basal Area
100
80
60
40
20
0
QUWI/HEAR2
MO-QUWI-PISA2
Vegetation Subseries
QUWI
QUKE
QUDO
PISA2

FIGURE 24.

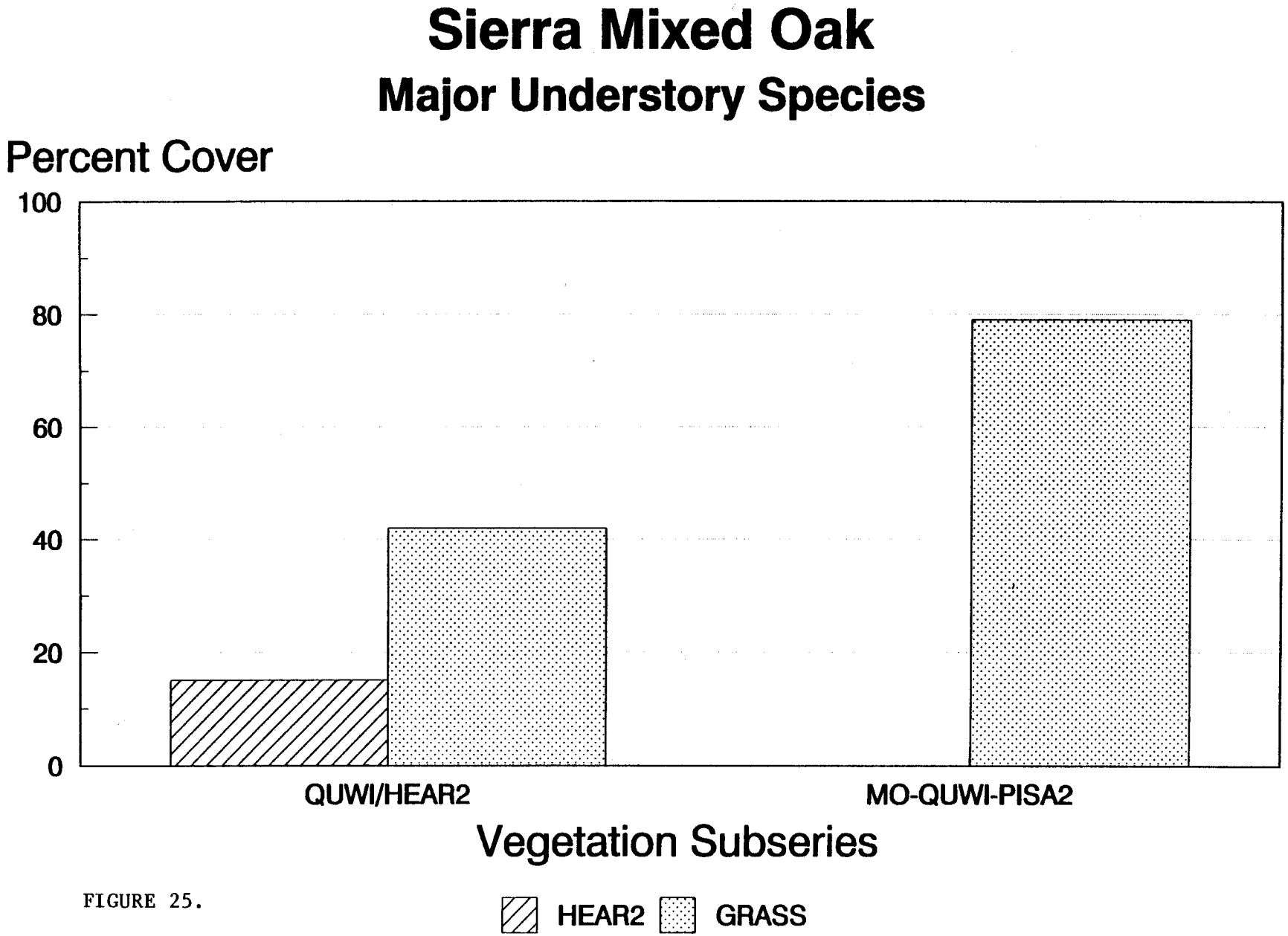
Sierra Mixed Oak
Major Understory Species
Percent Cover
100
80
60
40
20
0
QUWI/HEAR2
MO-QUWI-PISA2
Vegetation Subseries
HEAR2
GRASS

FIGURE 25.

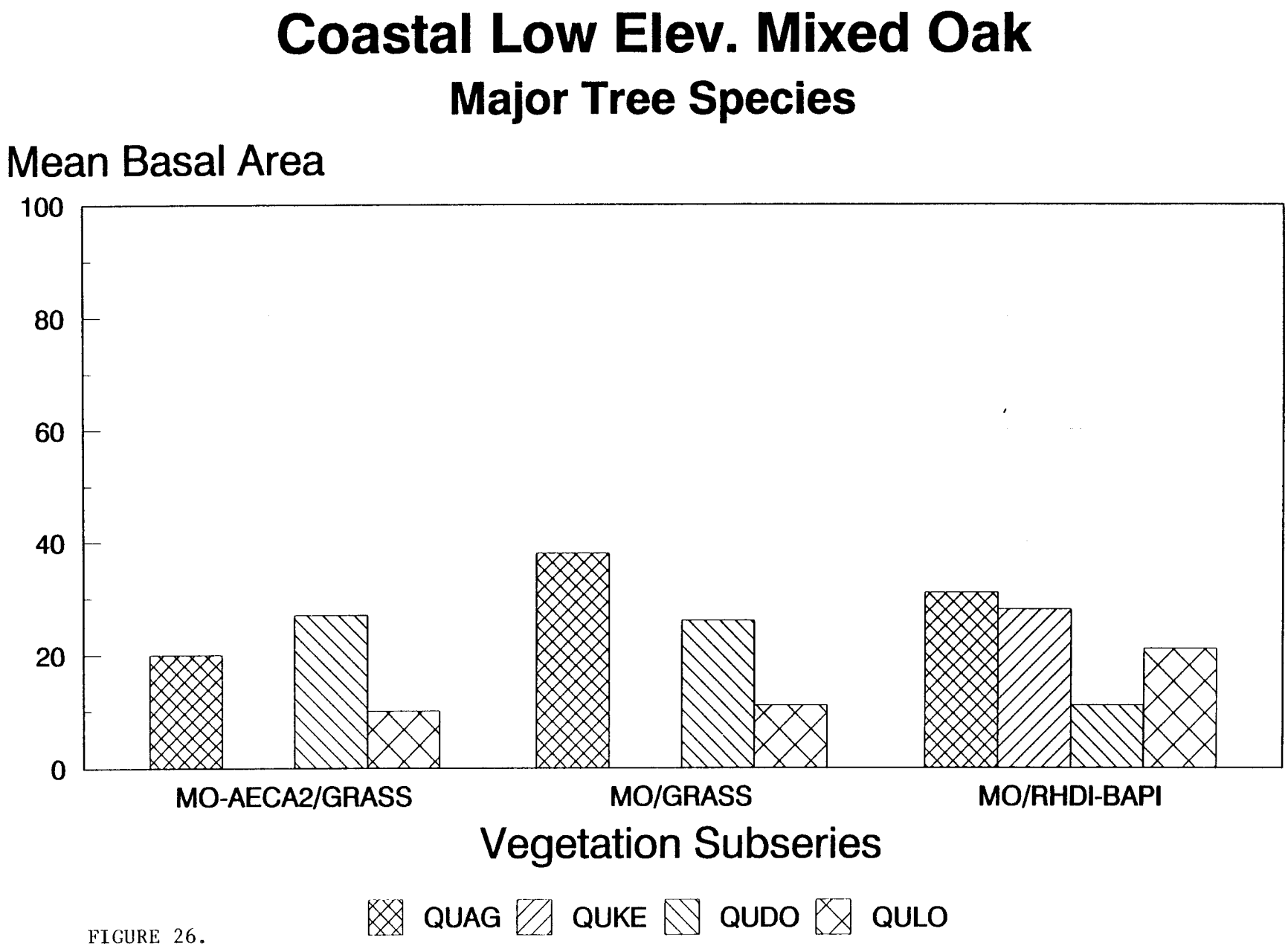
Coastal Low Elev. Mixed Oak
Major Tree Species
Mean Basal Area
100
80
60
40
20
0
MO-AECA2/GRASS
MO/GRASS
MO/RHDI-BAPI
Vegetation Subseries
QUAG
QUKE
QUDO
QULO

FIGURE 26.

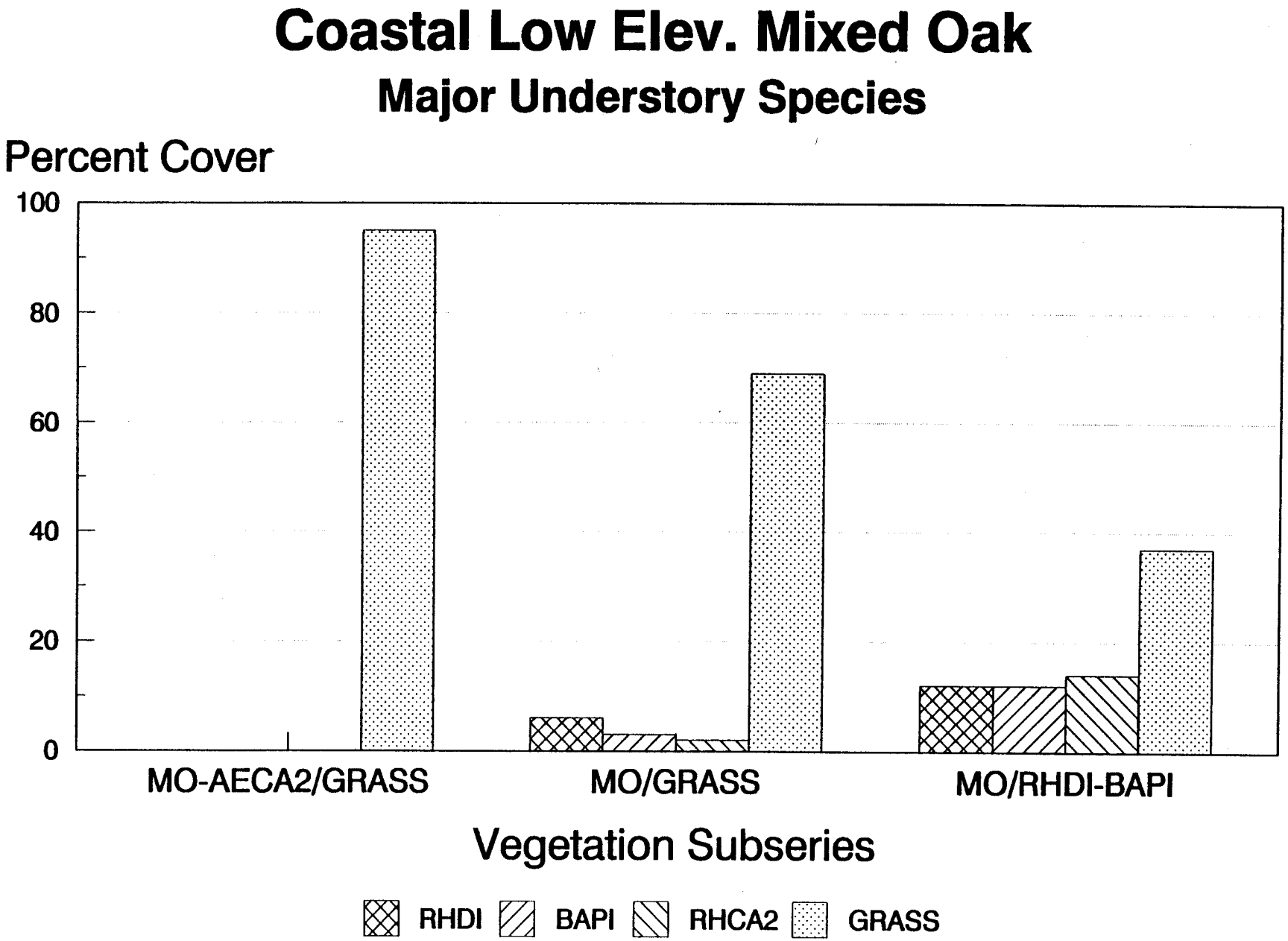
Coastal Low Elev. Mixed Oak
Major Understory Species
Percent Cover
100
80
60
40
20
0
MO-AECA2/GRASS
MO/GRASS
MO/RHDI-BAPI
Vegetation Subseries
RHDI
BAPI
RHCA2
GRASS

FIGURE 27.

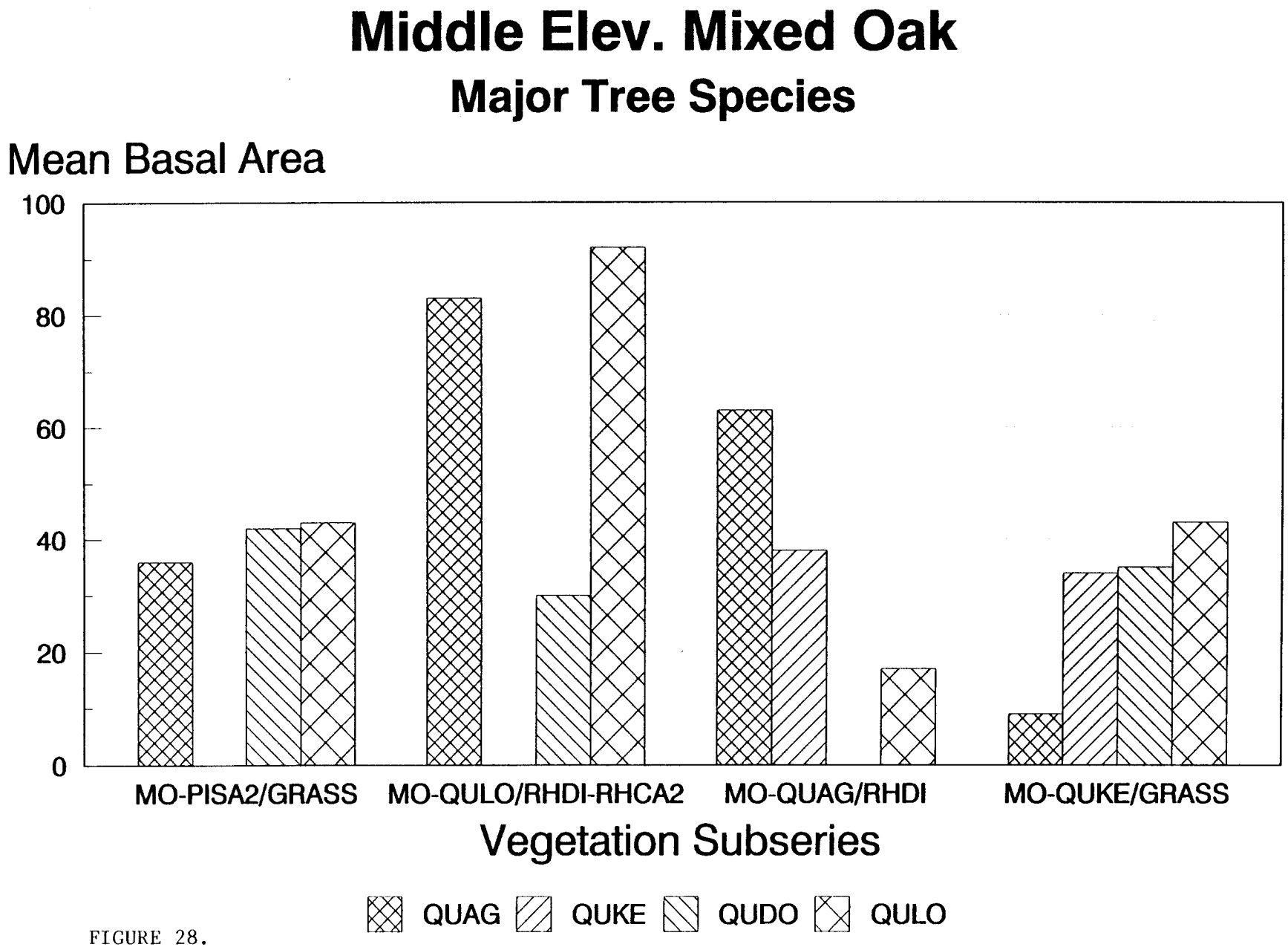
Middle Elev. Mixed Oak
Major Tree Species
Mean Basal Area
100
80
60
40
20
0
MO-PISA2/GRASS
MO-QULO/RHDI-RHCA2
MO-QUAG/RHDI
MO-QUKE/GRASS
Vegetation Subseries
QUAG
QUKE
QUDO
QULO

FIGURE 28.

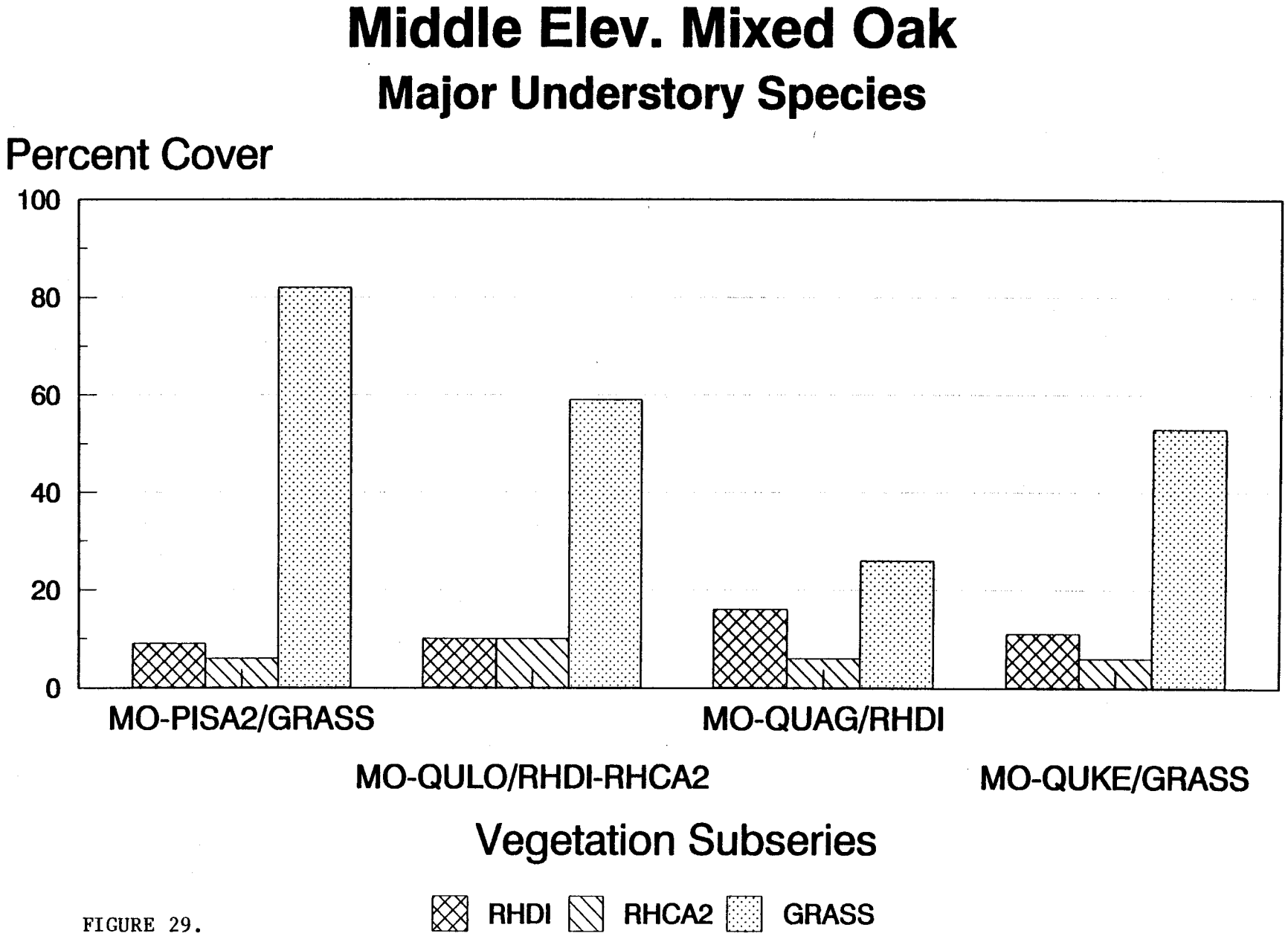
Middle Elev. Mixed Oak
Major Understory Species
Percent Cover
100
80
60
40
20
0
MO-PISA2/GRASS
MO-QULO/RHDI-RHCA2
MO-QUAG/RHDI
MO-QUKE/GRASS
Vegetation Subseries
RHDI
RHCA2
GRASS

FIGURE 29.

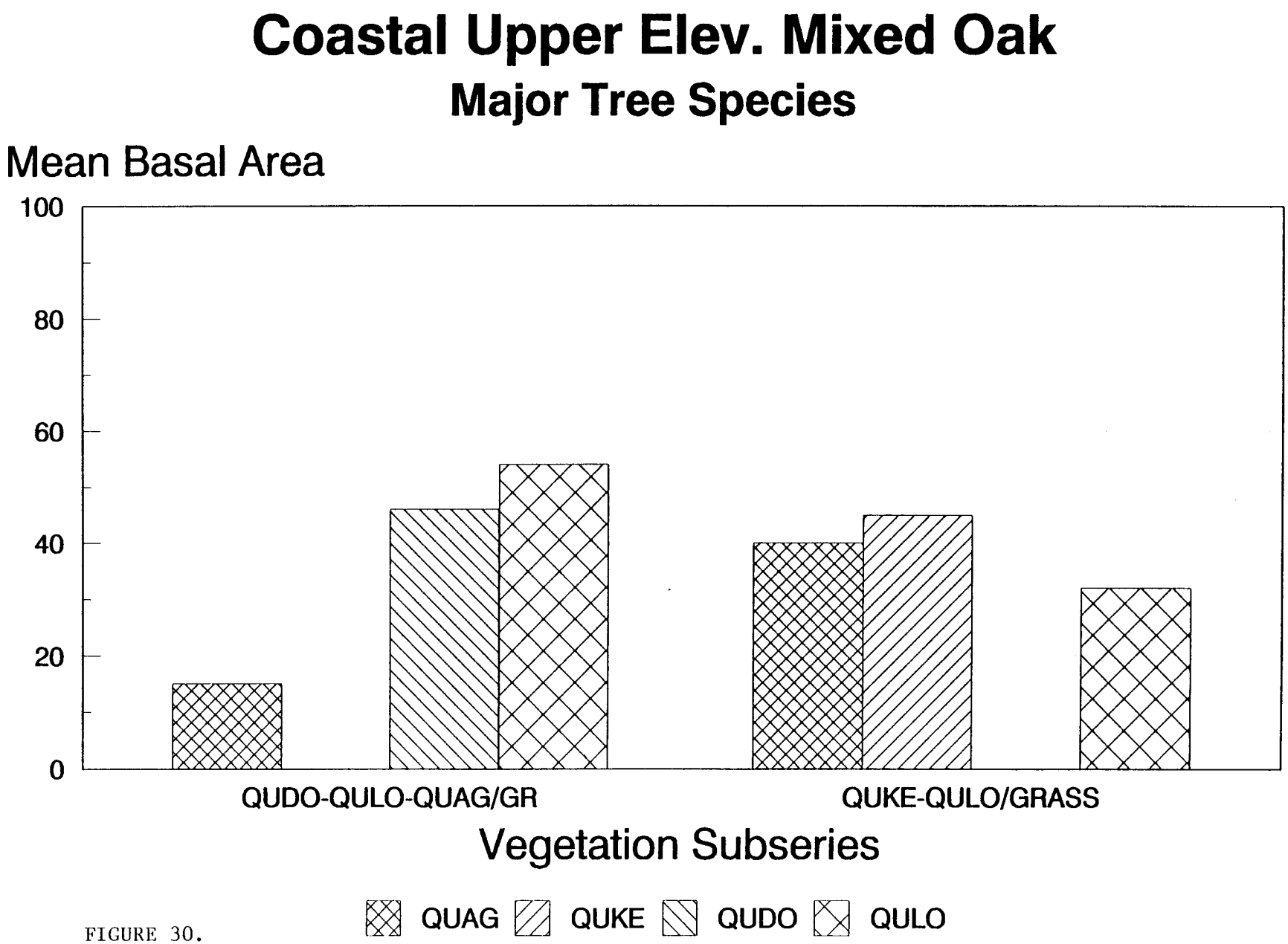
Coastal Upper Elev. Mixed Oak
Major Tree Species
Mean Basal Area
100
80
60
40
20
0
QUDO-QULO-QUAG/GR
QUKE-QULO/GRASS
Vegetation Subseries
QUAG
QUKE
QUDO
QULO

FIGURE 30.

KEYS TO THE TYPES

Instructions

Each description contains the type name, number of plots used to describe the type, location information, environmental setting, and plant species. Additionally, a stand table is given for all tree species. Since the descriptions are founded on old plot data, the original units are used, without conversion to metric.

As mentioned before, this document does not contain garry oak, Engelmann oak, or tanoak plant community types. In addition, users may find themselves in oak cover types that are not described within the classification system. This may be because the data set used to develop the classification did not contain examples of the type. Specific examples are described in the overview of types.

Users must know approximately a dozen plant species to use the keys to the hardwood rangeland subseries. Since keys are only a tool in identifying the type, users must also read the type description to verify that he/she has correctly identified the type. If the description does not fit with what the user is seeing on the ground, he/she should go back through the key and check alternative routes.

The rangeland cover types have all been given a name (and number). The common name is given as well as the code name, which is a useful shorthand method of labelling the types. The name is composed of the dominant species of the tree, shrub, and/or herbaceous layer. The species having the greatest constancy (presence) across all plots representing the type is used in the name. A slash (/) is used to separate species of different life forms, and a dash (-) is used to separate species of the same life form.

Scientific species names, common names, and codes come from Munz and Keck 1968, and Powell 1987. Appendix 2 lists the plant species and codes used in this report. Notations on elevation and soils are given in feet. Basal area is given in square feet per acre. Appendix 3 displays the codes for environmental variables.

Constancy is expressed, in percent, as the number of plots in a type which contain a specific number of species divided by the total number of plots used to describe the type.

KEY TO THE SERIES

1a. Stand consists of single Quercus species.

Go to :

Coast Live Oak Key:	p. 62
Blue Oak Key:	p. 65
Valley Oak Key:	p. 68
Interior Live Oak Key:	p. 69
Black Oak Key:	p. 70
Scrub Oak Key:	p. 73

1b. Stand consists of two or more Quercus species.

2a. Go to the key of the dominant oak species.

2b. If stand consists of 3 or more oak species, go to:

Mixed Oak Series Key: p. 74

KEY TO THE COAST LIVE OAK SUBSERIES

1a. Coast live oak (QUAG) is the only overstory tree. Understory species are rarely present with total cover that seldom exceeds 25%. Coast live oak basal area is usually high (>200ft^2/acre).

COAST LIVE OAK (24).....p. 107

1b. Coast live oak may be the only overstory tree present and total understory cover exceeds 25%. Coast live oak basal area is less than 200 sq.ft/acre.

2a. Understory grass cover generally exceeds 50%.

3a. Blue oak is present.

BLUE OAK-COAST LIVE OAK/GRASS (37).....p. 100

3b. Blue oak is absent.

COAST LIVE OAK/GRASS (28).....p. 97

2b. Understory grass cover is less than 50%.

4a. The following shrubs are present individually or together in the understory: coffeeberry, creambush, blackberry, and hazelnut. Big leaf maple may be present in the tree layer. The shrubs toyon, chamise, coast sagebrush, and black sage are absent. California bay is absent.

5a. Bracken fern is present, baccharis is often present. Big leaf maple, madrone, snowberry and hazelnut are absent.

COAST LIVE OAK/BLACKBERRY/BRACKEN FERN (27)...p. 77

5b. Bracken fern and baccharis are absent.

6a. Madrone and hazelnut are present. Big leaf maple, creambush and snowberry are absent.

COAST LIVE OAK-MADRONE/HAZELNUT-BLACKBERRY (26)..p. 81

6b. Madrone and hazelnut are absent. Big leaf maple, creambush and snowberry are present.

7a. Big leaf maple is present. Snowberry is absent.

COAST LIVE OAK-MAPLE/COFFEEBERRY-OCEAN SPRAY (252).....p. 129

7b. Big leaf maple is absent. Snowberry is present.

COAST LIVE OAK/OCEAN SPRAY-SNOWBERRY (251)...p. 118

4b. Blackberry, hazelnut, and big leaf maple are absent. Coffeeberry and creambush may be present. The shrubs toyon, chamise, coast sagebrush, and black sage may be present. California bay may be present.

8a. Toyon is present. Redberry and California bay may be present. Black sage and coast sagebrush are absent.

9a. Other shrubs and trees are generally absent.

COAST LIVE OAK/TOYON-POISON OAK (214).....p. 110

9b. Coffeeberry, redberry, creambush and California bay may be present. Chamise and wedgeleaf ceanothus may be present.

10a. Chamise is present; wedgeleaf ceanothus is often present. Coffeeberry, creambush and California bay are absent.

COAST LIVE OAK/TOYON/GRASS (215).....p. 121

10b. Chamise and wedgeleaf ceanothus are absent. Coffeeberry, redberry and California bay are present.

11a. Coffeeberry and redberry are present. California bay and scrub oak are absent.

COAST LIVE OAK/COFFEEBERRY-TOYON (213).....p. 114

11b. Coffeeberry and redberry are absent. California bay and scrub oak are present.

COAST LIVE OAK-CALIFORNIA BAY/TOYON-SCRUB OAK (211).....p. 125

8b. Toyon is absent. Redberry and California bay are absent. Black sage and coast sagebrush may be present.

12a. Chamise, black sage and coast sagebrush are present individually or together.

13a. Coast sagebrush is present with greater than 25% cover of grasses. Chamise and black sage are absent.

COAST LIVE OAK/COAST SAGEBRUSH/GRASS (22).....p. 89

13b. Coast sagebrush is absent. Chamise and black sage are present individually or together with less than 25% cover of grasses.

COAST LIVE OAK/CHAMISE-BLACK SAGE (20).....p . 103

12b. Chamise, black sage and coast sagebrush are absent.

14a. Poison oak is the dominant shrub cover. Grass cover is absent.

COAST LIVE OAK/POISON OAK (231).....p. 85

14b. Poison oak and grass both have high cover.

COAST LIVE OAK/POISON OAK/GRASS (232).....p. 93

KEY TO THE BLUE OAK SUBSERIES.

1a. Digger pine is present in the stand.

2a. Digger pine and interior live oak are present. Wedgeleaf ceanothus is often present.

3a. Whiteleaf manzanita is present.

BLUE OAK-DIGGER PINE/WHITELEAF MANZANITA/GRASS (13)..... p. 138

3b. Whiteleaf manzanita is absent or occurs rarely.

4a. Understory interior live oak and blue oak are often present. Other shrubs may be present in the understory.

5a. Wedgeleaf ceanothus averages 18 percent cover and is always present. Redberry, poison oak, and other shrubs may be present.

BLUE OAK/WEDGELEAF CEANOTHUS/GRASS (9).....p. 163

5b. Wedgeleaf ceanothus, if present, averages 8 percent cover. Other shrubs are rare.

BLUE OAK-INTERIOR LIVE OAK/GRASS (10).....p. 149

4b. Understory interior live oak and blue oak are not present. Shrubs are rare. Interior live oak is dominant in the stand.

INTERIOR LIVE OAK-BLUE OAK-DIGGER PINE (11).....p. 153

2b. Digger pine is present. Interior live oak is absent. Wedgeleaf ceanothus may or may not be present.

6a. Understory shrubs are rare, averaging < 10 percent cover.

BLUE OAK-DIGGER PINE/GRASS (6).....p. 159

6b. Understory shrubs such as wedgeleaf ceanothus, and/or mountain mahogany, and/or narrowleaf goldenbush are present.

BLUE OAK-DIGGER PINE/WEDGELEAF CEANOTHUS-MT. MAHOGANY (8).....p. 167

1b. Digger pine is absent or rare.

7a. Generally other oaks are present in the stand with blue oak.

8a. Interior live oak may be present. Basal area of interior live oak is generally > 10 sq.ft./acre.

9a. The stand is dense with trees averaging > 155 trees per acre, with basal area > 100 sq.ft./acre.

INTERIOR LIVE OAK-BLUE OAK-DIGGER PINE (11).....p. 153

9b. The stand is relatively open, with basal area averaging 50 sq.ft./acre.

10a. Wedgeleaf ceanothus, if present, averages < 10 percent cover.

BLUE OAK-INTERIOR LIVE OAK/GRASS (10).....p. 149

10b. Wedgeleaf ceanothus is present and averages > 10 percent cover.

BLUE OAK/WEDGELEAF CEANOTHUS/GRASS (9).....p. 163

8b. Valley oak and/or coast live oak are present in the stand.

11a. Valley oak is codominant with blue oak.

12a. Coast live oak is absent.

BLUE OAK-VALLEY OAK/GRASS (35).....p. 142

12b. Both valley oak and coast live oak are present in the stand.

BLUE OAK-VALLEY OAK-COAST LIVE OAK/GRASS (41)....p. 156

11b. Valley oak is absent.

13a. Coast live oak is present. Coast sagebrush may also be present though shrubs are rare; elevation averages 1000'.

BLUE OAK-COAST LIVE OAK/GRASS (37).....p. 132

13b. Shrubs are common. Elevation averages 2500'.

BLUE OAK-DIGGER PINE/WEDGELEAF CEANOTHUS-MT. MAHOGANY (8).....p. 167

7b. Generally blue oak is the only oak present in the stand.

14a. Narrowleaf goldenbush is present.

BLUE OAK/NARROWLEAF GOLDENBUSH (40).....p. 171

14b. Narrowleaf goldenbush is absent. Grass is the primary understory species.

15a. Understory blue oak are present.

BLUE OAK-UNDERSTORY BLUE OAK/GRASS (39).....p. 145

15b. Understory blue oak are absent.

BLUE OAK/GRASS (38).....p. 135

KEY TO THE VALLEY OAK SUBSERIES

1a. Valley oak is the only tree species in the overstory.

VALLEY OAK/GRASS (30).....p. 186

1b. Valley oak is mixed with other oak species.

2a. Black oak is present.

BLACK OAK-VALLEY OAK/GRASS (29).....p. 189

2b. Black oak is absent.

3a. Blue oak is present; coast live oak is rarely present.

BLUE OAK-VALLEY OAK/GRASS (35).....p. 183

3b. Blue oak is sometimes present; coast live oak is present.

4a. Poison oak is present.

5a. Coffeeberry is present.

MIXED OAK-VALLEY OAK/POISON OAK-COFFEEBERRY (33).p. 180

5b. Coffeeberry is absent.

COAST LIVE OAK-VALLEY OAK/POISON OAK (32).....p. 174

4b. Poison oak is absent.

VALLEY OAK-COAST LIVE OAK/GRASS (31).....p. 177

KEY TO THE INTERIOR LIVE OAK SUBSERIES

1a. Yerba santa is present.

2a. Yerba santa averages >20% cover, grass averages 30%, and overstory tree cover may or may not be present.

INTERIOR LIVE OAK/YERBA SANTA/GRASS (16).....p. 209

2b. Yerba Santa averages <20% cover, whiteleaf manzanita and/or wedgeleaf ceanothus is common. Interior live oak is present in the overstory.

INTERIOR LIVE OAK/WHITELEAF MANZANITA (18).....p. 205

1b. Yerba santa is absent or is rare occuring at ≤5% cover.

3a. Madrone is present, and grass is rare.

INTERIOR LIVE OAK-MADRONE/POISON OAK (15).....p. 195

3b. Madrone is absent.

4a. Grass is present and interior live oak is often present in the understory.

5a. Manzanita is common.

6a.Digger pine and/or blue oak are present.

INTERIOR LIVE OAK-DIGGER PINE/MANZANITA (17).....p. 192

6b. Digger pine is rare and blue oak is absent.

INTERIOR LIVE OAK/WHITELEAF MANZANITA (18).....p. 201

5b. Manzanita is not common.

7a. Understory interior live oak may be present, blue oak is common, and toyon is rare.

INTERIOR LIVE OAK-BLUE OAK-DIGGER PINE (11).....p. 198

7b. Understory interior live oak and toyon are present. Blue oak is rare.

INTERIOR LIVE OAK/TOYON (19).....p. 205

4b. Grass is absent.
INTERIOR LIVE OAK-MADRONE/POISON OAK (15).....p. 195

KEY TO THE BLACK OAK SUBSERIES

1a. Coast live oak, valley oak, canyon live oak, madrone, and/or beach pine are present at >5 sq. ft. of basal area.

2a. Canyon live oak is present.

3a. Canyon live oak and/or black oak are present in the understory at >5% cover. Deerbrush is absent, or present at <10% cover. Grass is absent.

CANYON LIVE OAK-BLACK OAK (944).....p. 244

3b. Canyon live oak and/or black oak are absent in the understory, or present at <5% cover. Deerbrush is often present at >10% cover. Grass is often present.

BLACK OAK-CANYON LIVE OAK/DEERBRUSH-POISON OAK/GRASS (912).....p. 240

2b. Canyon live oak is absent.

4a. Two of these three species are present: madrone, beach pine, ocean spray.

5a. Two of these three species are present: beach pine, ocean spray, coffeeberry. Toyon is absent.

BLACK OAK-COAST LIVE OAK-BEACH PINE/ OCEAN SPRAY-POISON OAK (95).....p. 224

5b. Two of these three species are absent: beach pine, ocean spray, coffeeberry. Toyon is usually present.

BLACK OAK-MADRONE-COAST LIVE OAK/POISON OAK-TOYON (93).....p. 212

4b. Two of these three species are absent: madrone, beach pine, ocean spray.

6a. Valley oak is present and usually codominant with black oak.

BLACK OAK-VALLEY OAK/GRASS (29).....p. 228

6b. Valley oak absent, or present at <15 sq. ft. of basal area. Coast live oak is present.

MIXED OAK-COAST LIVE OAK/POISON OAK (94).....p. 216

1b. Coast live oak, valley oak, canyon live oak, and beach pine are absent. If present, each species is <5 sq. ft. of basal area.

7a. Poison oak is present. Usually found in Shasta County or the Coast Range.

8a. Deerbrush, California storax, and/or grass-nut are present. Found mainly in Shasta County.

9a. Bracken fern is present. Grass-nut is absent. Usually above 2000 ft. elevation.

BLACK OAK/DEERBRUSH-POISON OAK/BRACKEN FERN (942) p.234

9b. Bracken fern is usually absent. Grass-nut and/or California storax are often present. Usually below 2000 ft. elevation.

BLACK OAK/POISON OAK-CALIFORNIA STORAX/GRASS-NUT (91).....p. 220

8b. Deerbrush, California storax, and grass-nut are not present. Found mainly in the Coast Range.

10a. Grass is >10% cover. Digger pine is often present.

BLACK OAK/POISON OAK/GRASS (97).....p. 237

10b. Grass is <10% cover. Digger pine is absent.

BLACK OAK/POISON OAK (92).....p. 231

7b. Poison oak is absent. Usually found in the central and southern Sierra.

11a. Greenleaf manzanita and/or deerbrush are present.

12a. Greenleaf manzanita is present. Deerbrush is absent, or present at <25% cover.

BLACK OAK/GREENLEAF MANZANITA-MOUNTAIN WHITETHORN (928).....p. 254

12b. Greenleaf manzanita is absent. Deerbrush is present at >25% cover.

BLACK OAK/DEERBRUSH (943).....p. 248

11a. Greenleaf manzanita and deerbrush are absent.

13a. Grass is >5% cover.

BLACK OAK/GRASS (98).....p. 251

13b. Grass is <5% cover.

BLACK OAK/POISON OAK (92).....p. 231

KEY TO THE SCRUB OAK SUBSERIES

1a. Blue oak is present in the overstory. Grass is dominant in the understory.

SCRUB OAK-BLUE OAK/GRASS (1).....p. 260

1b. Blue oak is absent from the overstory.

2a. Grass is >25% cover.

SCRUB OAK/GRASS (2).....p. 257

2b. Grass is <25% cover.

SCRUB OAK (3).....p. 263

KEY TO THE MIXED OAK SUBSERIES

1a. You are located in the Sierra Nevada range.

2a. Understory interior live oak and/or toyon are present.

INTERIOR LIVE OAK/TOYON (19).....p. 269

2b. Understory interior live oak and/or toyon are rare. Digger pine is common.

MIXED OAK-INTERIOR LIVE OAK-DIGGER PINE (910)....p. 266

1b. You are located in the coast ranges.

3a. Mean elevation is greater than 2500'; black oak and valley oak are common.

BLACK OAK-VALLEY OAK/GRASS (29).....p. 302

3b. Mean elevation is less than 2500'.

4a. Valley oak is the dominant oak species in the mix.

5a. Valley oak and coast live oak are codominants.

6a. Grass, poison oak, and coffeeberry may be present. Valley and coast live oak have mean basal area > 60 sq.ft/acre.

MIXED OAK-VALLEY OAK/POISON OAK-COFFEBERRY (33)..p. 28

6b. Black oak is codominant with coast live oak and valley oak. Grass and poison oak are common.

MIXED OAK-BLACK OAK/GRASS (96).....p. 295

5b. Valley and blue oak are codominants. Coast live oak is present.

BLUE OAK-VALLEY OAK-COAST LIVE OAK/GRASS (41)....p. 299

4b. Valley oak is not the dominant oak in the species mix. Coast live oak and/or blue oak and/or black oak is dominant.

7a. Coast live oak and black oak are common in the stand. Blue oak is absent or present at low constancy and cover.

8a. Baccharis and/or coffeeberry are common associates. Toyon may be present. Generally low elevation (mean=1000').

MIXED OAK/POISON OAK-BACCHARIS (212).....p. 280

8b. Baccharis and coffeeberry are very rare. Poison oak is usually present. Mean basal area of coast live oak is twice that of the MO/Poison Oak-Baccharis type. Generally middle elevation (mean=1500').

MIXED OAK-COAST LIVE OAK/POISON OAK (94).....p. 291

7b. Blue oak is a common associate in the mixed oak stand.

9a. California buckeye is common. Grass cover averages 95 percent. Digger pine is absent or very rare. Generally low elevation.

MIXED OAK-CALIFORNIA BUCKEYE/GRASS (36).....p. 273

9b. California buckeye is not common. Digger pine may or may not be present.

10a. Digger pine is absent. Black oak may be present. Low elevation sites.

MIXED OAK/GRASS (34).....p. 276

10b. Digger pine is present. Black oak is absent. Middle elevation sites.

MIXED OAK-DIGGER PINE/GRASS (5).....p. 284

HARDWOOD RANGELAND SUBSERIES DESCRIPTIONS

COAST LIVE OAK SERIES

(27) Coast Live Oak/Blackberry/Bracken Fern
QUAG/RUVI2/PTAQ
N=18

EXTENT: This type occurs in the central coast ranges from Contra Costa to Santa Cruz county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	783	200	2000
ASPECT	All aspects.		
SLOPE	All slopes.		

SOILS:

PARENT MATERIAL	Hard and soft sedimentary rocks.
TEXTURE	Sandy and gravelly loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(27) Coast Live Oak/Blackberry/Bracken Fern
(N=18)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	18	2-92	94
ARME3	Madrone	9	0-17	35
PSME	Douglas-fir	43	0-90	28
UMCA1	Cal. bay	18	0-48	17
QUWI	Interior live oak	9	0-14	17

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	3	0-5	24

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	14	0-28	76
RUVI2	Blackberry	13	0-43	71
BAPI	Baccharis	35	0-95	53
HODI	Ocean spray	18	0-59	53
CETH	Blueblossom ceano.	17	0-49	41
COCO5	Hazelnut	16	0-35	29
ARCA7	Coast sagebrush	9	0-21	17
HEAR2	Toyon	2	0-4	17

HERBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
PTAQ	Bracken Fern	13	0-42	82

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	15	0-66	41
ROCK	-		

(27) Coast Live Oak/Blackberry/Bracken Fern
(N=18)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
QUDO Blue oak
QUKE Black oak
QULO Valley oak
SESE2 Coast redwood

TREE UNDERSTORY
AECA2 Cal. buckeye
PIAT1 Knobcone pine
QUDO Blue oak

SHRUBS
ARTO2 Shaggy barked manzanita
CEPA3 Warty-leaved ceanothus
CRCA2 Cal. croton
DIAU1 Bush monkeyflower
LECA3 Woodbalm
RHCA2 Coffeeberry
RUPA2 Western thimbleberry
SAL11 Willow
SACA4 Mtn blue elderberry
SYMO Creeping snowberry
SYRI Upright snowberry

HERBS
LOSC Lotus

(27) Coast Live Oak/Blackberry/Bracken Fern
(N=18)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	2	0.0	0	0.0	1	0.7	0	0.0	2
ARME3	2	2.1	1	0.8	0	0.0	0	0.0	6
PIAT1	1	0.0	1	0.0	0	0.0	0	0.0	1
PSME	2	1.9	1	1.4	1	0.7	0	0.4	5
QUAG	5	4.2	1	1.9	0	0.2	0	0.2	17
QUDO	7	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	5	0.0	0	0.0	0	0.0	0	0.0	1
QULO	1	0.0	0	0.0	0	0.0	0	0.0	1
QUWI	5	3.2	0	0.0	0	0.0	0	0.0	3
SESE2	5	0.0	0	0.0	0	0.0	0	0.0	1
UMCA1	6	7.5	1	1.7	0	0.0	0	0.0	3

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	2	0.0	2	0	0.0	0	1	0.0	1	0	0.0	0
ARME3	2	2.4	5	1	1.7	3	0	0.0	0	0	0.0	0
PIAT1	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PSME	2	1.9	5	3	4.4	2	1	0.9	4	1	0.0	1
QUAG	5	4.2	17	2	3.7	7	1	0.0	1	1	0.0	1
QUDO	7	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	5	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	5	3.2	3	0	0.0	0	0	0.0	0	0	0.0	0
SESE2	5	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
UMCA1	6	7.5	3	3	0.0	1	0	0.0	0	0	0.0	0

(26) Coast Live Oak-Madrone/Hazelnut-Blackberry
QUAG-ARME3/COCO5-RUVI2
N=23

EXTENT: This type occurs in the central coast ranges from Marin to Monterey county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	870	200	2400
ASPECT	92% on west to north to east.		
SLOPE	Mod steep, averages 36%.		

SOILS:

PARENT MATERIAL	Primarily soft sedimentary rocks.
TEXTURE	All kinds of loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak
Parker and Matyas (1989): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(26) Coast Live Oak-Madrone/Hazelnut-Blackberry
(N=23)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	122	53-287	100
ARME3 Madrone	44	0-227	64

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
ARME3 Madrone	7	0-28	27
QUAG Coast live oak	6	0-13	27

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
COCO5 Hazelnut	22	0-58	68
RUVI2 Blackberry	22	0-78	64
RHCA2 Coffeeberry	9	0-21	50
RHDI Poison oak	12	0-25	32
HEAR2 Toyon	5	0-16	27
HODI Ocean spray	3	0-5	27

HERBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
PTAQ Bracken fern	4	0-8	23

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	4	0-9	18
ROCK	2	-	8

(26) Coast Live Oak-Madrone/Hazelnut-Blackberry
(N=23)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
LIDE2 Tan-oak
LIDE3 Incense-cedar
PSME Douglas fir
QUGA2 Garry oak
QUKE Black oak
QUWI Interior live oak
UMCA1 Cal. bay

TREE UNDERSTORY
AECA2 Cal. buckeye
PICO2 Coulter pine
QUCH2 Canyon live oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
AMUT Utah serviceberry
ARCA7 Coast sagebrush
ARTO2 Shaggy barked manzanita
BAPI Baccharis
CASE3 Bush chinquapin
CEIN3 Deerbrush
CESO3 Jim brush
CETH Blueblossom ceanothus
ERFA Cal. buckwheat
MECH Ice plant
RHTR Squawbush
RICA1 Hillside gooseberry
ROGY Wood rose
RUPA2 Western thimbleberry
SAL11 Willow
SASP Pitcher Sage
SYRI Upright snowberry

HERBS
LOSC Lotus
PESP2 Showy penstemon
POMU1 Sword fern
PSPH Forest scurfpea

(26) Coast Live Oak-Madrone/Hazelnut-Blackberry
(N=23)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
ARME3	9	15.7	2	2.6	0	0.7	0	0.4	15
LIDE2	0	0.0	1	0.0	0	0.0	0	0.0	1
LIDE3	1	0.7	1	0.7	0	0.0	0	0.0	2
PICO1	10	9.1	2	2.1	0	0.0	0	0.0	3
PSME	1	1.5	1	0.6	1	0.6	0	0.0	3
QUAG	23	17.2	10	17.0	1	1.7	0	0.5	23
QUGA2	1	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	1	1.2	0	0.6	0	0.0	0	0.0	3
QUWI	3	3.1	0	0.6	0	0.0	0	0.0	3
UMCA1	33	0.7	0	0.0	0	0.0	0	0.0	2

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	10	16.3	14	3	3.8	9	1	2.3	5	1	3.6	2
LIDE2	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
LIDE3	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PICO1	15	15.6	2	4	3.6	2	0	0.0	0	0	0.0	0
PSME	2	2.4	2	1	1.0	2	1	1.0	2	0	0.0	0
QUAG	24	17.6	23	10	17.9	22	2	2.9	12	1	4.4	3
QUGA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUWI	4	4.9	2	1	0.0	1	0	0.0	0	0	0.0	0
UMCA1	33	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0

(231) Coast Live Oak/Poison Oak
QUAG/RHDI
N=48

EXTENT: This type occurs in the central coast ranges from Marin to Santa Barbara county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	910	250	2200
ASPECT	64% on north and northeast aspects.		
SLOPE	30% flat, 23% in the 36-45% category.		

SOILS:

PARENT MATERIAL	Sedimentary shale and sandstone, serpentine.
TEXTURE	All kinds of loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(231) Coast Live Oak/Poison Oak
(N=48)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	136	3-450	100
ARME3 Madrone	9	0-21	15
AECA2 Cal. buckeye	7	0-22	15

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	3	0-6	15

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	16	0-48	79
RHCA2 Coffeeberry	13	0-45	52
DIAU1 Bush monkeyflower	5	0-16	21
BAPI Baccharis	18	0-50	19
RHCR Redberry	10	0-28	15

HERBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
PTAQ Bracken fern	12	0-45	35

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	3	0-3	2
ROCK	4	0-7	4

(231) Coast Live Oak/Poison Oak
(N=48)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
LIDE2 Tan-oak
QUDO Blue oak
QUGA2 Garry oak
QUKE Black oak
QULO Valley oak
UMCA1 Cal. bay

TREE UNDERSTORY
AECA2 Cal. buckeye
ARME3 Madrone
QUDU2 Scrub oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
ARTO2 Shaggy-barked manzanita
ARVI3 Whiteleaf manzanita
CEBE2 Birchleaf mtn-mahogany
CECU2 Wedgleaf ceanothus
CETH Blue blossom ceanothus
COCO5 Hazelnut
DERI Tree poppy
GAEL Coast silktassel
GAFR Fremont silktassel
HEAR2 Toyon
HODI Ocean spray
LOSU3 So. honeysuckle
PRIL1 Shrub hollyleaf cherry
RICA1 Hillside gooseberry
RISA Redflower currant
ROS Rose species
RUVI2 Blackberry
SACA4 Mtn blue elderberry
SAME6 Blue elderberry
SYMO Creeping snowberry
SYRI Upright snowberry

HERBS
LOSC Lotus

(231) Coast Live Oak/Poison Oak
(N=48)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	5	5.0	0	0.0	0	0.0	0	0.0	7
ARME3	5	3.0	0	0.4	0	0.0	0	0.0	7
LIDE2	1	0.0	1	0.7	0	0.0	0	0.0	2
PICO1	8	9.5	1	2.0	0	0.0	0	0.0	9
QUAG	21	16.0	8	7.5	1	2.7	0	0.3	48
QUDO	0	0.0	1	0.0	0	0.0	0	0.0	1
QUGA2	28	45.9	2	3.5	0	0.0	0	0.0	3
QUKE	18	0.0	4	0.0	0	0.0	0	0.0	1
QULO	6	0.0	1	0.0	0	0.0	0	0.0	1
UMCA1	4	3.6	0	0.6	0	0.0	0	0.0	3

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	5	5.0	7	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	5	3.0	7	1	0.0	1	0	0.0	0	0	0.0	0
LIDE2	1	0.0	2	1	0.0	1	0	0.0	0	0	0.0	0
PICO1	8	9.5	9	3	5.8	3	0	0.0	0	0	0.0	0
QUAG	21	16.0	48	9	7.9	44	3	4.7	22	1	3.8	4
QUDO	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
QUGA2	42	69.3	2	6	0.0	1	0	0.0	0	0	0.0	0
QUKE	18	0.0	1	4	0.0	1	0	0.0	0	0	0.0	0
QULO	6	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
UMCA1	6	6.2	2	1	0.0	1	0	0.0	0	0	0.0	0

(22) Coast Live Oak/Coast Sagebrush/Grass
QUAG/ARCA7/GR2
N=115

EXTENT: This type occurs in the coast range from Santa Clara to San Diego counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1005	200	3300
ASPECT	All, varied		
SLOPE	0-65%		

SOILS:

PARENT MATERIAL	Sedimentary: sandstone and shales.
TEXTURE	Variable

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest; Southern Coastal
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland, Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(22) Coast Live Oak/Coast Sagebrush/Grass
(N=115)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	73	2-371	100

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	4	0-17	19

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
ARCA7	Coast sagebrush	20	0-88	88
RHDI	Poison oak	7	0-21	35
HEAR2	Toyon	4	0-13	26
DIAU1	Bush monkeyflower	6	0-29	22
SAME4	Black sage	23	0-92	17
SALE2	Purple sage	13	0-52	17

HERBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
LOSC	Lotus	11	0-35	27

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	48	0-100	89
ROCK	4	0-7	7

(22) Coast Live Oak/Coast Sagebrush/Grass
(N=115)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY

ACMA	Bigleaf maple
JUCA4	So. black walnut
PICO2	Coulter pine
PIRA	Monterey pine
PISA2	Digger pine
PSME	Douglas fir
QUDO	Blue oak
QUEN1	Engelmann oak
QUKE	Black oak
QULO	Valley oak
QUWI	Interior live oak
UMCA1	Cal. bay

TREE UNDERSTORY

AECA2	Cal. buckeye
ARME3	Madrone
PICO2	Coulter pine
PISA2	Digger pine
QUDO	Valley oak
QUDU2	Scrub oak
QUGA2	Garry oak

HERBS

PECO3	Heartleaf penstemon
PTAQ	Bracken fern

SHRUBS

ADFA	Chamise
AMUT	Utah serviceberry
ARCO6	Hoary manzanita
ARGL5	Bigberry manzanita
ARTO2	Shgy barked mnznita
BAPI	Baccharis
CEBE2	Birchleaf mtn-mahog
CECU2	Wedgeleaf ceanothus
CEPA3	Warty-leaved cean.
CESO3	Jim brush
CETH	Blueblossom cean.
DERI	Tree poppy
ERCA6	Ca. yerba santa
ERCO7	Yellow yarrow
ERFA	Cal. buchwheat
ERPA3	Dune eriogonum
HASQ2	Sawtooth goldenbush
HODI	Ocean spray
LOSU3	So. honeysuckle
LUAL3	Silver lupine
PRIL1	Hollyleaf cherry
PRVID	Western chokecherry
RHCA2	Coffeeberry
RHCR	Redberry
RHLA	Laurel sumac
RIB	Gooseberry
RISP	Fuschia-flwr g'berry
SAAP1	White sage
SACA4	Mtn. blue eldbry
SAME6	Blue elderberry
SASP	Pitcher sage
YUWH	Chaparral yucca

(22) Coast Live Oak/Coast Sagebrush/Grass
(N=115)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	7	0.0	2	0.0	0	0.0	0	0.0	1
ARME3	3	0.0	0	0.0	0	0.0	0	0.0	1
JUCA4	9	9.7	0	0.0	0	0.0	0	0.0	3
PICO2	7	0.0	7	0.0	3	0.0	0	0.0	1
PIRA	23	0.0	4	0.0	1	0.0	0	0.0	1
PISA2	11	12.0	8	10.6	0	0.0	0	0.0	2
PSME	5	2.1	4	4.9	2	2.1	0	0.0	2
QUAG	9	9.2	4	5.1	1	1.5	0	0.3	115
QUCH2	1	0.0	0	0.0	0	0.0	0	0.0	1
QUDO	5	5.3	2	4.0	0	0.8	0	0.0	12
QUEN1	2	0.0	0	0.0	0	0.0	1	0.7	2
QUKE	0	0.0	1	0.0	0	0.0	0	0.0	1
QULO	1	1.3	3	2.8	0	0.0	0	0.0	9
QUWI	5	4.2	0	0.0	0	0.0	0	0.0	2
UMCA1	3	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	7	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
ARME3	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
JUCA4	9	9.7	3	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	7	0.0	1	7	0.0	1	3	0.0	1	0	0.0	0
PIRA	23	0.0	1	4	0.0	1	1	0.0	1	0	0.0	0
PISA2	11	12.0	2	8	10.6	2	0	0.0	0	0	0.0	0
PSME	5	2.1	2	7	0.0	1	3	0.0	1	0	0.0	0
QUAG	10	9.5	108	5	5.5	101	3	4.2	36	1	6.3	6
QUCH2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	6	6.0	10	4	6.7	6	2	6.3	2	0	0.0	0
QUEN1	2	0.0	2	0	0.0	0	0	0.0	0	1	0.0	1
QUKE	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
QULO	2	1.8	6	4	4.0	6	0	0.0	0	0	0.0	0
QUWI	5	4.2	2	0	0.0	0	0	0.0	0	0	0.0	0
UMCA1	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(232) Coast Live Oak/Poison Oak/Grass
QUAG/RHDI/GR2
N=40

EXTENT: This type occurs in the central coast ranges from the San Francisco Bay area to Monterey county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1018	225	2800
ASPECT	66% on north, northeast, and east aspects.		
SLOPE	All slopes, flat to steep.		

SOILS:

PARENT MATERIAL	Sedimentary shales, sandstones, limestone; serpentine, and igneous.
TEXTURE	Primarily gravelly and rocky loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(232) Coast Live Oak/Poison Oak/Grass
(N=40)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	120	5-335	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	5	0-17	50

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	20	0-88	78
RHCA2 Coffeeberry	4	0-14	40
RUVI2 Blackberry	20	0-81	35
HEAR2 Toyon	8	0-25	23
BAPI Baccharis	10	0-22	20
DIAU1 Bush monkeyflower	8	0-33	18
MECH Ice plant	8	0-12	15

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	19	0-91	70
ROCK	1	-	3

(232) Coast Live Oak/Poison Oak/Grass
(N=40)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
ARME3 Madrone
PILA Sugar pine
PIRA Monterey pine
PSME Douglas fir
QUGA2 Garry oak
QUKE Black oak
QULO Valley oak
QUWI Interior live oak
SESE2 Redwood

TREE UNDERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
QUCH2 Canyon live oak
QUKE Black oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
AMCA2 Mock locust
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
CEIN3 Deerbrush
CETH Blueblossom ceanothus
COCO5 Hazelnut
ERCA6 Cal. yerba santa
GAEL Coast silktassel
HASQ2 Sawtooth goldenbush
HODI Ocean spray
LOSU3 So. honeysuckle
PREM Bitter cherry
PRIL1 Shrub hollyleaf cherry
RIAU Golden currant
RIB Gooseberry
RICA1 Hillside gooseberry
ROGY Wood rose
SAAP1 White sage
SACA4 Mtn blue elderberry
SYMO Creeping snowberry
SYRI Upright snowberry

HERBS
LOSC Lotus
PTAQ Bracken fern

(232) Coast Live Oak/Poison Oak/Grass
(N=40)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	4	1.4	0	0.0	0	0.0	0	0.0	2
AECA2	3	0.0	2	0.0	0	0.0	0	0.0	1
ARME3	12	13.6	1	2.3	1	1.7	0	0.0	3
PICO1	4	2.5	1	0.8	0	0.0	0	0.0	7
PILA	4	2.1	0	0.0	0	0.0	0	0.0	2
PIRA	21	0.0	14	0.0	0	0.0	0	0.0	1
PSME	8	0.0	1	0.0	0	0.0	0	0.0	1
QUAG	19	16.1	7	6.2	1	1.8	0	0.5	40
QUGA2	2	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	2	0.0	0	0.0	0	0.0	0	0.0	3
QULO	1	0.0	0	0.0	0	0.0	0	0.0	1
QUWI	4	0.7	2	2.8	0	0.0	0	0.0	2
SESE2	2	0.7	3	1.4	0	0.0	1	0.7	2

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	4	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
AECA2	3	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
ARME3	12	13.6	3	4	0.0	1	3	0.0	1	0	0.0	0
PICO1	4	2.5	7	1	2.0	3	0	0.0	0	0	0.0	0
PILA	4	2.1	2	0	0.0	0	0	0.0	0	0	0.0	0
PIRA	21	0.0	1	14	0.0	1	0	0.0	0	0	0.0	0
PSME	8	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUAG	20	16.6	37	8	6.2	38	3	5.4	12	2	5.2	4
QUGA2	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	2	0.0	3	0	0.0	0	0	0.0	0	0	0.0	0
QULO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	4	0.7	2	4	0.0	1	0	0.0	0	0	0.0	0
SESE2	2	0.7	2	3	1.4	2	0	0.0	0	1	0.0	1

(28) Coast Live Oak/Grass
QUAG/GR2
N=14

EXTENT: This type occurs along the coast ranges from Solano to Monterey counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1050	150	2000
ASPECT	All but west.		
SLOPE	70% less than 45%.		

SOILS:

PARENT MATERIAL	Granitic and sedimentary, sandstone & shales
TEXTURE	Loam; 60% gravelly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(28) Coast Live Oak/Grass
(N=14)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	44	11-111	100
AECA2 Cal. buckeye	9	0-12	17

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
ARCA7 Coast sagebrush	34	0-58	25

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	83	25-100	100
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PSME Douglas fir
QUCH2 Canyon live oak
QUDU2 Scrub oak
QULO Valley oak

TREE UNDERSTORY
QUCH2 Canyon live oak
QUDU2 Scrub oak

SHRUBS
ADFA Chamise
HEAR2 Toyon
SAME4 Black sage

(28) Coast Live Oak/Grass
(N=14)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	6	3.5	0	0.0	0	0.0	0	0.0	2
PSME	7	7.1	2	0.0	1	0.7	0	0.0	2
QUAG	5	3.3	3	2.3	0	0.6	0	0.0	13
QUCH2	3	0.0	0	0.0	1	0.0	0	0.0	1
QUDU2	5	0.0	0	0.0	0	0.0	0	0.0	1
QULO	0	0.0	2	0.7	0	0.0	0	0.0	2

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	6	3.5	2	0	0.0	0	0	0.0	0	0	0.0	0
PSME	7	7.1	2	2	0.0	2	1	0.0	1	0	0.0	0
QUAG	5	3.3	13	4	2.4	12	2	5.0	2	0	0.0	0
QUCH2	3	0.0	1	0	0.0	0	1	0.0	1	0	0.0	0
QUDU2	5	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	0	0.0	0	2	0.7	2	0	0.0	0	0	0.0	0

(37) Blue Oak-Coast Live Oak/Grass
QUDO-QUAG/GR2
N=16

EXTENT: This type occurs in the central coast range from Napa to Monterey counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1054	500	1700
ASPECT	All aspects		
SLOPE	Fairly flat, 85% are less than 35% slope		

SOILS:

PARENT MATERIAL	Primarily sandstones and shales
TEXTURE	Loams, gravelly and sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger pine
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak Woodland; Coastal Oak Woodland

(37) Blue Oak/Coast Live Oak/Grass
(N=16)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	39	17-84	100
QUAG Coast live oak	11	2-24	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	10	0-19	23

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
ARCA7 Coast sagebrush	3	0-4	23
LOSU3 So. honeysuckle	3	0-4	23
RHCR Redberry	3	0-4	15

	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	83	51-100	100
ROCK	2	0-2	1

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
QUDU2 Scrub oak

TREE UNDERSTORY
QUDU2 Scrub oak

SHRUBS
ARMA3 Manzanita
RHDI Poison oak
RICA1 Hillside gooseberry

(37) Blue Oak/Coast Live Oak/Grass
(N=163)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
QUAG	2	2.4	1	0.7	0	0.3	0	0.0	16
QUDO	11	5.5	1	2.0	0	0.4	0	0.0	16
QUDU2	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
QUAG	3	2.7	13	1	1.1	10	1	0.0	1	0	0.0	0
QUDO	11	5.5	16	2	2.8	10	1	2.0	4	0	0.0	0
QUDU2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(20) Coast Live Oak/Chamise-Black Sage
QUAG/ADFA-SAME4
N=21

EXTENT: This type occurs in the coast ranges from Monterey south to Ventura county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1100	350	2400
ASPECT	All aspects.		
SLOPE	35% of plots on the flat, most less than 55%.		

SOILS:

PARENT MATERIAL	Soft and hard sedimentary.
TEXTURE	Gravelly, rocky and sandy loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Southern Coastal Oak Woodland; Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(20) Coast Live Oak/Chamise-Black Sage
(N=21)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	25	2-130	100

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	7	0-22	67
QUDU2	Scrub oak	6	0-14	29
QUWI	Interior live oak	16	0-70	24

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
ADFA	Chamise	33	0-91	86
SAME4	Black sage	12	0-38	62
HEAR2	Toyon	2	0-4	33
CEBE2	Birchleaf mtn-mahogany	9	0-17	29
AROB2	Serp. manzanita	39	0-66	24
DIAU1	Bush monkeyflower	4	0-8	19
RHCR	Redberry	3	0-5	19
RHDI	Poison oak	3	0-5	19

HERBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
LOSC	Lotus	13	0-42	38

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	6	0-19	24
ROCK	1	0-3	19

(20) Coast Live Oak/Chamise-Black Sage
(N=21)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PIAT1 Knobcone pine
PISA2 Digger pine
UMCA1 Cal. bay

SHRUBS
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
CECU2 Wedgeleaf ceanothus
CESP Greenbark ceanothus
DERI Tree poppy
ERPA3 Dune eriogonum
GAVE2 Veatch silktassel
LECA3 Woodbalm
PRIL1 Shrub hollyleaf cherry
RHCA2 Coffeeberry
RHLA Laurel sumac
SASP Pitcher sage

Herbs
LUAL3 Silver lupine
PTAQ Bracken fern

(20) Coast Live Oak/Chamise-Black Sage
(N=21)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
PIAT1	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	5	0.0	3	0.0	0	0.0	0	0.0	1
QUAG	11	12.3	1	1.1	0	0.2	0	0.0	21
UMCA1	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
PIAT1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	5	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
QUAG	11	12.3	21	2	4.6	5	1	0.0	1	0	0.0	0
UMCA1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(24) Coast Live Oak
QUAG
N=10

EXTENT: This type occurs from San Luis Obispo to San Diego counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1180	300	2700
ASPECT	All but north		
SLOPE	<55%		

SOILS:

PARENT MATERIAL	70% on hard sedimentary sandstone and shales, serpentine
TEXTURE	80% rocky and/or gravelly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Southern Coastal Oak Woodland
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak Series
Paysen et al. (1980): Coast Live Oak Series
Mayer et al. (1988): Coastal Oak Woodland

(24) Coast Live Oak
(N=10)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	258	116-400	100
ACMA Bigleaf maple	40	0-76	20

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHCA2 Coffeeberry	7	0-13	20

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	-		
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE UNDERSTORY
QUGA2 Garry oak

SHRUBS
DIAU1 Bush monkeyflower
HODI Ocean spray
RHDI Poison oak
SYRI Upright snowberry

HERBS
PTAQ Bracken fern

(24) Coast Live Oak
(N=10)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	2	0.0	2	2.1	1	1.4	0	0.0	2
QUAG	17	9.4	14	9.1	4	2.2	0	0.9	10

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	2	0.0	2	3	0.0	1	2	0.0	1	0	0.0	0
QUAG	17	9.4	10	14	9.1	10	5	2.4	9	3	0.0	1

(214) Coast Live Oak/Toyon-Poison Oak
QUAG/HEAR2-RHDI
N=49

EXTENT: This type occurs in the central coast ranges from Monterey to Ventura county. It also occurs in Napa county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1205	200	3250
ASPECT	63% on north and northeast aspects.		
SLOPE	70% greater than 36% slope.		

SOILS:

PARENT MATERIAL	73% hard sedimentary sandstone and shale.
TEXTURE	All kinds of loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(214) Coast Live Oak/Toyon-Poison Oak
(N=49)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	89	2-382	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	7	0-24	60
UMCA1 California bay	2	0-4	19

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
HEAR2 Toyon	9	0-31	75
RHDI Poison oak	10	0-49	65
RHCA2 Coffeeberry	5	0-16	38
DIAU1 Bush monkeyflower	6	0-35	35
RHCR Redberry	5	0-12	31
ARCA7 Coast sagebrush	11	0-19	19

HERBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
PTAQ Bracken fern	17	0-76	17

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	25	0-80	60
ROCK	-		

(214) Coast Live Oak/Toyon-Poison Oak
(N=49)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ARME3 Madrone
PICO2 Coulter pine
PIPO Ponderosa pine
PISA2 Digger pine
PSME Douglas fir
QUDU2 Scrub oak
QUKE Black oak
QULO Valley oak
QULO Valley oak
QUWI Interior live oak
UMCA1 California bay

SHRUBS
ADFA Chamise
AMCA2 Mock locust
ARCO6 Hoary manzanita
ARMA3 Manzanita
AROB2 Serp. manzanita
BAPI Baccharis
CEBE2 Mahogany
CECU2 Wedgeleaf ceanothus
CEIN3 Deerbrush
CESO3 Jim brush
CESP Greenbark ceanothus
CETH Blueblossom ceanothus
CHFO2 Mountain misery
COCO5 Hazelnut
ERPA3 Dune eriogonum
GAVE2 Veatch silktassel
HASQ2 Sawtooth goldenbush
HODI Ocean spray
LOIN3 Chap. honeysuckle
LOSU3 So. honeysuckle
LUP5 Lupine
MECH Ice plant
PRIL1 Hollyleaf cherry
RHTR Squawbush
RIAU Golden currant
SAAP1 White sage
SACA4 Mtn blue elderberry
SALE2 Purple sage
SAME4 Black sage
SAME6 Blue elderberry
SASP Pitcher sage
SYMO Creeping snowberry
SYRI Upright snowberry

TREE UNDERSTORY
ARME3 Madrone
QUCH2 Canyon live oak
QUDO Valley oak
QUDU2 Scrub oak
QUKE Black oak
QULO Valley oak
QUWI Interior live oak

HERBS
ERCO7 Yellow yarrow
LOSC Lotus
LUAL3 Silver lupine
PIMU1 Sword fern

(214) Coast Live Oak/Toyon-Poison Oak
(N=49)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ARME3	2	0.0	0	0.0	0	0.0	0	0.0	2
PICO1	5	0.0	0	0.0	0	0.0	0	0.0	1
PICO2	3	2.5	0	0.6	1	1.0	0	0.0	3
PIMU1	1	0.0	0	0.0	0	0.0	0	0.0	1
PIPO	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	1	0.4	0	0.5	0	0.0	0	0.0	5
PSME	3	0.0	0	0.0	0	0.0	0	0.0	1
QUAG	15	14.8	6	5.6	1	1.5	0	0.2	48
QUDU2	2	0.7	1	1.4	0	0.0	0	0.0	2
QUKE	5	6.4	0	0.0	0	0.0	0	0.0	3
QULO	1	1.2	0	0.0	0	0.6	0	0.0	3
QUWI	2	0.0	0	0.0	0	0.0	0	0.0	1
UMCA1	3	1.0	0	0.5	0	0.0	0	0.0	4

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ARME3	2	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	5	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	4	4.2	2	1	0.0	1	2	1.7	2	0	0.0	0
PIMU1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	1	0.4	5	1	1.7	2	0	0.0	0	0	0.0	0
PSME	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUAG	15	14.8	48	7	6.4	39	3	7.4	9	1	4.7	3
QUDU2	2	0.7	2	2	0.0	1	0	0.0	0	0	0.0	0
QUKE	5	6.4	3	0	0.0	0	0	0.0	0	0	0.0	0
QULO	2	2.0	2	0	0.0	0	1	0.0	1	0	0.0	0
QUWI	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
UMCA1	3	1.0	4	1	0.0	1	0	0.0	0	0	0.0	0

(213) Coast Live Oak/Coffeeberry-Toyon
QUAG/RHCA2-HEAR2
N=36

EXTENT: This type occurs in the central coast ranges from Santa Clara to Santa Barbara county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1250	200	2500
ASPECT	62% on north, northeast, and east aspects.		
SLOPE	78% less than 45% slope.		

SOILS:

PARENT MATERIAL	Shales, sandstones, limestone, serpentine, and igneous.
TEXTURE	Sandy, gravelly loams with 40% straight loam.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980):Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(213) Coast Live Oak/Coffeeberry-Toyon
(N=36)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	92	0-335	100
QULO	Valley oak	21	0-106	38

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	3	0-8	19

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	8	0-23	64
RHCA2	Coffeeberry	10	0-44	61
HEAR2	Toyon	9	0-26	58
RHCR	Redberry	6	0-23	56
SYRI	Upright snowberry	15	0-28	22

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	42	0-81	70
ROCK	6	0-10	6

(213) Coast Live Oak/Coffeeberry-Toyon
(N=36)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
ARME3 Madrone
PICO2 Coulter pine
PISA2 Digger pine
PLRA Cal. sycamore
QUCH2 Canyon live oak
QUDO Blue oak
UMCA1 Cal. bay

TREE UNDERSTORY
AECA2 Cal. buckeye
QUDU2 Scrub oak
QULO Valley oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
AMCA2 Mock locust
ARCA7 Coast sagebrush
ARCO6 Hoary manzanita
ARGL5 Bigberry manzanita
ARMA3 Manzanita
BAPI Baccharis
CEBE2 Birchleaf mtn-mahogany
CEIN3 Deerbrush
CELE2 Chap. whitethorn
CEPA3 Warty-leaved ceanothus
CESO3 Jim brush
DIAU1 Bush monkeyflower
HODI Ocean spray
PRIL1 Shrub hollyleaf cherry
PRVID Western chokecherry
RICA1 Hillside gooseberry
RISA Redflower currant
ROCA1 Cal. wild rose
RUVI2 Blackberry
SACA4 Mtn blue elderberry
SALI1 Willow
SASP Pitcher sage
YUWH Chaparral yucca

HERBS
LOSC Lotus
PTAQ Bracken fern

(213) Coast Live Oak/Coffeeberry-Toyon
(N=36)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	5	4.4	1	1.2	0	0.0	0	0.0	3
AECA2	4	2.8	0	0.0	0	0.0	0	0.0	2
ARME3	2	0.0	0	0.0	0	0.0	0	0.0	1
PICO1	7	0.0	0	0.0	0	0.0	0	0.0	1
PICO2	6	1.4	4	4.9	3	0.7	0	0.0	2
PIPO	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	3	3.1	1	0.6	0	0.6	0	0.0	3
PLRA	3	0.0	2	0.0	0	0.0	0	0.0	1
QUAG	13	15.7	6	5.6	1	2.2	0	0.2	35
QUCH2	5	0.0	0	0.0	2	0.0	0	0.0	1
QUDO	3	4.4	2	2.1	1	1.0	0	0.0	3
QULO	3	2.5	1	1.1	0	0.9	0	0.0	14
UMCA1	2	0.0	0	0.0	0	0.0	0	0.0	3

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	5	4.4	3	2	0.0	1	0	0.0	0	0	0.0	0
AECA2	4	2.8	2	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	7	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	6	1.4	2	7	0.0	1	3	0.7	2	0	0.0	0
PIPO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	4	4.9	2	1	0.6	3	1	0.0	1	0	0.0	0
PLRA	3	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
QUAG	13	16.0	34	7	6.3	29	3	5.5	12	1	0.0	1
QUCH2	5	0.0	1	0	0.0	0	2	0.0	1	0	0.0	0
QUDO	5	6.7	2	3	3.3	2	2	1.7	2	0	0.0	0
QULO	3	2.6	13	2	2.1	7	2	4.8	3	0	0.0	0
UMCA1	2	0.0	3	0	0.0	0	0	0.0	0	0	0.0	0

(251) Coast Live Oak/Ocean Spray-Snowberry
QUAG/HODI-SYRI
N=20

EXTENT: This type occurs in the coast ranges in San Luis Obispo and Santa Barbara counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1300	850	1600
ASPECT	80% on north and northeast.		
SLOPE	Flat to 55% slopes.		

SOILS:

PARENT MATERIAL	Hard sedimentary sandstone/shale, serpentine
TEXTURE	Rocky and gravelly loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(251) Coast Live Oak/Ocean Spray-Snowberry
(N=20)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	165	78-330	100
UMCA1	California bay	7	0-12	35
ARME3	Madrone	6	0-11	25
ACMA	Big leaf maple	9	0-17	25
QULO	Valley oak	47	0-76	20

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
UMCA1	Cal. bay	11	0-14	15

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	12	0-38	85
HODI	Ocean spray	31	0-75	80
RHCA2	Coffeeberry	18	0-38	80
SYRI	Upright snowberry	15	0-27	70
RHCR	Redberry	5	0-9	40
HEAR2	Toyon	4	0-9	35

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	-		
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
QUCH2 Canyon live oak

SHRUBS
CEBE2 Birchleaf mtn-mahogany
CECU2 Wedgeleaf ceanothus
CEIN3 Deerbrush
CESO3 Jim brush
PREM Bitter cherry

HERBS
LOSC Lotus
PTAQ Bracken fern

(251) Coast Live Oak/Ocean Spray-Snowberry
(N=20)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	6	3.7	0	0.0	0	0.0	0	0.0	5
ARME3	3	0.5	0	0.4	0	0.0	0	0.0	5
PICO1	6	0.0	0	0.0	0	0.0	0	0.0	1
QUAG	19	16.2	9	4.9	2	2.4	0	0.0	20
QUCH2	8	0.0	0	0.0	0	0.0	0	0.0	1
QULO	2	1.4	0	0.5	2	1.3	0	0.0	4
UMCA1	4	2.9	0	0.0	0	0.0	0	0.0	7

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	6	3.7	5	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	3	0.5	5	1	0.0	1	0	0.0	0	0	0.0	0
PICO1	6	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUAG	19	16.2	20	10	5.0	19	4	3.8	12	0	0.0	0
QUCH2	8	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	3	2.0	3	1	0.0	1	2	1.7	3	0	0.0	0
UMCA1	4	2.9	7	0	0.0	0	0	0.0	0	0	0.0	0

(215) Coast Live Oak/Toyon/Grass
QUAG/HEAR2/GR2
N=13

EXTENT: This type occurs in the coast ranges from Napa to Los Angeles counties, primarily along the Central Coast.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1312	350	2750
ASPECT	All aspects except west.		
SLOPE	Flat to very steep (85%).		

SOILS:

PARENT MATERIAL	Primarily hard sedimentary.
TEXTURE	Primarily rocky and sandy loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak; Southern Coastal Oak Woodland
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(215) Coast Live Oak/Toyon/Grass
(N=13)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	49	2-190	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	13	0-29	69
ARME3 Madrone	17	0-34	23
QUDU2 Scrub oak	7	0-9	23

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
HEAR2 Toyon	4	0-11	85
ADFA Chamise	10	0-19	54
RHDI Poison oak	5	0-13	54
CECU2 Wedgeleaf ceanothus	32	0-77	46
RHCR Redberry	5	0-15	38
CEBE2 Birchleaf mtn-mahog.	6	0-13	31
SACA4 Mtn. blue elderbry	4	0-6	23
CESO3 Jim brush	5	0-9	23
ARCA7 Coast sagebrush	3	0-5	15
ARTO2 Shaggy barked manz.	13	0-22	15
ERCA6 Cal. yerba santa	10	0-16	15
RHCA2 Coffeeberry	7	0-8	15
RHTR Squaw bush	7	0-9	15
RUVI2 Blackberry	7	0-9	15
LECA3 Woodbalm	6	0-7	15
PRIL1 Shrub hollyleaf cherry	5	0-9	15
ERFA Cal. buckwheat	4	0-6	15
BAPI Baccharis	3	0-4	15

HERBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
LOSU3 So. honeysuckle	2	0-3	15

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	28	0-69	62
ROCK	10	-	8

(215) Coast Live Oak/Toyon-Chamise/Grass
(N=13)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ARME3 Madrone
QUDO Blue oak

TREE UNDERSTORY
QUDO Blue oak
QUKE Black oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
AMUT Utah serviceberry
ARMA3 Manzanita
AROB2 Serp. manzanita
CELE2 Chap. whitethorn
CEPA3 Warty-leaved manzanita
CETH Blueblossom ceanothus
CRCA2 Cal. croton
DIAU1 Bush monkeyflower
FRDI Foothill ash
GAEL Coast silktassel
GAFLP Ashy silktassel
RIMA1 Chaparral currant
SAAP1 White sage
VAOV Cal. huckleberry

HERBS
LOSC Lotus
PECO3 Heartleaf penstemon
PTAQ Bracken fern

(215) Coast Live Oak/Toyon/Grass
(N=13)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ARME3	20	0.0	0	0.0	0	0.0	0	0.0	1
QUAG	11	15.9	3	4.8	0	0.4	0	0.3	13
QUDO	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ARME3	20	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUAG	11	15.9	13	4	6.1	9	1	3.3	2	1	0.0	1
QUDO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(211) Coast Live Oak-California Bay/Toyon-Scrub oak
QUAG-UMCA1/HEAR2-QUDU2
N=22

EXTENT: This type occurs in the central coast ranges from Contra Costa to Santa Barbara county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1318	700	1800
ASPECT	96% on north and northeast aspects.		
SLOPE	93% between 26 and 85% slope.		

SOILS:

PARENT MATERIAL	85% hard sedimentary sandstone and shale.
TEXTURE	All kinds of loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(211) Coast Live Oak-California Bay/Toyon-Scrub Oak
(N=22)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	38	2-247	100
UMCA1	California bay	15	0-77	77
ARME3	Madrone	10	0-28	45

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUDU2	Scrub oak	11	0-58	73
AECA2	Cal. buckeye	3	0-7	41
UMCA1	California bay	16	0-52	32
QUAG	oast live oak	8	0-24	18

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
HEAR2	Toyon	9	0-25	95
RHDI	Poison oak	13	0-35	82
HODI	Ocean spray	9	0-24	50
CEBE2	Birchleaf mtn-mahog.	7	0-26	50
RHCA2	Coffeeberry	12	0-38	36
SACA4	Mtn blue elderberry	2	0-4	27
CESO3	Jim brush	13	0-31	23
GAEL	Coast silktassel	4	0-7	23
AMUT	Utah serviceberry	5	0-6	18
ARGL5	Bigberry manzanita	3	0-7	18

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	6	0-28	18
ROCK	-		

(211) Coast Live Oak-California Bay/Toyon-Scrub Oak
(N=22)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PLRA Cal. sycamore
QUCH2 Canyon live oak
QUDU2 Scrub oak
QUKE Black oak

TREE UNDERSTORY
ARME3 Madrone
QUCH2 Canyon live oak
QUWI Interior live oak

SHRUBS
ADFA Chamise
ARCA7 Coast sagebrush
ARMA3 Manzanita
BAPI Baccharis
CECU2 Wedgeleaf ceanothus
CETH Blueblossom ceanothus
COCO5 Hazelnut
DIAU1 Bush monkeyflower
FRDI Foothill ash
GAFR Fremont silktassel
GAVE2 Veatch silktassel
LOSU3 So. honeysuckle
RHCR Redberry
RIAU Golden currant
RISA Redflower currant
ROS Rose species
RUPA2 W. thimbleberry
RUVI2 Blackberry
SYMO Creeping snowberry
SYRI Upright snowberry

HERBS
LOSC Lotus
PTAQ Bracken fern

(211) Coast Live Oak-California Bay/Toyon-Scrub oak
(N=22)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ARME3	5	4.6	0	0.4	0	0.0	0	0.0	10
PLRA	2	0.0	0	0.0	0	0.0	0	0.0	1
QUAG	8	9.4	2	3.1	0	1.1	0	0.0	21
QUCH2	5	4.9	1	1.0	0	0.0	0	0.0	3
QUDU2	1	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	2	0.0	0	0.0	0	0.0	0	0.0	1
UMCA1	8	9.4	0	1.1	0	0.0	0	0.0	16

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ARME3	5	4.6	10	1	2.8	2	0	0.0	0	0	0.0	0
PLRA	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUAG	9	9.6	20	3	4.0	14	5	0.0	1	0	0.0	0
QUCH2	5	4.9	3	2	1.7	2	0	0.0	0	0	0.0	0
QUDU2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
UMCA1	8	9.8	15	2	6.1	3	0	0.0	0	0	0.0	0

(252) Coast Live Oak-Maple/Coffeeberry-Ocean Spray
QUAG-ACMA/RHCA2-HODI
N=11

EXTENT: This type occurs in San Luis Obispo county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION(ft)	1695	700	2400
ASPECT	82% on north and northeast.		
SLOPE	Steep, 81% in 35-55% class.		

SOILS:

PARENT MATERIAL	Hard sedimentary sandstone/shale and serpentine.
TEXTURE	Rocky loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Southern Oak Woodland, QUAG phase.
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(252) Coast Live Oak-Maple/Coffeeberry-Ocean Spray
(N=11)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	169	87-257	100
ACMA	Big leaf maple	28	0-76	91
QULO	Valley oak	36	0-56	18
ARME3	Madrone	29	0-50	18

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHCA2	Coffeeberry	14	0-24	91
HODI	Ocean spray	12	0-26	73
RHDI	Poison oak	13	0-25	55
PRVID	W. chokecherry	11	0-14	18
RHCR	Redberry	7	0-10	18

HERBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
PTAQ	Bracken fern	7	0-8	18

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	19	0-19	9
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PISA2 Digger pine

SHRUBS
CESO3 Jim brush
HEAR2 Toyon

(252) Coast Live Oak-Maple/Coffeeberry-Ocean Spray
(N=11)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	5	2.8	1	1.0	0	0.8	0	0.0	11
ARME3	8	4.2	2	2.8	0	0.0	0	0.0	2
PISA2	5	0.0	2	0.0	0	0.0	0	0.0	1
QUAG	17	10.9	10	3.5	2	2.3	0	0.0	11
QULO	2	2.8	1	0.0	1	1.4	0	0.0	2

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	5	2.8	11	2	1.3	8	2	6.0	2	0	0.0	0
ARME3	8	4.2	2	4	0.0	1	0	0.0	0	0	0.0	0
PISA2	5	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
QUAG	17	10.9	11	10	3.5	11	3	2.9	8	0	0.0	0
QULO	4	0.0	1	1	0.0	2	2	0.0	1	0	0.0	0

BLUE OAK SERIES

(37) Blue Oak-Coast Live Oak/Grass
QUDO-QUAG/GR2
N=13

EXTENT: This type occurs in the central coast range from Napa to Monterey counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1054	500	1700
ASPECT	All aspects		
SLOPE	Fairly flat, 85% are less than 35% slope		

SOILS:

PARENT MATERIAL	Primarily sandstones and shales
TEXTURE	Loams, gravelly and sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger pine
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak Woodland; Coastal Oak Woodland

(37) Blue Oak-Coast Live Oak/Grass
(N=13)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	39	17-84	100
QUAG Coast live oak	11	2-24	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	10	0-19	23

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
ARCA7 Coast sagebrush	3	0-4	23
LOSU3 So. honeysuckle	3	0-4	23
RHCR Redberry	3	0-4	15

	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	83	51-100	100
ROCK	2	0-2	1

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
QUDU2 Scrub oak

TREE UNDERSTORY
QUDU2 Scrub oak

SHRUBS
ARMA3 Manzanita
RHDI Poison oak
RICA1 Hillside gooseberry

(37) Blue Oak-Coast Live Oak/Grass
(N=13)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
QUAG	3	2.5	1	0.8	0	0.3	0	0.0	13
QUDO	12	5.8	2	2.1	0	0.5	0	0.0	13

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
QUAG	3	2.8	11	1	1.4	7	1	0.0	1	0	0.0	0
QUDO	12	5.8	13	3	3.1	8	1	1.7	4	0	0.0	0

(38) Blue Oak/Grass
QUDO/GR2
N=298

EXTENT: This type has a widespread occurrence ringing the Central Valley. It occurs in the central coast from Monterey to Santa Barbara counties and the North-Central Coast from Sonoma to Contra Costa counties. It is also present in the Foothills of the Sierra Nevada from Butte to Mariposa counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1296	100	5500
ASPECT	All aspects, including southern		
SLOPE	Not steep, 85% less than 45% slope		

SOILS:

PARENT MATERIAL All types; granitics, soft sedimentary, shales and sandstone

TEXTURE All types

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger pine; Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak Woodland

(38) Blue Oak/Grass
(N=298)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	47	5-195	100

(% Cover)	AVERAGE	RANGE	CONSTANCY%
SHRUBS	-		
HERBS	-		
GRASSES	90	0-100	99
ROCK	5	0-21	17

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
JUCA4 Cal. walnut
PICO1 Beach (lodgepole) pine
PICO2 Coulter pine
PIJE Jeffrey pine
PIPO Ponderosa pine
PISA2 Digger pine
PSME Douglas fir
QUAG Coast live oak
QUCH2 Canyon live oak
QUDU2 Scrub oak
QUGA2 Garry oak
QUKE Black oak
QULO Valley oak
QUMO Oracle oak
QUWI Interior live oak
QUWI Interior live oak

TREE UNDERSTORY
AECA2 Cal. buckeye
JUCA3 Cal. walnut
PILA Sugar pine
PIMO2 One-needle pinyon pine
PIQU Four-needle pinyon pine
PISA2 Digger pine
PSME Douglas fir
QUCH2 Canyon live oak
QUDO Blue oak
QUDU2 Scrub oak
QUKE Black oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
ARCA5 Hoary manzanita
ARCA7 Coast sagebrush
ARMA3 Manzanita
ARVI3 Whiteleaf manzanita
CECU2 Wedgeleaf ceanothus
CEIN Deerbrush
ERCA6 Cal. yerba santa
ERFA Cal. buckwheat
HALI Narrowleaf gldnbush
HEAR2 Toyon
LOIN3 Chap. honeysuckle
LOSU3 So. honeysuckle
LUAL3 Silver lupine
PRIL1 Shb hlyleaf cherry
RHCA2 Coffeeberry
RHCR Redberry
RHDI Poison oak
RHTR Squaw bush
RICA1 Hillside gooseberry
RIQU Foothill gooseberry
SAAP1 White sage
SALE2 Purple sage
SAL11 Willow
XYBI Mission manzanita

HERBS
HYPE Klamath weed
LOSC Lotus
PTAQ Bracken fern

(38) Blue Oak/Grass
(N=298)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	2	1.5	0	0.5	0	0.0	0	0.0	4
JUCA3	4	0.0	1	0.0	0	0.0	0	0.0	1
PICO1	2	0.0	0	0.0	0	0.0	0	0.0	1
PICO2	4	4.2	1	0.7	0	0.0	0	0.0	2
PIJE	4	0.0	0	0.0	0	0.0	0	0.0	1
PIPO	8	1.4	6	3.5	7	9.2	0	0.0	2
PISA2	1	0.7	1	1.4	0	0.0	0	0.0	8
PSME	10	5.7	2	1.4	0	0.0	0	0.0	2
QUAG	0	0.0	1	0.0	0	0.0	0	0.0	1
QUCH2	5	3.5	1	1.4	0	0.0	0	0.0	2
QUDO	11	9.9	3	2.2	0	0.7	0	0.1	292
QUDU2	19	32.6	0	0.5	0	0.0	0	0.0	4
QUGA2	3	0.0	2	0.0	0	0.0	0	0.0	1
QUKE	0	0.0	1	0.0	0	0.0	0	0.0	1
QULO	7	9.9	1	1.0	0	0.5	1	0.6	4
QUMO	1	0.0	0	0.0	0	0.0	0	0.0	1
QUWI	2	2.1	0	0.6	0	0.0	0	0.0	19

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	2	1.5	4	1	0.0	1	0	0.0	0	0	0.0	0
JUCA3	4	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PICO1	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	4	4.2	2	1	0.0	1	0	0.0	0	0	0.0	0
PIJE	4	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	8	1.4	2	6	3.5	2	13	0.0	1	0	0.0	0
PISA2	1	1.1	5	2	1.8	6	0	0.0	0	0	0.0	0
PSME	10	5.7	2	2	1.4	2	0	0.0	0	0	0.0	0
QUAG	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
QUCH2	5	3.5	2	2	0.0	1	0	0.0	0	0	0.0	0
QUDO	11	10.1	281	3	2.3	261	2	3.4	55	1	16.0	3
QUDU2	19	32.6	4	1	0.0	1	0	0.0	0	0	0.0	0
QUGA2	3	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
QUKE	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
QULO	13	21.6	2	2	0.0	1	1	0.0	1	1	1.4	2
QUMO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	3	2.3	16	1	2.3	5	0	0.0	0	0	0.0	0

(13) Blue Oak-Digger Pine/Whiteleaf Manzanita/Grass
QUDO-PISA2/ARVI3/GR2
N=60

EXTENT: This type occurs primarily in Shasta county (54%) and the Sierra and foothills areas from Nevada to Calaveras counties. It rarely occurs in central California in Santa Clara, San Luis Obispo and Fresno counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1388	350	4600
ASPECT	Varied		
SLOPE	68% less than 15%; 96% less than 45%		

SOILS:

PARENT MATERIAL	Primarily igneous, granitics,some sedimentary and metamorphics
TEXTURE	All types of loams, gravelly and rocky, clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger pine

(13) Blue Oak-Digger Pine/Whiteleaf Manzanita/Grass
(N=60)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	29	5-121	100
PISA2 Digger pine	28	0-74	82
QUWI Interior live oak	6	0-21	25

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	4	0-13	57

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
ARVI3 Whiteleaf manz.	21	0-80	80
CECU2 Wedgeleaf ceano.	18	0-48	53
RHDI Poison oak	7	0-24	35
ARMA3 Manzanita	18	0-60	23

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	52	0-89	93
ROCK	13	0-27	25

(13) Blue Oak-Digger Pine/Whiteleaf Manzanita/Grass
(N=60)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
PICO2 Coulter pine
PIPO Ponderosa pine
QUCH2 Canyon live oak
QUKE Black oak

TREE UNDERSTORY
AECA2 Cal. buckeye
PICO2 Coulter pine
PISA2 Digger pine
QUCH2 Canyon live oak
QUKE Black oak
QUWI Interior live oak

SHRUBS
ADFA Chamise
ARGL5 Bigberry manzanita
ARME2 Indian manzanita
CEBE2 Birchleaf mtn-mahog
CHFO2 Mountain misery
ERCA6 Cal. yerba santa
HEAR2 Toyon
RHCA2 Coffeeberry
RHCR Redberry
RHTR Squaw bush
RICA1 Hillside gooseberry

Herbs:
BRLA2 Grass nut
HYPE Klamath weed
LOSC Lotus

(13) Blue Oak-Digger Pine/Whiteleaf Manzanita/Grass
(N=60)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	12	14.1	0	0.0	0	0.0	0	0.0	2
PICO2	4	0.0	2	0.0	0	0.0	0	0.0	1
PIPO	0	0.6	1	0.6	0	0.0	0	0.0	3
PISA2	2	1.5	1	1.3	0	0.6	0	0.4	49
QUCH2	1	0.7	1	0.7	0	0.0	0	0.0	2
QUDO	7	5.1	1	1.7	0	0.5	0	0.0	60
QUKE	1	1.3	1	1.4	0	0.5	0	0.0	8
QUWI	3	1.9	0	0.4	0	0.0	0	0.0	15

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	12	14.1	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	4	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
PIPO	1	0.0	1	1	1.0	2	0	0.0	0	0	0.0	0
PISA2	2	1.9	37	2	1.7	33	1	1.6	19	1	4.0	5
QUCH2	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUDO	7	5.2	58	2	2.5	36	1	1.7	18	0	0.0	0
QUKE	2	1.6	6	2	2.1	5	1	2.4	2	0	0.0	0
QUWI	3	1.9	15	1	3.6	2	0	0.0	0	0	0.0	0

(35) Blue Oak-Valley Oak/Grass
QUDO-QULO/GR2
N=32

EXTENT: This type primarily occurs along the central coast from Marin to Monterey and inland to Kern county. It is also represented in Placer and Calaveras counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1477	200	4400
ASPECT	All aspects		
SLOPE	Less steep 72% are have less than 35% slope		

SOILS:

PARENT MATERIAL	Hard and soft sedimentary; granitic
TEXTURE	Sandy to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland; Valley Oak Woodland
Griffin (1977): Foothill Woodland, QULO and QUDO phases
Holland (1986): Blue Oak Woodland; Valley Oak Woodland
Parker and Matyas (1981): Blue Oak; Valley Oak
Paysen et al. (1980): Blue Oak; Valley Oak
Mayer et al. (1988): Blue Oak Woodland; Valley Oak Woodland

(35) Blue Oak-Valley Oak/Grass
(N=32)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue oak	31	5-84	100
QULO	Valley oak	18	0-86	97

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	99	92-100	100
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
PISA2 Digger pine
QUAG Coast live oak
QUDU2 Scrub oak
QUWI Interior live oak

Shrubs:
ARMA3 Manzanita
RHCA2 Coffeeberry
RHDI Poison oak
RIAU Golden currant
RISP Redflower gooseberry

(35) Blue Oak-Valley Oak/Grass
(N=32)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	2	0.0	0	0.0	0	0.0	0	0.0	3
PISA2	0	0.0	1	0.0	0	0.0	0	0.0	2
QUAG	0	0.0	1	0.0	0	0.0	0	0.0	1
QUDO	6	4.3	2	1.2	0	0.5	0	0.2	32
QUDU2	2	0.0	0	0.0	0	0.0	0	0.0	1
QULO	2	2.4	1	1.3	0	0.5	0	0.2	31
QUWI	5	5.4	0	0.4	0	0.0	0	0.0	5

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	2	0.0	3	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	0	0.0	0	1	0.0	2	0	0.0	0	0	0.0	0
QUAG	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
QUDO	6	4.5	30	2	1.4	27	1	2.4	7	1	0.0	1
QUDU2	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	2	3.0	22	2	2.0	18	1	3.1	5	1	0.0	1
QUWI	5	5.4	5	1	0.0	1	0	0.0	0	0	0.0	0

(39) Blue Oak/Understory Blue Oak/Grass
QUDO/UQUDO/GR2
N=63

EXTENT: This type occurs in the central coast and interior areas from Alameda to Santa Barbara counties. It is also present in the Sierra and foothill areas from Shasta to Kern counties, ringing the central valley.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1489	150	3450
ASPECT	All aspects		
SLOPE	Mostly flat or gentle slopes; 77% less than 35% slope		

SOILS:

PARENT MATERIAL	Primarily sedimentary sandstones and shales; granitics
TEXTURE	Varied, sandy to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger pine; Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak Woodland

(39) Blue Oak/Understory Blue Oak/Grass
(N=63)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	46	12-106	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	4	0-34	95

(% Cover)	AVERAGE	RANGE	CONSTANCY%
SHRUBS	-		
HERBS	-		
GRASSES	85	11-99	99
ROCK	7	0-35	33

(39) Blue Oak/Understory Blue Oak/Grass
(N=63)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
PISA2 Digger pine
QUDU2 Scrub oak
QULO Valley oak
QUWI Interior live oak

TREE UNDERSTORY
AECA2 Cal. buckeye
JUCA3 Cal. juniper
PISA2 Digger pine
QUDU2 Scrub oak

SHRUBS
ARCA7 Coast sagebrush
ARGL5 Big berry manz.
ARVI3 Whiteleaf manzanita
CECU2 Wedgeleaf ceanothus
ERCA6 Cal. yerba santa
ERFA Cal. buckwheat
ERWR Eriognum sp.
HALI Narrowleaf goldenbush
LUP5 Bush lupine
RHCR Redberry
RHDI Poison oak
RIQU Foothill gooseberry

(39) Blue Oak/Understory Blue Oak/Grass
(N=63)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	5	5.7	0	0.0	0	0.0	0	0.0	2
PISA2	3	0.7	0	0.0	0	0.0	0	0.0	2
QUDO	12	8.5	2	1.5	0	0.6	0	0.0	63
QULO	1	1.5	0	0.0	0	0.6	0	0.0	3

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	5	5.7	2	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	3	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	12	8.5	63	2	1.5	58	1	2.1	16	0	0.0	0
QULO	2	2.4	2	0	0.0	0	1	0.0	1	0	0.0	0

(10) Blue Oak-Interior Live Oak/Grass
QUDO-QUWI/GR2
N=72

EXTENT: This type occurs primarily in the foothills of the Sierra from Nevada to Mariposa counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1500	200	3800
ASPECT	All aspects		
SLOPE	92% less than 45% slope		

SOILS:

PARENT MATERIAL	All types: Granitics, metamorphic and some sedimentary
TEXTURE	All textures

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland; Interior Live Oak Woodland
Parker and Matyas (1981): Blue Oak; Interior Live Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger pine

(10) Blue Oak-Interior Live Oak/Grass
(N=72)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	22	0-87	92
QUWI Interior live oak	17	0-63	85
PISA2 Digger pine	8	0-23	64

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	7	0-88	69
QUDO Blue oak	3	0-14	67

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
CECU2 Wedgeleaf ceano.	8	0-39	54
RHDI Poison oak	7	0-31	33
ARMA3 Manzanita	5	0-29	25
HEAR2 Toyon	9	0-44	18
RHCR Redberry	4	0-21	14

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	76	0-98	85
ROCK	5	0-13	25

(10) Blue Oak-Interior Live Oak/Grass
(N=72)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
PIPO Ponderosa pine
QUCH2 Canyon live oak
QUKE Black oak
QULO Valley oak

TREE UNDERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
PISA2 Digger pine
PSME Douglas fir
QUKE Black oak

Shrubs:
ADFA Chamise
ARCA7 Coast sagebrush
ARVI3 Whiteleaf manzanita
CEBE2 Birchleaf mtn-mahogany
CELE2 Chap. whitethorn
DIAU1 Bush monkeyflower
ERCA6 Cal. yerba santa
RHCA2 Coffeeberry
RHTR Squaw bush
RIB Gooseberry
RICA1 Hillside gooseberry
SACA4 Mtn blue elderberry
SAME6 Blue elderberry
XYBI Mission manzanita

HERBS
COCA8 Corethrogyne
HAAR Goldenfleece

(10) Blue Oak-Interior Live Oak/Grass
(N=72)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	6	9.3	1	1.0	0	0.0	0	0.0	4
PIPO	2	0.0	1	0.0	0	0.0	0	0.0	1
PISA2	2	2.3	1	0.7	0	0.0	0	0.0	46
QUCH2	3	0.0	0	0.0	0	0.0	0	0.0	1
QUDO	8	5.7	1	1.1	0	0.4	0	0.1	66
QUKE	1	1.2	1	0.9	0	0.0	0	0.0	5
QULO	2	1.7	0	0.6	0	0.0	0	0.0	3
QUWI	6	6.4	1	0.9	0	0.0	0	0.1	61

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	6	9.3	4	2	0.0	1	0	0.0	0	0	0.0	0
PIPO	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PISA2	3	2.5	41	1	1.3	22	0	0.0	0	0	0.0	0
QUCH2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	8	5.7	65	2	1.9	33	3	20.0	2	1	0.0	1
QUKE	2	2.0	3	2	2.7	2	0	0.0	0	0	0.0	0
QULO	3	3.0	2	1	0.0	1	0	0.0	0	0	0.0	0
QUWI	7	6.6	57	1	1.6	31	0	0.0	0	1	0.0	1

(11) Interior Live Oak-Blue Oak-Digger Pine
QUWI-QUDO-PISA2
N=45

EXTENT: This type occurs in the Sierra from Butte to Kern county. It also occurs in San Benito county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1533	400	5000
ASPECT	28% north to northeast; 37% south to southwest.		
SLOPE	78% less than 25%		

SOILS:

PARENT MATERIAL	Granitic and mixed; some mafic and metamorphic
TEXTURE	Loams, rocky clay loams, and sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO and QUWI phases
Holland (1986): Digger Pine-Oak Woodland; Blue Oak Woodland
Parker and Matyas (1981): Blue Oak; Interior Live Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine; Blue Oak Woodland

(11) Interior Live Oak-Blue Oak-Digger Pine
(N=45)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	41	6-110	100
QUDO	Blue oak	29	0-120	96
PISA2	Digger pine	32	0-91	78
QULO	Valley oak	11	0-25	16

TREE UNDERSTORY		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	5	0-13	42
QUDO	Blue oak	4	0-16	22

SHRUBS		AVERAGE	RANGE	CONSTANCY%
CECU2	Wedgeleaf ceanothus	10	0-34	40
RHDI	Poison oak	6	0-22	24
RICA1	Hillside gooseberry	3	0-9	20
ARVI3	Whiteleaf manzanita	8	0-27	16

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	61	0-100	87
ROCK	8	0-12	4

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
QUCH2 Canyon live oak
QUKE Black oak

TREE UNDERSTORY
PIJE Jeffrey pine
PISA2 Digger pine
QUGA2 Garry oak

SHRUBS
AMUT Utah serviceberry
ARMA3 Manzanita
ARMA4 Mariposa manzanita
ARTR Basin sagebrush
CELE2 Chap. whitethorn
CESP Greenbark ceanothus
ERCA6 Cal. yerba santa
ERFA Cal. buckwheat
HALI Narwleaf goldenfleece
HEAR2 Toyon
JUCA3 Cal. juniper
LOSU3 So. honeysuckle
PRIL1 Shb hollyleaf cherry
PRVID Western choke-cherry
RHCA2 Coffeeberry
RHCR Redberry
RIB Gooseberry
SAL11 Willow

(11) Interior Live Oak-Blue Oak-Digger Pine
(N=45)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	3	1.4	0	0.0	0	0.0	0	0.0	2
JUCA3	2	0.0	1	0.0	0	0.0	0	0.0	1
PISA2	2	3.1	2	1.7	0	0.8	0	0.0	35
QUCH2	0	0.0	1	1.4	1	0.7	0	0.0	2
QUDO	9	7.3	1	1.7	0	0.7	0	0.0	43
QUKE	2	0.7	0	0.0	0	0.0	0	0.0	2
QULO	2	1.6	1	0.8	0	0.4	0	0.0	7
QUWI	15	12.7	2	2.2	0	0.4	0	0.0	45

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	3	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
JUCA3	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PISA2	4	4.1	23	2	1.9	29	2	2.5	11	0	0.0	0
QUCH2	0	0.0	0	2	0.0	1	1	0.0	1	0	0.0	0
QUDO	9	7.3	43	2	2.8	24	2	7.3	4	0	0.0	0
QUKE	2	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
QULO	2	1.8	6	1	2.0	3	1	0.0	1	0	0.0	0
QUWI	16	13.1	43	3	3.6	25	1	4.6	4	0	0.0	0

(41) Blue Oak-Valley Oak-Coast Live Oak/Grass
QUDO-QULO-QUAG/GR2
N=17

EXTENT: This type occurs in the central coast areas from Napa to Santa Barbara counties. It also occurs in Calaveras county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1544	200	3500
ASPECT	All aspects		
SLOPE	Varied slopes		

SOILS:

PARENT MATERIAL	Varied, all types
TEXTURE	Varied; clay, gravelly and sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Oak Woodland: Blue Oak Woodland
Griffin (1977): Foothill Woodland: Blue Oak Phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak Series
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak Woodland

(41) Blue Oak-Valley Oak-Coast Live Oak/Grass
(N=17)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	46	0-186	88
QUAG Coast live oak	21	0-103	82
QULO Valley oak	60	0-229	13

SHRUBS (% cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	3	0-3	18

(% cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	95	0-100	88
ROCK			

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
PISA2 Digger pine
QUDU2 Scrub oak
QUKE Black oak

TREE UNDERSTORY
QUAG Coast live oak
QUDO Blue oak

SHRUBS
ARCA7 Coast sagebrush
ERPA3 Dune eriogonum
HEAR2 Toyon
SALE2 Purple sage

(41) Blue Oak-Valley Oak-Coast Live Oak/Grass
(N=17)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	3	2.1	2	0.7	0	0.0	0	0.0	2
QUAG	3	7.5	2	1.8	0	0.3	0	0.0	14
QUDO	7	5.0	3	4.0	0	0.7	0	0.3	15
QUDU2	1	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	1	0.0	0	0.0	0	0.0	0	0.0	1
QULO	4	4.8	3	4.4	1	1.5	0	0.4	13

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	3	2.1	2	2	0.7	2	0	0.0	0	0	0.0	0
QUAG	6	10.9	8	2	2.0	12	1	0.0	1	0	0.0	0
QUDO	7	5.0	15	4	4.9	11	1	2.3	5	1	0.0	1
QUDU2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	5	5.4	11	5	5.7	9	2	3.5	5	1	3.3	2

(6) Blue Oak-Digger Pine/Grass
QUDO-PISA2/GR2
N=101

EXTENT: This type occurs in the foothills and Sierran regions from Placer to Fresno counties and in the Central Coast area from Monterey to Los Angeles counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1749	300	4000
ASPECT	All Aspects		
SLOPE	46% occur on flat areas, 83% occur on slopes less than 35%		

SOILS:

PARENT MATERIAL	All types
TEXTURE	Varied: gravel to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger pine; Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger pine

(6) Blue Oak-Digger Pine/Grass
(N=101)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	35	2-116	100
PISA2 Digger pine	27	2-152	100

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
LOSU3 So. honeysuckle	4	0-10	16
CECU2 Wedgeleaf cean.	7	0-8	15
RHCR Redberry	3	0-23	15

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	92	0-100	98
ROCK	6	0-24	10

(6) Blue Oak-Digger Pine/Grass
(N=101)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
QUAG Coast live oak
QULO Valley oak
QUWI Interior live oak

TREE UNDERSTORY
AECA2 Cal. buckeye
PISA2 Digger pine
QUAG Coast live oak
QUDO Blue oak
QUDU2 Scrub oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
ARCA7 Coast sagebrush
ARGL5 Bigberry manz.
ARMA3 Manzanita
ARVI3 Whiteleaf manz.
CEBE2 Birchleaf mtn-mahog
CELE2 Chaparral whitethorn
CESO3 Jim brush
COCO5 Hazelnut
ERCA6 Cal. yerba santa
ERCR Thickleaf yerba santa
ERFA Cal. buckwheat
FRDI Foothill ash
HALI Narrowleaf goldenbush
HASQ2 Sawtooth goldenbush
RHCA2 Coffeeberry
RHDI Poison oak
RHTR Squaw bush
RICA1 Hillside gooseberry
SACA4 Mtn blue elderberry

(6) Blue Oak- Digger Pine/Grass
(N=101)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	2
PISA2	3	3.1	2	2.2	0	0.6	0	0.0	101
QUAG	1	1.3	1	1.3	0	0.6	0	0.0	11
QUDO	9	7.2	2	1.7	0	0.6	0	0.1	100
QULO	4	2.1	2	2.1	0	0.0	0	0.0	3
QUWI	3	3.1	0	0.3	0	0.0	0	0.0	9

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	1	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	3	3.7	76	2	2.6	80	1	3.2	17	0	0.0	0
QUAG	2	2.0	7	2	2.2	6	2	0.0	1	0	0.0	0
QUDO	9	7.4	96	2	2.0	78	2	3.6	16	1	9.9	2
QULO	4	2.1	3	4	3.6	2	0	0.0	0	0	0.0	0
QUWI	4	3.3	8	1	0.0	1	0	0.0	0	0	0.0	0

(9) Blue Oak/Wedgeleaf Ceanothus/Grass
QUDO/CECU2/GR2
N=56

EXTENT: This type occurs in the foothill and Sierra from Butte to Fresno counties, and in the Central coast in Monterey and San Benito counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1752	300	3800
ASPECT	All aspects		
SLOPE	63% less than 25%, 89% less than 45%		

SOILS:

PARENT MATERIAL	Granitics, basalts and shales
TEXTURE	Rocky and gravelly sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland; Interior Live Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger pine; Blue Oak; Interior Live oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger pine

(9) Blue Oak/Wedgeleaf Ceanothus/Grass
(N=56)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue oak	23	5-65	100
QUWI	Interior live oak	13	0-56	76
PISA2	Digger pine	19	0-48	73

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue oak	8	0-25	85
QUWI	Interior live oak	9	0-29	82
AECA2	Cal. buckeye	8	0-23	24
PISA2	Digger pine	3	0-7	15

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
CECU2	Wedgeleaf cean.	18	0-62	100
RHCR	Redberry	3	0-13	53
RHDI	Poison oak	4	0-10	42
ARVI3	Whiteleaf manz.	8	0-29	38

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	50	0-75	93
ROCK	5	0-20	25

(9) Blue Oak/Wedgeleaf Ceanothus/Grass
(N=56)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREES OVERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
PIPO Ponderosa pine
QUKE Black oak
QULO Valley oak

TREE UNDERSTORY
ACMA Bigleaf maple
FRCA2 Flannel bush
QUKE Black oak

SHRUBS:
ADFA Chamise
ARMA3 Manzanita
ARMA4 Mariposa manzanita
CEBE2 Birchleaf mtn-mahogany
CELE2 Chap. whitethorn
CHFO2 Mountain misery
COCO5 Hazelnut
DIAU1 Bush monkeyflower
ERCA6 Cal. yerba santa
FRDI Foothill ash
GAFLP Ashy silktassel
HALI Narrowleaf goldenbush
HEAR2 Toyon
LOIN3 Chap. honeysuckle
LOSU3 So. honeysuckle
RHCA2 Coffeeberry
RIAU Golden currant
RICA1 Hillside gooseberry
SACA4 Mtn. blue elderberry
SALI1 Willow

HERBS
COCA8 Corethrogyne
HAAR Goldenfleece

(9) Blue Oak/Wedgeleaf Ceanothus/Grass
(N=55)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	0	0.0	1	0.0	0	0.0	0	0.0	1
AECA2	3	3.5	0	0.6	0	0.0	0	0.0	3
PIPO	0	0.0	2	0.0	0	0.0	0	0.0	1
PISA2	3	2.9	1	1.2	0	0.2	0	0.0	39
QUDO	7	6.1	1	1.5	0	0.4	0	0.0	54
QUKE	2	1.0	0	0.6	0	0.0	0	0.0	3
QULO	2	1.4	1	0.7	0	0.0	0	0.0	2
QUWI	6	7.2	0	0.8	0	0.0	0	0.0	42

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
AECA2	3	3.5	3	1	0.0	1	0	0.0	0	0	0.0	0
PIPO	0	0.0	0	2	0.0	1	0	0.0	0	0	0.0	0
PISA2	4	3.1	34	2	1.5	30	1	0.0	1	0	0.0	0
QUDO	7	6.5	49	2	2.3	33	1	5.1	4	0	0.0	0
QUKE	2	1.0	3	1	0.0	1	0	0.0	0	0	0.0	0
QULO	2	1.4	2	1	0.0	1	0	0.0	0	0	0.0	0
QUWI	6	7.2	42	2	4.0	8	0	0.0	0	0	0.0	0

(8) Blue Oak-Digger Pine/Wedgeleaf Ceanothus-Mtn.-Mahogany
QUDO-PISA2/CECU2-CEBE2
N=23

EXTENT: This type occurs in the central coast and San Joaquin Valley from Contra Costa to Monterey counties and Stanislaus to Fresno counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2526	1000	4000
ASPECT	North to northeast aspects		
SLOPE	Varied		

SOILS:

PARENT MATERIAL	Sedimentary sandstones and shales
TEXTURE	Gravelly to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger Pine; Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine

(8) Blue Oak-Digger Pine/Wedgeleaf Ceanothus-Mtn. Mahogany
(N=23)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	25	2-136	100
PISA2 Digger pine	17	0-84	83
PIJE Jeffrey pine	20	0-69	16

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	6	0-16	74
JUCA3 Cal. juniper	6	0-18	48

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
CECU2 Wedgeleaf ceano.	7	0-21	74
CEBE2 Birchleaf mtn-mahg	13	0-34	61
HALI Happlopappus	9	0-22	57
RHCR Redberry	3	0-7	39
LOSU3 So. honeysuckle	3	0-6	39
ERFA Cal. buckwheat	5	0-7	17
ARCA7 Coast sagebrush	3	0-5	17
ADFA Chamise	2	0-2	17
ARGL5 Bigberry manz.	2	0-2	17

	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	59	0-92	91
ROCK			

(8) Blue Oak-Digger Pine/Wedgeleaf Ceanothus-Mtn. Mahogany (N=23)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
QUAG Coast live oak
QULO Valley oak

TREE UNDERSTORY
AECA2 Cal. buckeye
FRCA2 Flannel bush
PICO2 Coulter pine
PISA2 Digger pine
QUAG Coast live oak

SHRUBS
CELE2 Chaparral whitethorn
ERCA6 Cal. yerba santa
ERCR Thickleaf yerba santa
ERWR Eriognum sp.
FRDI Foothill ash
HEAR2 Toyon
RHCA2 Coffeeberry
RHDI Poison oak
RICA1 Hillside gooseberry
SACA4 Mtn blue elderberry
SAME4 Black sage

HERBS
LOSC Lotus

(8) Blue Oak-Digger Pine/Wedgeleaf Ceanothus-Mtn. Mahogany
(N=23)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	2	1.0	0	0.0	0	0.0	0	0.0	3
PIJE	3	3.1	3	3.1	0	0.0	0	0.0	4
PISA2	3	2.4	1	1.4	0	0.4	0	0.0	19
QUAG	0	0.6	1	0.0	0	0.0	0	0.0	3
QUDO	6	5.2	1	2.4	0	0.3	0	0.0	23
QULO	1	0.0	0	0.0	1	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	2	1.0	3	0	0.0	0	0	0.0	0	0	0.0	0
PIJE	3	4.0	3	3	4.0	3	0	0.0	0	0	0.0	0
PISA2	3	2.8	15	2	2.1	11	1	2.8	3	0	0.0	0
QUAG	1	0.0	1	1	0.0	3	0	0.0	0	0	0.0	0
QUDO	7	5.4	22	2	3.1	16	1	3.2	3	0	0.0	0
QULO	1	0.0	1	0	0.0	0	1	0.0	1	0	0.0	0

(40) Blue Oak/Narrowleaf Goldenbush
QUDO/HALI
N=17

EXTENT: This type occurs along te coast from Alameda to Santa Barbara counties and inland from Shasta to Merced counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2288	1450	3650
ASPECT	Northwest to east		
SLOPE	525 are on less than 25% slope		

SOILS:

PARENT MATERIAL	Hard and soft sandstones, shales, serpentine
TEXTURE	Sandy and gravelly-sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland: Blue Oak Phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak

(40) Blue Oak/Narrowleaf Goldenbush
N=17

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	28	10-61	100
PISA2 Digger pine	25	0-84	23

TREE UNDERSTORY (% cover)	AVERAGE	RANGE	CONSTANCY%
JUCA3 Cal. juniper	5	0-10	47
QUDO Blue oak	4	0-6	41

SHRUBS (% cover)	AVERAGE	RANGE	CONSTANCY%
HALI Narrowleag gldbush	22	0-65	94
ERFA Cal. buckwheat	5	0-7	23

(% cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	67	28-88	100
ROCK			

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PIJE Jeffrey pine
QULO Valley oak

TREE UNDERSTORY
JUCA3 Cal. juniper
PISA2 Digger pine
QUGA2 Garry oak
QULO Valley oak

SHRUBS
ARCA7 Coast sagebrush
ERWR Buckwheat
LOSU3 So. honeysuckle
RHCR Redberry
RIQU Foothill gooseberry
SALE2 Purple sage

(40) Blue Oak/Narrowleaf Goldenbush
N=17

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
JUCA3	3	0.0	0	0.0	0	0.0	0	0.0	1
PIJE	2	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	2	1.0	1	1.9	1	1.0	0	0.0	4
QUDO	5	5.5	2	1.3	0	0.4	0	0.0	17
QULO	5	0.0	1	0.0	1	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
JUCA3	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIJE	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	2	1.0	4	3	4.1	2	2	0.0	1	0	0.0	0
QUDO	5	5.7	16	2	1.5	14	1	2.1	4	0	0.0	0
QULO	5	0.0	1	1	0.0	1	1	0.0	1	0	0.0	0

VALLEY OAK SERIES

(32) Coast Live Oak-Valley Oak/Poison Oak
QUAG-QULO/RHDI
N=34

EXTENT: This type occurs in the central and southern coast counties from Marin to Santa Barbara. It also occurs in inland counties from Napa to San Benito.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1101	200	2700
ASPECT	68% are north to east.		
SLOPE	56% are less than 35%		

SOILS:

PARENT MATERIAL	Hard and soft sedimentary
TEXTURE	50% sandy and clay loams; 50% all other types

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Valley Oak Woodland
Griffin (1977): Foothill Woodland, QULO phase
Holland (1986): Valley Oak Woodland
Parker and Matyas (1981): Valley Oak; Coast Live Oak
Paysen et al. (1980): Valley Oak
Mayer et al. (1988): Valley Oak Woodland

(32) Coast Live Oak-Valley Oak/Poison Oak
(N=34)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUAG Coast live oak	90	3-304	100
QULO Valley oak	45	6-124	100
PICO1 Beach pine	20	0-35	18

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	8	0-23	53

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	76	0-100	91
ROCK	4	0-11	15

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
PICO2 Coulter pine
PILA Sugar pine
PISA2 Digger pine
QUCH2 Canyon live oak
QUKE Black oak
UMCA1 Cal. bay

TREE UNDERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
PICO2 Coulter pine
QUAG Coast live oak
QUDU2 Scrub oak
UMCA1 Cal. bay

SHRUBS
ARCA7 Coast sagebrush
ARCO6 Hoary manzanita
ARGL5 Bigberry manzanita
ARPRD Pink-brcd manzanita
BAPI Baccharis
CECU2 Wedgeleaf ceanothus
ERCA6 Cal. yerba santa
ERFA Cal. buckwheat
HEAR2 Toyon
LOSU3 So. honeysuckle
RHCA2 Coffeeberry
RHCR Redberry
RICA1 Hillside gooseberry
ROCA1 Cal. wild rose
RUVI2 Blackberry
SAAP1 White sage
SAME4 Black sage
SYRI Upright snowberry

(32) Coast Live Oak-Valley Oak/Poison Oak
(N=34)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	3	0.7	1	0.7	0	0.0	0	0.0	2
AECA2	4	2.0	1	1.2	0	0.0	0	0.0	6
PICO1	5	4.7	1	1.5	0	0.0	0	0.0	6
PICO2	14	0.0	4	0.0	1	0.0	0	0.0	1
PILA	2	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	2	1.5	1	0.0	0	0.0	0	0.0	3
QUAG	7	7.1	6	5.4	1	1.8	0	0.4	34
QUCH2	4	0.0	4	0.0	0	0.0	0	0.0	1
QUKE	1	0.0	0	0.0	0	0.0	0	0.0	1
QULO	4	3.8	2	2.4	1	1.1	0	0.4	34
UMCA1	3	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	3	0.7	2	1	0.0	1	0	0.0	0	0	0.0	0
AECA2	4	2.0	6	2	4.2	2	0	0.0	0	0	0.0	0
PICO1	5	4.7	6	2	2.2	4	0	0.0	0	0	0.0	0
PICO2	14	0.0	1	4	0.0	1	1	0.0	1	0	0.0	0
PILA	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	2	1.5	3	1	0.0	3	0	0.0	0	0	0.0	0
QUAG	8	8.0	28	6	5.6	32	3	3.9	14	2	8.5	2
QUCH2	4	0.0	1	4	0.0	1	0	0.0	0	0	0.0	0
QUKE	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	5	4.8	25	3	2.9	25	2	2.7	13	2	8.5	2
UMCA1	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(31)Valley Oak-Coast Live Oak/Grass
QULO-QUAG/GR2
N=37

EXTENT: This type coccurs on the Southern coast, central coast and Kern, Merced, San Benito and Santa Clara counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1318	300	3800
ASPECT	All aspects		
SLOPE	79% are north to east		

SOILS:

PARENT MATERIAL	72% Hard sandstone and shale
TEXTURE	Rocky, sandy and clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Valley Oak Woodland
Griffin (1977): Foothill Woodland, QULO phase
Holland (1986): Valley Oak Woodland
Parker and Matyas (1981): Valley Oak
Paysen et al. (1980): Valley Oak
Mayer et al. (1988): Valley Oak Woodland; Coastal Oak Woodland

(31) Valley Oak-Coast Live Oak/Grass
(N=37)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QULO	Valley oak	63	8-214	100
QUAG	Coast live oak	47	0-171	84
PSME	Douglas fir	29	0-64	32

(% Cover)	AVERAGE	RANGE	CONSTANCY%
SHRUBS	-		
HERBS	-		
GRASSES	97	30-100	100
ROCK	-	0-2	3

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PICO1 Beach (lodgepole) pine
PILA Sugar pine
PISA2 Digger pine
QUKE Black oak
QUWI Interior live oak

TREE UNDERSTORY
QUDO Blue oak

SHRUBS
RHCA2 Coffeeberry
RHCR Redberry
SACA4 Mtn blue elderberry

(31) Valley Oak-Coast Live Oak/Grass (N=37)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	4	0.7	0	0.0	0	0.0	0	0.0	2
PICO1	1	0.0	0	0.0	0	0.0	0	0.0	1
PILA	1	0.0	3	0.0	0	0.0	0	0.0	1
PISA2	1	0.0	1	0.0	0	0.0	0	0.0	1
PSME	6	4.3	2	1.9	0	0.0	0	0.0	12
QUAG	3	3.3	3	2.0	1	1.2	0	0.2	31
QUKE	2	0.0	0	0.0	0	0.0	0	0.0	1
QULO	5	6.0	3	1.6	1	1.7	0	0.3	37
QUWI	0	0.0	2	0.0	1	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	4	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PILA	1	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
PISA2	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PSME	6	4.5	11	3	2.4	9	0	0.0	0	0	0.0	0
QUAG	4	4.4	21	3	2.0	31	2	3.6	10	1	0.0	1
QUKE	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	6	7.0	29	3	1.7	34	3	3.3	17	1	3.3	4
QUWI	0	0.0	0	2	0.0	1	1	0.0	1	0	0.0	0

(33) Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
MO-QULO/RHDI-RHCA2
N=22

EXTENT: This type occurs primarily in the central coast region from Monterey to San Luis Obispo counties. It also occurs slightly inland in Contra Costa and Santa Clara counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1443	400	3000
ASPECT	47% north; 37% south to west		
SLOPE	58% are less than 35%		

SOILS:

PARENT MATERIAL	Soft and hard sedimentary
TEXTURE	Clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Valley Oak Woodland; Coast Live Oak Forest
Griffin (1977): Foothill Woodland, QULO and QUDO phases
Holland (1986): Valley Oak Woodland; Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak; Valley Oak; Blue Oak-Digger pine
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland; Valley Oak Woodland

(33)Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
(N=22)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QULO Valley oak	83	3-245	100
QUAG Coast live oak	108	0-385	90
QUDO Blue oak	28	0-81	54
AECA2 Cal. buckeye	22	0-46	30
PISA2 Digger pine	16	0-33	27

SHRUBS (%cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	10	0-32	85
RHCA2 Coffeeberry	10	0-22	65
RHCR Redberry	4	0-5	20

(%cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	54	0-92	90
ROCK	14	0-14	5

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PICO1 Beach (lodgepole) pine
UMCA1 Cal. bay

TREE UNDERSTORY
PISA2 Digger pine
QUAG Coast live oak
UMCA1 Cal. bay

SHRUBS
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
BAPI Baccharis
DIAU1 Bush monkeyflower
HEAR2 Toyon
HODI Ocean spray
LOSU3 So. honeysuckle
SAAP1 White sage

HERBS
LOSC Lotus
PTAQ Bracken fern

(33)Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
(N=22)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	3	0.0	0	0.0	0	0.0	0	0.0	1
AECA2	8	2.2	2	2.4	0	0.8	0	0.4	6
PICO2	8	0.0	6	0.0	0	0.0	0	0.0	1
PISA2	2	2.3	2	1.0	0	0.0	0	0.0	6
QUAG	7	4.0	5	3.8	1	2.4	0	0.2	20
QUDO	5	3.0	1	1.6	1	0.9	0	0.0	12
QULO	6	6.0	3	3.0	2	1.9	0	0.2	22
UMCA1	2	0.0	2	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
AECA2	8	2.2	6	3	4.8	3	2	0.0	1	1	0.0	1
PICO2	8	0.0	1	6	0.0	1	0	0.0	0	0	0.0	0
PISA2	4	3.4	4	2	1.2	5	0	0.0	0	0	0.0	0
QUAG	7	4.0	20	5	4.3	17	4	5.3	8	1	0.0	1
QUDO	5	3.0	12	3	3.1	6	2	2.6	4	0	0.0	0
QULO	6	6.2	21	4	3.6	17	3	2.2	18	1	0.0	1
UMCA1	2	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0

(35) Blue Oak-Valley Oak/Grass
QUDO-QULO/GR2
N=47

EXTENT: This type occurs in the foothills suuronding the central valley, the central coast and in Placer and Calaveras counties in the Sierras.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1477	200	4400
ASPECT	All aspects		
SLOPE	70% are less than 35%		

SOILS:

PARENT MATERIAL	Hard and soft sedimentary, granitics
TEXTURE	Sandy to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland; Valley Oak Woodland
Griffin (1977): Foothill Woodland, QULO and QUDO phases
Holland (1986): Blue Oak Woodland; Valley Oak Woodland
Parker and Matyas (1981): Blue Oak; Valley Oak
Paysen et al. (1980): Blue Oak; Valley Oak
Mayer et al. (1988): Blue Oak Woodland; Valley Oak Woodland

(35) Blue Oak-Valley Oak/Grass
(N=47)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue Oak	38	5-186	100
QULO	Valley oak	28	0-229	98
QUAG	Coast live oak	15	0-36	23

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	97	75-100	100
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. bay
HEAR2 Toyon
PISA2 Digger pine
QUDU2 Scrub oak
QUKE Black oak
QUWI Interior live oak

TREE UNDERSTORY
QUDO Blue oak
QULO Valley oak

SHRUBS
ARCA7 Coast sagebrush
ARMA3 Manzanita
HALI Haplopappus
RHCA2 Coffeeberry
RHDI Poison oak
RIAU Golden currant
RISP Fuschia flr gsebry
SALE2 Purple sage

(35) Blue Oak-Valley Oak/Grass
(N=47)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	3	3.3	0	0.0	0	0.0	0	0.0	5
PISA2	1	1.9	1	0.5	0	0.0	0	0.0	4
QUAG	1	1.6	1	1.1	0	0.3	0	0.0	11
QUDO	7	5.4	2	2.5	0	0.6	0	0.2	47
QUDU2	2	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	1	0.0	0	0.0	0	0.0	0	0.0	1
QULO	2	2.6	2	2.5	0	0.9	0	0.2	46
QUWI	5	5.4	0	0.4	0	0.0	0	0.0	5

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	3	3.3	5	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	3	4.1	2	1	0.5	4	0	0.0	0	0	0.0	0
QUAG	3	3.5	5	2	1.3	9	1	0.0	1	0	0.0	0
QUDO	7	5.5	45	3	2.8	38	1	2.1	13	1	6.7	2
QUDU2	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	3	3.2	34	3	3.6	27	2	3.0	12	1	6.6	2
QUWI	5	5.4	5	1	0.0	1	0	0.0	0	0	0.0	0

(30) Valley Oak/Grass
QULO/GR2
N=44

EXTENT: This type occurs coastally from Mendocino to Los Angeles counties and inland in Contra Costa, Santa Clara, San Benito and Kern county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2253	50	5600
ASPECT	All aspects		
SLOPE	78% are less than 35%		

SOILS:

PARENT MATERIAL	Granitics; hard and soft sedimentary
TEXTURE	Mostly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Valley Oak Woodland
Griffin (1977): Foothill Woodland, QULO phase
Holland (1986): Valley Oak Woodland
Parker and Matyas (1981): Valley Oak
Paysen et al. (1980): Valley Oak
Mayer et al. (1988): Valley Oak Woodland

(30) Valley Oak/Grass
(N=44)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QULO Valley oak	74	10-273	100

(% Cover)	AVERAGE	RANGE	CONSTANCY%
SHRUBS	-		
HERBS	-		
GRASSES	90	0-100	91
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
JUCA4 So. black walnut
PISA2 Digger pine
QUDO Blue oak
QUKE Black oak
QUAG Coast live oak

TREE UNDERSTORY
QUWI Interior live oak
QULO Valley oak

HERBS
PTAQ Bracken fern

SHRUBS
ARCA7 Coast sagebrush
ARMA3 Manzanita
ARTR Basin sagebrush
CECU2 Wedgeleaf ceanothus
ERCI2 Red-stem filaree
ERFA Cal. buckwheat
HEAR2 Toyon
RHCA2 Coffeeberry
RHCR Redberry
RHDI Poison oak
RIB Gooseberry
RICA1 Hillside gooseberry
SYRI Upright snowberry

(30) Valley Oak/Grass
(N=44)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
JUCA4	3	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	0	0.0	12	0.0	1	0.0	0	0.0	1
QUAG	5	1.4	0	0.0	0	0.0	0	0.0	2
QUDO	1	0.0	0	0.0	0	0.0	0	0.0	3
QUKE	2	1.4	1	0.0	0	0.0	0	0.0	2
QULO	6	7.2	3	2.8	1	1.6	0	0.8	44

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
JUCA4	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	0	0.0	0	12	0.0	1	1	0.0	1	0	0.0	0
QUAG	5	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	1	0.0	3	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	2	1.4	2	1	0.0	2	0	0.0	0	0	0.0	0
QULO	8	9.1	31	4	3.0	38	2	3.4	18	2	2.6	13

(29) Black Oak-Valley Oak/Grass
QUKE-QULO/GR2
N=19

EXTENT: This type occurs in the coast ranges from Mendocino to Santa Clara county. It also occurs in the south coast and inland areas of San Luis Obispo, Santa Barbara, San Diego and Kern counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2375	75	6000
ASPECT	All aspects.		
SLOPE	68% are less than 25%		

SOILS:

PARENT MATERIAL	Granitic; soft and hard sedimentary
TEXTURE	All textures

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Foothill Woodland, QULO phase
Holland (1986): None
Parker and Matyas (1981): Valley Oak; Black Oak
Paysen et al. (1980): Valley Oak; Black Oak; Coast Live Oak
Mayer et al. (1988): Montane Hardwood; Valley Oak Woodland; Coastal Oak Woodland

(29) Black Oak-Valley Oak/Grass
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	45	3-195	100
QULO Valley oak	32	0-71	79
QUAG Coast live oak	40	0-146	47
PSME Douglas fir	38	0-68	16

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	3	0-4	32

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	92	0-100	89
ROCK	-	0-1	5

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
ARME3 Madrone
PICO1 Beach pine
PICO2 Coulter pine
PISA2 Digger pine

TREE UNDERSTORY
AECA2 Cal. buckeye
QUGA2 Garry oak
QULO Valley oak

SHRUBS
ARGL5 Bigberry manzanita
ARMA3 Manzanita
CECU2 Wedgeleaf manzanita
ERCO7 Yellow yarrow
HEAR2 Toyon
SYRI Upright snowberry

(29) Black Oak-Valley Oak/Grass
(N=19)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	0	0.0	2	0.0	0	0.0	0	0.0	1
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
ARME3	6	5.7	4	2.8	0	0.0	0	0.0	2
PICO1	2	1.4	0	0.0	0	0.0	0	0.0	2
PICO2	2	0.0	3	0.0	0	0.0	0	0.0	1
PISA2	3	0.0	0	0.0	0	0.0	0	0.0	1
PSME	10	6.6	3	2.1	0	0.0	0	0.0	3
QUAG	5	5.8	3	2.9	0	1.0	0	0.0	9
QUKE	4	3.6	3	2.7	1	1.0	0	0.5	19
QULO	7	11.7	2	1.4	0	0.7	0	0.0	15

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	0	0.0	0	2	0.0	1	0	0.0	0	0	0.0	0
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	6	5.7	2	4	2.8	2	0	0.0	0	0	0.0	0
PICO1	2	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	2	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
PISA2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PSME	10	6.6	3	3	2.1	3	0	0.0	0	0	0.0	0
QUAG	7	6.9	7	4	4.1	6	2	5.5	2	0	0.0	0
QUKE	5	3.7	18	3	3.2	15	2	2.9	6	2	0.0	1
QULO	10	14.2	11	2	2.0	10	2	4.1	3	0	0.0	0

INTERIOR LIVE OAK SERIES

(17) Interior Live Oak-Digger Pine/Manzanita
QUWI-PISA2/ARMA3
N=36

EXTENT: This type occurs primarily within the Sierra Nevada foothills from El Dorado to Tuolumne counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1144	600	1900
SLOPE	69% less than or equal to 35%		
ASPECT	50% north to east; 72% northwest to east		

SOILS:

PARENT MATERIAL	Granite, andesite, serpentine and hard sedimentary.
TEXTURE	Rocky, gravelly sandy clay loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO and QUWI phases
Holland (1986): Digger Pine-Oak Woodland; Blue Oak Woodland
Parker and Matyas (1981): Blue Oak; Interior Live Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine; Blue Oak Woodland

(17) Interior Live Oak-Digger Pine/Manzanita
(N=36)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	21	2-71	100
PISA2	Digger pine	24	0-99	78
QUDO	Blue oak	8	0-28	67

TREE UNDERSTORY		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	23	0-58	94
QUDO	Blue oak	7	0-24	39
AECA2	Cal. buckeye	5	0-13	31
PISA2	Digger pine	3	0-6	31

SHRUBS		AVERAGE	RANGE	CONSTANCY%
ARMA3	Manzanita	10	0-35	81
HEAR2	Toyon	15	0-44	64
RHDI	Poison oak	7	0-20	56
CECU2	Wedgeleaf	7	0-16	47
RHCR	Redberry	4	0-6	25

(% COVER)	AVERAGE	RANGE	CONSTANCY%
GRASSES	24	0-65	75
ROCK	2	0-6	19

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
FRDI Foothill ash
QUKE Black oak
QULO Valley oak
QUMO Oracle oak

TREE UNDERSTORY
QUKE Black oak
QULO Valley oak

HERBS
APCA Indian hemp
LOSC Lotus

SHRUBS
ADFA Chamise
ARMA4 Mariposa manzanita
ARVI3 Whiteleaf manzanita
CEBE2 Birchleaf mtn-mahog
CECO2 Mtn. whitethorn
COCA8 Cal. corethrogyne
ERCA6 Cal. yerba santa
HAAR Goldenfleece
RICA1 Hillside gooseberry
LUP5 Bush lupine

(17) Interior Live Oak-Digger Pine/Manzanita
(N=36)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	3	1.9	0	0.0	0	0.0	0	0.0	5
PISA2	4	3.7	2	1.3	0	0.7	0	0.0	28
QUDO	4	2.6	0	0.6	0	0.0	0	0.0	24
QUKE	2	0.7	1	0.7	0	0.0	0	0.0	2
QULO	4	0.0	1	0.0	0	0.0	0	0.0	1
QUMO	2	0.0	0	0.0	0	0.0	0	0.0	1
QUWI	11	8.8	1	0.8	0	0.0	0	0.0	36

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	3	1.9	5	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	4	4.3	22	2	1.5	23	3	12.8	2	0	0.0	0
QUDO	4	2.6	24	2	5.4	3	0	0.0	0	0	0.0	0
QUKE	2	0.7	2	1	0.0	1	0	0.0	0	0	0.0	0
QULO	4	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUMO	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	11	8.8	36	2	2.3	12	0	0.0	0	0	0.0	0

(15) Interior Live Oak-Madrone/Poison Oak
QUWI-ARME3/RHDI
N=23

EXTENT: This type occurs in the Sierra in Calaveras and El Dorado counties and in the Coast ranges from Mendocino to Monterey county. It also occurs in Shasta county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1493	500	3500
ASPECT	All aspects except south		
SLOPE	40% flat; 78% less than or equal to 35%		

SOILS:

PARENT MATERIAL	Granitic and soft sedimentary
TEXTURE	Gravelly to rocky sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO and QUWI phases
Holland (1986): Digger pine-Oak Woodland; Blue Oak Woodland
Parker and Matyas (1981): Blue Oak; Interior Live Oak
Paysen et al. (1980): Blue Oak; Interior Live Oak
Mayer et al. (1988): Blue Oak-Digger pine; Blue Oak Woodland

(15) Interior Live Oak-Madrone/Poison Oak
(N=23)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	67	19-145	100
ARME3 Madrone	31	0-66	52
QUKE Black oak	9	0-24	22
LIDE2 Tan-oak	32	0-51	17

TREE UNDERSTORY	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	10	0-29	43

SHRUBS	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	10	0-22	52
RHCA2 Coffeeberry	5	0-12	17

HERBS	AVERAGE	RANGE	CONSTANCY%
PTAQ Bracken fern	25	0-42	17

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	-		
ROCK	21	0-41	9

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PICO1 Beach pine
PICO2 Coulter pine
PISA2 Digger pine
PSME Douglas fir
QUAG Coast live oak
QUCH2 Canyon live oak
QUDO Blue oak
QUGA2 Garry oak
QULO Valley oak
SESE2 Coast Redwood
UMCA1 Cal. bay

TREE UNDERSTORY
AECA2 Cal. buckeye
ARME3 Madrone
QUAG Coast live oak
QUDO Blue oak
QUGA2 Garry oak
UMCA1 Cal. bay

SHRUBS
AMUT Utah serviceberry
ARGL5 Bigberry manzanita
ARMA3 Manzanita
ARMA4 Mariposa manzanita
BAPI Bacharris
CECU2 Wedgeleaf ceanothus
CETH Blueblossom ceanothus
COCO5 Hazelnut
DIAU1 Bush monkeyflower
ERCA6 Cal. yerba santa
HEAR2 Toyon
PHLEC Cal. mock orange
RHTR Squaw bush
RUPA2 Western thimbleberry
RUVI2 Blackberry
VAOV Cal. huckleberry

HERBS
LOSC Lotus
PSPH Forest scurfpea

(15) Interior Live Oak-Madrone/Poison Oak
(N=23)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ARME3	8	6.4	1	1.7	0	0.8	0	0.0	12
LIDE2	12	14.5	1	0.8	0	0.5	0	0.0	4
PICO1	8	4.9	1	0.0	0	0.0	0	0.0	2
PICO2	1	0.0	2	0.0	0	0.0	0	0.0	1
PISA2	3	2.1	0	0.0	0	0.0	0	0.0	2
PSME	2	1.5	0	0.0	0	0.0	0	0.0	3
QUAG	7	4.6	0	0.0	2	2.9	0	0.0	3
QUCH2	3	0.0	0	0.0	0	0.0	0	0.0	1
QUDO	1	0.0	1	0.0	0	0.0	0	0.0	1
QUGA2	2	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	4	4.0	0	0.5	0	0.0	0	0.0	5
QULO	1	1.4	1	1.4	0	0.0	0	0.0	2
QUWI	25	20.1	2	2.3	0	0.8	0	0.2	23
SESE2	3	2.1	1	1.2	0	0.0	0	0.0	3
UMCA1	2	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ARME3	8	6.4	12	2	2.6	7	2	6.3	2	0	0.0	0
LIDE2	16	18.7	3	1	1.1	3	1	0.0	1	0	0.0	0
PICO1	8	4.9	2	1	0.0	2	0	0.0	0	0	0.0	0
PICO2	1	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
PISA2	3	2.1	2	0	0.0	0	0	0.0	0	0	0.0	0
PSME	2	1.5	3	0	0.0	0	0	0.0	0	0	0.0	0
QUAG	7	4.6	3	0	0.0	0	5	0.0	1	0	0.0	0
QUCH2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUGA2	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	4	4.0	5	1	1.7	2	0	0.0	0	0	0.0	0
QULO	2	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
QUWI	25	20.1	23	3	2.9	17	2	4.5	4	1	0.0	1
SESE2	3	2.1	3	2	2.0	2	0	0.0	0	0	0.0	0
UMCA1	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(11) Interior Live Oak-Blue Oak-Digger Pine
QUWI-QUDO-PISA2
N=45

EXTENT: This type occurs in the Sierra from Butte to Kern county. It also occurs in San Benito county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1533	400	5000
ASPECT	28% north to northeast; 37% south to southwest.		
SLOPE	78% less than 25%		

SOILS:

PARENT MATERIAL	Granitic and mixed; some mafic and metamorphic
TEXTURE	Loams, rocky clay loams, and sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO and QUWI phases
Holland (1986): Digger Pine-Oak Woodland; Blue Oak Woodland
Parker and Matyas (1981): Blue Oak; Interior Live Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine; Blue Oak Woodland

(11) Interior Live Oak-Blue Oak-Digger Pine
(N=45)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	41	6-110	100
QUDO	Blue oak	29	0-120	96
PISA2	Digger pine	32	0-91	78
QULO	Valley oak	11	0-25	16

TREE UNDERSTORY		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	5	0-13	42
QUDO	Blue oak	4	0-16	22

SHRUBS		AVERAGE	RANGE	CONSTANCY%
CECU2	Wedgeleaf ceanothus	10	0-34	40
RHDI	Poison oak	6	0-22	24
RICA1	Hillside gooseberry	3	0-9	20
ARVI3	Whiteleaf manzanita	8	0-27	16

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	61	0-100	87
ROCK	8	0-12	4

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
QUCH2 Canyon live oak
QUKE Black oak

TREE UNDERSTORY
PIJE Jeffrey pine
PISA2 Digger pine
QUGA2 Garry oak

SHRUBS
AMUT Utah serviceberry
ARMA3 Manzanita
ARMA4 Mariposa manzanita
ARTR Basin sagebrush
CELE2 Chap. whitethorn
CESP Greenbark ceanothus
ERCA6 Cal. yerba santa
ERFA Cal. buckwheat
HALI Narwleaf goldenfleece
HEAR2 Toyon
JUCA3 Cal. juniper
LOSU3 So. honeysuckle
PRIL1 Shb hollyleaf cherry
PRVID Western choke-cherry
RHCA2 Coffeeberry
RHCR Redberry
RIB Gooseberry
SAL11 Willow

(11) Interior Live Oak-Blue Oak-Digger Pine
(N=45)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	3	1.4	0	0.0	0	0.0	0	0.0	2
JUCA3	2	0.0	1	0.0	0	0.0	0	0.0	1
PISA2	2	3.1	2	1.7	0	0.8	0	0.0	35
QUCH2	0	0.0	1	1.4	1	0.7	0	0.0	2
QUDO	9	7.3	1	1.7	0	0.7	0	0.0	43
QUKE	2	0.7	0	0.0	0	0.0	0	0.0	2
QULO	2	1.6	1	0.8	0	0.4	0	0.0	7
QUWI	15	12.7	2	2.2	0	0.4	0	0.0	45

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	3	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
JUCA3	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PISA2	4	4.1	23	2	1.9	29	2	2.5	11	0	0.0	0
QUCH2	0	0.0	0	2	0.0	1	1	0.0	1	0	0.0	0
QUDO	9	7.3	43	2	2.8	24	2	7.3	4	0	0.0	0
QUKE	2	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
QULO	2	1.8	6	1	2.0	3	1	0.0	1	0	0.0	0
QUWI	16	13.1	43	3	3.6	25	1	4.6	4	0	0.0	0

(18) Interior Live Oak/Whiteleaf Manzanita
QUWI/ARVI3
N=72

EXTENT: This type occurs in the Sierra and foothill regions from Yuba to Madera counties. It also occurs in Shasta county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1780	600	4250
ASPECT	All aspects		
SLOPE	90% less than 45%		

SOILS:

PARENT MATERIAL	Granitic, metamorphic and some sedimentary
TEXTURE	Gravelly sands and clayey loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Holland (1986): Foothill Woodland, QUWI phase
Parker and Matyas (1981): Blue Oak Woodland, Interior Live Oak
Paysen et al. (1980): Interior Live Oak
Mayer et al. (1988): Blue Oak-Digger Pine

(18) Interior Live Oak/Whiteleaf Manzanita
(N=72)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	16	2-82	100
PISA2 Digger pine	10	0-49	47
QUKE Black oak	10	0-60	25

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	16	0-6	78
QUDO Blue oak	6	0-24	39

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
ARVI3 Whiteleaf manz.	19	0-75	69
CECU2 Wedgeleaf ceano.	15	0-64	65
HEAR2 Toyon	8	0-35	57
RHDI Poison oak	9	0-46	47
RHCR Redberry	3	0-7	17

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	34	0-93	64
ROCK	6	0-31	19

(18) Interior Live Oak/Whiteleaf Manzanita
(N=72)

RARELY OCCURRING SPECIES (less than 15% constancy):

OVERSTORY TREES:
AECA2 Cal. buckeye
LIDE3 Incense cedar
PIPO Ponderosa pine
PSME Douglas fir
QUCH2 Canyon live oak
QUDO Blue oak
QULO Valley oak
QUMO Oracle oak

UNDERSTORY TREES:
COCO5 Hazelnut
FRCA2 Flannel bush
PIPO Ponderosa pine
PISA2 Digger pine
QUDU2 Scrub oak
QUKE Black oak
QULO Valley oaK

HERBS:
APCA Indian hemp
BRLA2 Grass nut
ERCI2 Red-stem filaree
HAAR Goldenfleece
LUAL3 Silver lupine

SHRUBS:
ADFA Chamise
ARMA3 Manzanita
ARMA4 Mariposa manzanita
CEBE2 Birchleaf mtn-mahogany
CEIN3 Deerbrush
CELE2 Chap. whitethorn
CHFO2 Bear-clover
DIAU1 Bush monkeyflower
ERCA6 Cal. yerba santa
GAVE2 Veatch silktassel
LOSU3 So. honeysuckle
PRSU2 Sierra plum
RHCA2 Coffeeberry
RHTR Squaw bush
RICA1 Hillside gooseberry
RIRO Sierra gooseberry
ROCA1 Cal. wild rose
SACA4 Mtn blue elderberry
SYRI Upright elderberry

(18) Interior Live Oak/Whiteleaf Manzanita
(N=72)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	2	1.2	0	0.0	0	0.0	0	0.0	3
LIDE3	0	0.0	1	0.0	0	0.0	0	0.0	1
PIPO	2	1.5	0	0.0	0	0.6	0	0.0	3
PISA2	2	1.3	1	0.8	0	0.2	0	0.0	34
PSME	3	0.7	0	0.0	0	0.0	0	0.0	2
QUCH2	9	0.0	0	0.0	0	0.0	0	0.0	1
QUDO	4	3.1	1	0.9	0	0.4	0	0.0	44
QUKE	2	2.3	1	1.7	0	0.0	0	0.0	18
QULO	2	0.0	0	0.0	0	0.0	0	0.0	2
QUMO	1	0.7	1	0.7	0	0.0	0	0.0	2
QUWI	7	7.8	1	1.0	0	0.1	0	0.0	72

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	2	1.2	3	0	0.0	0	0	0.0	0	0	0.0	0
LIDE3	0	0.0	0	1	0.0	1	0	0.0	0	0	0.0	0
PIPO	3	2.6	2	0	0.0	0	1	0.0	1	0	0.0	0
PISA2	2	1.5	28	1	1.4	18	1	5.7	2	0	0.0	0
PSME	3	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
QUCH2	9	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	4	3.3	41	2	2.4	15	1	4.6	4	0	0.0	0
QUKE	3	2.4	16	2	4.3	6	0	0.0	0	0	0.0	0
QULO	2	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
QUMO	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUWI	7	8.1	68	2	3.3	20	1	0.0	1	0	0.0	0

(19) Interior Live Oak/Toyon
QUWI/HEAR2
N=43

EXTENT: This type occurs in the Sierra Nevada and the foothill areas of the Sierra primarily from Placer to Madera counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1855	600	3200
ASPECT	All aspects		
SLOPE	Below 55%		

SOILS:

PARENT MATERIAL	Granitic and metamorphic
TEXTURE	Rocky and sandy clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Foothill Woodland, QUWI phase
Griffin (1977): Blue Oak Woodland
Holland (1986): Interior Live Oak, Blue Oak Woodland
Parker and Matyas (1981): Interior Live Oak, Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine

(19) Interior Live Oak/Toyon
(N=43)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	16	0-53	88
QUDO Blue oak	4	0-11	33
PISA2 Digger pine	6	0-17	28
QUKE Black oak	5	0-13	28

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUWI Interior live oak	19	0-75	95
QUDO Blue oak	5	0-11	30

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
HEAR2 Toyon	14	0-47	78
RHDI Poison oak	11	0-51	55
RHCR Redberry	3	0-10	35
ARMA3 Manzanita	8	0-24	30
ARVI3 Whiteleaf manz.	9	0-31	28
ERCA6 Cal. yerba santa	4	0-7	20

HERBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
HAAR Goldenfleece	3	0-6	20

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	42	0-82	95
ROCK	9	0-24	14

(19) Interior Live Oak/Toyon
(N=43)

RARELY OCCURRING SPECIES (less than 15% constancy):

OVERSTORY TREES:

AECA2	Cal. buckeye
PIPO	Ponderosa pine
QUCH2	Canyon live oak
QULO	Valley oak
QUMO	Oracle oak

UNDERSTORY TREES:

AECA2	Cal. buckeye
PISA2	Digger pine
QUCH2	Canyon live oak
QUKE	Black oak
QULO	Valley oak

HERBS:

HYPE	Klamath weed
LOSC	Lotus

SHRUBS:

ADFA	Chamise
ARMA4	Mariposa manz.
CEBE2	Blf mtn-mahog.
CECU2	Wdleaf ceanothus
CELE2	Chap. whitethorn
DIAU1	Bush monkeyflower
RHCA2	Coffeeberry
RIRO	Sierra gooseberry
ROCA1	Cal. wild rose
RUVI2	Blackberry
SAL11	Willow
STOFC	Cal. storax

(19) Interior Live Oak/Toyon
(N=43)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
PIPO	2	1.4	1	0.7	0	0.0	0	0.0	2
PISA2	1	1.9	1	0.7	0	0.0	0	0.0	14
QUCH2	1	0.6	0	0.0	0	0.0	0	0.0	3
QUDO	1	0.6	0	0.4	0	0.0	0	0.0	14
QUKE	2	0.9	0	0.4	0	0.0	0	0.0	13
QULO	2	0.7	1	0.7	0	0.0	0	0.0	2
QUMO	1	0.0	0	0.0	0	0.0	0	0.0	2
QUWI	6	6.0	1	1.3	0	0.2	0	0.0	38

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	2	1.4	2	1	0.0	1	0	0.0	0	0	0.0	0
PISA2	2	2.7	9	1	1.5	6	0	0.0	0	0	0.0	0
QUCH2	1	0.6	3	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	1	0.6	13	1	2.3	3	0	0.0	0	0	0.0	0
QUKE	2	0.9	12	1	2.2	3	0	0.0	0	0	0.0	0
QULO	2	0.7	2	1	0.0	1	0	0.0	0	0	0.0	0
QUMO	1	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	6	6.1	37	2	3.4	13	1	6.0	2	0	0.0	0

(16) Interior Live Oak/Yerba Santa/Grass
QUWI/ERCA6/GR2
N=36

EXTENT: This type occurs in the Sierra and the Sierran foothills from Nevada county in the north, south to Madera county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2120	1000	3150
ASPECT	All aspects		
SLOPE	31% flat, 53% are less than 25%		

SOILS:

PARENT MATERIAL	42% granitic, some igneous and metamorphic
TEXTURE	Rocky, sandy and gravelly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland, QUDO and QUWI phases
Holland (1986): Digger pine- Oak Woodland; Blue Oak Woodland
Parker and Matyas (1981): Blue Oak; Interior Live Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger pine; Blue Oak Woodland

(16) Interior Live Oak/Yerba Santa/Grass
(N=36)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	8	0-20	61
QUDO	Blue oak	7	0-26	42
PISA2	Digger pine	9	0-25	36

TREE UNDERSTORY		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	15	0-59	86
QUDO	Blue oak	3	0-9	47
AECA2	Cal. buckeye	3	0-6	22

SHRUBS		AVERAGE	RANGE	CONSTANCY%
ERCA6	Cal. yerba santa	23	0-63	92
CECU2	Wedgeleaf ceanothus	16	0-51	58
HEAR2	Toyon	16	0-37	56
RHCR	Redberry	2	0-10	50
RHDI	Poison oak	5	0-25	39
ARVI3	Whiteleaf manzanita	4	0-9	19
CELE2	Chap. whitethorn	10	0-34	17

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	31	1-65	100
ROCK	8	0-19	22

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ARME2 Madrone
FRDI Foothill ash
QUCH2 Canyon live oak
QUKE Black oak

TREE UNDERSTORY
FRCA2 Flannel bush
PISA2 Digger pine
QUCH2 Canyon live
QUKE Black oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
ARMA4 Mariposa manzanita
CEBE2 Birchleaf mtn-mahog
CEIN3 Deerbrush
DIAU1 Bush monkeyflower
HAAR Goldenfleece
LOIN3 Chap. honeysuckle
RICA1 Hillside gooseberry
RIMA1 Chaparral currant
RIRO Sierra gooseberry
SACA4 Mtn blue elderberry

HERBS
LUAL3 Silver lupine

(16) Interior Live Oak/Yerba Santa/Grass
(N=36)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
PISA2	1	0.7	1	0.9	0	0.3	0	0.0	13
QUCH2	2	0.7	0	0.0	0	0.0	0	0.0	2
QUDO	2	1.8	0	0.7	0	0.0	0	0.0	15
QUKE	1	0.0	0	0.0	0	0.0	0	0.0	1
QUWI	3	2.5	0	0.6	0	0.0	0	0.0	22

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
PISA2	1	0.8	11	2	1.9	6	1	0.0	1	0	0.0	0
QUCH2	2	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	2	1.8	14	2	2.9	4	0	0.0	0	0	0.0	0
QUKE	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	3	2.7	20	1	1.5	9	0	0.0	0	0	0.0	0

BLACK OAK SERIES

(93) Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon
QUKE-ARME3-QUAG/RHDI-HEAR2
N=23

EXTENT: This type occurs in the Coast Range from Santa Cruz to Sonoma counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1293	300	2500
ASPECT	57% are north, but can occurs on all		
SLOPE	All slopes		

SOILS:

PARENT MATERIAL	48% sandstone, 30% shale
TEXTURE	Mostly sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak
Griffin (1977): Foothill Woodland, North Slope Phase
Holland (1986): Black Oak Woodland; Mixed Evergreen Forest
Parker and Matyas (1981): Black Oak
Paysen et al. (1980): Coast Live Oak; Black Oak
Mayer et al. (1988): Montane Hardwood

(93) Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon (N=23)
(N=23)

VEGETATION COVER SUMMARY

TREE OVERSTORY		AVERAGE	RANGE	
CONSTANCY%				
(BA ft^2)				
QUKE Black oak	48	0-194	91	
ARME3 Madrone		33	0-128	70
QUAG Coast live oak		21	0-60	70
PSME Douglas fir	68	0-172	26	
UMCA1 California bay		3	0-6	26
ACMA Bigleaf maple	14	0-38	22	
PICO1 Beach pine	11	0-17	17	

TREE UNDERSTORY	AVERAGE	RANGE	CONSTANCY%	
(% Cover)				
QUKE Black oak	7	0-33	48	
ARME3 Madrone		5	0-23	48
UMCA1 California bay		7	0-17	43
QUAG Coast live oak		7	0-25	35

SHRUBS		AVERAGE	RANGE	
CONSTANCY%				
(% Cover)				
RHDI Poison oak	11	0-35	61	
HEAR2 Toyon		7	0-16	61
HODI Ocean spray	27	0-59	17	
SYMO Creeping snowberry		24	0-75	17
RUVI2 Blackberry	9	0-20	17	

	AVERAGE	RANGE	
(% Cover)			
CONSTANCY%	-		
HERBS	14	0-44	30
GRASSES	-		
ROCK			

(93) Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon (N=23)
(N=23)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
LIDE3 Incense cedar
PILA Sugar pine
QUCH2 Canyon live oak
QUGA2 Garry oak
QULO Valley oak
QUWI Interior live oak

TREE UNDERSTORY
AECA2 Calif. buckeye
COCO5 Hazelnut
CONU2 Pacific dogwood
PILA Sugar pine
PSME Douglas fir
QUDO Blue oak
QUDU2 Scrub oak

HERBS
LOSC Lotus
LOSU3 So. honeysuckle
POMU1 Sword fern
PTAQP Bracken fern

SHRUBS
ADFA Chamise
AMCA2 Mock locust
AMUT Utah serviceberry
ARCA7 Coast sage
ARGL5 Bigberry manzanita
ARMA3 Manzanita
BAPI Baccharis
CECU2 Wedgeleaf ceanothus
CETH Blueblossom ceanothus
CRCA2 Cal. croton
RHCA2 Coffeeberry
ROCA1 Calif. wild rose
SAAP1 White sage

(93) Black Oak-Madrone-Coast Live Oak/Poison Oak-Toyon
(N=23)

STAND TABLE: number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	6	3.3	0	0.0	0	0.4	0	0.0	5
AECA2	11	0.0	0	0.0	0	0.0	0	0.0	1
ARME3	13	11.8	1	2.2	0	0.2	0	0.0	17
LIDE3	1	0.0	0	0.0	0	0.0	0	0.0	1
PICO1	7	3.5	0	0.0	0	0.0	0	0.0	4
PILA	1	0.0	0	0.0	0	0.0	0	0.0	1
PSME	5	4.7	4	2.7	1	2.0	0	0.0	6
QUAG	10	13.3	1	0.9	0	0.3	0	0.0	16
QUCH2	3	2.1	0	0.0	0	0.0	0	0.0	2
QUDO	0	0.0	0	0.0	0	0.0	0	0.0	1
QUGA2	15	18.4	1	0.7	0	0.0	0	0.0	2
QUKE	23	26.0	1	1.5	0	0.5	0	0.0	21
QULO	4	3.6	1	1.2	0	0.0	0	0.0	3
QUWI	1	0.0	1	0.0	0	0.0	0	0.0	1
UMCA1	2	1.5	0	0.0	0	0.0	0	0.0	6

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	6	3.3	5	0	0.0	0	1	0.0	1	0	0.0	0
AECA2	11	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	13	11.8	17	3	5.6	6	1	0.0	1	0	0.0	0
LIDE3	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	7	3.5	4	0	0.0	0	0	0.0	0	0	0.0	0
PILA	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PSME	6	5.4	5	4	3.2	5	3	3.9	3	0	0.0	0
QUAG	10	13.8	15	2	2.8	5	1	0.0	1	0	0.0	0
QUCH2	3	2.1	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0
QUGA2	15	18.4	2	1	0.0	1	0	0.0	0	0	0.0	0
QUKE	24	26.7	20	2	3.0	10	2	6.6	2	0	0.0	0
QULO	4	3.6	3	2	0.0	1	0	0.0	0	0	0.0	0
QUWI	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
UMCA1	2	1.5	6	0	0.0	0	0	0.0	0	0	0.0	0

(94)Mixed Oak-Coast Live Oak/Poison Oak
MO-QUAG/RHDI
N=42

EXTENT: This type occurs in Santa Clara county (55%) and along the central coast range counties from Sonoma and Napa to Monterey and Santa Benito.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1465	400	3500
ASPECT	97% north to east; 85% north to northeast		
SLOPE	All slopes		

SOILS:

PARENT MATERIAL	92% Hard sedimentary
TEXTURE	Gravelly to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Mixed Hardwood Forest
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak; Black Oak; Valley Oak
Paysen et al. (1980): Black Oak; Coast Live Oak
Mayer et al. (1988): Valley Oak Woodland; Coastal Oak Woodland; Montane Hardwood

(94)Mixed Oak-Coast Live Oak/Poison Oak
(N=42)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	54	0-289	95
QUKE	Black oak	38	0-128	85
QULO	Valley oak	16	0-90	40
AECA2	Cal. buckeye	9	0-24	33
ARME3	Madrone	10	0-56	23
UMCA1	Cal. bay	9	0-36	18

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	4	0-9	38
UMCA1	Cal. bay	6	0-18	28

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	16	0-64	90
RHCA2	Coffeeberry	5	0-11	38
SYRI	Upright snowberry	11	0-49	19
HEAR2	Toyon	7	0-19	19
DIAU1	Bush monkeyflower	4	0-10	19

(%Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	26	0-76	71
ROCK	5	0-8	8

(94)Mixed Oak-Coast Live Oak/Poison Oak
(N=42)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
LIDE3 Incense cedar
PICO1 Beach (lodgepole) pine
PICO2 Coulter pine
PISA2 Digger pine
PSME Douglas fir
QUCH2 Canyon live oak
QUDO Blue oak
QUGA2 Garry oak
QUWI Interior live oak

TREE UNDERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
QUCH2 Canyon live oak
QUGA2 Garry oak
QUKE Black oak
QUWI Interior live oak

SHRUBS
ADFA Chamise
AMUT Utah serviceberry
ARCA5 Hoary manzanita
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
ARMA3 Manzanita
BAPI Baccharis
CECU2 Wedgeleaf ceanothus
CEPA3 Warty-leaved ceanothus
COCO5 Hazelnut
HODI Ocean spray
LUAL3 Silver lupine
RHCR Redberry
RICA1 Hillside gooseberry
RISP Fuschia-flower gooseberry
ROS Rose
SYMO Creeping snowberry

HERBS
PTAQ Bracken fern

(94)Mixed Oak-Coast Live Oak/Poison Oak
(N=42)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	7	6.4	0	0.4	0	0.0	0	0.0	15
ARME3	2	1.4	1	1.8	0	0.0	0	0.0	11
LIDE3	1	0.0	0	0.0	0	0.0	0	0.0	1
PICO1	3	2.5	0	0.5	0	0.0	0	0.0	6
PICO2	9	5.7	3	0.0	0	0.0	1	0.7	2
PISA2	2	0.0	3	0.0	0	0.0	0	0.0	1
PSME	5	1.4	3	3.5	0	0.0	0	0.0	2
QUAG	11	14.3	4	4.0	1	1.7	0	0.0	40
QUCH2	3	2.1	0	0.0	0	0.0	0	0.0	2
QUDO	2	0.0	0	0.0	0	0.0	0	0.0	1
QUGA2	9	0.0	4	0.0	0	0.0	0	0.0	1
QUKE	10	9.7	2	1.5	0	1.0	0	0.0	34
QULO	4	3.4	1	1.5	0	0.3	0	0.2	18
QUWI	3	0.0	0	0.0	0	0.0	0	0.0	1
UMCA1	3	1.6	1	1.5	0	0.0	0	0.0	7

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	7	6.4	15	1	3.6	2	0	0.0	0	0	0.0	0
ARME3	2	1.4	11	3	6.1	3	0	0.0	0	0	0.0	0
LIDE3	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	4	2.9	5	1	2.0	2	0	0.0	0	0	0.0	0
PICO2	9	5.7	2	3	0.0	2	0	0.0	0	1	0.0	1
PISA2	2	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
PSME	5	1.4	2	5	0.0	1	0	0.0	0	0	0.0	0
QUAG	12	14.9	37	4	4.3	36	3	6.8	8	0	0.0	0
QUCH2	3	2.1	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUGA2	9	0.0	1	4	0.0	1	0	0.0	0	0	0.0	0
QUKE	10	10.1	32	2	1.6	29	3	11.9	3	0	0.0	0
QULO	4	3.5	17	3	4.4	6	1	4.0	2	1	0.0	1
QUWI	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
UMCA1	3	1.6	7	4	0.0	1	0	0.0	0	0	0.0	0

(91) Black Oak/Poison Oak-California Storax/Grass-nut
QUKE/RHDI-STOFC/BRLA2
N=19

EXTENT: This type occurs primarily in Shasta county; also found in Nevada county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1484	800	2500
ASPECT	68% north or northwest		
SLOPE	Sixty eight percent of plots are found on greater than 35% slope, but occurs on all slopes less than 75% slope.		

SOILS:

PARENT MATERIAL	74% granitic, 26% sandstone
TEXTURE	63% loamy clay, 37% loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Range Ponderosa Pine Forest
Griffin (1977): None
Holland (1986): Black Oak Forest
Parker and Matyas (1981): Black Oak
Paysen et al. (1980): Black Oak
Mayer et al. (1988): Montane Hardwood-Conifer; Montane Hardwood

(91) Black Oak/Poison Oak-California Storax/Grass-nut
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	48	8-189	100
QUGA2 Garry oak	6	0-17	26
PIPO Ponderosa pine	8	0-25	21
PIAT1 Knobcone pine	9	0-11	16
PSME Douglas fir	15	0-25	16

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	9	2-35	100
QUCH2 Canyon live oak	3	0-6	26
PIPO Ponderosa pine	4	0-8	16

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	26	4-56	100
STOFC California storax	11	0-39	74
ARVI3 Whiteleaf manzanita	15	0-41	53
CEIN3 Deerbrush	10	0-31	53
RHCA2 Coffeeberry	2	0-4	16

HERBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
BRLA2 Grass-nut	31	0-54	74
PTAQP Bracken fern	7	0-16	32

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	-		
ROCK	5	0-6	11

(91) Black Oak/Poison Oak-California Storax/Grass-nut (N=19)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ARME3 Madrone
QUCH2 Canyon live oak
QUWI Interior live oak

TREE UNDERSTORY
AECA2 Cal. buckeye
PISA2 Digger pine
QUWI Interior live oak

SHRUBS
ARPA9 Greenleaf manzanita
CEOC California redbud
CETH Blueblossom ceanothus
CETO Woollyleaf ceanothus
PRSU2 Sierra plum
RHTR Squaw bush
RUVI2 Blackberry

(91) Black Oak/Poison Oak-California Storax/Grass-nut
(N=19)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ARME3	1	0.0	0	0.0	0	0.0	0	0.0	1
PIAT1	1	1.2	1	0.0	0	0.0	0	0.0	3
PIPO	2	0.6	0	0.0	0	0.5	0	0.0	4
PSME	1	1.0	1	0.6	0	0.6	0	0.0	3
QUCH2	1	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	8	5.9	2	1.9	1	0.8	0	1.1	19
QUWI	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ARME3	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIAT1	2	0.0	1	1	0.0	3	0	0.0	0	0	0.0	0
PIPO	2	0.6	4	0	0.0	0	1	0.0	1	0	0.0	0
PSME	2	1.7	2	1	1.0	2	1	0.0	1	0	0.0	0
QUCH2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	9	6.1	18	3	3.5	10	2	2.7	6	5	0.0	1
QUWI	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(95) Black Oak-Coast Live Oak-Beach Pine/Ocean Spray-Poison Oak
QUKE-QUAG-PICO1/HODI-RHDI
N=17

EXTENT: This type is found in the central coast range from San Benito to Sonoma counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1691	600	3000
ASPECT	76% are north or northeast		
SLOPE	Fifty three percent of plots are found between 25% and 55%, but can be found on all slopes.		

SOILS:

PARENT MATERIAL	71% on sandstone, 29% on shale
TEXTURE	Sandy loam to loamy clay

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Foothill Woodland, North Slope Phase; Mixed Hardwood Forest
Holland (1986): Black Oak Woodland; Mixed Evergreen Forest
Parker and Matyas (1981): Black Oak
Paysen et al. (1980): Coast Live Oak; Black Oak
Mayer et al. (1988): Montane Hardwood

(95) Black Oak-Coast Live Oak-Beach Pine/Ocean Spray-Poison Oak
(N=17)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	53	5-111	100
PICO1	Beach pine	29	0-124	65
QUAG	Coast live oak	63	0-132	59
ARME3	Madrone	19	0-48	47
QULO	Valley oak	13	0-25	29
AECA2	Cal. buckeye	11	0-31	29
UMCA1	California bay	26	0-58	29
QUCH2	Canyon live oak	15	0-29	18

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
UMCA1	California bay	3	0-7	71
QUCH2	Canyon live oak	4	0-7	18

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
HODI	Ocean spray	25	0-49	76
RHDI	Poison oak	14	0-55	76
RHCA2	Coffeeberry	6	0-12	65
RICA1	Hillside gseberry	9	0-25	18

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	16	0-47	47
ROCK	4	0-7	24

(95) Black Oak-Coast Live Oak-Beach Pine/Ocean Spray-Poison Oak
(N=68)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple

TREE UNDERSTORY
AECA2 Cal. buckeye
COCO5 Hazelnut
PIPO Ponderosa pine
QUAG Coast live oak
QUKE Black oak
QUWI Interior live oak

SHRUBS
AMUT Utah serviceberry
BAPI Baccharis
HEAR2 Toyon
MYCA Pacific wax myrtle
ROCA1 Cal. wild rose
ROS Rose
RUVI2 Blackberry
SAAP1 White sage
SACA4 Mtn blue elderberry
SAME4 Black sage
SYRI Upright snowberry

HERBS
ERCI2 Red-stem filaree
LOSC Lotus
PTAQ Bracken fern

(95) Black Oak-Coast Live Oak-Beach Pine/Ocean Spray-Poison Oak
(N=17)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	4	0.0	0	0.0	0	0.0	0	0.0	1
AECA2	7	7.3	0	0.0	0	0.0	0	0.0	5
ARME3	3	3.9	1	1.1	0	0.7	0	0.0	8
PICO1	14	16.5	1	1.9	0	0.0	0	0.0	11
QUAG	11	7.8	4	2.9	1	0.8	0	0.0	10
QUCH2	4	3.5	1	1.0	0	0.0	0	0.0	3
QUKE	10	11.1	2	2.2	1	1.2	0	0.0	17
QULO	3	2.4	0	0.5	0	0.4	0	0.0	5
UMCA1	8	7.2	1	1.4	0	0.4	0	0.0	5

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	4	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
AECA2	7	7.3	5	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	5	6.3	5	2	1.8	5	2	0.0	1	0	0.0	0
PICO1	15	17.4	10	3	7.1	3	0	0.0	0	0	0.0	0
QUAG	11	7.8	10	5	3.1	9	2	3.2	3	0	0.0	0
QUCH2	4	3.5	3	2	1.7	2	0	0.0	0	0	0.0	0
QUKE	12	11.9	15	3	2.9	12	2	2.5	7	0	0.0	0
QULO	3	2.4	5	1	1.7	2	1	0.0	1	0	0.0	0
UMCA1	8	7.2	5	3	4.4	2	1	0.0	1	0	0.0	0

(29) Black Oak-Valley Oak/Grass
QUKE-QULO/GR2
N=19

EXTENT: This type occurs in the coast ranges from Mendocino to Santa Clara county. It also occurs in the south coast and inland areas of San Luis Obispo, Santa Barbara, San Diego and Kern counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2375	75	6000
ASPECT	All aspects.		
SLOPE	68% are less than 25%		

SOILS:

PARENT MATERIAL	Granitic; soft and hard sedimentary
TEXTURE	All textures

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Foothill Woodland, QULO phase
Holland (1986): None
Parker and Matyas (1981): Valley Oak; Black Oak
Paysen et al. (1980): Valley Oak; Black Oak; Coast Live Oak
Mayer et al. (1988): Montane Hardwood; Valley Oak Woodland; Coastal Oak Woodland

(29) Black Oak-Valley Oak/Grass
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	45	3-195	100
QULO	Valley oak	32	0-71	79
QUAG	Coast live oak	40	0-146	47
PSME	Douglas fir	38	0-68	16

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	3	0-4	32

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	92	0-100	89
ROCK	-	0-1	5

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
ARME3 Madrone
PICO1 Beach (lodgepole) pine
PICO2 Coulter pine
PISA2 Digger pine

TREE UNDERSTORY
AECA2 Cal. buckeye
QUGA2 Garry oak
QULO Valley oak

SHRUBS
ARGL5 Bigberry manzanita
ARMA3 Manzanita
CECU2 Wedgeleaf manzanita
HEAR2 Toyon
SYRI Upright snowberry

(29) Black Oak-Valley Oak/Grass
(N=19)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	0	0.0	2	0.0	0	0.0	0	0.0	1
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
ARME3	6	5.7	4	2.8	0	0.0	0	0.0	2
PICO1	2	1.4	0	0.0	0	0.0	0	0.0	2
PICO2	2	0.0	3	0.0	0	0.0	0	0.0	1
PISA2	3	0.0	0	0.0	0	0.0	0	0.0	1
PSME	10	6.6	3	2.1	0	0.0	0	0.0	3
QUAG	5	5.8	3	2.9	0	1.0	0	0.0	9
QUKE	4	3.6	3	2.7	1	1.0	0	0.5	19
QULO	7	11.7	2	1.4	0	0.7	0	0.0	15

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	0	0.0	0	2	0.0	1	0	0.0	0	0	0.0	0
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	6	5.7	2	4	2.8	2	0	0.0	0	0	0.0	0
PICO1	2	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	2	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
PISA2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PSME	10	6.6	3	3	2.1	3	0	0.0	0	0	0.0	0
QUAG	7	6.9	7	4	4.1	6	2	5.5	2	0	0.0	0
QUKE	5	3.7	18	3	3.2	15	2	2.9	6	2	0.0	1
QULO	10	14.2	11	2	2.0	10	2	4.1	3	0	0.0	0

(92) Black Oak/Poison Oak
QUKE/RHDI
N=19

EXTENT: This type occurs in both the central coast range from Monterey to Napa counties and the Sierra from Kern to Shasta counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2486	500	5300
ASPECT	58% north; also northeast and northwest		
SLOPE	All; up to 65% slope		

SOILS:

PARENT MATERIAL	24% sandstone, 24% shale, assorted others
TEXTURE	Sandy loam to loamy clay

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Foothill Woodland; Mixed Evergreen Forest
Holland (1986): Black Oak Woodland; Mixed Evergreen Forest
Parker and Matyas (1981): Black Oak
Paysen et al. (1980): Black Oak
Mayer et al. (1988): Montane Hardwood; Coastal Oak Woodland

(92) Black Oak/Poison Oak
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	115	11-305	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	12	0-25	21
UMCA1 California bay	4	0-6	21

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	13	0-22	58
SYRI Upright snowberry	13	0-19	21
RHCA2 Coffeeberry	4	0-10	21

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	6	0-10	16
ROCK	2	0-1	5

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PSME Douglas fir
QUAG Coast live oak
QUCH2 Canyon live oak
QUDO Blue oak
QULO Valley oak
QUWI Interior live oak

TREE UNDERSTORY
COCO5 Hazelnut
QUCH2 Canyon live oak
QUDO Blue oak

Shrubs
ARGL5 Bigberry manzanita
CEBE2 Birchleaf mtn. mahogany
CEOC California rosebud
CHFO2 Mountain misery
HEAR2 Toyon

HERBS
LUAL3 Silver lupine
PTAQ Bracken fern

(92) Black Oak/Poison Oak
(N=19)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
PSME	1	0.0	0	0.0	0	0.0	0	0.0	1
QUAG	3	0.0	0	0.0	0	0.0	0	0.0	1
QUCH2	2	0.0	0	0.0	0	0.0	0	0.0	1
QUDO	2	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	26	27.2	5	3.9	1	2.5	0	0.4	19
QULO	1	1.2	0	0.0	0	0.0	0	0.0	3
QUWI	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
PSME	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUAG	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUCH2	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	28	28.0	18	6	4.4	16	3	4.9	8	1	2.8	3
QULO	2	2.0	2	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(942) Black Oak/Deerbrush-Poison Oak/Bracken Fern
QUKE/CEIN3-RHDI/PTAQP
N=11

EXTENT: This type occurs in the northern Sierra from Shasta to Butte counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2527	1000	4200
ASPECT	45% are north or northwest; occurs on all aspects		
SLOPE	Fifty five percent are less than 45% slope, but occurs up to 75% slope		

SOILS:

PARENT MATERIAL	45% sedimentary; also granitic and igneous
TEXTURE	64% clay loams, also gravelly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Westside Ponderosa Pine Forest
Rundel et. al. (1977): Lower Montane Forest
Holland (1986): Black Oak Forest
Parker and Matyas (1981): Mixed Conifer-Pine; Black Oak
Paysen et al. (1980): Black Oak
Mayer et al. (1988): Montane Hardwood-Conifer; Montane Hardwood

(942) Black Oak/Deerbrush-Poison Oak/Bracken Fern
(N=11)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	63	0-223	82
PIPO	Ponderosa pine	13	0-24	36

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	13	0-30	91
PIPO	Ponderosa pine	2	0-6	45
PSME	Douglas fir	1	0-1	18

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
CEIN3	Deerbrush	11	0-22	73
RHDI	Poison oak	12	0-39	64
CEOC	California redbud	2	0-6	45
ARVI3	Whiteleaf manzanita	15	0-34	45
RHCA2	Coffeeberry	5	0-10	36
STOFC	California storax	6	0-17	36
COCO5	Hazelnut	9	0-15	27
ARPA9	Greenleaf manzanita	2	0-2	18
PREM	Bitter cherry	7	0-9	18
PRSU2	Sierra plum	5	0-6	18

HERBS (% Cover)		AVERAGE	RANGE	CONSTANCY
PTAQP	Bracken fern	10	0-29	91

(% Cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	1	0-1	9
ROCK	8	4-12	27

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple

TREE UNDERSTORY
PILA Sugar pine
QUCH2 Canyon live oak
UMCA1 California bay

SHRUBS
CECU2 Wedgeleaf ceanothus
CEPR Squaw carpet
CETH Blueblossom cenaothus
RHTR Squaw bush
SAME4 Black sage

(942) Black Oak/Deerbrush-Poison Oak/Bracken Fern
(N=11)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	2	0.0	0	0.0	0	0.0	0	0.0	1
PIPO	1	0.6	0	0.0	1	0.6	0	0.0	4
QUKE	5	3.4	2	2.4	1	2.2	0	0.3	9

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	1	1.4	2	0	0.0	0	1	1.4	2	0	0.0	0
QUKE	5	3.4	9	4	3.4	6	4	7.2	3	1	0.0	1

(97) Black Oak/Poison Oak/Grass
QUKE/RHDI/GR2
N=13

EXTENT: This type is found primarily in the central Coast Range from Santa Cruz to Alameda counties. It also occurs in Mariposa and Calaveras counties in the Sierra.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2746	2200	3500
ASPECT	77% north or northeast		
SLOPE	All are greater than 25%; sixty two percent are between 35% and 55% slope		

SOILS:

PARENT MATERIAL	62% sandstone, some shale and granitic
TEXTURE	Sandy loam to loamy clay

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Mixed Hardwood Forest
Holland (1986): Black Oak Woodland; Blue Oak Woodland; Mixed Evergreen Forest
Parker and Matyas (1981): Black Oak
Paysen et al. (1980): Black Oak
Mayer et al. (1988): Montane Hardwood

(97) Black Oak/Poison Oak/Grass
(N=13)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	81	35-59	100
PISA2 Digger pine	15	0-31	46
QUDO Blue oak	4	0-8	46
QUCH2 Canyon live oak	3	0-5	31
AECA2 Cal. buckeye	22	0-36	23
UMCA1 California bay	5	0-6	23

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
PISA2 Digger pine	4	0-14	38
QUCH2 Canyon live oak	4	0-8	23
QUDO Blue oak	1	0-1	15
QUKE Black oak	15	0-30	15
UMCA1 California bay	3	0-3	15

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	12	0-21	77
ARGL5 Bigberry manzanita	14	0-30	38
RHCA2 Coffeeberry	27	0-55	23

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	36	0-77	92
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PIAT1 Knobcone pine
PSME Douglas fir
QUWI Interior live oak

TREE UNDERSTORY
ARME3 Madrone
QUWI Interior live oak

SHRUBS
ADFA Chamise
RUVI2 Blackberry

HERBS
PTAQL Bracken fern

(97) Black Oak/Poison Oak/Grass
(N=13)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	14	10.8	0	0.0	0	0.0	0	0.0	3
PIAT1	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	5	3.3	1	1.3	0	0.0	0	0.0	6
PSME	2	0.0	1	0.0	0	0.0	0	0.0	1
QUCH2	2	0.8	0	0.0	0	0.0	0	0.0	4
QUDO	2	1.0	0	0.4	0	0.0	0	0.0	6
QUKE	9	8.5	4	3.1	1	0.9	0	0.4	13
QUWI	2	0.0	1	0.0	0	0.0	0	0.0	1
UMCA1	3	1.0	0	0.0	0	0.0	0	0.0	3

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	14	10.8	3	0	0.0	0	0	0.0	0	0	0.0	0
PIAT1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	5	3.3	6	2	2.6	3	0	0.0	0	0	0.0	0
PSME	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUCH2	2	0.8	4	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	2	1.2	5	1	0.0	1	0	0.0	0	0	0.0	0
QUKE	10	9.5	11	4	3.2	12	2	1.2	10	1	3.3	2
QUWI	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
UMCA1	3	1.0	3	0	0.0	0	0	0.0	0	0	0.0	0

(912) Black Oak-Canyon Live Oak/Deerbrush-Poison Oak/Grass
QUKE-QUCH2/CEIN3-RHDI/GR2
N=19

EXTENT: This type is found primarily in the Sierra from Kern to Shasta counties. Also found in Santa Clara and Alameda counties in the Coast Range without deerbrush.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2963	1500	7200
ASPECT	47% north or northeast, but occurs on all aspects		
SLOPE	All occur on greater than 25% slope		

SOILS:

PARENT MATERIAL	32% sandstone, 26% granitic, other mixed
TEXTURE	All

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Canyon Live Oak Forest
Griffin (1977): Northern Oak Woodland
Holland (1986): Black Oak Forest; Black Oak Woodland
Parker and Matyas (1981): Black Oak; Canyon Live Oak
Paysen et al. (1980): Black Oak; Canyon Live Oak
Mayer et al. (1988): Montane Hardwood

(912) Black Oak-Canyon Live Oak/Deerbrush-Poison Oak/Grass
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	69	0-229	95
QUCH2 Canyon live oak	50	0-179	89
PISA2 Digger pine	22	0-56	32

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUCH2 Canyon live oak	4	0-12	37
AECA2 Cal. buckeye	10	0-16	16

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
CEIN3 Deerbrush	19	0-74	53
RHDI Poison oak	14	0-66	53
STOFC California storax	31	0-74	32
ARVI3 Whiteleaf manzanita	3	0-7	26
CEBE2 Birchleaf mtn-mahogany	11	0-18	26

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	19	0-62	53
ROCK	12	0-43	32

(912) Black Oak-Canyon Live Oak/Deerbrush-Poison Oak/Grass
(N=19)

RARELY OCCURRING SPECIES (less than 15% constancy)

TREE OVERSTORY
ACMA Bigleaf maple
AECA2 Calif. buckeye
COCO5 Hazelnut
CONU2 Pacific dogwood
LIDE3 Incense cedar
PICO2 Coulter pine
QUDO Blue oak
QUGA2 Garry oak
QUWI Interior live oak

TREE UNDERSTORY
CONU2 Pacific dogwood
FRCA2 Flannel bush
FRDI Foothill ash
PICO2 Coulter pine
QUDO Blue oak
QUKE Black oak
QULO Valley oak
QUWI Interior live oak
UMCA1 California bay

SHRUBS
ARPA9 Greenleaf manzanita
BAPI Baccharis
CECO2 Mountain whitethorn
CECU2 Wedgeleaf ceanothus
CELE2 Chap. whitethorn
CEOC California redbud
CHFO2 Mountain misery
HEAR2 Toyon
PHLEC California mock orange
PRSU2 Sierra plum
RHCA2 Coffeeberry
RHCR Redberry
RHRU Sierra coffeeberry
RHTR Squaw bush
RIRO Sierra gooseberry

(912) Black Oak-Canyon Live Oak/Deerbrush-Poison Oak/Grass
(N=19)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	4	0.0	0	0.0	0	0.0	0	0.0	1
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
CONU2	1	0.0	0	0.0	0	0.0	0	0.0	1
LIDE3	0	0.0	2	0.0	1	0.0	1	0.0	1
PICO2	3	0.0	2	0.0	4	0.0	0	0.0	1
PISA2	1	0.9	1	1.1	1	0.8	0	0.0	6
QUCH2	5	5.4	2	2.2	1	1.3	0	0.3	17
QUDO	1	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	11	12.8	3	4.0	1	1.0	0	0.3	18
QUWI	8	7.8	1	1.4	0	0.0	0	0.0	2
UMCA1	3	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	4	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
CONU2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
LIDE3	0	0.0	0	2	0.0	1	1	0.0	1	1	0.0	1
PICO2	3	0.0	1	2	0.0	1	4	0.0	1	0	0.0	0
PISA2	2	1.4	4	2	1.6	4	2	3.1	2	0	0.0	0
QUCH2	7	7.0	12	3	3.2	11	2	2.4	8	1	3.9	2
QUDO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	13	14.4	15	4	4.7	14	1	1.5	11	1	4.0	2
QUWI	8	7.8	2	2	0.0	1	0	0.0	0	0	0.0	0
UMCA1	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(944) Canyon Live Oak-Black Oak
QUCH2-QUKE
N=24

EXTENT: This type is found primarily in the northern Sierra from Shasta to Tuolumne counties; also found in Mendocino and Santa Cruz counties in the Coast Range.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	3230	1600	5700
ASPECT	All aspects		
SLOPE	Eighty three percent are between 25% to 65%.		

SOILS:

PARENT MATERIAL	42% sandstone, also some metamorphic and igneous.
TEXTURE	Mostly loams; 67% have a rocky component

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Canyon Live Oak Forest
Griffin (1977): Mixed Hardwood Forest
Holland (1986): Black Oak Woodland; Canyon Live Oak Forest; Black Oak Forest
Parker and Matyas (1981): Canyon Live Oak; Black Oak
Paysen et al. (1980): Canyon Live Oak; Black Oak
Mayer et al. (1988): Montane Hardwood

(944) Canyon Live Oak-Black Oak
(N=24)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUCH2 Canyon live oak	38	0-114	96
QUKE Black oak	28	0-106	83
PIPO Ponderosa pine	14	0-27	50
QUGA2 Garry oak	17	0-25	37
PSME Douglas fir	10	0-35	29

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUCH2 Canyon live oak	13	0-39	87
QUKE Black oak	8	0-30	50
COCO5 Hazelnut	5	0-10	21

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
CEIN3 Deerbrush	6	0-25	37
CHFO2 Mountain misery	18	0-49	29
CEOC California redbud	5	0-7	21
STOFC California storax	10	0-17	21
CEBE2 Mountain mahogany	9	0-12	17

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	9	0-9	4
ROCK	10	0-21	42

(944) Black Oak-Canyon Live Oak

RARELY OCCURRING SPECIES (less than 15% constancy)

TREE OVERSTORY
ACMA Bigleaf maple
ARME3 Madrone
PIJE Jeffrey pine
PISA2 Digger pine

TREE UNDERSTORY
ABCO White fir
ACMA Bigleaf maple
AECA2 Cal. buckeye
CONU2 Pacific dogwood
FRDI Mountain ash
LIDE2 Tan-oak
LIDE3 Incense cedar
PILA Sugar pine
PSME Douglas fir
QUGA2 Garry oak
UMCA1 California bay

SHRUBS
ADFA Chamise
ARMA3 Manzanita
ARME2 Indian manzanita
ARPA9 Greenleaf manzanita
ARVI3 Whiteleaf manzanita
CECU2 Wedgeleaf ceanothus
HODI Ocean spray
PHLEC Cal. mock orange
PREM Bitter cherry
RHCA2 Coffeeberry
RHDI Poison oak
RHTR Squaw bush

(944) Black Oak-Canyon Live Oak
(N=24)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	3	0.0	2	0.0	0	0.0	0	0.0	1
ARME3	15	0.0	0	0.0	0	0.0	0	0.0	1
PIJE	2	0.0	1	0.0	0	0.0	0	0.0	1
PIPO	1	1.0	1	0.8	0	0.5	0	0.0	12
PISA2	3	0.0	0	0.0	0	0.0	0	0.0	1
PSME	1	1.0	0	0.5	0	0.0	0	0.4	7
QUCH2	12	8.8	2	2.2	0	0.6	0	0.2	23
QUGA2	10	7.1	0	0.6	0	0.0	0	0.0	3
QUKE	11	13.3	1	1.2	0	0.2	0	0.2	20

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	3	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
ARME3	15	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIJE	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PIPO	2	2.0	6	1	1.4	7	1	2.1	3	0	0.0	0
PISA2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PSME	2	1.1	6	1	2.2	2	0	0.0	0	1	0.0	1
QUCH2	12	9.1	22	3	3.6	13	3	0.0	1	1	0.0	1
QUGA2	10	7.1	3	1	0.0	1	0	0.0	0	0	0.0	0
QUKE	11	13.3	20	2	2.3	10	1	0.0	1	1	0.0	1

(943) Black Oak/Deerbrush
QUKE/CEIN3
N=13

EXTENT: This type is found in the Sierra from Tuolumne to Shasta counties

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	3435	1400	5000
ASPECT	62% are north or northeast, but occurs on all aspects but south and southeast		
SLOPE	Sixty nine percent are less than 45% slope, but is occasionally found on steep slopes		

SOILS:

PARENT MATERIAL	46% granitic
TEXTURE	Sandy loam to clay loam

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Sierran Mixed Conifer Forest
Rundel et. al. (1977): Lower Montane Forest
Holland (1986): Black Oak Forest
Parker and Matyas (1981): Mixed Conifer-Pine; Black Oak
Paysen et al. (1980): Mixed Conifer; Black Oak
Mayer et al. (1988): Montane Hardwood-Conifer; Sierran Mixed Conifer; Ponderosa Pine

(943) Black Oak/Deerbrush
(N=13)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	38	2-115	100
PIPO	Ponderosa pine	21	0-45	31

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	13	0-44	85
QUCH2	Canyon live oak	6	0-14	23
COCO5	Hazelnut	6	0-6	15
PIPO	Ponderosa pine	1	0-1	15

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
CEIN3	Deerbrush	56	22-96	100
PREM	Bitter cherry	11	0-31	31
RHDI	Poison oak	5	0-11	31
ARPA9	Greenleaf manzanita	18	0-49	23
ARVI3	Whiteleaf manzanita	3	0-7	23
CHFO2	Mountain misery	14	0-23	15
RHCA2	Coffeeberry	2	0-3	15

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	8	0-8	8
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy)

TREE OVERSTORY
- LIDE3 Incense cedar
- PSME Douglas fir
- QUCH2 Canyon live oak
- QUGA2 Garry oak

TREE UNDERSTORY
- ABCO White fir
- ACMA Bigleaf maple
- CONU2 Pacific dogwood
- PILA Sugar pine
- QUWI Interior live oak

SHRUBS
- CASE3 Bush chinquapin
- CETO Woollyleaf ceanothus
- PHLEC California mock orange
- RIB Gooseberry
- STOFC California storax

HERBS
- PTAQP Bracken fern

(943) Black Oak/Deerbrush
(N=13)

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
QUGA2	1	0.0	0	0.0	0	0.0	0	0.0	1
LIDE3	10	0.0	0	0.0	0	0.0	0	0.0	1
PIPO	1	1.3	2	1.3	0	0.5	0	0.0	4
PSME	1	0.0	0	0.0	0	0.0	0	0.0	1
QUCH2	5	0.0	1	0.0	0	0.0	0	0.0	1
QUKE	10	7.0	2	3.0	0	0.4	0	0.0	13

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
QUGA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
LIDE3	10	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	2	1.6	3	2	1.7	3	1	0.0	1	0	0.0	0
PSME	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUCH2	5	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUKE	10	7.0	13	4	4.4	8	1	3.3	2	0	0.0	0

(98) Black Oak/Grass
QUKE/GR2
N=15

EXTENT: Occurs in two areas: the Transverse Ranges in Kern and San Bernardino counties, and the Coast Range from Monterey to Napa counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	4193	1500	6100
ASPECT	93% north, northeast, or northwest		
SLOPE	Sixty seven percent are less than 25% slope, but occurs on up to 50% slope		

SOILS:

PARENT MATERIAL	53% granitic, 33% sandstone
TEXTURE	53% sandy loam; also loam and clay loam

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Range Ponderosa Pine Forest
Thorne (1977): Lower Montane Coniferous Forest
Holland (1986): Black Oak Woodland; Upland Coast Range Ponderosa Pine Forest; Black Oak Forest
Parker and Matyas (1981): Black Oak
Paysen et al. (1980): Black Oak
Mayer et al. (1988): Montane Hardwood-Conifer; Montane Hardwood

(98) Black Oak/Grass
(N=15)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUKE Black oak	97	47-204	100
PIPO Ponderosa pine	9	0-13	27

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUCH2 Canyon live oak	1	0-2	27
QUKE Black oak	5	0-5	20

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
RHCA2 Coffeeberry	2	0-3	20

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	44	0-100	87
ROCK	11	0-13	13

RARELY OCCURRING SPECIES (less than 15% constancy

TREE OVERSTORY
ABCO White fir
ARME3 Madrone
LIDE3 Incense cedar
PISA2 Digger pine
PLRA Western sycamore
QUDO Blue oak
QULO Valley oak

TREE UNDERSTORY
AECA2 Cal. buckeye

SHRUBS
ADFA Chamise
ARGL5 Bigberry manzanita
ARTO2 Shaggy-barked manzanita
CEBE2 Birch-leaf mtn. mahogany
CEIN3 Deerbrush
ERFA California buckwheat
LOSU3 So. honeysuckle
RHDI Poison oak
RHTR Squaw bush
RIB Gooseberry
RIRO Sierra gooseberry
SYMO Creeping snowberry

HERBS
LUP5 Lupine
PTAQL Bracken fern

(98) Black Oak/Grass
(N=15)

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ABCO	0	0.0	1	0.0	0	0.0	0	0.0	2
ARME3	3	0.0	0	0.0	0	0.0	0	0.0	1
LIDE3	4	4.9	1	0.7	0	0.0	1	0.7	2
PIPO	2	1.3	1	0.5	0	0.0	0	0.0	4
PISA2	2	0.7	1	0.7	0	0.0	0	0.0	2
PLRA	4	0.0	0	0.0	0	0.0	0	0.0	1
QUDO	2	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	22	13.1	4	3.5	1	1.2	0	0.3	15
QULO	5	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ABCO	0	0.0	0	1	0.0	2	0	0.0	0	0	0.0	0
ARME3	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
LIDE3	7	0.0	1	1	0.0	1	0	0.0	0	1	0.0	1
PIPO	2	1.7	3	1	0.7	3	0	0.0	0	0	0.0	0
PISA2	2	0.7	2	1	0.0	1	0	0.0	0	0	0.0	0
PLRA	4	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	24	13.7	14	4	3.8	13	2	2.0	9	1	0.0	1
QULO	5	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(928) Black Oak/Greenleaf Manzanita-Mountain Whitethorn
QUKE/ARPA9-CECO2
N=19

EXTENT: This type is found in the Sierra from Tulare to Sierra counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	5647	4600	7100
ASPECT	Primarily western and southern, but can be found on all exposures		
SLOPE	Seventy four percent of the plots are on slopes less than 35%		

SOILS:

PARENT MATERIAL	42% granitic, 32% andesitic tuff
TEXTURE	Mostly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Sierran Mixed Conifer Forest
Griffin (1977): Lower Montane Forest
Holland (1986): Black Oak Woodland
Parker and Matyas (1981): Mixed Conifer-Pine; Black Oak
Paysen et al. (1980): Black Oak; Mixed Conifer
Mayer et al. (1988): Sierran Mixed Conifer; Montane Hardwood-Conifer

(928) Black Oak/Greenleaf Manazanita-Mountain Whitethorn
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	19	2-48	100
LIDE3	Incense cedar	9	0-38	47
ABCO	White fir	4	0-8	32
PIPO	Ponderosa pine	7	0-10	26
PIJE	Jeffrey pine	15	0-32	21

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	5	0-22	47
LIDE3	Incense cedar	3	0-4	21

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
ARPA9	Greenleaf manz.	53	0-91	95
CECO2	Mtn. whitethorn	18	0-64	63
CEIN3	Deerbrush	8	0-23	53
PREM	Bitter cherry	9	0-20	42
CASE3	Bush chinquapin	7	0-12	21
CHFO2	Mountain misery	1	0-2	21
ARME2	Indian manzanita	17	0-43	16

(% Cover)		AVERAGE	RANGE	CONSTANCY%
HERBS		-		
GRASSES		23	0-44	11
ROCK		14	0-39	16

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PSME Douglas fir

TREE UNDERSTORY
ABCO White oak
QUCH2 Canyon live oak
QUVA Huckleberry oak

SHRUBS
AMUT Utah serviceberry
ARMA4 Mariposa manzanita
CEPR Squaw carpet
GAFR Fremont silktassel
PHLEC California mock orange
SYMO Creeping snowberry

(928) Black Oak/Greenleaf Manzanita-Mountain Whitethorn
(N=19)

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ABCO	1	1.4	0	0.4	0	0.0	0	0.0	6
LIDE3	2	1.1	1	1.3	0	0.0	0	0.0	9
PIJE	2	2.4	1	0.5	0	0.5	0	0.0	4
PIPO	1	1.2	1	0.5	0	0.0	0	0.0	5
PSME	2	0.7	1	0.7	0	0.0	0	0.0	2
QUKE	9	8.4	0	1.2	0	0.0	0	0.0	19

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ABCO	2	1.6	5	1	0.0	1	0	0.0	0	0	0.0	0
LIDE3	2	1.4	7	2	2.7	4	0	0.0	0	0	0.0	0
PIJE	3	5.1	2	1	0.7	3	1	0.0	1	0	0.0	0
PIPO	2	2.0	3	1	1.0	3	0	0.0	0	0	0.0	0
PSME	2	0.7	2	1	0.0	1	0	0.0	0	0	0.0	0
QUKE	9	8.4	19	2	5.4	4	0	0.0	0	0	0.0	0

SCRUB OAK SERIES

(2) Scrub Oak/Grass
QUDU2/GR2
N=16

EXTENT: This type is found in the Coast Range in Monterey and San Luis Obispo counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1369	800	2150
ASPECT	75% north, the rest northerly		
SLOPE	All slopes		

SOILS:

PARENT MATERIAL	81% shale, 19% sandstone
TEXTURE	Mostly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Californian Mixed Chaparral
Griffin (1977): Woodland Chaparral
Holland (1986): Scrub Oak Chaparral
Parker and Matyas (1981): Scrub Oak
Paysen et al. (1980): Scrub Oak
Mayer et al. (1988): Mixed Chaparral

(2) Scrub Oak/Grass
(N=16)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDU2 Scrub oak	50	17-93	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDU2 Scrub oak	9	0-32	87

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
LOSU3 So. honeysuckle	2	0-3	19

% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	78	34-98	100
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PISA2 Digger pine
QUAG Coast live oak

TREE UNDERSTORY
PISA2 Digger pine

SHRUBS
ARGL5 Bigberry manzanita
HALI Narrowleaf goldenbush
HEAR2 Toyon
LUAL3 Silver lupine
MYCA Pacific wax-myrtle
PRIL1 Shrub hollyleaf cherry
RHCR Redberry
SYRI Upright snowberry

(2) Scrub Oak/Grass
(N=16)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
PISA2	2	0.0	1	0.0	0	0.0	0	0.0	1
QUAG	1	0.0	0	0.0	0	0.0	0	0.0	2
QUDU2	27	14.6	1	1.0	0	0.0	0	0.0	16

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
PISA2	2	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUAG	1	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDU2	27	14.6	16	2	1.8	9	0	0.0	0	0	0.0	0

(1) Scrub Oak-Blue Oak/Grass
QUDU2-QUDO/GR2
N=14

EXTENT: This type is found in the Coast Range in Monterey, San Luis Obispo, and San Benito counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1400	1000	1800
ASPECT	50% are north, others northerly		
SLOPE	Seventy one percent are between 15% and 45%; some are steep		

SOILS:

PARENT MATERIAL	64% on shale, 29% on sandstone
TEXTURE	43% clay loam, others mostly loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland
Griffin (1977): Foothill Woodland-Blue Oak Phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak-Digger
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine

(1) Scrub Oak-Blue Oak/Grass
(N=14)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDU2 Scrub oak	34	3-119	100
QUDO Blue oak	21	5-44	100

TREE UNDERSTORY	AVERAGE	RANGE	CONSTANCY%
QUDU2 Scrub oak	5	0-15	64

SHRUBS	AVERAGE	RANGE	CONSTANCY%
LOSU3 So. honeysuckle	5	0-9	43
RHCR Redberry	3	0-4	29

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	85	16-100	100
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy).

TREE OVERSTORY
PISA2 Digger pine

TREE UNDERSTORY
JUCA3 California juniper
QUDO Blue oak

SHRUBS
ARGL5 Bigberry manzanita
CEBE2 Birchleaf mountain-mahogany
CECU2 Wedgeleaf ceanothus
ERFA California buckwheat
HALI Narrowleaf goldenbush
HEAR2 Toyon
PRIL1 Shrub hollyleaf cherry

(1) Scrub Oak-Blue Oak/Grass
(N=14)

STAND TABLE: Number of trees by diameter class (in inches)

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
PISA2	1	0.0	1	0.7	0	0.0	0	0.0	2
QUDO	3	2.9	2	1.3	0	0.0	0	0.0	14
QUDU2	10	7.7	2	2.8	0	0.3	0	0.0	14

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
PISA2	1	0.0	2	1	0.0	1	0	0.0	0	0	0.0	0
QUDO	3	3.3	10	2	1.2	13	0	0.0	0	0	0.0	0
QUDU2	10	7.7	14	4	4.5	8	1	0.0	1	0	0.0	0

(3) Scrub Oak
QUDU2
N=11

EXTENT: This type is found in the Coast Range in Monterey and San Luis Obispo counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1427	850	1900
ASPECT	82% north or northeast		
SLOPE	Ninety one percent of the plots are greater than 25% slope		

SOILS:

PARENT MATERIAL	64% shale, 36% sandstone
TEXTURE	Mostly gravelly or rocky loam

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Californian Mixed Chaparral
Griffin (1977): Woodland Chaparral
Holland (1986): Scrub Oak Chaparral
Parker and Matyas (1981): Scrub Oak
Paysen et al. (1980): Scrub Oak
Mayer et al. (1988): Mixed Chaparral

(3) Scrub Oak
(N=11)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDU2 Scrub oak	73	23-181	100

TREE UNDERSTORY (% Cover)	AVERAGE	RANGE	CONSTANCY%
QUDU2 Scrub oak	21	0-70	91
QUWI Interior live oak	5	0-7	27

SHRUBS (% Cover)	AVERAGE	RANGE	CONSTANCY%
HEAR2 Toyon	4	0-8	45
PRIL1 Hollyleaf cherry	5	0-11	36
CECU2 Wedgelf. ceanothus	2	0-2	27
LOSU3 So. honeysuckle	7	0-12	27
ADFA Chamise	2	0-2	18
ARGL5 Bigberry manzanita	1	0-1	18

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	10	0-21	45
ROCK	1	0-1	9

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PISA2 Digger pine
QUWI Interior live oak

SHRUBS
ARCA7 Coast sagebrush
HASQ2 Sawtooth goldenbush
HODI Ocean spray
LOSC Southern honeysuckle

(3) Scrub Oak
(N=11)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
PISA2	2	0.0	0	0.0	0	0.0	0	0.0	1
QUDU2	36	30.8	2	2.7	0	0.0	0	0.0	11
QUWI	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
PISA2	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUDU2	36	30.8	11	4	5.9	5	0	0.0	0	0	0.0	0
QUWI	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

MIXED OAK SERIES

(910) Mixed Oak-Interior Live Oak-Digger Pine
MO-QUWI-PISA2
N=11

EXTENT: This subseries is found in the Sierra Nevada primarily in Calaveras and Tuolumne counties, though it may be found throughout the central Sierra.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2014	1300	2900
ASPECT	Primarily north to northeast.		
SLOPE	Seventy five percent of plots were less than 45% slope.		

SOILS:

PARENT MATERIAL	Primarily metamorphic with some igneous; deep soils.
TEXTURE	Sandy clay loams to clay loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Foothill Woodland, QUDO and QUWI phases
Holland (1986): Black Oak Woodland; Interior Live Oak Woodland
Parker and Matyas (1981): Black Oak; Interior Live Oak
Paysen et al. (1980): Black Oak; Interior Live Oak
Mayer et al. (1988): Montane Hardwood

(910) Mixed Oak-Interior Live Oak-Digger Pine
(N=11)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
PISA2	Digger pine	14	2-34	100
QUWI	Interior live oak	18	0-22	82
QUKE	Black oak	15	0-74	82
QUDO	Blue oak	16	0-28	55
PIPO	Ponderosa pine	37	0-80	36
AECA2	Cal. buckeye	4	0-6	27

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	9	0-20	45
ARMA3	Manzanita	5	0-7	36
HEAR2	Toyon	5	0-7	36
CECU2	Wedgeleaf ceanothus	3	0-3	36
ARVI3	Whiteleaf manzanita	4	0-9	27

(%cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	78	45-96	100
ROCK	-		

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
QUMO Oracle oak

TREE UNDERSTORY
AECA2 Cal. buckeye
QUWI Interior live oak

SHRUBS
ERCA6 Cal. yerba santa
RHCR Redberry

(910) Mixed Oak-Interior Live Oak-Digger Pine
(N=11)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	3	1.5	0	0.0	0	0.0	0	0.0	3
PIPO	0	0.5	2	1.0	1	1.4	0	0.0	4
PISA2	1	0.8	1	1.1	0	0.3	0	0.0	11
QUDO	3	4.1	1	1.2	0	0.4	0	0.0	6
QUKE	3	2.2	1	1.0	0	0.7	0	0.0	9
QUMO	1	0.0	0	0.0	0	0.0	0	0.0	2
QUWI	6	5.1	1	0.9	0	0.0	0	0.0	9

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	3	1.5	3	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	1	0.0	1	2	1.0	4	2	3.2	2	0	0.0	0
PISA2	1	1.0	8	2	1.4	8	1	0.0	1	0	0.0	0
QUDO	4	4.7	5	2	2.3	3	1	0.0	1	0	0.0	0
QUKE	3	2.2	9	2	3.1	3	2	0.0	1	0	0.0	0
QUMO	1	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	7	5.6	8	1	1.1	7	0	0.0	0	0	0.0	0

(19) Interior Live Oak/Toyon
QUWI-HEAR2
N=40

EXTENT: This type is found in the Sierra Nevada and the foothill areas of the Sierra primarily from Placer to Madera counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1856	600	3200
ASPECT	All aspects		
SLOPE	Below 55%		

SOILS:

PARENT MATERIAL	Granitics and metamorphics
TEXTURE	Rocky and sandy clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Foothill Woodland, QUWI phase
Griffin (1977): Blue Oak Woodland
Holland (1986): Interior Live Oak, Blue Oak Woodland
Parker and Matyas (1981): Interior Live Oak, Blue Oak
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak-Digger Pine

(19) Interior Live Oak/Toyon
(N=40)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	16	0-53	88
QUDO	Blue oak	4	0-11	33
PISA2	Digger pine	6	0-17	28
QUKE	Black oak	5	0-13	28

TREE UNDERSTORY (% Cover)		AVERAGE	RANGE	CONSTANCY%
QUWI	Interior live oak	19	0-75	95
QUDO	Blue oak	5	0-11	30

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
HEAR2	Toyon	14	0-47	78
RHDI	Poison oak	11	0-51	55
RHCR	Redberry	3	0-10	35
ARMA3	Manzanita	8	0-24	30
ARVI3	Whiteleaf manz.	9	0-31	28
ERCA6	Cal. yerba santa	4	0-7	20
HAAR	Goldenfleece	3	0-6	20

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	42	0-82	95
ROCK	9	0-24	14

(19) Interior Live Oak/Toyon
(N=40)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREES:
AECA2 Cal. buckeye
PIPO Ponderosa pine
QUCH2 Canyon live oak
QULO Valley oak
QUMO Oracle oak

UNDERSTORY TREES:
AECA2 Cal. buckeye
PISA2 Digger pine
QUCH2 Canyon live oak
QUKE Black oak
QULO Valley oak

SHRUBS:
ADFA Chamise
ARMA4 Mariposa manzanita
CEBE2 Birchleaf mountain-mahogany
CECU2 Wedgeleaf ceanothus
CELE2 Chaparral whitethorn
DIAU1 Bush monkeyflower
RHCA2 Coffeeberry
RICA1 Hillside gooseberry
RIRO Sierra gooseberry
ROCA1 Cal. wild rose
RUVI2 Blackberry
SACA4 Mountain blue elderberry
SAL11 Willow
STOFC Cal. storax

HERBS:
HYPE Klamath weed
LOSC Lotus

(19) Interior Live Oak/Toyon
(N=40)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
PIPO	2	1.4	1	0.7	0	0.0	0	0.0	2
PISA2	2	2.2	0	0.7	0	0.0	0	0.0	11
QUCH2	1	0.6	0	0.0	0	0.0	0	0.0	3
QUDO	1	0.6	0	0.4	0	0.0	0	0.0	13
QUKE	2	0.9	0	0.5	0	0.0	0	0.0	11
QULO	2	0.7	1	0.7	0	0.0	0	0.0	2
QUMO	1	0.0	0	0.0	0	0.0	0	0.0	1
QUWI	6	5.9	1	1.3	0	0.2	0	0.0	35

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PIPO	2	1.4	2	1	0.0	1	0	0.0	0	0	0.0	0
PISA2	2	3.0	7	1	2.0	4	0	0.0	0	0	0.0	0
QUCH2	1	0.6	3	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	1	0.6	12	1	2.2	3	0	0.0	0	0	0.0	0
QUKE	2	1.0	10	1	2.0	3	0	0.0	0	0	0.0	0
QULO	2	0.7	2	1	0.0	1	0	0.0	0	0	0.0	0
QUMO	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUWI	6	6.0	34	2	4.1	10	1	5.7	2	0	0.0	0

(36)Mixed Oak-California Buckeye/Grass
MO-AECA2/GR2
N=29

EXTENT: This type occurs in the central coast ranges from Napa to San Benito counties. It tends to occur further inland from the coast than its other two low elevation mixed oak associates.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	938	100	2000
ASPECT	65% occur on northwest to northeast aspects.		
SLOPE	88% between 16 and 55%		

SOILS:

PARENT MATERIAL	Hard and soft sedimentary materials.
TEXTURE	Mostly sandy and gravelly loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland; South Coastal Oak Woodland
Griffin (1977): Mixed Hardwood Forest; Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland; Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak; Blue Oak-Digger pine
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Montane Hardwood; Blue Oak Woodland; Valley Oak Woodland; Coastal Oak Woodland

(36)Mixed Oak-California Buckeye/Grass
(N=29)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue oak	27	0-92	90
AECA2	Calif. buckeye	9	0-27	79
QUAG	Coast live oak	20	0-42	76
QULO	Valley oak	10	0-41	45
QUWI	Interior live oak	34	0-74	17

TREE UNDERSTORY (%cover)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue oak	3	0-6	20

(%cover)	AVERAGE	RANGE	CONSTANCY%
SHRUBS	-		
HERBS	-		
GRASSES	96	54-100	100
ROCK	9	0-9	4

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PICO1 Beach pine
PISA2 Digger pine
UMCA1 Cal. bay

TREE UNDERSTORY
QUAG Coast live oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
ARMA3 Manzanita
RHDI Poison oak
ROCA1 California wild rose

(36)Mixed Oak-California Buckeye/Grass
(N=29)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	4	3.2	0	0.8	0	0.0	0	0.0	23
PICO1	2	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	7	0.0	1	0.0	0	0.0	0	0.0	1
QUAG	4	4.6	2	1.1	0	0.2	0	0.0	22
QUDO	7	4.9	1	1.6	0	0.6	0	0.0	26
QULO	3	2.2	0	0.5	0	0.3	0	0.0	13
QUWI	6	5.9	1	1.3	1	0.9	0	0.0	5
UMCA1	1	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	4	3.3	22	1	2.5	7	0	0.0	0	0	0.0	0
PICO1	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	7	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUAG	5	5.0	19	2	1.3	18	1	0.0	1	0	0.0	0
QUDO	8	5.1	24	2	1.9	19	2	9.9	2	0	0.0	0
QULO	3	2.5	11	1	1.4	5	1	0.0	1	0	0.0	0
QUWI	6	5.9	5	2	2.2	3	2	2.7	2	0	0.0	0
UMCA1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(34)Mixed Oak/Grass
MO/GR2
N=35

EXTENT: This type occurs in the central coast from Sonoma to Santa Barbara counties. Fifty percent of the plots which characterize this type were taken in Santa Clara county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	952	100	2700
ASPECT	Primarily north to northeast, but found on all.		
SLOPE	Moderately steep, 16% to 55%.		

SOILS:

PARENT MATERIAL	Primarily sandstones and shales.
TEXTURE	Widely diverse; sandy, rocky, clay loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland; Southern Coastal Oak Woodland; Coast Live Oak Forest
Griffin (1977): Mixed Hardwood Forest; Foothill Woodland, QUDO and QULO phases
Holland (1986): Blue Oak Woodland; Coast live Oak Woodland
Parker and Matyas (1981): Coast Live Oak; Blue Oak-Digger pine; Valley Oak
Paysen et al. (1980): Coast Live Oak; Blue Oak
Mayer et al. (1988): Montane Hardwood; Blue Oak Woodland; Coastal Oak Woodland; Blue Oak-Digger pine

(34)Mixed Oak/Grass
(N=35)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	38	0-125	97
QUDO	Blue oak	26	0-50	80
QULO	Valley oak	11	0-74	74
QUKE	Black oak	7	0-20	20

TREE UNDERSTORY (%cover)		AVERAGE	RANGE	CONSTANCY%
QUDO	Valley oak	3	0-14	19

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	8	0-49	66
HEAR2	Toyon	3	0-6	20
ARCA7	Coast sagebrush	5	0-21	17

(%cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	68	12-100	100
ROCK	4	0-8	9

(34) Mixed Oak/Grass
(N=35)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
ARME3 Madrone
MYCA Pacific wax-myrtle
PICO1 Beach pine
PICO2 Coulter pine
PISA2 Digger pine
QUGA2 Garry oak
QUWI Interior live oak

TREE UNDERSTORY
QUAG Coast live oak
QUCH2 Canyon live oak
QUGA2 Garry oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
AMCA2 Mock locust
ARGL5 Bigberry manzanita
ARMA3 Manzanita
BAPI Baccharis
CEBE2 Birchleaf mountain-mahogany
CECU2 Wedgeleaf ceanothus
COCO5 Hazelnut
DIAU1 Bush monkeyflower
HODI Ocean spray
MECH Ice plant
RHCA2 Coffeeberry
RHCR Redberry
RIB Gooseberry
RICA1 Hillside gooseberry
ROCA1 Cal. wild rose
SAAP1 White sage
SALE2 Purple sage
SAME4 Black sage

HERBS
LOSC Lotus

(212) Mixed Oak/Poison Oak-Baccharis
MO/RHDI-BAPI
N=22

EXTENT: This type occurs in the central coast from Alameda to Santa Barbara county. Fifty percent of the plots used to characterize the type are from Santa Clara county.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1020	300	2200
ASPECT	77% north to east.		
SLOPE	59% less than 35%.		

SOILS:

PARENT MATERIAL	Primarily hard sedimentary.
TEXTURE	Vried types of loams.

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Mixed Hardwood Forest; Foothill Woodland, QUDO phase
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland

(212) Mixed Oak/Poison Oak-Baccharis
(N=22)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	31	0-105	95
QUKE	Black oak	28	0-72	45
QULO	Valley oak	21	0-81	45
UMCA1	Cal. bay	15	0-39	43
QUDO	Blue oak	11	0-31	36
AECA2	Cal. buckeye	16	0-31	18

TREE UNDERSTORY (%cover)		AVERAGE	RANGE	CONSTANCY%
UMCA1	Cal. bay	2	0-6	36
QUAG	Coast live oak	1	0-2	36
QUDU2	Scrub oak	11	0-28	21

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	10	0-17	86
RHCA2	Coffeeberry	14	0-22	79
BAPI	Baccharis	14	0-42	71
HEAR2	Toyon	13	0-27	50
DIAU1	Bush monkeyflower	4	0-6	43
HODI	Ocean spray	8	0-15	21

HERBS (%cover)		AVERAGE	RANGE	CONSTANCY%
PTAQ	Bracken fern	21	0-45	21

(%cover)	AVERAGE	RANGE	CONSTANCY%
GRASSES	28	0-63	86
ROCK	-		

(212) Mixed Oak/Poison Oak-Baccharis
(N=22)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PICO1 Beach (lodgepole) pine
PIMO2 One needle pinyon pine
PISA2 Digger pine
PSME Douglas fir

TREE UNDERSTORY
QUCH2 Canyon live oak
QUDO Blue oak
QUDU2 Scrub oak
QUGA2 Garry oak
QULO Valley oak
QUWI Interior live oak

SHRUBS
AMCA2 Mock locust
AMUT Utah serviceberry
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
LOSU3 Southern honeysuckle
MECH Ice plant
RHCR Redberry
RISA Red flowering currant
RUVI2 Blackberry
SACA4 Mtn. blue elderberry
SAL11 Willow
SYMO Creeping snowberry
SYRI Upright snowberry

(212) Mixed Oak/Poison Oak-Baccharis
(N=22)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	10	7.4	0	0.0	0	0.0	0	0.0	4
PICO1	3	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	2	1.2	0	0.6	0	0.0	0	0.0	3
PSME	1	0.0	1	0.0	0	0.0	0	0.0	1
QUAG	7	6.3	2	1.4	0	0.7	0	0.0	21
QUDO	6	6.3	0	0.4	0	0.0	0	0.0	8
QUKE	6	4.6	2	1.8	0	0.6	0	0.0	10
QULO	5	3.2	1	2.4	0	0.3	0	0.0	10
UMCA1	8	9.3	0	0.8	0	0.0	0	0.0	6

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	10	7.4	4	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	2	1.2	3	1	0.0	1	0	0.0	0	0	0.0	0
PSME	1	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUAG	8	6.9	18	2	1.5	18	2	8.8	2	0	0.0	0
QUDO	6	6.3	8	1	0.0	1	0	0.0	0	0	0.0	0
QUKE	7	4.9	9	2	2.3	7	2	0.0	1	0	0.0	0
QULO	6	3.5	9	2	3.5	6	1	0.0	1	0	0.0	0
UMCA1	8	9.3	6	2	0.0	1	0	0.0	0	0	0.0	0

(5)Mixed Oak-Digger Pine/Grass
MO-PISA2/GR2
N=68

EXTENT: This type occurs in the central coast ranges from Santa Clara to Santa Barbara counties. It also occurs in Contra Costa and Kern counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1499	700	2800
ASPECT	North, northeast or flat		
SLOPE	84% are less than 45%		

SOILS:

PARENT MATERIAL	81% are hard sedimentary
TEXTURE	All textures

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland; Southern Coastal Oak Woodland; Coast Live Oak Forest
Griffin (1977): Mixed Hardwood Forest; Foothill Woodland, QUDO phase
Holland (1986): Blue Oak Woodland; Coast Live Oak Forest
Parker and Matyas (1981): Coast Live Oak; Blue Oak-Digger pine
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Montane Hardwood; Blue Oak Woodland; Coastal Oak Woodland

(5) Mixed Oak-Digger Pine/Grass
(N=68)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	37	0-133	94
QUDO	Blue oak	42	0-153	93
PISA2	Digger pine	29	0-226	76
QULO	Valley oak	46	0-118	40

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	9	0-55	35
RHCR	Redberry	4	0-12	28
CECU2	Wedgeleaf ceanothus	5	0-14	21

(%cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	82	2-100	100
ROCK	3	0-4	3

(5)Mixed Oak-Digger Pine/Grass
(N=68)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
FRDI Foothill ash
PICO2 Coulter pine
PIJE Jeffrey pine
QUDU2 Scrub oak

TREE UNDERSTORY
AECA2 Cal. buckeye
JUCA3 Cal. juniper
PIQU Four-needle pinyon pine
PISA2 Digger pine
PSME Douglas fir
QUAG Coast live oak
QUDO Blue oak
QUDU2 Scrub oak
QULO Valley oak

SHRUBS
ADFA Chamise
ARCA5 Hoary manzanita
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
ARPRD Pink-bracted manzanita
ARVI3 Whiteleaf manzanita
CEBE2 Birchleaf mountain mahogany
CESO3 Jim bush
COCO5 Hazelnut
ERCR2 Thick-leaf yerba santa
ERFA Cal. buckwheat
HALI Narrowleaf goldenbush
HASQ2 Sawtooth goldenbush
HEAR2 Toyon
LOSU3 So. honeysuckle
LUAL3 Silver lupine
RHCA2 Coffeeberry
RHTR Squaw bush
RICA1 Hillside gooseberry
SACA4 Mountain blue elderberry
SAME6 Blue elderberry

HERBS
LOSC Lotus

(5)Mixed Oak-Digger Pine/Grass
(N=68)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	3	0.7	0	0.0	0	0.0	0	0.0	2
AECA2	4	0.0	0	0.0	0	0.0	0	0.0	2
PICO2	5	0.0	1	0.0	0	0.0	0	0.0	1
PIJE	2	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	4	4.2	2	2.2	0	0.6	0	0.1	52
QUAG	3	3.5	2	1.4	1	0.9	0	0.1	64
QUDO	7	6.0	3	2.9	0	0.7	0	0.1	63
QUDU2	3	0.0	0	0.0	0	0.0	0	0.0	1
QULO	2	2.1	2	1.2	1	1.1	0	0.3	27

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	3	0.7	2	0	0.0	0	0	0.0	0	0	0.0	0
AECA2	4	0.0	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	5	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
PIJE	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	4	4.2	50	3	2.6	40	2	6.3	5	1	0.0	1
QUAG	4	4.0	52	2	1.6	55	1	2.1	25	1	0.0	1
QUDO	7	6.1	62	4	3.4	49	1	2.5	16	1	0.0	1
QUDU2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	3	3.1	17	2	1.4	22	2	1.6	17	1	5.0	2

(33)Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
MO-QULO/RHDI-RHCA2
N=22

EXTENT: This type occurs primarily in the central coast region from Monterey to San Luis Obispo counties. It also occurs slightly inland in Contra Costa and Santa Clara counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1443	400	3000
ASPECT	47% north; 37% south to west		
SLOPE	58% are less than 35%		

SOILS:

PARENT MATERIAL	Soft and hard sedimentary
TEXTURE	Clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Valley Oak Woodland; Coast Live Oak Forest
Griffin (1977): Foothill Woodland, QULO and QUDO phases
Holland (1986): Valley Oak Woodland; Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak; Valley Oak; Blue Oak-Digger pine
Paysen et al. (1980): Coast Live Oak
Mayer et al. (1988): Coastal Oak Woodland; Valley Oak Woodland

(33)Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
(N=22)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QULO	Valley oak	84	3-245	100
QUAG	Coast live oak	108	0-385	90
QUDO	Blue oak	28	0-81	54
AECA2	Cal. buckeye	22	0-46	30
PISA2	Digger pine	16	0-33	27

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	10	0-32	85
RHCA2	Coffeeberry	10	0-22	65
RHCR	Redberry	4	0-5	20

(%cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	54	0-92	90
ROCK	14	0-14	5

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
PICO1 Beach (lodgepole) pine
UMCA1 Cal. bay

TREE UNDERSTORY
PISA2 Digger pine
QUAG Coast live oak
UMCA1 Cal. bay

SHRUBS
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
BAPI Baccharis
DIAU1 Bush monkeyflower
HEAR2 Toyon
HODI Narrowleaf goldenbush
LOSU3 So. honeysuckle
SAAP1 White sage

HERBS
LOSC Lotus
PTAQ Bracken fern

(33)Mixed Oak-Valley Oak/Poison Oak-Coffeeberry
(N=22)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	3	0.0	0	0.0	0	0.0	0	0.0	1
AECA2	8	2.2	2	2.4	0	0.8	0	0.4	6
PICO2	8	0.0	6	0.0	0	0.0	0	0.0	1
PISA2	2	2.3	2	1.0	0	0.0	0	0.0	6
QUAG	7	4.0	5	3.8	1	2.4	0	0.2	20
QUDO	5	3.0	1	1.6	1	0.9	0	0.0	12
QULO	6	6.0	3	3.0	2	1.9	0	0.2	22
UMCA1	2	0.0	2	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
AECA2	8	2.2	6	3	4.8	3	2	0.0	1	1	0.0	1
PICO2	8	0.0	1	6	0.0	1	0	0.0	0	0	0.0	0
PISA2	4	3.4	4	2	1.2	5	0	0.0	0	0	0.0	0
QUAG	7	4.0	20	5	4.3	17	4	5.3	8	1	0.0	1
QUDO	5	3.0	12	3	3.1	6	2	2.6	4	0	0.0	0
QULO	6	6.2	21	4	3.6	17	3	2.2	18	1	0.0	1
UMCA1	2	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0

(94)Mixed Oak-Coast Live Oak/Poison Oak
MO-QUAG/RHDI
N=42

EXTENT: This type occurs in Santa Clara county (55%) and along the central coast range counties from Sonoma and Napa to Monterey and Santa Benito.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1465	400	3500
ASPECT	97% north to east; 85% north to northeast		
SLOPE	All slopes		

SOILS:

PARENT MATERIAL	92% Hard sedimentary
TEXTURE	Gravelly to clay loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Coast Live Oak Forest
Griffin (1977): Mixed Hardwood Forest
Holland (1986): Coast Live Oak Woodland
Parker and Matyas (1981): Coast Live Oak; Black Oak; Valley Oak
Paysen et al. (1980): Black Oak; Coast Live Oak
Mayer et al. (1988): Valley Oak Woodland; Coastal Oak Woodland; Montane Hardwood

(94)Mixed Oak-Coast Live Oak/Poison Oak
(N=42)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	54	0-289	95
QUKE	Black oak	38	0-128	85
QULO	Valley oak	16	0-90	40
AECA2	Cal. buckeye	9	0-24	33
ARME3	Madrone	10	0-56	23
UMCA1	Cal. bay	9	0-36	18

TREE UNDERSTORY (%cover)		AVERAGE	RANGE	CONSTANCY%
QUAG	Coast live oak	4	0-9	38
UMCA1	Cal. bay	6	0-18	28

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	16	0-64	90
RHCA2	Coffeeberry	5	0-11	38
SYRI	Upright snowberry	11	0-49	19
HEAR2	Toyon	7	0-19	19
DIAU1	Bush monkeyflower	4	0-10	19

(%cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	26	0-76	71
ROCK	5	0-8	8

(94)Mixed Oak-Coast Live Oak/Poison Oak
(N=42)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
LIDE3 Incense cedar
PICO1 Beach (lodgepole) pine
PICO2 Coulter pine
PISA2 Digger pine
PSME Douglas fir
QUCH2 Canyon live oak
QUDO Blue oak
QUGA2 Garry oak
QUWI Interior live oak

TREE UNDERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
QUCH2 Canyon live oak
QUGA2 Garry oak
QUKE Black oak
QUWI Interior live oak

SHRUBS
ADFA Chamise
AMUT Utah serviceberry
ARCA5 Hoary manzanita
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
ARMA3 Manzanita
BAPI Baccharis
CECU2 Wedgeleaf ceanothus
CEPA3 Warty-leaved ceanothus
COCO5 Hazelnut
HODI Ocean spray
LUAL3 Silver lupine
RHCR Redberry
RICA1 Hillside gooseberry
RISP Fuschia-flower gooseberry
ROS Rose
SYMO Creeping snowberry

HERBS
PTAQ Bracken fern

(94)Mixed Oak-Coast Live Oak/Poison Oak
(N=42)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	7	6.4	0	0.4	0	0.0	0	0.0	15
ARME3	2	1.4	1	1.8	0	0.0	0	0.0	11
LIDE3	1	0.0	0	0.0	0	0.0	0	0.0	1
PICO1	3	2.5	0	0.5	0	0.0	0	0.0	6
PICO2	9	5.7	3	0.0	0	0.0	1	0.7	2
PISA2	2	0.0	3	0.0	0	0.0	0	0.0	1
PSME	5	1.4	3	3.5	0	0.0	0	0.0	2
QUAG	11	14.3	4	4.0	1	1.7	0	0.0	40
QUCH2	3	2.1	0	0.0	0	0.0	0	0.0	2
QUDO	2	0.0	0	0.0	0	0.0	0	0.0	1
QUGA2	9	0.0	4	0.0	0	0.0	0	0.0	1
QUKE	10	9.7	2	1.5	0	1.0	0	0.0	34
QULO	4	3.4	1	1.5	0	0.3	0	0.2	18
QUWI	3	0.0	0	0.0	0	0.0	0	0.0	1
UMCA1	3	1.6	1	1.5	0	0.0	0	0.0	7

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	7	6.4	15	1	3.6	2	0	0.0	0	0	0.0	0
ARME3	2	1.4	11	3	6.1	3	0	0.0	0	0	0.0	0
LIDE3	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	4	2.9	5	1	2.0	2	0	0.0	0	0	0.0	0
PICO2	9	5.7	2	3	0.0	2	0	0.0	0	1	0.0	1
PISA2	2	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
PSME	5	1.4	2	5	0.0	1	0	0.0	0	0	0.0	0
QUAG	12	14.9	37	4	4.3	36	3	6.8	8	0	0.0	0
QUCH2	3	2.1	2	0	0.0	0	0	0.0	0	0	0.0	0
QUDO	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUGA2	9	0.0	1	4	0.0	1	0	0.0	0	0	0.0	0
QUKE	10	10.1	32	2	1.6	29	3	11.9	3	0	0.0	0
QULO	4	3.5	17	3	4.4	6	1	4.0	2	1	0.0	1
QUWI	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
UMCA1	3	1.6	7	4	0.0	1	0	0.0	0	0	0.0	0

(96) Mixed Oak-Black Oak/Grass
MO-QUKE/GR2
N=37

EXTENT: This type occurs in the central coast areas from Marin to Monterey counties (primarily in Santa Clara county (50%)). It also occurs in the Sierra from Nevada to Tuolumne counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1351	100	3000
ASPECT	Primarily north; 80% north to northeast		
SLOPE	40% are less than 25%; some steep		

SOILS:

PARENT MATERIAL	80% hard and soft sedimentary
TEXTURE	Varied, all types of loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Blue Oak Woodland; Valley Oak Woodland
Griffin (1977): Mixed Hardwood Forest
Holland (1986): Black Oak Woodland; Valley Oak Woodland; Blue Oak
Parker and Matyas (1981): Blue Oak-Digger pine; Valley Oak; Black Oak
Paysen et al. (1980): Black Oak; Valley Oak
Mayer et al. (1988): Montane Hardwood; Blue Oak Woodland; Valley Oak Woodland; Coastal Oak Woodland

(96) Mixed Oak-Black Oak/Grass
(N=37)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	34	0-97	89
QUDO	Blue oak	34	0-92	71
QULO	Valley oak	43	0-232	71
QUAG	Coast live oak	9	0-18	45
AECA2	Cal. Buckeye	13	0-28	26
QUWI	Interior live oak	23	0-38	21

TREE UNDERSTORY (%cover)		AVERAGE	RANGE	CONSTANCY%
QUDO	Blue oak	3	0-9	18

SHRUBS (%cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	11	0-35	76
RHCA2	Coffeeberry	5	0-11	29

(%cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	54	0-100	89
ROCK	4	0-11	16

(96) Mixed Oak-Black Oak/Grass
(N=37)

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ARME3 Madrone
PICO1 Beach (lodgepole) pine
PISA2 Digger pine
PSME Douglas fir
UMCA1 Cal. bay

TREE UNDERSTORY
AECA2 Cal. buckeye
QUAG Coast live oak
QUKE Black oak
QULO Valley oak
QUWI Interior live oak
UMCA1 Cal. bay

SHRUBS
ADFA Chamise
ARCA7 Coast sagebrush
ARGL5 Bigberry manzanita
ARMA3 Manzanita
ARPRD Pink-bracted manzanita
BAPI Baccharis
CECU2 Wedgeleaf ceanothus
DIAU1 Bush monkeyflower
HEAR2 Toyon
HODI Ocean spray
LOSU3 So. honeysuckle
RHCR Redberry
RICA1 Hillside gooseberry
SYRI Upright snowberry

HERBS
PTAQ Bracken fern

(96) Mixed Oak-Black Oak/Grass
(N=37)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	7	3.7	0	0.7	0	0.0	0	0.0	10
ARME3	1	0.0	0	0.0	0	0.0	0	0.0	1
PICO1	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	3	0.0	2	0.0	0	0.0	0	0.0	1
PSME	3	0.0	1	0.0	0	0.0	0	0.0	1
QUAG	2	2.1	1	0.7	0	0.0	0	0.0	17
QUDO	8	7.3	2	2.0	0	0.6	0	0.0	27
QUKE	6	8.7	2	1.8	0	0.8	0	0.2	34
QULO	4	4.5	2	2.7	1	1.6	0	0.4	27
QUWI	8	6.6	1	1.4	0	0.0	0	0.0	8
UMCA1	2	0.0	0	0.0	0	0.0	0	0.0	1

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	7	3.7	10	2	4.3	2	0	0.0	0	0	0.0	0
ARME3	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PICO1	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	3	0.0	1	2	0.0	1	0	0.0	0	0	0.0	0
PSME	3	0.0	1	1	0.0	1	0	0.0	0	0	0.0	0
QUAG	3	2.6	13	1	1.5	8	0	0.0	0	0	0.0	0
QUDO	9	7.5	26	3	2.8	17	1	2.8	6	0	0.0	0
QUKE	7	9.7	28	2	2.1	27	1	2.9	8	1	0.0	1
QULO	5	4.6	26	3	3.9	16	3	7.5	5	1	2.3	5
QUWI	8	6.6	8	2	2.2	5	0	0.0	0	0	0.0	0
UMCA1	2	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0

(41) Blue Oak-Valley Oak-Coast Live Oak/Grass
QUDO-QULO-QUAG/GR2
N=17

EXTENT: This type occurs in the central coast areas from Napa to Santa Barbara counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	1544	200	3500
ASPECT	All aspects		
SLOPE	Varied slopes		

SOILS:

PARENT MATERIAL	Varied, all types
TEXTURE	Varied; clay, gravelly and sandy loams

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): Oak Woodland: Blue Oak Woodland
Griffin (1977): Foothill Woodland: Blue Oak Phase
Holland (1986): Blue Oak Woodland
Parker and Matyas (1981): Blue Oak Series
Paysen et al. (1980): Blue Oak
Mayer et al. (1988): Blue Oak Woodland

(41) Blue Oak-Valley Oak-Coast Live Oak/Grass
(N=17)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)	AVERAGE	RANGE	CONSTANCY%
QUDO Blue oak	46	0-186	88
QUAG Coast live oak	21	0-103	82
QULO Valley oak	60	0-229	77

SHRUBS (% cover)	AVERAGE	RANGE	CONSTANCY%
RHDI Poison oak	3	0-3	18

(% cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	95	0-100	88
ROCK			

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
AECA2 Cal. buckeye
PISA2 Digger pine
QUDU2 Scrub oak
QUKE Black oak

TREE UNDERSTORY
QUAG Coast live oak
QUDO Blue oak

SHRUBS
ARCA7 Coast sagebrush
ERPA3 Dune eriogonum
HEAR2 Toyon
SALE2 Purple sage

(41) Blue Oak-Valley Oak-Coast Live Oak/Grass
(N=17)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
PISA2	3	2.1	2	0.7	0	0.0	0	0.0	2
QUAG	3	7.5	2	1.8	0	0.3	0	0.0	14
QUDO	7	5.0	3	4.0	0	0.7	0	0.3	15
QUDU2	1	0.0	0	0.0	0	0.0	0	0.0	1
QUKE	1	0.0	0	0.0	0	0.0	0	0.0	1
QULO	4	4.8	3	4.4	1	1.5	0	0.4	13

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PISA2	3	2.1	2	2	0.7	2	0	0.0	0	0	0.0	0
QUAG	6	10.9	8	2	2.0	12	1	0.0	1	0	0.0	0
QUDO	7	5.0	15	4	4.9	11	1	2.3	5	1	0.0	1
QUDU2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QUKE	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
QULO	5	5.4	11	5	5.7	9	2	3.5	5	1	3.3	2

(29) Black Oak-Valley Oak/Grass
QUKE-QULO/GR2
N=19

EXTENT: This type occurs in the coast ranges from Mendocino to Santa Clara county. It also occurs in the south coast and inland areas of San Luis Obispo, Santa Barbara, San Diego and Kern counties.

ENVIRONMENT:

	MEAN	MIN	MAX
ELEVATION (ft)	2375	75	6000
ASPECT	All aspects.		
SLOPE	68% are less than 25%		

SOILS:

PARENT MATERIAL	Granitic; soft and hard sedimentary
TEXTURE	All textures

RELATIONSHIPS TO OTHER CLASSIFICATIONS:

Cheatham and Haller (1975): None
Griffin (1977): Foothill Woodland, QULO phase
Holland (1986): None
Parker and Matyas (1981): Valley Oak; Black Oak
Paysen et al. (1980): Valley Oak; Black Oak; Coast Live Oak
Mayer et al. (1988): Montane Hardwood; Valley Oak Woodland; Coastal Oak Woodland

(29) Black Oak-Valley Oak/Grass
(N=19)

VEGETATION COVER SUMMARY

TREE OVERSTORY (BA ft^2)		AVERAGE	RANGE	CONSTANCY%
QUKE	Black oak	45	3-195	100
QULO	Valley oak	32	0-71	79
QUAG	Coast live oak	40	0-146	47
PSME	Douglas fir	38	0-68	16

SHRUBS (% Cover)		AVERAGE	RANGE	CONSTANCY%
RHDI	Poison oak	3	0-4	32

(% Cover)	AVERAGE	RANGE	CONSTANCY%
HERBS	-		
GRASSES	92	0-100	89
ROCK	-	0-1	5

RARELY OCCURRING SPECIES (less than 15% constancy):

TREE OVERSTORY
ACMA Bigleaf maple
AECA2 Cal. buckeye
ARME3 Madrone
PICO1 Beach (lodgepole) pine
PICO2 Coulter pine
PISA2 Digger pine

TREE UNDERSTORY
AECA2 Cal. buckeye
QUGA2 Garry oak
QULO Valley oak

SHRUBS
ARGL5 Bigberry manzanita
ARMA3 Manzanita
CECU2 Wedgeleaf manzanita
HEAR2 Toyon
SYRI Snowberry

(29) Black Oak-Valley Oak/Grass
(N=19)

STAND TABLE: Number of trees by diameter class (in inches).

ABSOLUTE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 Mean	DBH 4-11 StdDev	DBH 12-23 Mean	DBH 12-23 StdDev	DBH 24-35 Mean	DBH 24-35 StdDev	DBH 36+ Mean	DBH 36+ StdDev	Total Plots
ACMA	0	0.0	2	0.0	0	0.0	0	0.0	1
AECA2	1	0.0	0	0.0	0	0.0	0	0.0	1
ARME3	6	5.7	4	2.8	0	0.0	0	0.0	2
PICO1	2	1.4	0	0.0	0	0.0	0	0.0	2
PICO2	2	0.0	3	0.0	0	0.0	0	0.0	1
PISA2	3	0.0	0	0.0	0	0.0	0	0.0	1
PSME	10	6.6	3	2.1	0	0.0	0	0.0	3
QUAG	5	5.8	3	2.9	0	1.0	0	0.0	9
QUKE	4	3.6	3	2.7	1	1.0	0	0.5	19
QULO	7	11.7	2	1.4	0	0.7	0	0.0	15

RELATIVE MEAN NUMBER OF TREES BY SPECIES

Species	DBH 4-11 $\bar{X}$	DBH 4-11 SD	DBH 4-11 N	DBH 12-23 $\bar{X}$	DBH 12-23 SD	DBH 12-23 N	DBH 24-35 $\bar{X}$	DBH 24-35 SD	DBH 24-35 N	DBH 36+ $\bar{X}$	DBH 36+ SD	DBH 36+ N
ACMA	0	0.0	0	2	0.0	1	0	0.0	0	0	0.0	0
AECA2	1	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
ARME3	6	5.7	2	4	2.8	2	0	0.0	0	0	0.0	0
PICO1	2	1.4	2	0	0.0	0	0	0.0	0	0	0.0	0
PICO2	2	0.0	1	3	0.0	1	0	0.0	0	0	0.0	0
PISA2	3	0.0	1	0	0.0	0	0	0.0	0	0	0.0	0
PSME	10	6.6	3	3	2.1	3	0	0.0	0	0	0.0	0
QUAG	7	6.9	7	4	4.1	6	2	5.5	2	0	0.0	0
QUKE	5	3.7	18	3	3.2	15	2	2.9	6	2	0.0	1
QULO	10	14.2	11	2	2.0	10	2	4.1	3	0	0.0	0

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APPENDICES

APPENDIX 1.

COMPARISON OF OTHER CLASSIFICATION SYSTEMS

Attributes Used in Delineating Types

	% COVER DOMINANTS/ CODOMINANTS	%COVER TREES &/OR SHRUBS	TREE DENSITY OR BA	% COVER GRASS/FORBS	ASSOCIATED SPECIES	PLANT HEIGHT	GEOGR. LOCATION	ELEVATION
BARBOUR & MAJOR 1977	x		x				x	
BARRY 1985	x				x	x		
BROWN et al. 1980	x		x		x	x	x	
CDF							x	x
CHEATHAM & HALLER'75				x	x	x	x	x
EYRE 1980		x	x		x			
FOSBERG 1961	x							
HEWITT 1964					x		x	
HOLLAND 1986							x	x
HOLSTEIN 1980	x							
JENSEN 1947				x				
LEGRIS 1961	x							
MUNZ & KECK 1959	x				x	x	x	x
PARKER & MATYAS '81	x			x	x	x	x	
PASSOF et al 1985		x					x	
PAYSEN et al 1980					x	x		x
PENALOSA 1963		x			x		x	
PLUMB & McDONALD '81							x	x
SCS 1981							x	x
SCS RANGE SITE 1986	x	x				x	x	x
STD. SITE COMP. 1986	x	x	x	x		x	x	x
THORNE 1976							x	x
TWISSELMANN 1956					x			
UNESCO 1973		x				x		

continued

APPENDIX 1.

COMPARISON OF OTHER CLASSIFICATION SYSTEMS

Attributes Used in Delineating Types

	PARENT MATERIAL	% COVER CONIFERS	PHYSIOGNOMY OF VEG	SOIL TYPE	SOIL TEXTURE	SOIL DRAINAGE	ASPECT	% SLOPE
BARBOUR & MAJOR 1977				X	X		X	
BARRY 1985			X					
BROWN et al. 1980			X					X
CDF		X						
CHEATHAM & HALLER'75			X	X	X		X	X
EYRE 1980								
FOSBERG 1981			X					
HEWITT 1964	X			X				
HOLLAND 1985				X	X	X		
HOLSTEIN 1980								
JENSEN 1947		X						
LEGRIS 1961				X				
MUNZ & KECK 1959			X					
PARKER & MATYAS '81			X					
PASSOF et al. 1986								X
PAYSEN et al. 1980			X					
PENALOSA 1963	X					X		
PLUMB & McDONALD '81								
SCS 1981				X	X	X		
SCS RANGE SITE 1986				X			X	X
STD. SITE COMP. 1986	X			X	X		X	X
THORNE 1976								
TWISSELMANN 1968								
UNESCO 1973			X	X				

page 2

Appendix 2: Plant species codes with scientific names and common names from Munz and Keck (1968) and Powell (1987).

VEGCODE	GENUS	SPECIES	VARIETY	COMMON NAME
ABCO	ABIES	CONCOLOR	-0-	White fir
ACMA	ACER	MACROPHYLLUM	-0-	Bigleaf maple
ADFA	ADENOSTOMA	FASCICULATUM	-0-	Chamise
AECA-2	AESCULUS	CALIFORNICA	-0-	California buckeye
AMCA-2	AMORPHA	CALIFORNICA	-0-	Mock locust
AMUT	AMELANCHIER	UTAHENSIS	-0-	Utah serviceberry
APCA	APOCYNUM	CANNABINUM	-0-	Indian hemp
ARCA-5	ARCTOSTAPHYLOS	CANESCENS	-0-	Hoary manzanita
ARCA-7	ARTEMISIA	CALIFORNICA	-0-	Coast sagebrush
ARCO-6	ARCTOSTAPHYLOS	COLUMBIANA	-0-	Hairy manzanita
ARGL-5	ARCTOSTAPHYLOS	GLAUCA	-0-	Bigberry manzanita
ARMA-3	ARCTOSTAPHYLOS	MANZANITA	-0-	Common manzanita
ARMA-4	ARCTOSTAPHYLOS	MARIPOSA	-0-	Mariposa manzanita
ARME-2	ARCTOSTAPHYLOS	MEWUKKA	-0-	Indian manzanita
ARME-3	ARBUTUS	MENZIESII	-0-	Madrone
AROB-2	ARCTOSTAPHYLOS	OBISPOENSIS	-0-	Serpentine manzanita
ARPA-9	ARCTOSTAPHYLOS	PATULA	-0-	Greenleaf manzanita
ARPRD	ARCTOSTAPHYLOS	PRINGLEI	drupa	Pink-bracted manzanita
ARPU-6	ARCTOSTAPHYLOS	PUNGENS	-0-	Mexican manzanita
ARTO-2	ARCTOSTAPHYLOS	TOMENTOSA	-0-	Shaggy barked manzanita
ARTR	ARTEMISIA	TRIDENTATA	-0-	Basin sagebrush
ARVI-3	ARCTOSTAPHYLOS	VISCIDA	-0-	Whiteleaf manzanita
BAPI	BACCHARIS	PILULARIS	-0-	Baccharis
BRLA-2	BRODIAEA	LAXA	-0-	Grass-nut
CASE-3	CASTANOPSIS	SEMPERVIRENS	-0-	Bush chinquapin
CEBE-2	CERCOCARPUS	BETULOIDES	-0-	Birchleaf mountain-mahogany
CECO-2	CEANOTHUS	CORDULATUS	-0-	Mountain whitethorn
CECU-2	CEANOTHUS	CUNEATUS	-0-	Wedgeleaf ceanothus
CEIN-3	CEANOTHUS	INTEGERRIMUS	-0-	Deerbrush
CELE-2	CEANOTHUS	LEUCODERMIS	-0-	Chaparral whitethorn
CEOC	CERCIS	OCCIDENTALIS	-0-	California redbud
CEPA-3	CEANOTHUS	PAPILLOSUS	-0-	Warty-leaved ceanothus
CEPA-5	CEANOTHUS	PARVIFOLIUS	-0-	Littleleaf ceanothus
CEPR	CEANOTHUS	PROSTRATUS	-0-	Squaw carpet
CESO-3	CEANOTHUS	SOREDIATUS	-0-	Jim brush
CESP	CEANOTHUS	SPINOSUS	-0-	Greenbark ceanothus
CETH	CEANOTHUS	THYRSIFLORUS	-0-	Blueblossom ceanothus
CETO	CEANOTHUS	TOMENTOSUS	-0-	Woollyleaf ceanothus
CHFO-2	CHAMAEBATIA	FOLIOLOSA	-0-	Mountain misery
COCA-8	CORETHROGYNE	CALIFORNICA	-0-	-0-
COCO-5	CORYLUS	CORNUTA	-0-	Hazelnut
CONU-2	CORNUS	NUTTALLII	-0-	Pacific dogwood
COROC	CORYLUS	ROSTRATA	calif	-0-
CRCA-2	CROTON	CALIFORNICUS	-0-	California croton
DERI	DENDROMECON	RIGIDA	-0-	Tree poppy
DIAU-1	DIPLACUS	AURANTIACUS	-0-	Bush monkeyflower
ERCA-6	ERIODICTYON	CALIFORNICUM	-0-	California yerba santa
ERCI-2	ERODIUM	CICUTARIUM	-0-	Red-stem filaree
ERCO-7	ERIOPHYLLUM	CONFERTIFLORUM	-0-	Yellow yarrow
ERCR-2	ERIODICTYON	CRASSIFOLIUM	-0-	Thick-leaf yerba santa
ERFA	ERIOGONUM	FASCICULATUM	-0-	California buckwheat
ERPA-3	ERIOGONUM	PARVIFOLIUM	-0-	Dune eriogonum

Appendix 2 (cont.): Plant species codes with scientific and common names from Munz and Keck (1968) and Powell (1987).

VEGCODE	GENUS	SPECIES	VARIETY	COMMON NAME
ERWR	ERIOGONUM	WRIGHTII	-0-	Buckwheat
FRCA2	FREMONTIA	CALIFORNICA	-0-	Flannel bush
FRDI	FRAXINUS	DIPETALA	-0-	Foothill ash
GAEL	GARRYA	ELLIPTICA	-0-	Coast silktassel
GAFLP	GARRYA	FLAVESCENS	palli	Ashy silktassel
GAFR	GARRYA	FREMONTII	-0-	Fremont silktassel
GAVE-2	GARRYA	VEATCHII	-0-	Veatch silktassel
GR2				Grass
HAAR	HAPLOPAPPUS	ARBORESCENS	-0-	Goldenfleece
HALI	HAPLOPAPPUS	LINEARIFOLIUS	-0-	Narrowleaf goldenbush
HASQ-2	HAZARDIA	SQUARROSA	-0-	Sawtooth goldenbush
HEAR-2	HETEROMELES	ARBUTIFOLIA	-0-	Toyon, christmas berry
HODI	HOLODISCUS	DISCOLOR	-0-	Ocean spray, Creambush
HYPE	HYPERICUM	PERFORATUM	-0-	Klamath weed
JUCA-3	JUNIPERUS	CALIFORNICA	-0-	California juniper
JUCA-4	JUGLANS	CALIFORNICA	-0-	Southern black walnut
LECA-3	LEPECHINIA	CALYCINA	-0-	Woodbalm
LIDE-2	LITHOCARPUS	DENSIFLORUS	-0-	Tan-oak
LIDE-3	LIBOCEDRUS	DECURRENS	-0-	Incense-cedar
LOIN-3	LONICERA	INTERRUPTA	-0-	Chaparral honeysuckle
LOSC	LOTUS	SCOPARIUS	-0-	Lotus
LOSU-3	LONICERA	SUBSPICATA	-0-	Southern honeysuckle
LUAL-3	LUPINUS	ALBIFRONS	-0-	Silver lupine
LUP-5	LUPINUS	SP. WOODY SHRUB	-0-	Bush lupine
MECH	MESEMBRYANTHEMUM	CHILENSE	-0-	Iceplant
MYCA	MYRICA	CALIFORNICA	-0-	Pacific wax-myrtle
PECO-3	PENSTEMON	CORDIFOLIUS	-0-	-0-
PESP-2	PENSTEMON	SPECTABILIS	-0-	Showy penstemon
PHLEC	PHILADELPHUS	LEWISII	californicus	California mock orange
PIAT-1	PINUS	ATTENUATA	-0-	Knobcone pine
PICO-1	PINUS	CONTORTA	-0-	Beach (lodgepole) pine
PICO-2	PINUS	COULTERI	-0-	Coulter pine
PIJE	PINUS	JEFFREYI	-0-	Jeffrey pine
PILA	PINUS	LAMBERTIANA	-0-	Sugar pine
PIMO-2	PINUS	MONOPHYLLA	-0-	One-needle pinyon pine
PIMU-1	PINUS	MURICATA	-0-	Bishop pine
PIPO	PINUS	PONDEROSA	-0-	Ponderosa pine
PIQU	PINUS	QUADRIFOLIA	-0-	Four-needle pinyon pine
PIRA	PINUS	RADIATA	-0-	Monterey pine
PISA-2	PINUS	SABINIANA	-0-	Digger pine
PLRA	PLATANUS	RACEMOSA	-0-	Western sycamore
POMU-1	POLYSTICHUM	MUNITUM	-0-	Sword fern
PREM	PRUNUS	EMARGINATA	-0-	Bitter cherry
PRIL-1	PRUNUS	ILICIFOLIA	-0-	Shrub hollyleaf cherry
PRSU-2	PRUNUS	SUBCORDATA	-0-	Sierra plum
PRVID	PRUNUS	VIRGINIANA	demissa	Western choke-cherry
PSMA-2	PSEUDOTSUGA	MACROCARPA	-0-	Big-cone spruce
PSME	PSEUDOTSUGA	MENZIESII	-0-	Douglas-fir
PSPH	PSORALEA	PHYSODES	-0-	California tea
PTAQL	PTERIDIUM	AQUILINUM	Lanuginosum	Bracken fern
PTAQP	PTERIDIUM	AQUILINUM	pubescens	Bracken fern

Appendix 2 (cont.): Plant species codes with scientific and common names from Munz and Keck (1968) and Powell (1987).

VEGCODE	GENUS	SPECIES	VARIETY	COMMON NAME
QUAG	QUERCUS	AGRIFOLIA	-0-	Coast live oak
QUCH-2	QUERCUS	CHRYSOLEPIS	-0-	Canyon live oak
QUDO	QUERCUS	DOUGLASII	-0-	Blue oak
QUDU-2	QUERCUS	DUMOSA	-0-	California scrub oak
QUEN-1	QUERCUS	ENGELMANNII	-0-	Engelmann oak
QUGA-2	QUERCUS	GARRYANA	-0-	Oregon oak, garry oak
QUGAB	QUERCUS	GARRYANA	breweri	Brewer oak
QUKE	QUERCUS	KELLOGGII	-0-	California black oak
QULO	QUERCUS	LOBATA	-0-	Valley oak
QUMO	QUERCUS	MOREHUS	x quwiw & qukek	Oracle oak
QUVA	QUERCUS	VACCINIFOLIA	-0-	Huckleberry oak
QUWI	QUERCUS	WISLIZENII	-0-	Interior live oak
RHCA-2	RHAMNUS	CALIFORNICA	-0-	California coffeeberry
RHCR	RHAMNUS	CROCEA	-0-	Redberry
RHDI	RHUS	DIVERSILOBA	-0-	Poison-oak
RHLA	RHUS	LAURINA	-0-	Laurel sumac
RHRU	RHAMNUS	RUBRA	-0-	Sierra coffeeberry
RHTR	RHUS	TRILOBATA	-0-	Squaw bush
RIAU	RIBES	AUREUM	-0-	Golden currant
RIB	RIBES	SP. WOODY SHRUB	-0-	Gooseberry, currant
RICA-1	RIBES	CALIFORNICUM	-0-	Hillside gooseberry
RIMA-1	RIBES	MALVACEUM	-0-	Chaparral currant
RIQU	RIBES	QUERCETORUM	-0-	Foothill gooseberry
RIRO	RIBES	ROEZLII	-0-	Sierra gooseberry
RISA	RIBES	SANGUINEUM	-0-	Red flowering currant
RISP	RIBES	SPECIOSUM	-0-	Fuchsia-flower gooseberry
ROCA-1	ROSA	CALIFORNICA	-0-	California wild rose
ROGY	ROSA	GYMNOCARPA	-0-	Wood rose
ROS	ROSA	SP. WOODY SHRUB	-0-	Rose
RUPA-2	RUBUS	PARVIFLORUS	-0-	Western thimbleberry
RUVI-1	RUMEX	VIOLASCENS	-0-	-0-
RUVI_2	RUBUS	SP. SHRUB	-0-	Blackberry
SAAP-1	SALVIA	APIANA	-0-	White sage
SACA-4	SAMBUCUS	CAERULEA	-0-	Mountain blue elderberry
SAL11	SALIX	SP. WOODY SHRUB	-0-	Willow
SALE-2	SALVIA	LEUCOPHYLLA	-0-	Purple sage
SAME-4	SALVIA	MELLIFERA	-0-	Black sage
SAME-6	SAMBUCUS	MEXICANA	-0-	Blue elderberry
SASP	SALVIA	SPATHACEA	-0-	Pitcher sage
SESE-2	SEQUOIA	SEMPERVIRENS	-0-	Coast redwood
STOFC	STYRAX	OFFICINALIS	californica	California storax
SYMO	SYMPHORICARPOS	MOLLIS	-0-	Creeping snowberry
SYRI	SYMPHORICARPOS	RIVULARIS	-0-	Upright snowberry
UMCA-1	UMBELLULARIA	CALIFORNICA	-0-	California laurel, bay tree
VAOV	VACCINIUM	OVATUM	-0-	California huckleberry
XYBI	XYLOCOCCUS	BICOLOR	-0-	Mission manzanita
YUWH	YUCCA	WHIPPLEI	-0-	Chaparral yucca

Appendix 3: Vegetation/environmental attributes used in classification of hardwood rangeland cover types.

PLOTID:	Number assigned to plot in database
QUAD:	Taken from USGS topographic map, Scale 1:62500
MAPLOC:	Based on location from vegetation type map
CTY:	County where plot was located
TOWN:	Township of sample plot (USGS topographic map)
RANGE:	Range of sample plot (USGS topographic map)
SECT:	Section of sample plot (USGS topographic map)
ELEV:	Elevation to the nearest figure allowed by the topographic map
ASPECT:	Exposure as N. NW, W, etc (using 8 points of the compass)
SLOPE:	Slope estimated to the nearest 5 percent (ocular estimation)
PARENT:	Parent material of soil
PERM:	Permeability or penetrability of water flow through the soil
DEPTH:	Soil depth (in feet). Usually indicated by road and trail cuts or deep gullies in the vicinity. Not intended to be rigidly interpreted.
PLDATE:	Date of sampling of plot
BURNYR:	Year of last burn from previous data on the area
SITE:	Site index estimated for plots with timber
LITTER:	Percent of ground surface covered by dead plant material such as leaves
SOIL:	Percent of ground surface that is bare soil
COVER:	Absolute cover from line point transects, including bare ground. Trees expressed as basal area, understory expressed as percent cover by species.

Appendix 3 (cont.): Vegetation/environmental attributes.

County Codes

001 Alameda
003 Alpine
005 Amador
007 Butte
009 Calaveras
011 Colusa
013 Contra Costa
015 Del Norte
017 El Dorado
019 Fresno
021 Glenn
023 Humboldt
025 Imperial
027 Inyo
029 Kern
031 Kings
033 Lake
035 Lassen
037 Los Angeles
039 Madera
041 Marin
043 Mariposa
045 Mendocino
047 Merced
049 Modoc
051 Mono
053 Monterey
055 Napa
057 Nevada
059 Orange
061 Placer
063 Plumas
065 Riverside
067 Sacramento
073 San Diego
071 San Bernardino
077 San Joaquin
069 San Benito
079 San Luis Obispo
081 San Mateo
075 San Francisco
083 Santa Barbara
085 Santa Clara
087 Santa Cruz
089 Shasta
091 Sierra
093 Siskyou
095 Solano
097 Sonoma
099 Stanislaus
101 Sutter
103 Tehama
105 Trinity
107 Tulare
109 Tuolumne
111 Ventura
113 Yolo
115 Yuba

Appendix 3 (cont.): Vegetation/environmental attributes.

Topography

Code	Equivalent
1	Flat ridgetop or mountain peak
2	Convex narrow ridgetop or peak
3	Upper 1/3 slope
4	Middle 1/3 slope
5	Lower 1/3 slope
6	Canyon bottom
7	Flat bench, terrace flat
8	Flat broad or alluvial flat
9	Flat swamp or wet flat
0	No data

Slope (%)

Code	Equivalent
1	0-15
2	16-25
3	26-35
4	36-45
5	46-55
6	56-65
7	66-75
8	76-85
9	86+
0	No data

Aspect (exposure)

Code	Equivalent
1	North
2	Northeast
3	East
4	Southeast
5	South
6	Southwest
7	West
8	Northwest
9	Level
0	No data

Appendix 3 (cont.): Vegetation/environmental attributes.

Soil Texture (Text)

Code	Equivalent
s	Sandy
l	Loam
si	Silt
c	Clay
a	Adobe
r	Rocky
g	Gravelly
nd	No data

Soil Drainage (Drain)

Code	Equivalent
1	Excess
2	Sl. excess
3	Good
4	Moderate
5	Poor
9	No data

Soil Depth (Depth)

Code	Equivalent
1	Shallow <1'
2	Medium 1-3'
3	Deep >3'
0	No data

Surface stoniness and Exposed Bedrock

Code	Equivalent
1	<2
2	2-10
3	11-24
4	25-50
5	51-75
6	75+
9	No data

Soil Permeability (Perm)
(Vtm equivalents)

Code	Equivalent
1	Rapid (easy)
2	Moderately rapid
3	Moderate (medium)
4	Moderately slow (difficult)
5	Slow (impenetrable)
9	No data

Appendix 2 (cont.): Vegetation/environmental attributes.

Parent Material (Parent)

Code	Equivalent
100	Igneous Intrusive
110	Granitic (siliceous) rocks
120	Mafic rocks,
130	Ultramafic rocks, pyroxemite, periodotite, dunite
200	Igneous Extrusive Flow Rocks
201	Rhyolitic Lava -rhyolite, dacite
202	Mafic Lava - andesite, basalt
203	Rhyolitic Mudflow, or Siliceous lahar
204	Andesitic Mudflow. or Mafic lahar
300	Igneous Extrusive, Pyroclastic Rocks
301	Agglomerative
302	CInders, mafic
303	Pumice, siliceous cinders
304	Rhyolitic Ash
305	Andesitic Ash
306	Rhyolitic Tuff
307	Andesitic Tuff
308	Rhyolitic Tuff-Breccia
309	Andesitic Tuff-Breccia
400	Metamorphic Rocks
401	Phyllite
402	Slate
403	Schist, distinctly foliated
404	Schistose Rock
405	Semischist, indistinctly foliate
406	Gneiss
407	Granulite
408	Serpentine
409	Greenstone
410	Hornfels
411	Marble
412	Metaconglomerate
413	Quartzite
500	Sedimentary Rocks, Soft
501	Sandstone
502	Siltstone
503	Argillite
504	Mudstone
505	Conglomerate
506	Chalk
507	Diatomite
508	Muck
509	Peat
510	Marl
511	Alluvium
600	Sedimentary Rocks, Hard
601	Sandstone
602	Shale
603	Conglomerate
604	Chert
605	Limestone
606	Dolomite
607	Travertine
608	Gypsum
699	Mixed
700	No data