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Bryophyte Survey on Newhall Ranch**

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Introduction

A species list was obtained from California Natural Diversity Database 2009 for those bryophytes (mosses, liverworts, and hornworts) considered within the context of California Environmental Quality Act documents for this project. A total of 30 bryophytes were evaluated.

List of Taxa

Of the 30 species for this analysis, each one has been observed both in the field and in the herbarium by the investigators. Therefore, we have a working knowledge of the habitats and distribution parameters for each of these species. Bryophytes compared to vascular plants have very specific micro-habitat requirements, and therefore, the distribution of bryophytes throughout California can be one of rather disjunct and widely-spaced occurrences, especially for taxa considered to be of conservation concern. Only four of the 30 species considered are even remotely possible in the project area (Doyle and Stotler 2006; Norris and Shevock 2004a; Sagar 2007; Sagar and Wilson 2007). These four species highlighted for this survey are viewed as coastal species. These taxa occur on soil over rock; none on tree trunks or rotten wood. They are:

Anomobryum julaceum

Schizymenium shevockii (now placed in the genus *Mielichhoferia*)

Tortula californica

Triquetrella californica

Twenty-six CNDDDB species were removed from further consideration since they all occur in habitats not present in the project area; for example, the other taxa are restricted to coniferous forests, alpine areas of the Cascades and Sierra Nevada or specialized geology (i.e. heavy metals, marbles, serpentine).

Anomobryum julaceum. The nearest occurrence is documented from Santa Barbara County along intermittent streamlets over bedrock. It can also occur seeps that dry out by early summer.

Mielichhoferia shevockii. This species occurs in widely disjunct populations with an occurrence in Monterey County and one in Riverside County near the San Diego County line. Other locations where it has been documented are the Sierra Nevada foothills with occurrences in Fresno, Mariposa and Tulare counties. Populations are generally at the base of rocks with some type of heavy metals such as copper, cobalt, or chromium. Of the four species to be surveyed on the Newhall Ranch, this is the least likely of the four to possibly be encountered.

Tortula californica. Populations occur on thin soil especially over rock. Documented populations are known from Santa Monica Mountains National Recreation Area, Ventura County and from Santa Rosa Island, Channel Islands National Park. This is the most likely species to locate within the Newhall Ranch area.

Triquetrella californica. This species occurs in coastal areas of remarkably disjunct populations. The only southern California population reported is from San Diego County. The next population to the north occurs on San Bruno Mountain, San Mateo County. This species prefers soil over rock or at the base of coastal sage scrub.

All four of these target species referenced above also have a color plate in the new field guide titled California Mosses (Malcolm et al. 2009).

None of these four species are currently documented to occur in Los Angeles County, however, based on review of the Vegetation Communities and Land Covers (Fig 4.5-11-A1 Newhall Ranch RMDP/SCP EIS/EIR), some selected vegetation types could possibly provide suitable habitat, and therefore this field review was initiated. In a historical perspective, Los Angeles County has been under surveyed because bryophyte collecting has received less attention compared to other counties in the state. This is due to a smaller percentage of public lands, more private land with restricted access, and a general lack of focus by the collectors.

Herbarium Review

As mentioned above, we have examined all of the CNDDDB bryophytes of conservation concern in herbaria (UC Berkeley and the California Academy of Sciences) so we are familiar with the gestalt of these taxa even when in a dry condition.

Habitat Assessment

Prior to the actual field review, we examined the vegetation maps and identified vegetation polygons that had the potential to contain bryophytes. One area of interest to us was the California Walnut Woodland (CWW) because no bryophyte collections in herbaria have been documented as occurring in the vegetation type.

We conducted the bryophyte survey on February 1, 2010. The timing of this survey was ideal; the winter rains were above average and the rains of a week ago made the bryophytes completely easy to observe since the plants were green and hydrated. All of the four taxa if present on the lands surveyed would have been readily observable. We began the survey by driving up onto the higher elevations of the property in the Santa Susana Mountains within Ventura County to provide a good overview of the area.



View from upper Salt Creek Canyon northward to Highway 126

It was along this upper section of Salt Creek Canyon in the higher elevations of the project area that had the best bryophyte cover and number of species observed. After a review of the vegetation maps, and much to our surprise, the project area has very few bryophytes. We attribute this to three main factors. The first is an overwhelming lack of exposed bedrock (with hard surfaces) in the project area thereby eliminating all taxa that require thin soil over rock. In fact, the most common mosses throughout California occurring on rocks in full sun are members of the genus *Grimmia*, however, we were unable to locate a single species of this genus in the project area. What the area has in abundance is highly erosive slopes of friable sandstone conglomerates forming clayey soils. This condition makes for the establishment of bryophyte cover as either unsuitable or of poor quality habitat. The second factor effecting bryophyte communities and their distribution in the project area is the long-term impacts of grazing and the introduction of numerous weedy species (especially in riparian areas), again eliminating potential for bryophyte cover. The third factor is the recurring pattern of wildland fire thereby providing habitat for only the most ruderal and early seral bryophytes, such as *Didymodon vinealis*, *Bryum argenteum* and *Funaria hygometrica*, all of which are common species in California. In the lower riparian areas with commonly intermittent flow, there is also a lack of large boulders. These creeks are frequently scoured clean with sediment pulses during storm events. No bryophytes were located in these lower stream channels since there was no stable habitat to colonize.



Long Canyon area with sandy eroded creek bottom

Additional areas have undergone various types of grading, agriculture, discing, large graded platforms, and road construction.



Grapevine Mesa with disturbed grading

The California Walnut Woodland did not produce any uncommon bryophytes and the tree trunk bark of this species is too smooth for moss establishment. During our field review, the following vegetation map units lacked bryophyte habitat. These include: alluvial scrub, arrow weed scrub, bulrush-cattail wetland, cismontane alkali marsh, coastal and fresh water marsh, developed, disturbed land, giant reed grassland, herbaceous wetlands, mulefat scrub, river wash, scrub tamarisk. Other vegetation units had the potential for bryophytes but most sites we observed had none.

One site in Middle Canyon with a fenced enclosure protecting a spring that has been highly altered with milk thistle, grape, blackberry, and stinging nettle. Only ruderal and common weedy bryophytes were encountered in this semi-wet area and no aquatic bryophytes were obtained in the stream flowing from the spring. This spring area is adjacent to the southern cottonwood-willow riparian hardwood forest of the Santa Clara River and this area again is highly altered during peaks flows providing no bryophyte habitat.



Overgrown vegetation at Middle Spring

Generally, hardwood tree trunks are good habitat for bryophytes. However, we examined several oaks (both deciduous and evergreen species) and found bryophytes nearly absent. We found only a small patch of *Orthotrichum* at the base of a tree trunk in rather bad condition. Most trunks have recently been burned and re-colonization of the bark habitat has not occurred. Yet, we did not see even the most common moss of oak woodlands in California, that being *Antitrichia californica* on tree trunks or on the primarily branches.

Humble and Long Canyons had poor habitat for bryophytes due to sandy substrate in the riparian corridor. On the north side of the project, in both Chiquito Canyon and San Martinez Grande Canyon, bryophyte cover was sparse because of thick vegetation and general lack of exposed bedrock. The Entrada portion of the project area appeared to have potential, especially for *Triquetrella californica*, but no bryophytes were encountered in this location.



Chaparral in the Entrada portion of the project

The areas with the best bryophyte cover occurred in the upper slopes of Salt Creek Canyon and tributaries, Santa Susana Mountains. Deep canyons (intermittent stream courses with walls covered with *Polypodium californicum*) offered the best site but these locations were exceedingly small on the landscape.



None of the bryophytes observed were special status, but rather, were widespread and common species. North-facing road cuts had some bryophyte cover. All in all, we observed two thallose liverworts and 13 mosses during the entire survey. For the size of the project area, this is a very depauperate bryophyte assemblage of species. All of the bryophytes encountered are common and widespread species.

During the field review selected bryophyte samples were collected. These were identified using several of the standard identification manuals and floras (several with line illustrations) including Flowers (1973); FNA (2007); Malcolm et al. (2009); Norris and Shevock (2004b); Sagar (2007); Sharp et al. (1994).

Bryophytes observed on the Newhall Ranch:

Thallose liverworts:

Asterella californica
Targionia hypophylla

Mosses:

Ancolia menziesii
Bryum argenteum
Bryum sp.
Didymodon brachyphyllus
Didymodon vinealis
Funaria hygrometrica
Gymnostomum calceareum
Henediella heimii
Homalothecium arenarium
Orthotrichum cf. *norrisii*
Tortula atrovirens
Scleropodium touretii
Weissia controversa

The specimens collected will be properly labeled and placed into archival quality packets then incorporated into the herbarium of the California Academy of Sciences (CAS), San Francisco.

Conclusion

The survey team spent a full day both driving and hiking through the project area in a wide diversity of habitats, aspects, and vegetation types. Sites were visited from the upper elevations to the lower riparian areas. Although two field days were initially scheduled for the bryophyte survey, we concluded at the end of the first day that this area lacked habitats for special status bryophytes. None of the target species were encountered. Since the majority of the proposed development alternatives for Newhall Ranch RMDP/SCP EIS/EIR are planned for the lower elevations where the landscape is already altered in various conditions, our professional opinion is this project will have no impact on special status bryophytes.

Literature Cited

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