

To: Ruth Porter
From: Carol Zabel *CZ*
Date: February 10, 2003
Subject: JR oaks and hybrid oaks

At your request I am writing what I know about mostly the hybrid oaks at JRBP.

The Winter 1993 newsletter VIEWS, text and map, shows the location of the canyon oak, *Quercus chrysolepis*, grove, on lower trail 9. They are in "Buckeye Alley", north side of trail. It also shows the location of the interior live oak, *Q. wislizeni* var. *frutescens*, grove, on trail 9, the only locations we know of at JR. The location of the hybrid blue and valley oaks, *Q. douglasii* x *Q. lobata* is also shown, on upper 9. I put this as sector 33-2A in the sector map book. Copy of VIEW attached. The map was based at least in part on Patti Poindexter's docent project sometime in the 1980's.

There is a possible second location for blue-valley hybrid oak. I led a docent walk in 1988 or 1989. Herb Dengler and a few of the group walked over to a group of blue oaks off trail 3 near the intersection of road F to look at what he said was a blue-valley oak hybrid. I looked for this oak spring 2001, could not find. This summer I plan to collect a branch and leaves from the known one on trail 9, and with it try to find the one on trail 3.

Thomas' Flora lists *Q. dumosa*, scrub oak, now *Q. berberidifolia* as being found at Jasper Ridge. Ann Lambrecht's notes from Herb's training in March, 1975 mentions that Herb showed the group "*Q. dumosa*." It was somewhere off lower road E between the road and the lake, and was about 20 feet high. We have no information on the hybrid scrub and valley oak in your list.

The hybrid oak, oracle oak, *Q. kelloggii* x *Q. wislizeni*, called *Q. x morehus* in Thomas' Flora and the Duncan Porter report, has, as far as I know, only one herbarium specimen, collected by Fisher, March 19, 1898 on "Jasper Ridge" (Duncan Porter report). No known location where it might have grown.

There is no known location for *Q. wislizeni* var. *wislizeni* today that I know of. Herb Dengler did not list var. *wislizeni* in his plant list supplied to Ann Lambrecht and the early docent training class, only var. *frutescens*. See attachment. The Duncan Porter report lists only var. *frutescens*. The three slides marked interior live oak, *Q. wislizeni* var. *wislizeni* in the Ruth Porter-Toni Corelli first vascular plant list of March 13, 1998, may possibly be of var. *frutescens*.

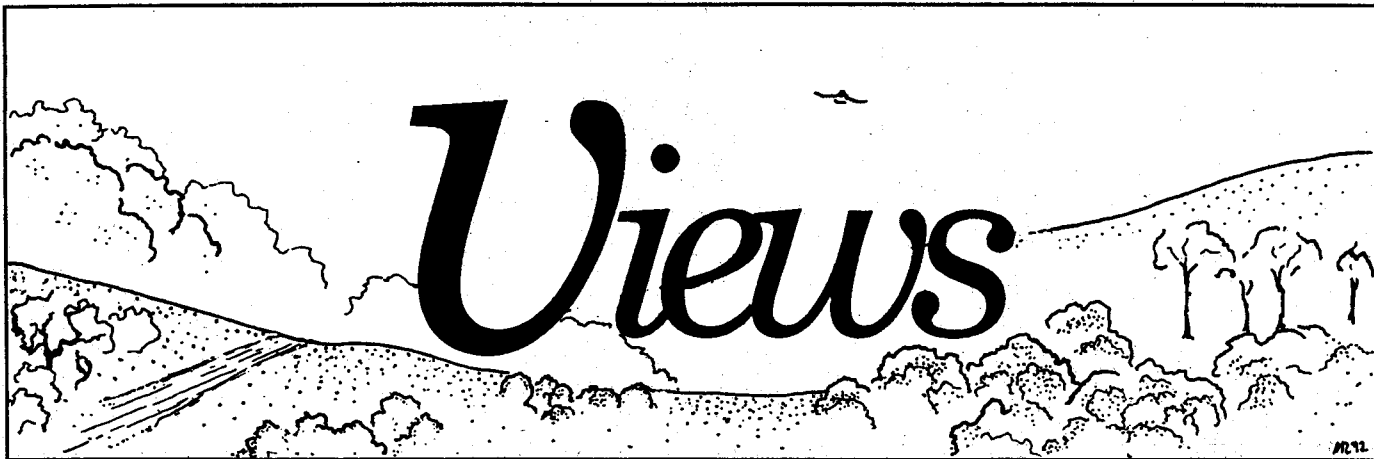
The second vascular plant list, July 9, 2001, shows one each herbarium specimen, teaching and reserve, for var. *wislizeni*, with question marks for var. *frutescens*. Maybe these need another look.

Still on the subject of *Q. wislizeni*, there are three shrubs on trail c, formerly known as Herb's class trail, which in my early notes of what Herb had told us, were hybrids of *Q. agrifolia* var. *agrifolia* and *Q. wislizeni* var. *frutescens*. The shrubs are about 12 feet tall and are found on the north side of the trail, 150-200? feet (have not stepped it off) after the trees start on both sides. The trail starts from the intersection with trails 9 and 10. Probably sector 33-1A, upper left corner. If not a hybrid, then shrubs are probably *Q. wislizeni* var. *frutescens*. These need work from someone. I have a small collection of these leaves from 2001. There are no "tufts of hair in the axils of the veins abaxially," also known as "hairy armpits."

The hybrid blue and leather, *Q. douglasii* x *durata*, is also in the same VIEW, p. 10. It is on trail 15, north side of trail. I have in my notes that it is in sector 34-3B. Patti Poindexter's sheet with captions matching her slides has a typo; it shows trail 13 instead of 15 for the blue-leather oak. Copy attached.

Last but not least, the hybrid on lower trail 5. There are still no acorns. Tree appears semi-deciduous (my notes 1/30/02 and 1/3/03). Ann and I collected fallen leaves and gave them to you and Toni 10/24/01. I have reexamined the leaves I collected for myself at the same time, and still find hairs in the axils, leading me to believe this must be a California black oak - coast live oak hybrid, *Q. kelloggii* x *Q. agrifolia* var. *a*. This is what Patti P. reported in her docent project. I'm sure she must have had some help from Herb and probably Dr. Thomas as well as some other docents. Location printed in my Trail News from Carol Zabel in Field Notes October 2001. Copy attached. This would be sector 13, probably the intersection of 4, 5, D, E. We have GPSed it but are not even into Arcvue yet.

cc: Toni Corelli
Ann Lambrecht



NEWSLETTER OF THE STANFORD UNIVERSITY JASPER RIDGE BIOLOGICAL PRESERVE DOCENT PROGRAM

WINTER 1993
OAKS ISSUE

◆
IN THIS ISSUE...

Jasper Ridge Oak Walk
by Anne Rosenthal...p.1

**Oak Restoration Near the
Docent Center**
by Anne Rosenthal...p.6

**Acorns and Prehistory on
Jasper Ridge**
by Julia E. Hammett...p.6

**The JRBP Teaching and
Reference Collection of
Vascular Plants**
by John Hunter Thomas...p.7

**Notes on the Blue Oak Wood-
land**
by Elizabeth Rush...p.8

Oak Moths
by Irene Brown...p.9

Jasper Ridge Oak Walk

◆
Anne Rosenthal

Seven species of oak grow on Jasper Ridge—valley oak, blue oak, black oak, coast live oak, interior live oak, canyon oak, and leather oak—in addition to several hybrids. The oak walk described below was designed and information provided by Ed Fryer, Monika Björkman, Anne Rosenthal, Patti Poindexter, Bill Kirsher, Winkie Lennihan, and Herb Dengler. The route takes you through three oak groves—valley oak, coast live oak, and blue oak—and then sidetracks to a group of magnificent leather oaks. The walk continues on the Chaparral Trail, where all seven oaks, as well as a blue oak/valley oak hybrid, occur. Temporary signs placed along the route mark the specimens described.

Since species descriptions are readily available in the recently published *Oaks of California* by Bruce Pavlik *et al.*, as well as in *Flora of the Santa Cruz Mountains* by John Thomas and the new *Jepson Manual*, we have not attempted to give complete species descriptions here. All three books are available for your reference in the Docent Center library.

VOgr Valley Oak (*Quercus lobata*) Grove Near the Docent Center

This grove illustrates many important features of and issues related to valley oak groves. The grove itself is aging, and until the recent restoration effort, seedlings were not successful. (See *Oak Restoration Near the Docent Center* on page 6.) The living trees house many wildlife species, including White-breasted Nuthatches and Western Bluebirds. The dead trees are valuable wildlife habitat, often serving as acorn woodpecker granaries. Note the granary in the dead valley oak still standing in the Docent Center grove. The trees bear many lichens, including the hanging species *Ramalina menziesii*, commonly mislabeled Spanish moss by tour participants. Visitors usually ask about the mistletoe, a hemiparasitic plant scattered in the treetops, which provides berries for Western Bluebirds and several other species during the winter.

Distinctive characteristics of these trees include the bark, fissured into a checkered pattern; the smaller branches, which tend to droop or “weep,” sometimes reaching the ground; and the lobed leaves.

CLOgr Coast Live Oak (*Q. agrifolia*) Grove Near the Hillside Lab

(Directions: Cross the dam and turn right. About 100 yards down the trail, turn left on the trail marked “To 8.” At trail 8, turn left again. At the junction > page 4

OAK WALK, continued from page 1

with trail 7, take a sharp right. Continue on trail 7 to the top of the hill. When you reach the fire road, the Hillside Lab is directly ahead.)

This grove was a favorite for the Shack Riders equestrian group; their "headquarters" was here. Hooks for tying horses are still buried in the bark of these trees.

Coast live oaks dominate the hillside above San Francisquito Creek, both in terms of numbers and actual cover. Note the sparseness of the understory: the dense canopies block light, making it difficult for plants to gain a foothold underneath. Tannin in the decaying leaves may be an additional factor. This species produces numerous acorns, sometimes resembling "gravel on a road." A distinctive characteristic of the leaves, termed "hairy armpits" in outdoor education vernacular, is described botanically by John Thomas in his *Flora of the Santa Cruz Mountains* as "tufts of hair in the axils of the veins abaxially."

LrgLO Large Leather Oaks (*Q. durata*)

(Directions: Continue straight on trail 7 past the lab until you reach trail 6. Turn right onto trail 6, which takes you to the fire road at the edge of the blue oak woodland. Turn right on the fire road and continue uphill about 50 yards. Turn onto the unmarked trail to your left.)

Note: Please leave this small grove of leather oaks intact; refrain from trampling through the understory.

Herb Dengler believes this to be some of the largest specimens of leather oak on the Preserve. Their location on the crest of a north-facing slope may be advantageous.

BOWd Blue Oak (*Q. douglasi*) Woodland

(Directions: Backtrack down the fire road to trail 4. Take a left onto trail 4.)

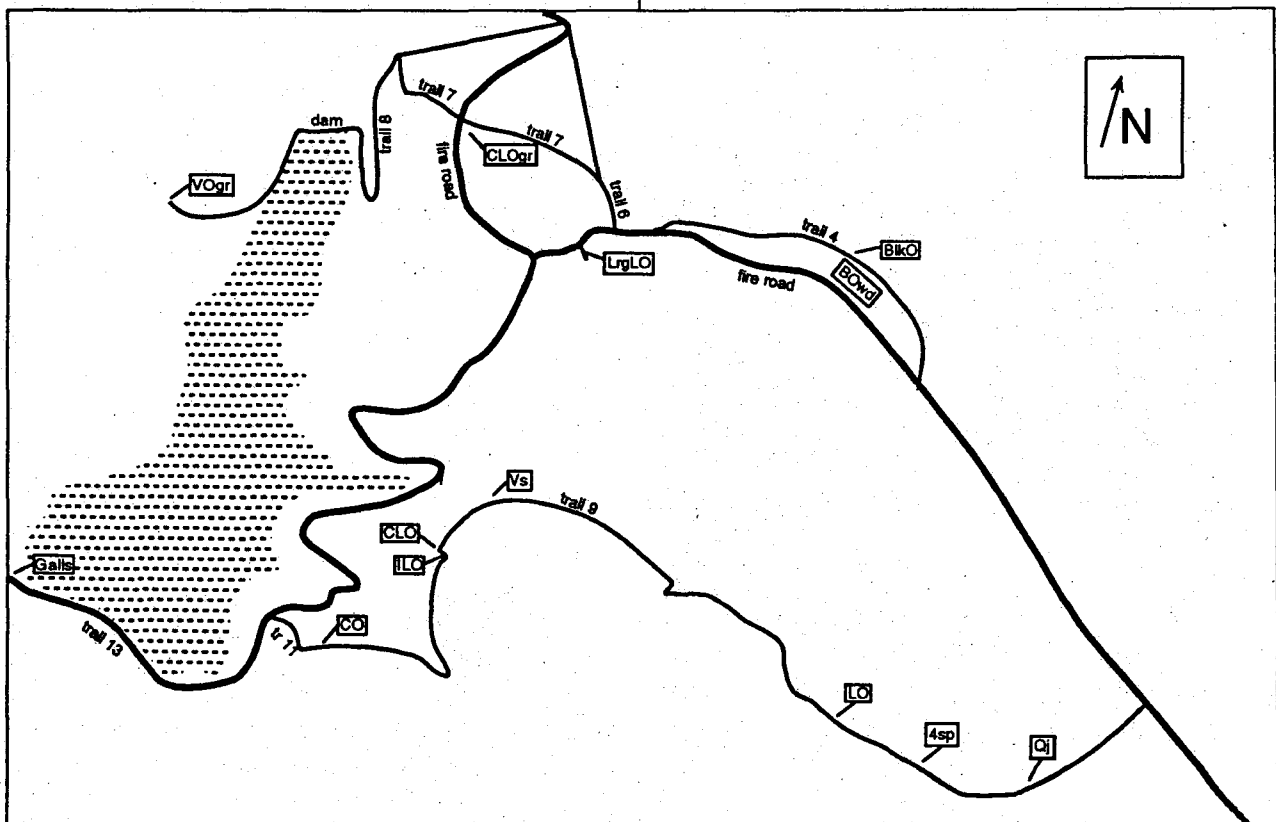
This woodland typifies many on the Peninsula—older, dying trees with few young trees below. (See *Notes on the Blue Oak Woodland* on page 8.) Within the woodland, coast live oaks are replacing the blue oaks as they die off. When cattle grazing on the ridge was halted in 1960, the blue oaks colonized the bordering grassland. However, browsing by deer has stunted the growth of these seedlings.

The understory is lush and more complex than that of the live oak and valley oak groves seen earlier. During summer, watch for Blue-gray Gnatcatchers, which nest in the woodland.

These trees probably represent secondary growth. The woodland was most likely cut for fuel at the time the dam was constructed, about one hundred years ago. We do not, however, have a concrete historical record of such an event.

BlkO Black Oaks (*Q. kelloggii*)

(Directions: About the midpoint of trail 4, you will come on a group of black oaks, which continue into the meadow near the end of trail 4.)



The black oaks can be readily distinguished from the blue oaks by their leaves. Black oak leaves are lobed, with each lobe ending in a bristle or "point." Black oak acorns are high in fat.

QJ *Q. totonensis*, a cross between Blue Oak and Valley Oak

(Directions: When you reach the fire road, turn left and continue along the road until you reach trail 9. Turn right. Continue on trail 9, passing the turnoff to trail 10. About 200 yards past the turnoff, look for three small signs to the right of the trail.)

The hybrid has characteristics of both blue oaks and valley oaks. The leaves are intermediate between the moderately lobed blue oak leaves and the more deeply lobed leaves of the valley oak. The limbs dip towards the ground somewhat, giving the "weeping branch" appearance typical of valley oaks. Apple galls, usually found on valley oaks are present on the tree. The twigs are not as finely divided as those of blue oak, nor is the bark as deeply furrowed in narrow grooves. The hybrid can be compared to the magnificent blue oak specimen located approximately 100 yards in back of the hybrid.

4sp **Four Oak Species in Proximity**

(Directions: Continue on trail 9 approximately 150 yards to the crest of the hill. The trees are to the right of the trail.)

Look for signs identifying specimens of valley oak, coast live oak, blue oak and black oak. This is a good spot to note differences between them.

LO **Leather Oak Stand**

(Directions: Continue on trail 9 into the chaparral. About 50 feet past a large live oak is the stand of leather oak. If you pass Coyote Howl Hill—a bald spot in the chaparral—you have gone too far.)

Since these trees grow very slowly, they are probably quite old; in fact, they may be some of the oldest trees on the Preserve. Look for strawberry galls (pictured on the front of Russo's *Plant Galls of the California Region*)—a blue plastic tie marks a spot where several are located. Leather oaks are usually associated with serpentine soils; serpentine rocks are probably not far underneath.

Typically, leather oaks bear heavily. Herb Dengler notes that large leather oaks are often subject to mistletoe invasion—the dying mistletoe appears golden and can be spotted from a distance.

Vs **Views of Coast Live Oak and Valley Oak**

(Directions: Keep going down the hill past the jog in trail 9. When the lake comes into view, stop under the shade of the California bay-laurel whose branches arch over the trail.)

This is a good vantage point to observe the shapes of trees you have just studied. Note the coast live oaks protruding from the chaparral across the canyon to your right. Further away, on the far side of the lake, stately valley oaks grace the grasslands near the Searsville entrance.

CLO **Magnificent Coast Live Oak**

(Directions: Further down the trail you come to an extremely large live oak on the right side of the trail. Immediately after the tree, the trail turns left.)

This weathered survivor is quite large, especially considering its location in a hillside of chaparral. Note the numerous

sapsucker holes on limbs near the trail. Herb Dengler mentions that the bark of this oak is smoother than that of other oak species, and thus the vascular tissue is closer to the surface, attracting sapsuckers.

ILO **Interior Live Oak (*Q. wislizenii* var. *frutescens*) Grove**

(Directions: Just a few feet further down the trail is a stand of interior live oak.)



Quercus agrifolia (Coast Live Oak)
by Anne Warren

THE JRBP TEACHING AND REFERENCE COLLECTION OF VASCULAR PLANTS

John Hunter Thomas

Soon after Stanford University opened its doors to students on October 1, 1891, the region then known as Searsville Ridge, now known as the Jasper Ridge Biological Preserve, attracted students and faculty as an ideal area to study the flora and fauna. Except for a few class notes (William R. Dudley, the presumed author, *Notes on Local Trees and Shrubs*, Leaflets I-III, no date) no systematic survey of Jasper Ridge vascular plants was carried out until 1935 when Martha Springer wrote her A.M. thesis on the area. In 1947, John Carter Moer wrote another thesis on the area, which was an ecological and taxonomic survey of the spermatophytes. A third thesis was written in 1962 by Duncan McNair Porter, who compiled a third list of plants based on the two theses cited above, old specimens in the Dudley Herbarium, and citations in my *Flora of the Santa Cruz Mountains of California*.

A disparity in the number of species referred to in the theses is due to the changes in the Preserve boundaries, possible extinctions, inadequate collecting, and year-to-year variation in climate. Interestingly, neither Springer nor Moer included ferns and fern allies.

I have been collecting vascular plants in the Preserve since about 1960 and have made at least 2000 collections at different seasons of the year. My purpose was and is to write still another list of plants in the Preserve, hopefully with keys. I estimate that there are about 600 species, subspecies, and varieties distributed in nearly 100 families in the Preserve.

Biological preserves and field stations need floras and faunas that can with effort be used by anyone. But most do not have them! Thanks to a very generous gift to the Jasper Ridge Biological Preserve, it was possible for me to go through most of my Preserve collections last summer, and about 900 specimens for the Jasper Ridge Biological Preserve collection were mounted by Angela K. Kalmer, now a Stanford junior in Biological Sciences. In addition, another 1000 or so specimens were mounted for the Dudley Herbarium of Stanford University, as part of the permanent record of Preserve plants.

Each herbarium sheet for the Jasper Ridge collection will have a label, a map of the Preserve showing the location where the plant was collected, and a tag reading as follows: "Jasper Ridge Biological Preserve Teaching and Reference Collection of Vascular Plants." And the collection is precisely that—a collection for teaching and reference. Since it is not a research collection (as is the Dudley Herbarium), specimens in it should not be cited and additions to it should be made only to fill gaps. There are a number of labels still to be typed, but we are well on our way.◆

OAK WALK, *continued from page 5*

The leaf of the interior live oak is generally flat, with a straight midrib. Unlike coast live oak leaves, the leaves of the interior live oak do not have tufts of hairs in the axils of the veins on the undersides of the leaves. The acorns take two years to mature—you can see small, immature acorns on the tree. This variety is the "chaparral" form, and John Thomas notes that it is smaller than the variety found on "wooded slopes and in lowlands."

CO Canyon Oak (*Q. cbrysolepis*) Grove

(Directions: Continue along the trail, crossing the creek. Note that the trail has been changed recently; it now goes slightly uphill to cross the stream. A redberry (*Rhamnus crocea*) bush is growing in the creek at the beginning of the grove. If you reach the point where the trail diverges from the creek, you have just passed the grove.)

These canyon oaks are far below their usual elevation, according to Herb Dengler, and thus are in a marginal location. Unlike the interior live oaks described above, these are not a chaparral variety. Canyon oak leaves vary extensively—not only within one tree, or on one branch, but within a single leaf: one side of the leaf may be entire, while the other side is toothed. New leaves have golden powder on the underside.

Canyon oak is sometimes called "Gold-cup Oak" for the shallow, silk-lined acorn cups. "Maul Oak" is another common name, derived from its use for mauls because the wood is so hard. Early settlers also used the wood for axles and wagon wheels.

Galls Small Valley Oak Well Parasitized by the California Gallfly, *Andricus californicus*

(Directions: When you reach the meadow you will see a small sign "Trailhead Moved." Since the trail to the lake now goes to the right, rather than straight ahead, turn right onto trail 11. Head back to the Docent Center on trail 13, crossing both the small and large footbridges. On the far side of the large footbridge is a small valley oak.)

This small oak is covered with the apple galls induced by the California gallfly. Since the oak is so close to the ground, you can examine the galls easily. Young galls have a green or red apple-like appearance whereas older galls have a bleached tan appearance and are often covered with a black, sooty mold. The galls may remain on the tree for several seasons before falling off. According to Ronald A. Russo in the 1979 edition of *Plant Galls of the California Region*, older galls may yield a variety of insects, some feeding on the gall tissue (inquilines), and others parasitizing gall inhabitants. On older galls, look for tiny holes where insects have exited, as well as larger holes where woodpeckers have drilled.◆

OAK MOTHS, *continued from page 9*

went on to teach entomology—but he gradually switched his interests from insects to fish. When I knew him at San Jose State, he was teaching in both fields; later he worked in fishery biology.

To my knowledge, neither he nor anyone else has solved the mysteries of the boom and bust populations of the oak moth. The defoliated trees seem unharmed and leaf out again. According to Essig, the winter brood survives as follows: some eggs laid by late emerging adults do not hatch until the following spring, others hatch and larvae feed slowly during the winter on live oaks. Only eggs survive the winter on the leafless deciduous oaks. But some are ready to hatch and feed when new growth appears.

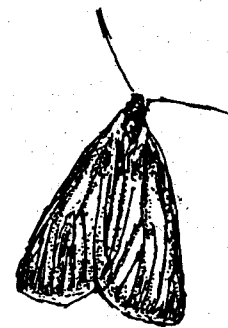
According to Essig, the larvae are favorite food of the spined predaceous bug, *Podisus maculiventris* (Say), but Harville found minor predation by this bug. Harville wrote that the larvae were untouched by birds; *Oaks of California* reports that Western Bluebirds and Nuttall's Woodpeckers pick the larvae off leaves. Oaks also reports that white-footed mice consume the pupae. I have seen Scrub Jays capture and eat the adults, and I sometimes find *Phryganidia* wings among butterfly wings dropped on the ground during episodes of bird predation on the Chalcedon checkerspot, *Euphydryas chalcedona*. These reports seem contradictory to Powell and Hogue's statement that "All stages" of *Phryganidia* are "conspicuous and probably are distasteful to birds and thereby protected."

Whatever predation occurs, it does not begin to reduce oak moths during a population explosion. In 1926 Essig recommended controlling the oak worm by spraying with arsenate of lead. For many years that permanent, environmentally destructive, and now illegal pesticide was used widely on local oaks. But, as reported in *Oaks of California*, "...foraging by the caterpillars rarely kills an oak." Yet Olkowski *et al.* writing in the June 1976 issue of *Bioscience* include *Phryganidia* feeding on *Quercus spp.* in their table of major insect problems on street trees in Berkeley. These authors state that the first move away from heavy reliance on pesticides in Berkeley came with the use of *Bacillus thuringiensis* Berliner (B.T.) for control of the oak worm. B.T. is a microbial agent; perhaps a strain of it caused the "virulent wilt disease" described by Harville.

Efforts to control the oak worm are not necessary to save the trees—they are for the convenience of people. The oaks near the faculty club on campus are a case in point. Various seminars have lunch at picnic tables under these trees. During defoliation episodes, larval frass drops like rain, and larvae descend on silken threads. Frass in your lunch, oak worms in your hair—disgusting. Many suburban landholders still have their oaks sprayed, now with B.T., or at least with a short-lived insecticide.

Clearly there is still much to learn about this insect. Outbreaks, crashes, and population cycles remain "hot topics" in biology. I have heard many speculations on the coevolutionary relationships between the oaks and moths. According to Pamela Muick, speaking at the Seventh Annual Jasper Ridge Biological Preserve Memorial Lecture in 1990, oak moth cycles may coincide with drought, and their "pruning" may help the trees survive. Others speculate that the trees put ever more tannin and other toxic compounds into their leaves as a protection against the moths. Are the leaves that grow out after defoliation more toxic than the first set (as happens with some eastern oaks and a different moth)? Some suggest that the moths benefit the trees by helping start the breakdown process that releases minerals bound up in the slow-to-decay leathery leaves.

When will another graduate student take on the challenge of studying the California oak moth?◆



Oak Moth
by Irene Brown

~~LEATHER OAK BEEF OAK HYBRID~~

An extremely unusual hybrid, *Quercus durata* x *Q. douglasii*, has been located at Jasper Ridge by Herb Dengler. In a May 12, 1992 letter addressed to Herb, John M. Tucker, Professor Emeritus of Biological Sciences at University of California, Davis, wrote, "This is the first instance I have ever heard of hybridization between these two species." The semi-deciduous hybrid is a small tree with a narrow horizontal trunk extending about 4 m. Structures intermediate between the two species include the hairs on the lower leaf surface. See the hybrid map in the Docent Center for the location.◆

OAK REFERENCES

Two important references on oaks are available in the Docent Center library. Remarkable not only for its spectacular photographs and lucid, vivid text, *Oaks of California* by Pavlik *et al.* is a treasury of accurate, well-organized information. Also available is the July, 1990 issue of *Fremontia*, a special issue commemorating the Year of the Oak.◆

A List of the VASCULAR PLANTS
of
JASPER RIDGE BIOLOGICAL PRESERVE

*for Ann
from Herb
1975*

Fagaceae. Oak or Beech Family

- Quercus kelloggii Newb. California Black Oak
- Q. agrifolia Nee. California Live Oak, Encina
- Q. wislizenii A. DC. var. frutescens Engelm.
Interior Live Oak
- Q. douglasii H. & A. Blue Oak
- Q. lobata Nee. Valley Oak, Roble
- Q. chrysolepis Liebm. Maul Oak, Golden Oak
- Q. durata Jeps. Leather Oak
- Hybrid Oaks:
- Q. agrifolia x kelloggii
- Q. " x wislizenii
- Q. douglasii x lobata
- Q. " x durata

Urticaceae. Nettle Family

- Urtica holosericea Nutt. Hoary Nettle
- Hesperocnide tenella Torr. Western Nettle

Loranthaceae. Mistletoe Family

- Phoradendron villosum Nutt. Oak Mistletoe

Polygonaceae. Buckwheat Family

- Pterostegia drymarioides F. & M.
- Chorizanthe diffusa Benth. Diffuse Spine-flower
- Eriogonum nudum Dougl. ex Benth. Tibinagua
- E. vimineum Dougl. ex Benth. Wicker Eriogonum
- Rumex acetosella L. Sheep Sorrel
- R. salicifolius Weinm. Willow-leaved Dock
- R. transitorius Rech. f.
- R. crispus L. Curly or Yellow Dock
- R. conglomeratus Murr. Green Dock
- R. fueginus Philippi. Golden Dock
- R. persicarioides L. Golden Dock
- R. pulcher L. Fiddle Dock
- R. obtusifolius L. Bitter Dock

TRAIL NEWS FROM CAROL ZABEL

Twelve or thirteen years ago, Mabel Crittendon led a docent walk to the San Francisquito Creek bed off of Trail 1. She showed us one plant of Dudley's Shield Fern, *Polystichum dudleyi*. Since I started "plant-hunting" in 1998, I have been wanting to go back to see if this fern still grew in JRBP. This month, Ann Lambrecht and I went down in the dry creek and found ten of these ferns. I'm not going to give directions, not because it is a secret, but because it is so hard to get down to the creek. If there are people who really want to see this fern, call me and I will give you directions.

Years ago at JRBP, I learned that there was supposed to be a hybrid oak on lower Trail 5, but I had never looked for it. Last winter, Ann Lambrecht and I believed we had found it, from leaves that had fallen in our path. I went out again to look for this tree when the leaves started falling in early September. By the time you read this, it may be too late for any leaves to be found, but if you have any interest and are on Trail 5, you can at least find the tree.

Directions are as follows: From the switchback on lower Trail 5, about 150 feet down, on the creek side, is a leaning Valley Oak, *Quercus lobata*. It grows up in an arc and has Hairy Honeysuckle, *Lonicera hispidula var. vacillans* vines and Poison Oak vines growing up the trunk. The trail immediately below it drops down because of exposed roots and I am glad I have the leaning oak to lean on. The next oak down (another 25 feet) on the creek side, but ten feet away from the trail is the hybrid. If you walk down the trail a few feet, you can see that the tree has two trunks, starting three to four feet above the ground. If there are still leaves on the tree, you can look up with the sky as the background and see the outline of the leaves or you may find some on the trail.

This is maybe a hybrid of California Black Oak, *Quercus kelloggi* and Coast Live Oak, *Q. agrifolia var. agrifolia*. There are Black Oaks growing off of Trail 5 above this tree (watch the path for the leaves to compare) and Coast Live Oaks are found in many places in the Preserve. The leaves of the hybrid are not as deeply lobed as the Black Oak, but are bristle tipped. The undersides of some of the leaves appear to have hairs in the leaf axils, as the Coast Live Oak usually has (unscientifically sometimes referred to as "hairy armpits"). There is also the possibility that this is a hybrid of California Black Oak and Interior Live Oak, *Quercus wizlizeni*, which is in some books called "Oracle Oak". More information later.

Last year about Thanksgiving, a docent called inquiring about some flowers in bloom. Naturally, I had to check this out. Going in at Escobar Gate to the serpentine slope just before entering the Blue Oaks, *Quercus douglasii*, there were at least 50 plants of Wicker Buckwheat, *Eriogonum luteolum var. luteolum*. With small pink flowers, and the rest of the plant an orangey-brown color, they made quite a sight. The flowering time is unpredictable. In June, I received a small sample collected from serpentine on Trail b. On August 30th, I saw some in flower on the same slope as in 2000, and on Trail 15, in two different places, but all on serpentine. So if you are out walking near serpentine areas, take a look for this buckwheat.

Society of America, 2001 Annual Meeting, Abstracts with Programs – Geological Society of America; Vol. 33, No. 6; p. 228)

Oze, C.J., Fendorf, S.E., and Bird, D.K. 2001. "Paragenesis of chromium in serpentine soils: Stability of primary and authigenic Cr minerals". (ASA-CSSA-SSSA, 2001 Annual Meeting Abstracts).

You can view one of Chris' abstracts at:

http://gsa.confex.com/gsa/2001AM/finalprogram/abstract_22291.htm

TRAIL NEWS FROM CAROL ZABEL

In the last JRBP Field Notes, I wrote about the hybrid oak on lower Trail 5. There do seem to be hairs in the axils on the underside of the leaves, meaning a hybrid of coast live oak and California black oak, *Quercus agrifolia* var. *agrifolia* with *Q. kelloggii*, but it really takes the acorns to be certain. So I can put on my "To-Do" list for year 2002, to look for acorns, if any, from this tree.

A few weeks ago, Cindy Wilber and companions found on Trail 2 a broomrape, *Orobanche* sp. It has been seen by quite a few people by now, and was keyed by botanist Toni Corelli, along with Ann Lambrecht, to be Jepson's broomrape, *Orobanche californica* ssp. *jepsonii*. This plant, on Trail 2, was in the path about 80 feet east (NE? SE? I must start carrying a compass on these walks!) of a place where there is a cut tree limb with a white plastic stake used to mark Argentine ant nests, and also bird point count stake #26.

In 1999, there were two small patches of plants, which looked identical to this broom-rape, earlier in the fall, and at the cut tree limb/ant stake. They were not keyed to species at that time. These were not seen in 2000, (by me at least) since I was only at this site in early June and early July.

Another year and the flowering cycle begins again. The western leatherwood, *Dirca occidentalis*, often starts flowering in late December. Early in January, the hillside gooseberry, *Ribes californicum* var. *californicum*, shrubs start to flower. They are quite common in JRBP. Toward the end of January look for chaparral currant shrubs, *Ribes malvaceum* var. *malvaceum*. There are two or three plants up Trail 8 from the switchback just before the right hand curve, then about 15 feet upslope, somewhat hidden behind other shrubs. While at the switchback, look for striped coralroot, *Corallorhiza striata*, which has appeared here for several years, but usually a little later in the spring. There are three or four chaparral currants about 50 feet downhill from the intersection of roads D, E, and F, then 20 feet or so east. Also, another someplace on lower Trail 9, after going through what a few of us call "Buckeye Alley" and turning the corner to go through chaparral. While you are going through Buckeye Alley, look to the north a few feet, and find the small group of evergreen canyon live oaks, *Quercus chrysolepis*. Ann and I hope to start GPS'ing the "uncommon-in-JRBP plants" in January. **Happy Holidays!**



COLLECTED 12/00 AND 3/01
LOWER TRAILS HYBRID OAK CALIFORNIA BLACK OAK X COAST LIVE OAK ?

Patti Pounder's
Captions for her slide show

JASPER RIDGE OAKS

Black Oaks:

Q. agrifolia 1 leaf: tufts of hairs in axils, margins spiny
Coast Live Oak
evergreen toothed

2 bark: slightly furrowed, irregular patches,
branches too curved - not used for lumber,
good fuel

Q. kelloggii 3 leaf: jaggedly lobed, veins end in bristles
Black Oak

deciduous 4 bark: dark; too irregular for lumber, wood
used in mini-milling - Oroville; acorns -
high fat content

Q. wislizenii 5 scruffy specimen, on loop off of Trail 9
Interior Live Oak

evergreen 6 leaf: flat, lance-like, toothed to entire

7 tree found on Trail 9

White Oaks:

Q. douglasii 8 reniform shape, even crown, drier soil
Blue Oak

deciduous 9 leaf: blue-green, shallowly lobed, pubescent

10 bark: shallowly checked, roughness goes out
branches

Q. lobata 11 leaf: distinctly lobed; weeping, Spanish
Valley Oak
deciduous Roble, prefers deep loam and high water table

12 Pioneers "mush" oak - fence rotted in water,
cooperage - California wine

13 bark: thick cuboid checked, deep furrows,
flat ridges

Q. durata 14 found on serpentine and chert lenses (dome)
Leather Oak

evergreen 15 leaf: curved, pubescent

16 leaf

17 lichens

Intermediate Oaks:

Q. chrysolepis 18 wood tough - used as axels, wagon wheels,
Maul, Canyon Oak
best fuel in west

evergreen	19	atypical leaf, young, pubescent
	20	golden-leaf
Hybrids:		
Q. douglasii x Q. durata	21	Trail ^{TR 15} (13,) doesn't show vigor
	22	intermediate leaves
	23	nearby Blue Oak
	24	nearby Leather Oak
Q. lobata x Q. douglasii	25	Trail 9
	26	10
	27	galls - California gallfly
	28	on hilltop near Trail 9 and fireroad
Q. kelloggii x Q. agrifolia	29	shows no vigor
	30	near Trails 1, 2, and 5
	31	intermediate characteristics of leaf
Q. agrifolia x Q. wislizeni	32	mid-rib, parallel veins
	33	leaves toothed and entire
	34	
	35	leaves entire
Galls:		
valley Oak	36	Andricus californicus, detachable
	37	black soot mold
	38	integral
east Live Oak	39	integral
blue Oak	40	Neuroterus saltatorius, Jumping Oak Gall Wasp
leather Oak	41	Disholcaspis plumbella, Beaked Twig Gall Wasp
	42	central larval chamber
	43	can stay several years