

LEATHERMAN BIOCONSULTING, INC.



Biological Surveys, Management & Monitoring

September 27, 2013

Ms. Cheryl Tubbs

LILBURN CORPORATION

1905 Business Center Drive
San Bernardino, California 92408

Subject: Results of Habitat Assessment for Southern Rubber Boa and San Bernardino Flying Squirrel at the Pine Rose Cabins Property

Dear Ms. Tubbs:

This letter reports the results of a habitat assessment for the southern rubber boa (*Charina bottae umbratica*) and San Bernardino flying squirrel (*Glaucomys sabrinus californicus*) at the Arrowhead Pine Rose Cabins property in Twin Peaks, San Bernardino County, California. The southern rubber boa is a state-listed threatened species, and the San Bernardino flying squirrel is a state species of special concern, and is on the U.S. Forest Service watch list. Both of these species occur within the County's Biotic Resources Overlay Map, which requires that a habitat assessment be conducted on the property as part of the CUP application process.

SPECIES' BIOLOGY

Southern Rubber Boa

The southern rubber boa is state-listed as a threatened species under the California Endangered Species Act (CDFW 2012a). It is considered a sensitive species by the U.S. Forest Service in the San Bernardino National Forest (Stephenson and Calcarone 1999), and on the County's Biotic Resources Overlay Map, but currently has no federal status (USFWS 2012). Threats to the species include development (the majority of the known locations are on private lands), off-road activity, and habitat destruction by collectors (Steinhart 1990).

Preferred habitat for the rubber boa includes moist coniferous forest and woodland habitats at higher elevations in the San Bernardino and San Jacinto Mountains, usually from about 5,000 to 8,000 feet elevation (Stewart 1988, Foyer and Stewart 2000a, 2000b). It is fossorial (living underground most of the time) and nocturnal (although sometimes active in the early morning or late evening) so specimens are rarely encountered. It hibernates in rock outcrops, rotting logs, or other below ground retreats (Steinhart 1990). Rubber boas begin to emerge from hibernation from early to late April depending on climatic conditions (Foyer and Stewart 2000a). Boas are

generally active throughout the summer and have been observed on the surface as late as October (Foyer and Stewart 2000a).

Rock outcrops on southern exposures tend to be favored in spring (as the snake emerges from hibernacula), whereas riparian and forested areas tend to be favored later in the season as the weather becomes warmer and drier (Stewart 1988). The rubber boa tends to be associated with vegetatively productive sites with deep, well-developed soils suitable for burrowing. Large downed logs and a thick leaf/duff layer are considered important for cover and for maintaining high soil moisture, where the boas are usually found in the summer months (Loe 1985).

In the San Bernardino Mountains, most of the known locations occur in a roughly 10 mile stretch between Twin Peaks on the west and Green Valley on the east, including the Running Springs and Lake Arrowhead areas (Stewart 1988). Populations appear to be isolated, with tracts of apparently suitable habitat unoccupied. Dominant and representative trees in these occupied areas include Jeffrey pine (*Pinus jeffreyi*), ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), white fir (*Abies concolor*), incense cedar (*Callocedrus decurrens*), and black oak (*Quercus kelloggii*).

San Bernardino Flying Squirrel

The San Bernardino flying squirrel, a subspecies of the Northern flying squirrel, is a state species of special concern (CDFW 2012a), a U.S. Forest Service sensitive species (Davidson and Calcarone 1998), and on the County's Biotic Resources Overlay Map. It currently has no federal status (USFWS 2012).

The Northern flying squirrel is often associated with fairly dense coniferous forest, but also lives in mixed conifer-deciduous forest, and occasionally in pure stands of deciduous hardwoods (Heaney 1999). The San Bernardino flying squirrel prefers habitats that consist of older forests with large diameter trees and open understories between 5,200 and 8,500 feet elevation (Williams 1986). Zeiner et al. (1990) suggest that mature, dense conifer forest, particularly those with white fir in proximity to riparian habitats, may be preferred, and Williams et al. (1992) state that it generally occurs in mixed conifer forests where white fir and black oak are the "principal trees associated with these squirrels."

The San Bernardino flying squirrel primarily uses old woodpecker holes or other cavities in large trees and snags for nesting and cover (Ingles 1965). It does not hibernate (Heaney 1999), although snow persists for most of the year in some parts of its range. It is strictly nocturnal, activity peaking after dark and ending before dawn. In summer it relies primarily on fungi, but will eat a variety of other foods including seeds, nuts, fruit, meat bait, oatmeal, raisins, lichens, insects, eggs and the flesh of small mammals and birds (Ingles 1965, Heaney 1999). San Bernardino flying squirrels have also been reported using backyard bird feeders in low density developments adjacent to heavily forested areas (Stephenson and Calcarone 1999). It does not collect and store food for winter, but instead depends largely on hair moss or other tree lichens for sustenance (Ingles 1965).

Owls are one of the primary predators of the Northern flying squirrel (Ingles 1965, Heaney 1999). Smith et al. (1997) found the squirrel to be an uncommon prey of the California spotted owl, but well distributed throughout forested vegetation in the San Bernardino Mountains. Other known predators include hawks, weasels, bobcats, foxes, and coyotes. Threats associated with increasing developments and habitat modifications, including the impacts on their ability to disperse among increasingly fragmented suitable habitats, are unknown.

EXISTING CONDITIONS

The Arrowhead Pine Rose Cabins property is located in an area with low density mountain cabins and resorts. It is located on the northwest corner of Highway 189 and Grandview Road, and is bisected by North Road, and Sunset Loop, two public roads. A district fire station and San Bernardino County government offices are across Grandview Road to the east. Open space occurs to the north-northwest beyond the property and surrounding residential areas.

Generally speaking, Arrowhead Pine Rose Cabins is a developed property with scattered cabins and activity centers, including a pool near the lobby and gift store at the south end. Two independent artificial streams meander the property in a north-south direction through the cabins. Coi ponds occur at the end of each of the stream segments, which are bordered by rock to create the stream edge and anchor the liner. A maintenance area for the grounds included various equipment and temporary stacks of logs for making benches and landscape borders. Walking paths provide access trails throughout the property, and existing public roads and private driveways provide access to each of the facilities.

The dominant trees on the property include several mature incense cedars and black oak trees. A couple of white firs and yellow pines also occur on the property. Several young incense cedars and other trees occur scattered throughout the property in landscaped areas. The native shrub and herbaceous understory associated with undeveloped forested lands in the region do not occur on the property. Understory vegetation was obviously cleared and removed when the property was developed. The trails, driveways and activity centers are maintained free of this vegetation, although a few native shrubs were observed in some of the landscaped areas. Logs are used as borders of the trails and parking areas, but naturally occurring downed logs and forest leaf litter are largely absent from the property. Large rocks were used to line the artificial streams and coi ponds, but no naturally occurring rock outcrops were observed.

The drainage that slopes away from the property to the north-northwest consists of forested habitat dominated by incense cedars and black oaks with scattered yellow pines and white firs. Scattered native shrubs occur in the understory and ground is covered with downed logs, woody debris and thick layer of duff/leaf litter. No rock outcrops were observed.

METHODS

Prior to conducting the habitat assessment, Leatherman BioConsulting, Inc. conducted a search of the California Natural Diversity Data Base (CDFG 2012b, San Bernardino North, Harrison Mountain, Silverwood Lake, and Lake Arrowhead 7.5 minute series USGS quadrangles) and reviewed other relevant available documents to determine if or to what extent the rubber boa and

flying squirrel may occur on the property or in the vicinity. Numerous additional references and resources, cited throughout this report, were used to compile information on the current agency status, distribution, habitat requirements, and life histories for each species.

The site was visited by Mr. Brian Leatherman September 17, 2013 to conduct a general biological survey and to evaluate the suitability of the habitat for supporting the rubber boa and flying squirrel. The survey consisted of walking slowly and methodically over the entire property and associated trails and roads to allow close inspection of all habitat features and an evaluation of the suitability of those features for the species of interest. Weather conditions during the survey were excellent, consisting of clear skies, mild temperatures (74 °F), and a light breeze (4-7 mph).

RESULTS

Southern Rubber Boa

Seventeen records for the rubber boa were found in the CNDDDB (CDFG 2012b) for the four quadrangles searched, however, all records were on the Harrison Mountain quadrangle (Harrison Mountain). Because location information in the CNDDDB is suppressed for this species (to deter illegal collecting), the proximity of these observations relative to the project site is unknown. The most recent record is from 2002: all other records are from 1982 or before. The distribution of the southern rubber boa includes the Twin Peaks area where there are known records (Stewart 1988).

Most of the Arrowhead Pine Rose Cabins property is developed and does not support southern rubber boa habitat. The primary habitat features, natural rock outcrops and rotten logs, were not observed on the property. The rocks piled along the margins of the artificial stream and the logs placed along the borders of the trails provide very low quality and marginal habitat. However, the open dry conditions, poorly developed soils, maintained grounds, and compacted soils do not allow for the mesic conditions and friable soils for burrowing required by this snake.

The canyon that borders the property to the north-northwest does provide suitable habitat for the southern rubber boa. However, the lack of suitable habitat on the property and in the immediate vicinity (due to adjacent residential cabin development) and the presence of roadways adjacent to and within the property severely limit the likelihood that boas occur on the property. Night traffic on the surrounding roads in particular would likely limit use of the property over time due to road kill (boas and other snakes are known to sit on asphalt roads after dark to absorb warmth).

San Bernardino Flying Squirrel

Five records for the flying squirrel were found in the CNDDDB (2012b) for the four quadrangles searched. The nearest record is from Lake Arrowhead: the remaining records were from Lake Gregory or west (Crestline, Cedarpines Park, Sawpit Canyon). None of the records were from the vicinity of the property. Although the number of records is sparse, the flying squirrel is

known to be widely distributed in the San Bernardino Mountains, based largely on prey remains identified in spotted owl (*Strix occidentalis*) pellets (La Haye, unpublished data).

The flying squirrel favors fairly dense coniferous forest near riparian habitats, possibly because their favorite food (fungi) thrives in the resulting mesic environment. White fir and black oak usually make up a portion of the tree canopy in occupied sites. Although there are mature black oaks on the property, only a couple of white fir trees were observed. Incense cedars are also a dominant tree on the property, but the density of the branching on these trees may not be conducive to the squirrels gliding behavior. In general, the overall density of the trees on the property does not appear to be high enough, in concert with the density in the surrounding residential environment, to be considered good habitat for the flying squirrel.

CONCLUSIONS

Records for the southern rubber boa and San Bernardino flying squirrel in the vicinity of the property are very few, and no records for the property itself were found. Both of these species are very secretive and nocturnal, and formal surveys are rarely conducted, so lack of records does not necessarily indicate that they are not in the area. However, the current use of the property as a mountain resort and the maintenance of the grounds are not conducive to the establishment of a population or long term use of the site by either species.

Suitable habitat that may be occupied by both species occurs to the north-northwest of the property. The highly mobile flying squirrel may therefore occasionally move through or occupy the site temporarily as it forages through the forest at night, especially given that they are known to take advantage of food provided at bird feeders at cabins adjacent to undisturbed forest lands. However, it is not likely to rely on resources on the property that are not available elsewhere.

The rubber boa is a fairly sedentary species and does not move widely through occupied habitat. If one were to move onto the property from the adjacent habitat it would not be likely remain because of the lack of suitable habitat (rock outcrops and rotten logs that provide refugia). The location of the property in a developed area where there is high potential for getting run over at road crossings and during maintenance activities severely limit the potential occurrence of this species.

The Arrowhead Pine Rose Cabins is an existing use. The occurrence of the southern rubber boa and San Bernardino flying squirrel is very unlikely. Even if either species did occur, the continued operation of the property is not expected to change the pattern of use by either species. Focused surveys for these species are therefore not recommended.

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It has been a pleasure to provide these services to Lilburn Corporation. If you have any questions regarding the contents of this report, please contact by phone at the number above or by email at bleathermanwlb@aol.com. The references cited are included at the end of this letter report.

Sincerely,

LEATHERMAN BIOCONSULTING, INC.



Brian Leatherman
Principal Biologist

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REFERENCES

- California Department of Fish and Game. 2012a. Special Animals. Unpublished report available from CDF&G, Sacramento.
- California Department of Fish and Game. 2012b. Rarefind electronic data base search for the Moonridge and Big Bear Lake USGS 7.5 minute series quadrangles. California Department of Fish and Game, Sacramento, California.
- Hoyer, R.F., and G. R. Stewart. 2000a. Biology of the Rubber Boa (*Charina bottae*), with emphasis on *C.b. umbratica*. Part I: Capture, Size, Sexual Dimorphism, and Reproduction. *Journal of Herpetology* 34:348-354.
- Hoyer, R.F., and G. R. Stewart. 2000b. Biology of the Rubber Boa (*Charina bottae*), with emphasis on *C.b. umbratica*. Part II: Diet, Antagonists, and Predators. *Journal of Herpetology* 34:354-360.
- Hall, E.R. and K.R. Kelson. 1959. *The Mammals of North America*. The Ronald Press Company, New York, New York.
- Heaney L.R. 1999. Northern Flying Squirrel. in *The Smithsonian Book of North American Mammals*. Wilson, D.E. and S. Ruff (eds). Smithsonian Institution Press, Washington.
- LaHaye, W.S., R.J. Gutierrez, H.R. Akcakaya. 1994. Spotted owl metapopulation dynamics in southern California. *Journal of Animal Ecology* 63:775-785.
- LaHaye, W.S. 2006. Personal communication via email regarding incidental observations of southern rubber in Big Bear Valley area. May.
- Loe, S. A. 1985. Habitat management guide for southern rubber boa (*Charina bottae umbratica*) on the San Bernardino National Forest. San Bernardino National Forest, San Bernardino, California. 9 pp.
- Stebbins, R. 2003. *A Field Guide to Western Reptiles and Amphibians*. Third Edition. Houghton Mifflin Company. Boston MA., New York, NY. 533 pp.
- Steinhart, P. 1990. *California's Wild Heritage: Threatened and Endangered Animals of the Golden State*. California Department of Fish and Game.
- Stephenson, J. R. and G. M. Calcarone. 1999. *Southern California Mountains and Foothills Assessment: Habitat and Species Conservation Issues*. PSW-GTR-172. Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. Albany, CA

Stewart, Glenn R. 1988. The rubber boa (*Charina bottae*) in California, with particular reference to southern subspecies (*C.b. umbratica*). Proceedings of the Conference on California Herpetology. Southwestern Herpetologists Society: 131-138. H. DeLisle, P. Brown, B. Kaufman, and B. McGurty (eds.)

U.S.Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; review of plant and animal taxa that are candidates or proposed for listing as endangered or threatened. Federal Register 77:69993-70060.

Williams, D.F. 1986. Mammalian Species of Special Concern in California. California Department of Fish and Game, Sacramento, California.

Williams, D.F., J. Verner, H.F. Sakai, and J.R. Waters. 1992. General biology of major prey species of the California spotted owl. Pages 207-224 in The California Spotted Owl: A Technical Assessment of Its Current Status. PSW-GTR-133, USDA Forest Service Pacific Southwest Research Station, Berkeley, California.

Zeiner, D.C., W.F. Laudenslayer and K.E. Mayer (editors). 1988. California's Wildlife Vol. 1, Amphibians and Reptiles. California Department of Fish and Game, Sacramento, California.

Zeiner, D.C., W.F. Laudenslayer and K.E. Mayer (editors). 1990. California's Wildlife Vol. III, Mammals. California Department of Fish and Game, Sacramento, California