

AMERICAN BADGER HABITAT SURVEY

Taxidea taxus



American Badger *Taxidea taxus*; Photo by NatureWorks

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PAULA LANE PROPOSED SUBDIVISION

Submitted to:

Paula Lane Action Network

California Department of Fish and Game

The City of Petaluma

Prepared by:

BioConsultant LLC



Kimberley Fitts
Derek Marshall

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INTRODUCTION

At the request of the Paula Lane Action Network (PLAN), BioConsultant LLC conducted an on-site survey of the American badger habitat and its use of the proposed Paula Lane Subdivision site. The Paula Lane Subdivision Project is a 21 home residential subdivision proposed to be developed on two parcels equaling 11.22 acres at the southwest corner of Paula Lane and Sunset drive in Petaluma, currently zoned in the County of Sonoma, California.

This report presents our findings and a discussion of possible construction-related impacts on the badger and its habitat, as well as a brief précis of badger life history.

SPECIES ACCOUNT

The American badger (*Taxidea taxus*) is a medium-sized carnivore with a semi-fossorial life style. Badger help control rodent populations by feeding upon ground squirrels, pocket gophers, chipmunks, mice and voles. Other prey includes reptiles (rattlesnakes), birds, and arthropods (Messick and Hornocker 1981). Badgers are primarily nocturnal, but Messick and Hornocker (1891) found that the young of the year tend to be active during the day and can disperse in the daylight hours of summer.

Badger Status

The badger is a California Species of Special Concern.

Badger Distribution Records

Badger populations have declined drastically in California within the last century (Grinnell *et.al.* 1937). While agricultural and urban developments have been the primary causes of decline and extirpation of the population of badgers, deliberate killing has been a major factor. Contacts with the CDFG and other resource agencies confirm that no current data exist on the status of badger populations in California, and no studies on its distribution or status have been completed since the CDFG 1987 *Badger Distribution study* (Larsen 1987) which recommended the badger remain a Species of Special Concern. Longhurst (1940) noted that they had nearly disappeared from Napa County by 1940. A review of the California Natural Diversity Data Base (CNDDB) provides no records of badger locations in Sonoma County. The only known site in Sonoma County is within the CDFG preserve in the Laguna de Santa Rosa (pers comm. Allen Buckman DFG).

Home range

Badgers show a strong attachment to their home range area; after dispersing from their natal area, they will remain in the same home range (Nowak 1997; Rahme *et al.* 1995). Home ranges of badgers vary in size between the sexes and seasonally. Males have larger home ranges than females and there is considerable range overlap. Because badgers reduce their activity during the winter months, they use only a fraction of their

total home range. Sergeant and Warner (1972) radio-tracked a female in Minnesota, which used an area of 1858 acres during the summer and had 50 dens within this area. In the fall she shifted to an adjacent area of 128 acres and often reused dens; in the winter she used a single den and traveled only infrequently inside an area of 5.0 acres. There is no data on home range size or amount of overlap in California, but size is dependent upon quality of the habitat and availability of prey. Prey availability seems to be the most significant limiting factor for the species.

Dens/Burrows

There are three types of dens within a badger's home range: large and complex ones for rearing young or kits, dens for over-wintering, and hunting dens which are smaller and used for brief periods when following target prey populations. Den entrance holes are horizontally elliptical in shape, usually about 12 inches wide by 8 to 10 inches tall (CDFG 1995). Burrows are often plugged with loose dirt in the winter (Lindzey 1982).

SITE VISIT

Methods

Ms. Fitts conducted a four hour site visit on December 18, 2003 to evaluate the badger habitat and to determine the extent of their use of the proposed project site. The day was clear and warm. Both parcels were walked and sign of badger activity was noted and the distribution of all denning and foraging activity was delineated with flagging. On a second visit, December 30, 2003, the extent of the badger on-site use and the areas of burrow concentration were mapped using a GPS (Trimble GeoExplorer III) by Derek Marshall. The combined field survey-effort totaled 9 hours.

Results

The on-site habitat is open grassland, consisting of primarily of non-native grasses with some scattered native forbs and shrubs. Several mature oaks are present on the adjacent property to the south and overhang the site providing avian habitat and forage for mammalian wildlife. This grassland, although largely non-native, provides excellent habitat for a large number of small mammals, the primary food source for the badger. A large rodent population is evident from the significant amount of rodent sign: scat, trails, and small diameter burrow openings.

Evidence of long-term badger activity is extensive and occurs throughout the site (**Figure 1**) with no clear area of concentration. Although the badger use extends onto adjacent properties to the south and west, the denning/use is concentrated on the proposed project site. Badgers are utilizing 9.0 acres of the 11.2 acre site. Badger sign was mapped on the adjacent property (Figure 1) to the southeast, and was noted on bordering properties to the southwest and west.

Using a “den” criterion based upon literature review, of at least a 25.5 cm diameter entrance and a depth of 1 meter, a den count of 25 was obtained. Many other large burrows occur, but fail to meet the “den” criteria. These other burrows are either older

dens or sign of badger foraging activities. Recent heavy rains filled some burrows with water and mud and increased the rate of burrow deterioration, causing many characteristic dens to fail to meet the criteria. Note that this survey was conducted during the winter season when the burrowing activity is reduced.

Conclusions

The project as proposed would directly remove and/or highly modify 9.0 acres of badger denning and foraging habitat, as discussed further below, and may also have other significant indirect and cumulative effects. These include but are not limited to:

- Human/pet encroachment;
- High potential for expulsion from the site due to construction related activities;
- Interference with the movement of a native resident; and
- Cumulative habitat loss and fragmentation in view of recent, past, and anticipated future developments.

CONSIDERATION OF PROJECT-RELATED IMPACTS TO THE BADGER

Discussion by Ms. Fitts

The Appropriateness of the Open-space as Mitigation

The project as proposed would have a direct loss of 9.0 acres of utilized badger habitat. The DFG recommended mitigation for this habitat loss, which I do not support based on my findings reported here, was simply to protect 3.0 acres of open-space with a conservation easement for badger habitat. However, Mr. Buckman made this recommendation in 2002, prior to a study and the documentation of the extent of the badger's use of the site. The size of the proposed mitigation would not be enough to protect the badger long-term, and there are also incompatible uses proposed for the area.

The Project's Initial Study states that the 3.0 acre open-space, in addition to mitigating the impact to the badger habitat, will provide on-site drainage with several basins that will detain storm water runoff, and will be attractively landscaped with a walking path that will meander through the area. An estimated 75 trees will be planted along the streets and in the open space. These other proposed uses (walking trail, storm drainage, plantings, and the associated maintenance) of the 3.0 acre open-space will adversely modify the open grassland habitat to such an extent that the habitat would not be suitable for badger residence or the long-term habitat protection as recommended in the DFG letter dated March 11, 2002.

Additionally, there is also some confusion regarding the meaning of a "conservation easement". I spoke to Allen Buckman, and he stated that it was his intent to protect the undeveloped portions of the project with a Conservation Easement, which is usually a deeded agreement and managed for the particular species. Mr. Buckman is retiring and his replacement is Mr. Liam Davis (707-994-5529). I had a conversation with Mr. Davis on January 26, 2004, and he confirmed that the intent of the March 11 letter is to protect

the habitat with a conservation easement. He also stated that **DFG does not consider multiuse open space as described in the Project Plan as mitigation for direct habitat loss.**

Interference with Movement

Badger sign was mapped on the adjacent property (Figure 1) to the south, and was noted on bordering properties to the southwest and west. Local landowners also report having badger on their lands to the south and north in the Paula Lane corridor between Bodega Avenue and Schumann Lane.

Badgers require large home ranges and move extensively within them during the summer and fall months. The ability to access all areas of their home range is essential, especially when the landscape is already fragmented with existing developments. Because this site is situated centrally between areas of badger use, at least to the south and west, the development of this site can interfere with the badger's ability to move between areas of its home range.

Construction-Related Activities

The badger is a fossorial animal, meaning that it spends much of its life underground in burrows/dens. The U.S. Fish and Wildlife Service consider other fossorial animals, such as the Point Arena mountain beaver (*Aplodontia rufa nigra*), to be very sensitive to ground vibrations caused by construction activities. The development of this property would create significant diurnal noise and vibration, highly likely to cause the badger to move from the site.

Cumulative effects

Recent housing developments near the Paula Lane corridor, such as a 42-unit subdivision on North Webster Street and Larch Drive, formally a 21 acre meadow and grassland just east of Paula Lane, have significantly encroached upon the rural natural lands of the area. These past and future planned developments, such as the planned construction of a water tank and several houses just north of Paula Lane would contribute to cumulative effects. Some of these include: an increase in the level of human and pet contact, further impediment of movement patterns, increased fragmentation of a functional landscape-scale corridor, and increase in the risk of mortality from forced displacement.

GENERAL THREATS

Sonoma County is one of the fastest growing counties in California (Census Bureau 1998); the conversion of valley and foothill grassland habitats into urban developments and vineyards in recent years is widespread and represents the greatest threat to badger populations.

Other threats include:

- Continued habitat loss and fragmentation
- Road mortalities during feeding and dispersal patterns
- Genetic depression from population isolation
- Agricultural /vineyard practice of rodenticide use “impacting the prey base”
- Trapping
- Landowners and county animal “control” efforts

RECOMMENDATIONS

1. Further consultation with DFG to resolve the issues raised in this report

As described above the proposed open space for this project would not be suitable for badger. Hence, in my opinion, the project would have the significant adverse impact of permanently removing 9.0 acres of habitat from the species’ home range. In addition to this direct effect, the project could result in a decline or extinction of the species on adjoining parcels. For these reasons, on-site mitigation may not be feasible; it is possible that the impact cannot be mitigated given the rarity of heavily used badger habitat in Sonoma County when combined with the high level of local threat to the species on most open lands and the actual killing of badgers by landowners. Final details of any mitigation will require consultation and approval by the DFG.

2. Preparation of a Draft EIR

CEQA requires that an EIR must be prepared when the Lead Agency determines that it can be fairly argued, based on substantial evidence, in light of the whole record, that a project may have a significant effect on the environment **15064 (a)**. Under CEQA the “fair argument” standard creates a very low threshold for EIR preparation. The information presented in this report and in my comment letter of January 7, 2004, provides a fair argument that the project as proposed may have a significant effect on the environment. Therefore, it is my recommendation that a Draft EIR be prepared to address the following:

- The badger’s Special Species Status was not considered in the Initial Study, thus the Biological Resource checklist boxes were inappropriately checked.
- DFG’s recommendations were made prior to a study documenting the extent of the badger’s use of the area.
- Evaluation of the impact of permanently removing heavily used habitat of a California Species of Special Concern.
- The impediment of movement patterns, while contributing to the increased fragmentation of a functional landscape-scale corridor, and increase in the risk of mortality from forced displacement.

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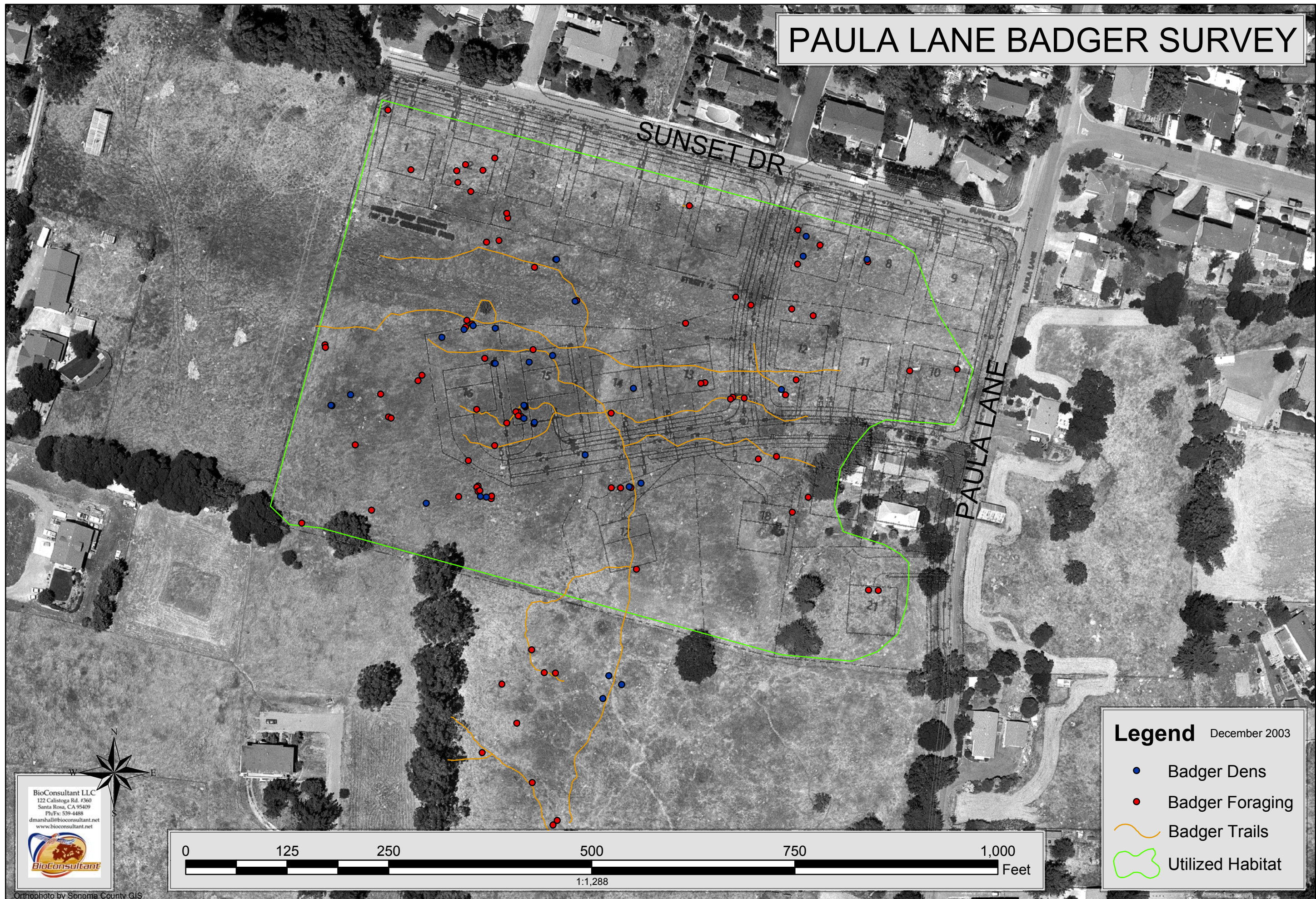


Figure 1.

Photographs to Support the Paula Lane Badger Survey
December 18, 2003



Figure 2. Looking SW- showing the habitat utilized by the American Badger



Figure 3. Single burrow with dirt mound. Located on the slope in the upper left of figure 2.



Figure 4. Showing a Badger print on top of the dirt mound in figure 3.



Figure 5. Close-up of burrow in figure 3.