A SENSITIVE PLANT AND WILDLIFE RESOURCE INVENTORY OF DIABLO CANYON LANDS, VOLUME I:

SURVEY PROCEDURES AND A SUMMARY OF SURVEY RESULTS

Prepared by:

BioSystems Analysis, Inc.
303 Potrero Street, Suite 29-101
Santa Cruz, California 95060

and

Pacific Gas and Electric Company
Technical and Ecological Services
3400 Crow Canyon Road
San Ramon, California 94583

Prepared for:

Pacific Gas and Electric Company
Diablo Canyon Land Stewardship Committee
Diablo Canyon Power Plant
Avila Beach, California

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EXECUTIVE SUMMARY

PG&E owns or controls through long-term lease agreements approximately 10,000 acres of ecologically diverse coastal lands surrounding Diablo Canyon Power Plant in San Luis Obispo County, California. Beginning in 1992, a comprehensive survey of these lands was undertaken to identify and describe all sensitive plant and wildlife resources not previously known that might occur there. Though not required by state or federal regulatory agencies, this voluntary effort is consistent with PG&E's Corporate Policy on Management of Company Real Property (Section 7, paragraphs a and d), as well as specific Best Management Practices identified by the Diablo Canyon Land Stewardship Program (PG&E 1993a).

By the time field surveys were completed in 1994, biologists had identified and mapped the locations of 7 state recognized rare vegetation community types,[1] 4 rare plant species populations,[2] 1 sensitive insect,[3] 10 sensitive bird species,[4] and 2 sensitive mammal species[5] (see Tables 3-1 and 3-2 for detailed data). One additional species, the federally endangered plant Indian Knob mountainbalm, is strongly suspected to occur, though no populations have yet been found. The sensitive species identified on Diablo Canyon Lands during this survey effort include none currently listed as threatened or endangered under the state or federal Endangered Species Acts. However, all of the species and community types are classified under one or more official "Watch Lists" at the state or federal government level. These Watch List species and communities are felt to be declining, and it is often from these lists that new candidates are added to the growing number of threatened and endangered species in California. Several other sensitive species about which much information is already known from the Diablo Canyon area have not been included here. These are the American peregrine falcon, southern sea otter, brown pelican, northern elephant seal, and several species of whales that annually migrate along the Diablo coast.

Volumes I and II of this Diablo Canyon Land Stewardship Committee report serve to document the methods used in conducting the sensitive resource inventory and a detailed record of all survey results. Also identified are local endangerment factors that could threaten the resource and the direction that management should take to provide proper safeguards. Because Volume II contains specific map locations of sensitive species populations, we are treating it as confidential and available only on a need-to-know basis inside and outside of PG&E. Volume I, which contains a less specific summary of survey results, is suitable for broad distribution. It is our intention that this information be used to arrive at sound decisions for the management and conservation of Diablo Canyon Lands. Furthermore, it is our intention that this document be periodically updated as new information is acquired or changes occur in the status of sensitive resources.

[1] Central maritime chaparral, bishop pine forest, central coast riparian scrub, northern coastal bluff scrub, coastal terrace prairie/valley needlegrass grassland, and central coast live oak riparian forest.
[2] La Cruz manzanita, Pecho manzanita, Edna manzanita, and Coulter's saltbush.
[3] Monarch butterfly.
[4] Sharp-shinned hawk, Cooper's hawk, ferruginous hawk, golden eagle, merlin, burrowing owl, California horned lark, loggerhead shrike, yellow warbler, and tricolored blackbird.
[5] Pallid bat and San Diego desert woodrat.

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1.0 INTRODUCTION

1.1 BACKGROUND

Pacific Gas and Electric Company (PG&E) owns or manages approximately 10,000 acres of land surrounding its Diablo Canyon Power Plant in coastal San Luis Obispo County (Figure 1-1). The property is referred to as Diablo Canyon Lands. These lands are managed for agriculture, grazing, weed and erosion control, fire hazard reduction, and natural and cultural resource protection, including the conservation and legal protection of sensitive and endangered species and natural communities. To provide guidance in managing for multiple uses, PG&E established the Diablo Canyon Land Stewardship Committee to advise the company on conservation and land use issues.

In an effort to better meet its corporate commitment to support multiple uses while maintaining or enhancing biological integrity, PG&E contracted comprehensive surveys to document the status of sensitive natural communities and plant and terrestrial wildlife species on Diablo Canyon Lands. Surveys were conducted from late summer 1992 through early fall 1993. These surveys supplement existing data bases and are intended to support effective management, education, and conservation on the site.

The results of these surveys have been documented in two volumes. Volume I presents a description of habitats and plant communities found on Diablo Canyon Lands, methods used to investigate the potential occurrence of sensitive biological resources, and a summary of survey results. Volume II contains detailed information on sensitive species and habitats known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands. Volume II includes geographic information system (GIS) maps showing the locations of sensitive resources, their statewide conservation status, their status on Diablo Canyon Lands, local endangerment factors, and management direction for PG&E to follow in providing for their continued protection. PG&E considers the information contained in Volume I to be suitable for broad public distribution to local community groups, conservation organizations, academic institutions, and others with an interest in the natural resources of central coastal California. Some of the information contained in Volume II is considered confidential and will be released on a need-to-know basis only, both inside and outside of PG&E.

Some special status species known to occur on Diablo Canyon Lands, including nearshore marine habitats, have been extensively studied here for many years. These species include the American peregrine falcon, brown pelican, southern sea otter, elephant seal, and various cetacean species that migrate seasonally along the Diablo coast. These species were not addressed in Volumes I or II because the inventory was intended to document resources not previously studied or for which only limited information was available from Diablo Canyon Lands.

1.2 REGIONAL SETTING

Diablo Canyon Lands is a largely undeveloped area situated in the Irish Hills of the San Luis Range. The site, which includes coastal bluffs and terraces between Point San Luis and Coon Creek, is locally known as the Pecho Coast. It is bordered on the north by Montaña de Oro State Park. To the east, much of the land between the isolated Saddle Peak parcel and the remaining contiguous parcels that comprise the Diablo Canyon Lands (Figure 1-2) is under the jurisdiction of the Bureau of Land Management. The Nature Conservancy is the land steward for the nearby Hibbert Preserve. The area provides important habitat for a variety of plants and wildlife, including numerous sensitive

Figure 1-1. General project location.

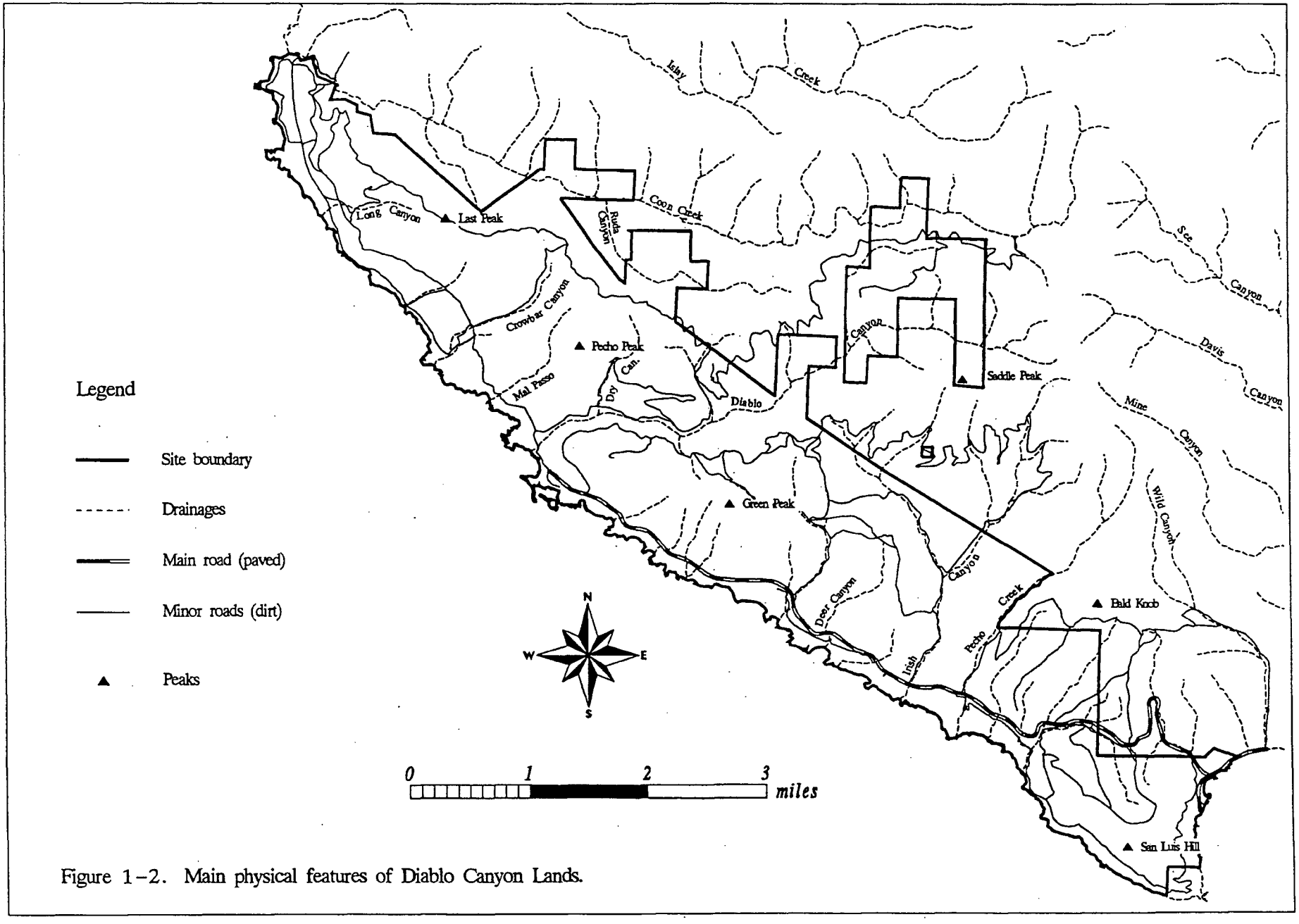

Figure 1-2. Main physical features of Diablo Canyon Lands.

species. Because of its considerable size and proximity to other large blocks of open space, these lands are important for regional conservation planning.

The topography of the site varies from coastal terraces to gently sloping pasture to the brushy, rocky cliffs and steep slopes of the massive fault blocks and synclines that make up the Irish Hills portion of the San Luis Range (Szary 1989). Elevations on the property vary from sea level to 1,819 feet at the summit of Saddle Peak (U.S. Geological Survey 1965).

Coon and Diablo Canyon creeks are perennial streams that drain two of the largest watersheds on the property (Figure 1-2). Smaller, intermittent streams in Crowbar, Deer, Irish, and Rattlesnake canyons, as well as Pecho Creek, carry water from the western slopes of the San Luis Range to the Pacific Ocean. Soils on the site vary from thin sands derived from sandstone substrate to heavier alluvial soils (Soil Conservation Service 1984, PG&E 1991).

Rock outcrops and soil substrates are Miocene marine sandstone and calcareous shale members of the Monterey, Pismo, Alferitz, Obispo, and Pismo formations (Jennings 1958). These are exposed in several areas on the property (Chipping 1987). Vertical outcrops, overhangs, cliffs, and recesses occur throughout the area. Soils and alluvium derived from these geologic formations support a complex mosaic of habitat types.

Diablo Canyon Lands has been subject to human alteration since at least 1843, when Francisco Bodilla established Rancho Pecho y Islay (California Department of Parks and Recreation 1986). Ranching has dominated the parcel for the past 150 years, and much of the landscape has been modified by plowing, wood cutting, grazing, bulldozing, and chaining. By reducing woody vegetation, principally chaparral and oak woodlands, and introducing noxious weeds and annual European grasses, humans have greatly altered the flora of the area (Stechman 1965; Kephardt, pers. comm. 1993).

Wildfires are an important historical component of the Diablo Canyon Lands ecosystem. In recent times, the frequency of fires has been reduced significantly. This is evident in the large, overmature stands of Bishop pine (*Pinus muricata*) and tree-like Pecho manzanita (*Arctostaphylos pechoensis*) interwoven with oak woodland on some slopes.

San Luis Obispo County supports many unique plant communities and endemic species. These communities reflect overlapping regional floras, as well as the diverse soils, terrain, and climates of the area. In 1970, Hoover produced a flora of San Luis Obispo County describing three loci of botanical endemism in the region: Cruzian, Obispoan, and Lucian (Hoover 1970). These pockets of botanical endemism are associated with the faulted geosyncline in the San Luis Range.

1.3 PRIOR STUDIES

Hoover's extensive work in the region resulted in a collection of rare plants that now belongs to California Polytechnic University, San Luis Obispo. During our work, we relocated Hoover's collection sites in Coon Canyon and along the Pecho Coast. The flora of Montaña de Oro State Park was studied by Barnes (1966), who created the first known checklist of the vascular plants of the area. Anderson (1972) performed detailed field studies of the Coon Creek area and adjacent state park lands. This work culminated in a master's thesis on the flora of the area. Anderson observed several unusual plants in the Coon Creek watershed, including scrub oak (*Quercus berberidifolia*), round-leaved psoralea, and straggly gooseberry (*Ribes divaricatum* var. *pubiflorum*). Hazard Canyon,

only 3 miles north of Coon Creek, is a well known locality for Indian Knob mountainbalm (*Eriodictyon altissimum*), a federal and state endangered species (Anderson 1972). Several rare plants have been identified by the California Department of Recreation on the Montaña de Oro State Park lands adjacent to Diablo Canyon Lands (California Department of Parks and Recreation 1986). Keil and Holland conducted surveys around Point San Luis in the late 1980s (Keil, pers. comm. 1993). They predicted that two rare plants, the Pecho manzanita and Hoover's bentgrass (*Argrostis hooveri*), should occur along the Pecho Coast trail, but they found only Pecho manzanita just off Diablo Canyon Lands.

Range inventory and restoration is a goal of the land stewardship program. Preliminary surveys for native perennial grass species have been conducted. These surveys identified eight species of native grasses: meadow barley (*Hordeum brachyantherum*), oniongrass (*Melica bulbosa*), saltgrass (*Distichlis spicata*), seaside brome (*Bromus marginatus* var. *maritima*), California brome (*B. carinatus*), giant wildrye (*Leymus condenstatus*), Pacific wildrye (*L. pacificus*), and purple needlegrass (*Nasella pulchra*) (Krenn, pers. comm. 1993).

Only a few wildlife investigations have been conducted on Diablo Canyon Lands. An environmental impact analysis of the power plant in the early 1970s focused on Diablo Canyon and adjacent areas (Burge and Schultz 1971, PG&E 1973, Colson and Osterling 1974). These cursory studies provided general wildlife habitat associations. Tom Tolman (B.A., Stanford University) has been a caretaker on North Ranch for many years and has kept field notes on uncommon wildlife sitings, including observations of special status species.

The National Audubon Society's annual Christmas bird counts have included North Ranch on several occasions, and the Audubon San Luis Obispo County Breeding Bird Atlas program has documented the breeding status of birds throughout San Luis Obispo County, including many coastal habitats similar to Diablo Canyon Lands (Edell, pers. comm. 1993). Marantz (1986) recorded all bird species known to occur in the county, including their breeding and overwintering locations.

1.4 HABITATS AND PLANT COMMUNITIES

PG&E identified the vegetation of Diablo Canyon Lands in a document describing the Diablo Canyon Land Stewardship Program (PG&E 1993a). Our survey was based on a GIS data base for Diablo Canyon Lands (PG&E 1993b) (Figure 1-3). This data base identifies 12 vegetation cover types.

Different systems exist for the labeling of vegetation types, with the result that similar aggregations of plant species may be known by several different names. To reduce the potential for confusion, we have prepared a nomenclature crosswalk to identify other names used within this inventory to describe Diablo Canyon vegetation cover types. Table 1-1 identifies the 12 vegetation types occurring on Diablo Canyon Lands as presented in PG&E (1993a). Each cover type is followed in the table by its counterpart(s) in the literature of natural plant communities of California (Cheatham and Haller 1975, Holland 1986, California Department of Fish and Game [CDFG] 1992b) and wildlife habitat types of California (Mayer and Laudenslayer 1988).

1.4.1 Agriculture

Agricultural activities occur on most of the coastal terraces between Coon Creek and Point San Luis. When not managed specifically for agricultural crops, these sites are dominated by non-native and

Table 1-1. Crosswalk showing correspondence between PG&E vegetation cover types and other selected vegetation classification systems.

Diablo Canyon Vegetation Cover Types	Naturally Occurring Plant Communities of California[1]	California Wildlife Habitat Types[2]
Agriculture	None described	Cropland
Bishop Pine	Southern Bishop Pine Forest	Closed-coned Pine-Cypress
Chaparral	Central Maritime Chaparral	Mixed Chaparral
Coastal Bluffs, Rocks, and Beaches	Northern Coastal Bluff Scrub	None described
Coastal Scrub[3]	Central (Lucian) Coastal Scrub	Coastal Scrub
Developed Areas[4]	No corresponding type	No corresponding type
Eucalyptus	No corresponding type	Eucalyptus
Grassland	Non-native Grassland Coastal Terrace Prairie Valley Needlegrass Grassland	Annual Grassland Perennial Grassland
Grassland with sparse Coastal Scrub	Central (Lucian) Coastal Scrub Non-native Grassland	Annual Grassland Coastal Scrub
Marsh (manmade)[5]	Coastal and Valley Freshwater Marsh	Fresh Emergent Wetland
Oak Woodland	Central Coast Live Oak Riparian Forest Coast Live Oak Woodland	Coastal Oak Woodland
Riparian	Central Coast Riparian Scrub Central Coast Arroyo Willow Riparian Forest Central Coast Live Oak Riparian Forest	Valley Foothill Riparian

[1] Cheatham and Haller (1975), Holland (1986), CDFG (1992b).
[2] Mayer and Laudenslayer (1988).
[3] Also soft chaparral and coastal live oak scrub.
[4] Also ruderal areas.
[5] Also ponds, seeps, springs, and submerged aquatics as described in Appendix A.

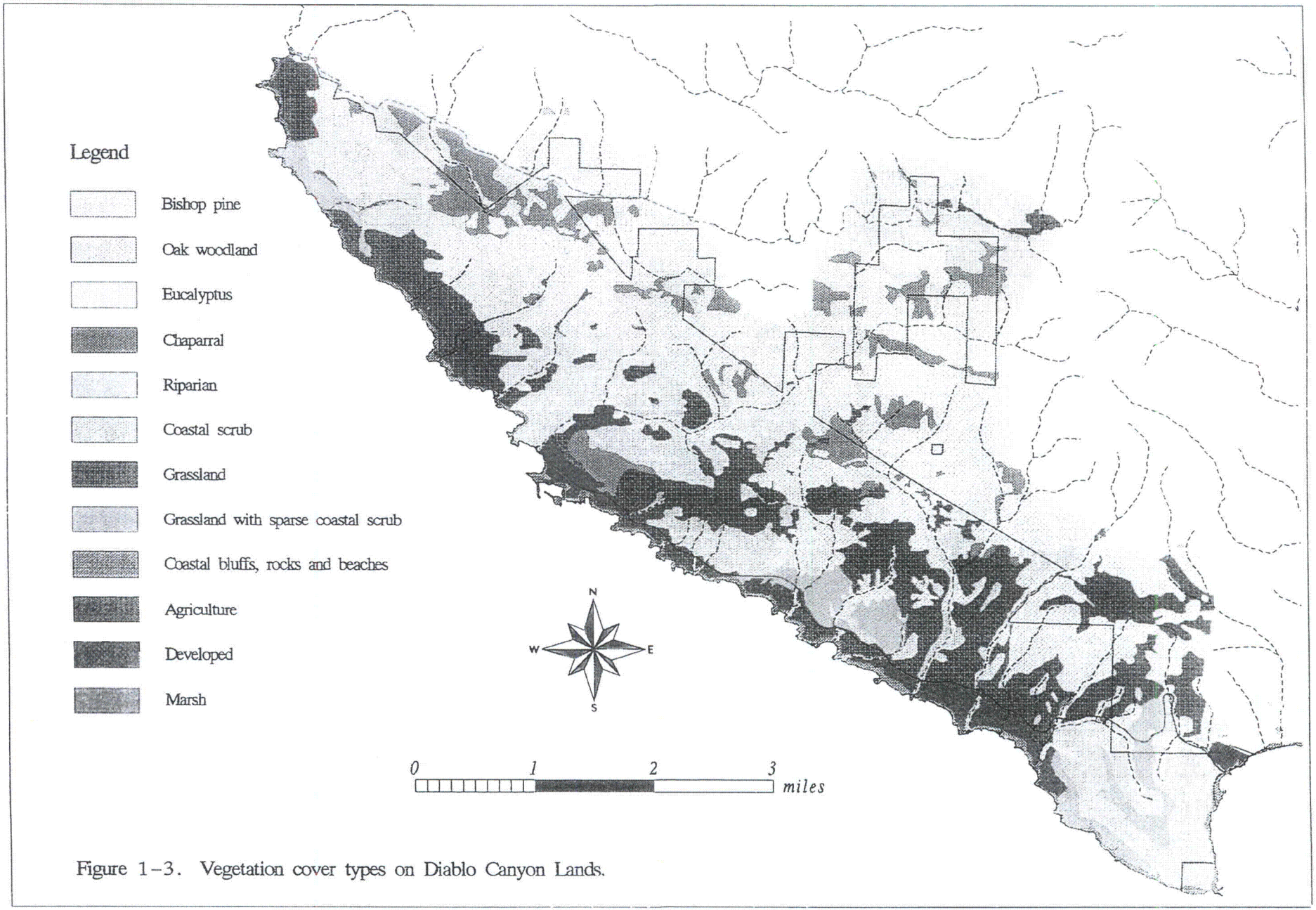

Figure 1-3. Vegetation cover types on Diablo Canyon Lands.

native weeds. Examples include mayweed (*Anthemis cotula*), mugwort (*Artemisia douglasiana*), Italian thistle (*Carduus pycnocephalus*), tocalote (*Centaurea melitensis*), pineapple weed (*Matricaria matricarioides*), bull thistle (*Cirsium vulgare*), cudweed (*Gnaphalium* spp.), telegraph weed (*Heterotheca grandiflora*), smooth cat's-ear (*Hypochaeris glabra*), slender tarweed (*Madia gracilis*), coast tarweed (*M. sativa*), milk thistle (*Silybum marianum*), prickly sow thistle (*Sonchus asper* ssp. *asper*), common sow thistle (*S. oleraceus*), spiny cocklebur (*Xanthium spinosum*), field mustard (*Brassica rapa*), wild radish (*Raphanus sativus*), sourclover (*Melilotus indica*), strawberry clover (*Trifolium fragiferum*), rose clover (*T. hirtum*), crimson clover (*T. incarnatum*), filaree (*Erodium* spp.), common mallow (*Malva neglecta*), bull mallow (*M. nicaeensis*), plantain (*Plantago* sp.), curly dock (*Rumex crispus*), wild oats (*Avena fatua*), ripgut grass (*Bromus diandrus*), and crabgrass (*Digitaria* spp).

Because croplands occur on some of the richest soil in the area, they probably once supported a high diversity of plants and associated wildlife. Pest control activities such as fencing, trapping, and poisoning further reduce wildlife diversity and abundance. Although wildlife diversity has been reduced, a few species of rodents and birds such as the deer mouse, red-winged blackbird, and California horned lark may be quite abundant.

1.4.2 Bishop Pine

The slopes of the San Luis Range are dominated by a complex mosaic of vegetation types consisting of pine, chaparral, oak woodland, and coastal scrub. The overstory of forested areas is dominated by Bishop pine. Understory shrubs within the Bishop pine forest include tan oak (*Lithocarpus densiflorus*), coast live oak (*Q. agrifolia*), manzanita, chinqapin (*Castanopsis chrysophylla*), huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), silk-tassel (*Garrya* spp.), and madrone (*Arbutus menziesii*). We studied this plant community in more detail since Bishop pine forest is a California Natural Diversity Data Base (CNDDB) "high inventory priority habitat" and considered sensitive by the CDFG.

Bishop pine communities support relatively few regionally rare or declining wildlife species, although an intergrade between the southern and Pacific rubber boas may be present. The black-bellied salamander, western fence lizard, and ring-necked snake are among the other reptiles and amphibians that may also occur. Several species of birds may nest in the Bishop pine forest, including the band-tailed pigeon, Cooper's and red-tailed hawks, and the common flicker. The gray squirrel, several species of mice, and large mammals such as deer, coyote, and gray fox also use this habitat.

1.4.3 Chaparral

PG&E has mapped chaparral on the property, but subtypes are not shown as separate polygons. For example, central maritime chaparral (a CNDDB "high inventory priority habitat"), chamise chaparral, and ceonothus chaparral are not mapped separately. Since we considered central maritime chaparral in some detail, we mapped these polygons as distinct units. Chaparral consists of dense, almost impenetrable thickets of ceanothus, manzanita, chamise, and elements of oak woodland and coastal scrub habitats. Huckleberry, gooseberry, bush poppy (*Dendromecon rigida*), wild buckwheat (*Eriognum* spp.), and mountain mahogany (*Cerocarpus* spp.) are also present. Hard chaparral on Diablo Canyon Lands characteristically intergrades with Bishop pine forest and coastal scrub (commonly known as soft chaparral).

Amphibian diversity usually is low in chaparral. The black-bellied salamander, ensatina, and Pacific tree frog are the most likely residents. Reptiles tend to be more diverse, and this habitat supports

the western fence lizard, side-blotched lizard, striped racer, and western rattlesnake. Birds characteristic of chaparral include the California quail, greater roadrunner, Bewick's wren, scrub jay, California thrasher, and white-crowned sparrow (winter only). Bell's sage sparrow, a regionally rare species, prefers chaparral habitats dominated by chamise. Many species of rodents occur in this habitat, and brush rabbit and black-tailed jackrabbit occur in more open areas. Carnivores such as the coyote, gray fox, striped skunk, and bobcat frequent chaparral because of the high diversity and abundance of prey.

1.4.4 Coastal Bluffs, Rocks, and Beaches

Most of the vegetation mapped by PG&E in these areas consists of a mixture of native perennial and introduced annual grasses, beach-bur (*Ambrosia chamissonis*), golden yarrow (*Eriophyllum confertiflorum*), sand-spurrey (*Spergularia* sp.), saltbush (*Atriplex canescens*), dudleya, salal, and milkvetch (*Astragalus nuttallii*). Rocks, especially those offshore, and isolated bluff edges with guano-enriched soils, support maritime goldfields (*Lasthenia maritima*). Beaches support sea rocket (*Cakile maritima*) but contain few of the dune plants characteristic of the region around Morro Bay, just a few miles to the north. It is here that Kephardt reported seaside brome and Pacific wildrye (Krenn, pers. comm. 1993).

Rocky cliffs, offshore rocks, and rocky intertidal areas provide roosting and nesting habitat for pelicans, cormorants, gulls, terns and peregrine falcons, as well as foraging habitat for shorebirds such as black oystercatchers, black and ruddy turnstones, willets, and surfbirds. Few species of wildlife other than birds are known to frequent coastal beach habitat. The western fence lizard and silvery legless lizard are the most frequent species of reptile. Deer mice, California ground squirrels, raccoons, and coyotes are also known to frequent this habitat.

1.4.5 Coastal Scrub

Diablo Canyon Lands contain scrublands dominated by black sage (*Salvia mellifera*), California sagebrush (*Artemisia californica*), bush monkeyflower (*Mimulus aurantiacus*), purple needlegrass (*Nassella pulchra*), and coyote brush (*Baccharis pilularis*). This habitat corresponds to the (Lucian) central coastal sage scrub described by Holland (1986). Poison oak (*Toxicodendron diversilobum*) and morning glory (*Convolvulus arvensis*) are common associates of this habitat.

The composition of wildlife in coastal scrub is similar to that of chaparral. Reptiles and small birds and mammals are usually abundant. The San Diego desert woodrat is common in rocky outcrops in coastal scrub. Carnivorous mammals such as coyotes, raccoons, long-tailed weasels and bobcats hunt for abundant prey., Likewise, foraging is good for birds of prey such as the white-tailed kite, northern harrier, merlin, and burrowing and short-eared owls.

1.4.6 Developed and Ruderal Areas

Areas of highly compacted soils around developed sites constitute a relatively small part of PG&E lands. Weeds have invaded some developed areas, and the vegetative composition is similar to that in the agricultural areas discussed previously. Few wildlife species frequent developed areas because of the lack of cover vegetation and food. Towers, buildings, and other structures may provide artificial roosting or nesting habitat for rodents, bats, and birds.

1.4.7 Grassland

The annual grasslands found throughout Diablo Canyon Lands represent an induced subclimax brought about through conversion of native vegetation types to accommodate agricultural practices. These grasslands have been maintained since the early Spanish colonial period through use of domestic grazing animals. These annual grasslands contain an abundance of introduced species such as wild oats (*Avena* spp.), brome (*Bromus* spp.), wild barley (*Hordeum* spp.), ryegrass (*Lolium* spp.), mustard (*Brassica* spp.), filaree (*Erodium* spp.), and bur clover (*Meticago hespida*).

Native perennial grasslands on Diablo Canyon Lands are characterized by their rich plant diversity, composition, and complexity. The dominant type of perennial grassland found on Diablo Canyon Lands is the coastal terrace prairie (Holland 1986). Located predominantly on cool, north-facing, windswept hills and coastal marine terraces, coastal terrace prairie grasslands are similar to the northern coastal prairie in species composition and plant associations. This grassland is characterized by the absence of two northern grassland species, creeping red fescue (*Festuca rubra*) and Idaho fescue (*F. idahoensis*). Genetic and paleobotanical evidence suggests that coastal prairie species are mostly northern in their origin and ultimately paleartic in their affinities (Stebbins and Major 1965).

Historical disturbances such as fire and grazing play important roles in the occurrence, distribution, and composition of remnant perennial grasslands. The most important factor influencing the range and distribution of pristine coastal grasslands is the soil type. Deep, well-developed, slightly acidic soils without a rock substrate are candidate sites for relict grasslands. The exceptions are scattered colonies of small-flowered melic (*Melica imperfecta*), Sandberg bluegrass (*Poa secunda*), and foothill needlegrass (*Nassela lepida*), which tend to occupy thin, rocky soil sites where there is a conspicuous lack of annuals.

The Pacific tree frog, black-bellied salamander, western skink, southern alligator lizard, common kingsnake, and gopher snake are among the amphibians and reptiles in this habitat. At various times of year, grasslands support a variety of birds, including the California horned lark, western meadowlark, savannah sparrow, and raptors such as the golden eagle and American kestrel. Grasslands are favored habitat for the California ground squirrel, Botta's pocket gopher, and western harvest mouse. Predators such as burrowing owls, coyotes, long-tailed weasels, and badgers depend on grasslands for foraging and denning sites.

1.4.8 Marsh

Freshwater marsh occurs near Windy Point and in the Irish Canyon. Near Windy Point, a naturally occurring artesian spring was excavated to create a small pond. This pond was later colonized by freshwater emergent plant species such as baltic rush (*Juncus balticus*), cattail (*Typha latifolia*), spike rush (*Eleocharis* sp.), and water milfoil (*Myriophyllum* sp.). The manmade pond intended for livestock use in Irish Canyon also contains these species. Other areas of marsh habitat include the mouth of Coon Creek, where small-fruited sedge occupies microsites not scoured by high runoff from the creek. Similar vegetation may also be found in association with various seeps, springs, and ponds used for irrigation.

Marshes provide important breeding habitat for several species of amphibians and reptiles including the Coast Range newt, southwestern pond turtle, and western aquatic garter snake. Waterfowl and other birds such as the tricolored blackbird may roost, feed, or breed at these sites. Rodents are common, and predators such as the white-tailed kite, northern harrier, coyote, badger, and long-tailed weasel may frequent this habitat.

1.4.9 Oak Woodland

Woodlands or shrublands dominated by coast live oak are principal habitat types on Diablo Canyon Lands. The understory of these woodlands contains important wildlife food plants such as scarlet catchfly (*Silene californica*), salal, huckleberry, vetch (*Vicia* spp.), gooseberry, pitcher sage, coffeeberry (*Rhamnus californica* ssp. *californica*), and spiny redberry (*R. crocea*). Oak woodland forms a complex mosaic with Bishop pine woodland, chaparral, and coastal scrub. The resulting ecotones constitute important components of wildlife habitat.

The moist understory of oak woodlands provides suitable habitat for several species of amphibians and reptiles, including the black-bellied salamander, ensatina, Coast Range newt, western fence lizard, western skink, silvery legless lizard, and ringneck snake. Oak woodlands provide important nesting and foraging habitat for birds, including acorn and downy woodpeckers, western flycatcher, Hutton's vireo, and orange-crowned warbler. Raptors that may roost, forage, or breed in oak woodlands include Cooper's and sharp-shinned hawks and the great horned, pygmy, and possibly California spotted owls. The protective cover and forage in oak woodlands attract many small mammals such as the broad-footed mole, California mouse, dusky-footed woodrat, and Townsend's big-eared and pallid bats. Many carnivores such as the mountain lion, bobcat, coyote, and ringtail forage in oak woodlands; acorns provide seasonal food for many wildlife species such as mule deer, grey squirrels, and band-tailed pigeons.

1.4.10 Riparian

The deep canyons formed by Coon, Diablo, Irish, and Ruda creeks support lush woodlands, and the interlocking canopies provide good cover for wildlife. In most of these areas, the coast live oak woodland is juxtaposed with riparian areas. The riparian habitats on the property are of the central coast riparian scrub and central coast live oak riparian forest types (Holland 1986). The dominant tree and shrub species in these canyon bottoms are coast live oak, big-leaf maple (*Acer macrophyllum*), elderberry (*sambucus mexicana*), dogwood (*Cornus sericea* ssp. *occidentalis*), gooseberry (*R. menziesii*), California bay (*Umbellularia californica*), wax myrtle (*Myrica californica*), coffeeberry, thimbleberry (*Rubus vitifolius*), arroyo willow (*Salix lasiolepis*), and shining willow (*S. lucida* ssp. *lasiandra*).

Undisturbed riparian habitats generally support the greatest diversity and abundance of wildlife. This is partly due to the complexity of microhabitats (leaf litter, fresh water, dense understory, and a multi-layered canopy for nesting and foraging). The abundance and diversity of amphibians, reptiles, birds, and mammals can be quite high. Several regionally rare species forage, roost, and breed in these habitats. These include the California red-legged frog, southwestern pond turtle, Cooper's hawk, California spotted owl, Townsend's big-eared and pallid bats, and ringtail.

1.4.11 Eucalyptus

A few small areas are vegetated with small groves of eucalyptus, a tree indigenous to eastern Australia. This tree sheds bark, fruits, and leaves on the ground, and oils and tannins in this litter prevent the establishment of most competing vegetation. As a consequence, these groves are often characterized by sparse understory vegetation.

Birds are the only vertebrate wildlife expected to frequent small stands of eucalyptus. Common raptors such as the red-tailed hawk, American kestrel, barn owl, and great horned owl use these trees for roosting and nesting. Other common species include the rock dove, common flicker,

European starling, and yellow-rumped warbler (winter only). Eucalyptus groves provide roosting habitat for the monarch butterfly, a species identified as sensitive by the CDFG.

1.4.12 Grassland with Sparse Coastal Scrub

Where brush clearing did not eradicate all scrub habitat, grassland and coastal scrub habitats occur in a complex mosaic. Species composition is not appreciably different from that in coastal scrub or grasslands, although the number of native species is probably reduced.

Many of the same wildlife species occur in this habitat as in grasslands. Brush rabbit and black-tailed jackrabbit favor this habitat because it provides open areas for foraging and cover to escape predation. Grasshopper and rufous-crowned sparrows tend to favor a mix of these habitat types.

2.0 METHODS

2.1 VEGETATION

Vegetation field surveys were conducted by identifying all vascular plants growing within preselected survey strips (Figure 2-1), regardless of regulatory status. This survey protocol optimizes the probability of detecting special status plants in the absence of prior field studies. The overall survey protocol used in this study was guided by Nelson (1987). In most instances, survey areas were visited several times throughout the 1993 growing season to increase the probability of detecting special status plants, especially annuals and late-flowering perennials. Appendix A presents a list of vascular plants sorted by habitat on Diablo Canyon Lands. Appendix B presents a provisional list of vascular plants on the property.

Plant species considered sensitive in our inventory include those listed as candidate, rare, threatened, or endangered under the state or federal Endangered Species Acts. They also included some species without state or federal status that are identified within the CNPS inventory of rare and endangered plants of California.

2.1.1 Project Orientation and Literature Review

Appropriate governmental, academic, and private organizations were contacted to determine if baseline resource studies had been conducted on land holdings adjacent to or within 1 mile of Diablo Canyon Lands. The San Luis Obispo office of The Nature Conservancy and the Bakersfield Bureau of Land Management (BLM) Caliente Resource Office (Carter, pers. comm. 1993) knew of no floristic studies in the area. BLM officials said they were cognizant of significant rare plants in the region.

We reviewed the published and unpublished literature using traditional and electronic bibliographic search methods. Recent publication of the *Jepson Manual* (Hickman 1993) was the most significant addition to the literature on the flora of the region. Other key references included the *Montaña de Oro State Park General Plan and Environmental Impact Assessment* (California Department of Parks and Recreation 1988), the California Natural Diversity (*RareFind*) Data Base (CNDDB 1990), and *Contribution to the Flora of Montaña de Oro State Park* (Anderson 1972).

2.1.2 Database Searches

We used the *RareFind* data base to determine known locations of special status plants in the vicinity of Diablo Canyon Lands. This microcomputer-based program provides location data on known occurrences for many (but not all) special status plants in the state. The *RareFind* information was current to March 1993, but because of a large backlog, *RareFind* does not contain all recently acquired data. To supplement *RareFind*, we consulted Professor David Keil and conducted research at the Hoover Herbarium (California Polytechnic University, San Luis Obispo). The listing status of sensitive plants was rechecked and revised using the CDFG (1995a).

2.1.3 Selection of Target Species

We prepared a target list of potential special status plants for the property and the surrounding San Luis Range by reviewing information obtained from our literature review and database searches. We continued to update the target species list as new information became available. Table 2-1 lists scientific name, common name, current state and federal endangerment status, habitat, and known geographic range for target species that may occur on Diablo Canyon Lands.

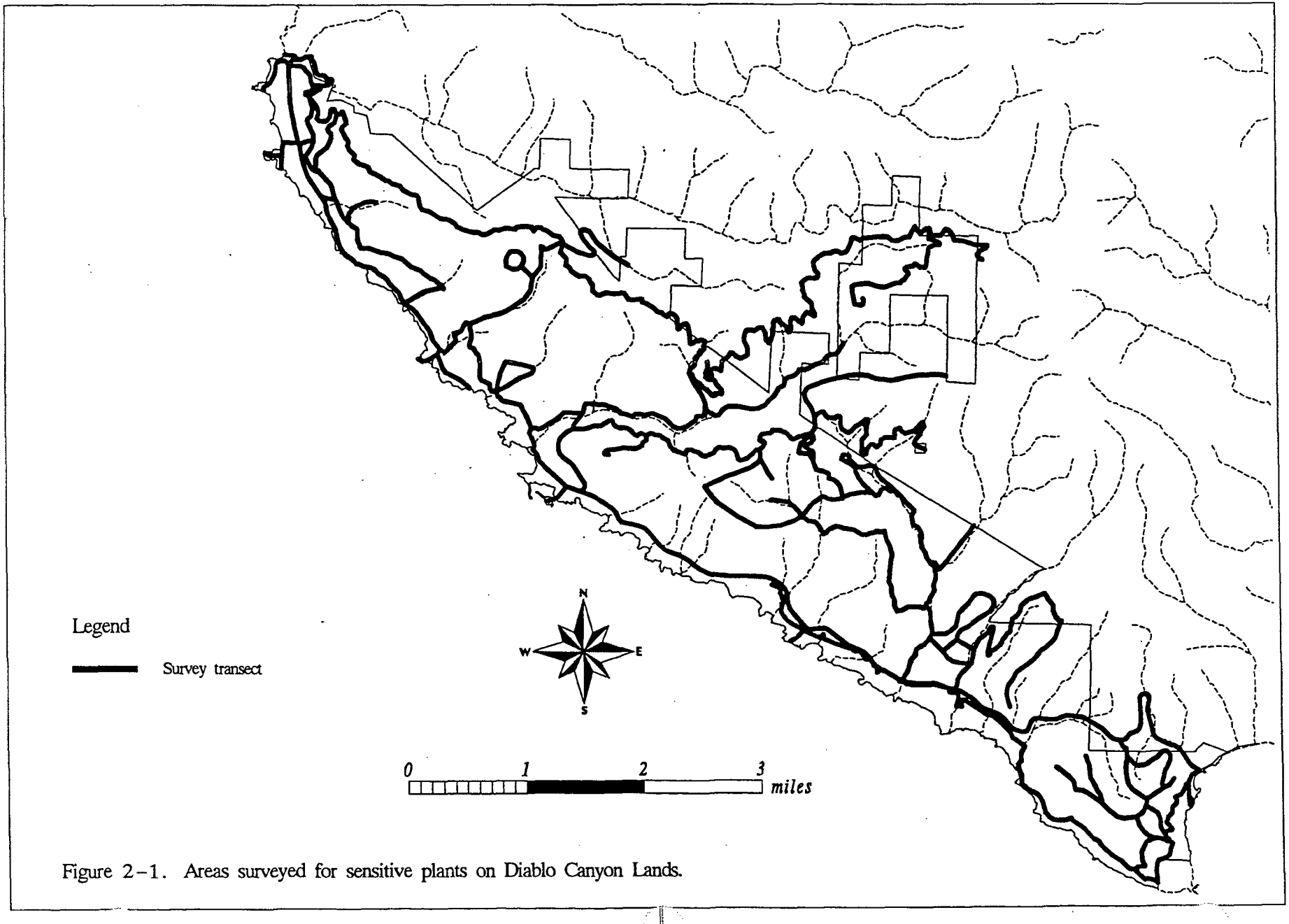

Figure 2-1. Areas surveyed for sensitive plants on Diablo Canyon Lands.

Table 2-1. Status, distribution, and habitat of target sensitive plants that may occur on Diablo Canyon Lands.

Species[1] or Habitat[2]	USFWS Status[3]	Status Trend[4]	State Status[5]	CNPS Status[1]	Habitat Type[1, 6]	Distribution by County[1]
La Cruz manzanita *Arctostaphylos cruzensis*	Cat. 2	U	None	2-2-3 List 1B	Chaparral, coastal scrub, closed-cone conifer forest	MNT SLO
Morro manzanita *Arctostaphylos morroensis*	Cat. 1	D	None	3-2-3 List 1B	Chaparral, coastal scrub, foothill woodland	SLO
Pecho manzanita *Arctostaphylos pechoensis*	Cat. 2	U	None	2-2-3 List 1B	Chaparral, coastal scrub, closed-cone conifer forest	SLO
Edna manzanita *Arctostaphylos wellsii*	None	None	None	2-3-3 List 1B	Chaparral	SLO
Coulter's atriplex *Atriplex coulteri*	None	None	None	3-3-2 List 1B	Coastal scrub	ANA LAX ORA RIV SBA SCT SCZ SBD SDG SMI SRO Baja California
San Luis mariposa lily *Calochortus obispoensis*	Cat. 3c	U	None	2-2-3 List 1B	Chaparral, coastal scrub, serpentine grassland	SLO
San Luis Obispo morning glory *Calystegia subacaulis* ssp. *episcopalis*	Cat. 2	U	None	?-?-3 List 3	Coastal scrub and woodland	SLO
San Luis sedge *Carex obispoensis*	Cat. 3c	U	None	2-1-3 List 1B	Chaparral, coastal scrub, closed-cone conifer forest often on serpentine	SLO
Chorro Creek bog thistle *Cirsium fontinale* var. *obispoense*	Cat. 1	U	None	3-2-3 List 1B	Serpentine seeps in chaparral, foothill woodland	SLO
Beach spectaclepod *Dithyrea maritima*	Cat. 1	D	None	3-3-2 List 1B	Coastal dunes and strand	LAX SBA SLO SMI* SNI VEN BA
San Luis serpentine dudleya *Dudleya abramsii* ssp. *bettinae*	Cat. 2	U	None	3-1-3 List 1B	Serpentine in coastal scrub	SLO
Blochman's leafy daisy *Erigeron foliosus* var. *blochmaniae*	None	None	None	1-2-3 List 1B	Coastal dunes	SBA SLO
Indian Knob mountainbalm *Eriodictyon altissimum*	FE	U	Endangered	3-3-3 List 1B	Chaparral	SLO
Jones' layia *Layia jonesii*	Cat. 2	U	None	3-2-3 List 1B	Chaparral, valley grasslands	MNT SLO
Gairdner's yampah *Perideridia gairdneri* ssp. *gairdneri*	Cat. 2	U	None	1-2-3 List 1B	Chaparral	KRN LAX* MNT MRN NAP ORA* SCL SCR SDG* SLO SMT* SOL SON

Table 2-1. Status, distribution, and habitat of target sensitive plants that may occur on Diablo Canyon Lands (continued).

Species[1] or Habitat[2]	USFWS Status[3]	Status Trend[4]	State Status[5]	CNPS Status[1]	Habitat Type[1,6]	Distribution by County[1]
California sueada *Sueada californica*	None	None	None	3-3-3 List 1B	Coastal salt marsh, strand	ALA* CCA* MRN* NAP* SBA SCL* SFO* SLO SMT* SOL* SON*
Gray's clover *Trifolium grayi*	None	None	None	?-?-2 List 3	Moist meadows and grasslands	MEN MNT MRN SCR SLO SMT SOL SON

[1] Listing and nomenclature corresponds to Smith and Berg (1988) and CNPS (1994). Counties abbreviated by a three-letter code; * = plants presumed extinct in these counties.
[2] Nomenclature follows Holland (1986) and CDFG (1992b).
[3] Cat. 1 = under review, sufficient information to justify listing; Cat. 2 = under review, insufficient information; Cat. 2* = species possibly extinct; Cat. 3c = not currently threatened; FE = listed as endangered.
[4] I = improving, S = stable, D = declining, U = unknown (USFWS 1993).
[5] Section 1904, California Fish and Game Code (CDFG 1992a).
[6] Hoover (1970), Smith (1976), Hickman (1993).

CNPS R-E-D CODE

R (Rarity)
1-Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
2-Occurrence confined to several populations or to one extended population.
3-Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)
1-Not endangered.
2-Endangered in a portion of its range.
3-Endangered throughout its range.

D (Distribution)
1-More or less widespread outside California.
2-Rare outside California.
3-Endemic to California.

2.1.4 Field Methodology

All field work was conducted between August 1992 and mid-October 1993. After review of topographical maps and aerial photographs, survey routes were selected to sample representative habitat areas. Anderson's (1972) study was used to locate sensitive community type in Coon Canyon. Figure 2-1 shows the areas surveyed for sensitive plants.

We identified vascular plants to species or infraspecific taxon (Kartesz and Kartesz 1980) using local and regional floras (Abrams 1923, 1944, 1951; Hitchcock 1950; Abrams and Ferris 1960; Hoover 1970; Anderson 1972; Munz and Keck 1973; Leonard and Gould 1974; Smith 1976; Griffin 1978; Hickman 1993). Scientific nomenclature follows Hickman (1993).

We inventoried all sensitive plant populations within strips in the areas shown on Figure 2-1. Field data were entered on standard field survey data forms. Information recorded included location of nearby landmarks and route of access to the population as determined from the PG&E Diablo Canyon GIS data base; physical (including edaphic) site characteristics such as substrate, microhabitat, relief, and elevation; associated vascular plants; and population size. Populations were photographed when possible.

2.1.5 Mapping of Sensitive Community Types

As part of the effort to map sensitive resources, we studied the species composition of plant communities, qualitatively noted dominant species, and compared our information with Holland's high-priority habitats (1986). We also checked the CNDDB's working list of high-priority habitats (i.e., those habitats that are considered rare or endangered within the state's borders). This information was used to prepare a list of target sensitive plant communities (Table 2-2).

We mapped sensitive resources on 1 inch = 200 feet topographic maps using ocular techniques. Polygons were not based on horizontal control. Resource locations were then digitized into a GIS data base. When possible, corrected aerial photographs (but not stereo pairs) were used to refine or supplement field mapping. Western Aerial Contractor black-and-white photographs (1989) were used with color aerials supplied by PG&E. PG&E habitat polygons were not field verified.

2.1.6 Collection of Voucher Specimens

Voucher specimens were collected for some of the sensitive plant populations. According to the botanist's professional judgment, if removal of whole plants or plant parts would jeopardize the survival of a population, no specimens were collected. If field identification was questionable or a potential hybrid was observed, specimens were collected for vouchers and subsequent verification. All vouchers were labeled and deposited in the Hoover and Diablo Canyon herbaria.

2.2 WILDLIFE

2.2.1 Literature Review

Publications and documents on the wildlife of the Diablo Canyon area were assembled and reviewed prior to initiating field studies. Literature on the wildlife of the region, including conservation status, biology, habitat relationships, and management was collected from numerous sources, including Remsen (1978), the CDFG (1980, 1991, 1992c), Verner and Boss (1980), Garrett and Dunn (1981), Csuti and Kleinsmith (1982), Williams (1986), and Marantz (1986), and Collins (1990). As part of

Table 2-2. Target sensitive plant communities that may occur on Diablo Canyon Lands.

Plant Community	CNDDB Element Code	Site Factors	Associated Species	Distribution
Northern coastal bluff scrub	31100	Exposed to wind and sea salt aerosols; soil usually rocky or poorly developed.	Wild buckwheat, golden yarrow, milkvetch, prostrate fiddleneck, and bicolored lupine.	Localized sites along coast from Point Conception north to Point Mendocino.
Central maritime chaparral	37C20	Well-drained sandy substrates within summer coastal fog zone; also stonier sites or shaley substrates out of fog zone.	Various manzanitas including woollyleaf, Pecho, La Cruz, and Edna manzanita.	Scattered locations near Monterey and Fort Ord and in southern San Luis Obispo and northern Santa Barbara counties.
Coastal terrace prairie	41100	Sandy loams on marine terraces within zone of coastal fog incursion.	California oatgrass, coastal hairgrass, colonial bentgrass, reed fescue, and other perennial grasses.	Discontinuous from Santa Cruz County north into Oregon.
Valley needlegrass grassland	42110	Usually on fine-textured clay soils, moist or even waterlogged during winter but very dry in summer; can intergrade with oak woodland on moist well-drained sites.	Purple needlegrass, various annual grass species, wild onion, yarrow, and plantago.	Formerly extensive within Sacramento, San Joaquin, and Salinas valleys and the Los Angeles basin (now much reduced).
Central coast live oak riparian forest	61220	Drier outer floodplains along perennial streams, ecotonal between more mesic types (willow/cottonwood) and more xeric types (chaparral).	Sage, coyote brush, coastal live oak, squawbush, wild rose, snowberry, poison oak, and wild lilac.	Canyon bottoms and floodplains of the South Coast and Transverse ranges from Sonoma County south to near Point Conception.
Central coast arroyo willow riparian forest	61230	Moist to saturated sandy or gravelly soil, especially on bottomlands and around dune slack ponds within the zone of coastal fog incursion.	Creek alder, arroyo willow, other willow species, and wax myrtle.	Low-gradient stream reaches near the coast from Monterey at least as far south as Santa Barbara.

Table 2-2. Target sensitive plant communities that may occur on Diablo Canyon Lands (continued).

Plant Community	CNDDB Element Code	Site Factors	Associated Species	Distribution
Central coast riparian scrub	63200	Relatively fine-grained sand and gravel bars that are close to river channels and therefore close to groundwater. Coarser substrates or greater depth to groundwater favors coyote brush.	Coyote brush and various willow species including arroyo willow, Coulter's willow, nuttall willow, and shinning willow.	Along and at the mouths of most perennial and many intermittent streams of the South Coast ranges from the San Francisco Bay Area south to Point Conception.
Southern Bishop pine forest	83122	In San Luis Obispo and Santa Barbara counties, it intergrades with central coastal scrub (32200) on dry rocky sites. Similar to northern Bishop pine forest but subject to greater summer fog conditions.	Bishop pine, bracken fern, coffeeberry, poison oak, sword fern, and California huckleberry.	Common in the hills near Point Buchon (San Luis Obispo County), especially in Hazard Canyon. Elsewhere scattered in western Santa Barbara County and the Channel Islands.

our review of available information on the wildlife of the region, we interviewed local resource experts and long-time residents. We also searched the CNDDB data base for known locations of special status species.

To determine the potential occurrence of wildlife species in specific habitat types on the property, we referred to the CDFG Wildlife Habitat Relationships System for San Luis Obispo County. Detailed descriptions of habitats, elements, and species requirements are provided by Mayer and Laudenslayer (1988) and Zeiner et al. (1988, 1990a, 1990b).

2.2.2 Selection of Target Species

A special status wildlife species, as defined for this study, includes any species listed by the U.S. Fish and Wildlife Service (USFWS) or CDFG as threatened or endangered or a proposed or candidate species for such a listing. State species of special concern and fully protected species were also given a special status rating. The current status of species was determined from the CDFG special animals list (CDFG 1992c, 1995b). We also consulted regional experts to determine if additional taxa should be considered as a result of local threats or population declines. Table 2-3 lists all target wildlife species selected for initial field studies.

2.2.3 Assumptions and Specific Field Methodology

2.2.3.1 Selection of Survey Sites and Methods

Using existing information, aerial photographs, and maps provided by PG&E, we conducted a reconnaissance-level survey to verify suitable potential habitat and to determine the accessibility of potential survey areas. We then developed survey methods for each species. Where species' habitats overlapped, we combined surveys to cover more area and save time. To schedule surveys, we considered the temporal aspects of each species' natural history. Surveys were scheduled during the season most critical to the species' viability in the region (e.g., spring/summer breeding season for Cooper's hawk). Standard field survey methodology was used whenever possible.

Given the large size of the Diablo Canyon Lands and the difficulty in accessing some areas, not all potential habitat for each species was surveyed. We focused our field surveys on the most suitable habitat with reasonable access. If a species was observed, we assumed that there was some likelihood it could occur in suitable habitat elsewhere on the property. If the target species was not observed, we did not rule out the possibility of its occurrence on the property. In these cases, we attempted to describe and map suitable habitat on Diablo Canyon Lands. When we suspected birds might be breeding, we returned to the site a week or more later to verify breeding status. This was necessary because migration and breeding periods overlap in many species.

2.2.3.2 Invertebrate Surveys

We surveyed sand and aquatic habitats, appropriate food and host plants, and suitable mating locations. We used standard invertebrate collecting techniques, including netting, beating, and night collecting with black lights and mercury vapor lights. Forty-two surveys were conducted from May through October 1993.

2.2.3.3 Amphibian Surveys

No surveys were conducted for foothill yellow-legged frogs because our reconnaissance showed there was no rocky stream habitat on Diablo Canyon Lands. We seined for the Coast Range newt, California tiger salamander, and California red-legged frog (Figure 2-2). Aquatic habitat was evaluated for suitable physical characteristics such as depth, presence of emergent vegetation, and

Table 2-3. Status of target sensitive invertebrate and vertebrate wildlife species that may occur on Diablo Canyon Lands.

Common Name	Scientific Name	Status
Invertebrates		
California brackish water snail*	*Tryonia imitator*	Cat. 2
Morro Bay shoulderband snail	*Helminthoglypta walkeriana*	Cat. 1
Vernal pool fairy shrimp*	*Branchinecta lynchi*	FPE, Cat. 1
Longhorn fairy shrimp*	*Branchinecta longiantenna*	FPE
Globose dune beetle*	*Coelus globosus*	Cat. 2
Sandy beach tiger beetle*	*Cicindela hirticollis gravida*	Cat. 2
White sand bear scarab beetle*	*Lichnanthe albipilosa*	Cat. 2
Atascadero June beetle*	*Polyphylla nubila*	Cat. 2
Smith's blue butterfly	*Euphilotes enoptes smithi*	FE
Morro Bay blue butterfly	*Icaricia icarioides moroensis*	Cat. 2
San Emigdio blue butterfly	*Plebejus emigdionis*	Cat. 2
Bay checkerspot butterfly*	*Euphydryas editha bayensis*	FT
Unsilvered fritillary butterfly	*Speyeria adiaste adiaste*	Cat. 2
Oso Flaco patch butterfly*	*Chlosyne leanira osoflaco*	Cat. 2
Monarch butterfly	*Danaus plexippus*	SA
Opler's longhorn moth*	*Adela oplerella*	Cat. 2
Henne's eucosman moth*	*Eucosma hennei*	Cat. 2
Oso Flaco robberfly*	*Ablautus schlingeri*	Cat. 2
Amphibians		
Coast Range newt	*Taricha torosa torosa*	CSC
California tiger salamander	*Ambystoma californiense*	CSC, Cat. 2
Foothill yellow-legged frog*	*Rana boylii*	CSC, Cat. 2
California red-legged frog	*Rana aurora draytonii*	CSC, FT
Reptiles		
Southwestern pond turtle	*Clemmys marmorata pallida*	CSC, Cat. 1
California horned lizard*	*Anniella pulchra nigra*	CSC, Cat. 2
Silvery legless lizard	*Anniella pulchra pulchra*	CSC
Southern rubber boa	*Charina bottae umbratica*	CT, Cat. 2
Birds		
White-tailed kite (breeding)	*Elanus caeruleus*	CFP
Northern harrier	*Circus cyaneus*	CSC
Cooper's hawk	*Accipiter cooperi*	CSC
Sharp-shinned hawk	*Accipiter striatus*	CSC
Ferruginous hawk (wintering)	*Buteo regalis*	CSC, Cat. 2
Golden eagle	*Aquila chrysaetos*	CSC, BEPA
Merlin (wintering)	*Falco columbarius*	CSC
Short-eared owl (wintering)	*Asio flammeus*	CSC
Long-eared owl	*Asio otus*	CSC
Burrowing owl	*Speotyto cunicularia*	CSC
California Spotted owl	*Strix occidentalis occidentalis*	CSC
California horned lark (breeding)	*Eremophila alpestris actia*	CSC
Loggerhead shrike (breeding)	*Lanius ludovicianus*	Cat. 2
Yellow warbler	*Dendroica petechia brewsteri*	CSC

Table 2-3. Status of target sensitive invertebrate and vertebrate wildlife species that may occur on Diablo Canyon Lands (continued).

Common Name	Scientific Name	Status
Yellow-breasted chat	*Icteria virens*	CSC
Bell's sage sparrow	*Amphispiza belli belli*	Cat. 2
Tricolored blackbird	*Agelaius tricolor*	Cat. 2
Mammals		
Townsend's big-eared bat	*Plecotus townsendii townsendii*	CSC, Cat. 2
Pallid bat	*Antrozous pallidus*	CSC
Morro Bay kangaroo rat*	*Dipodomys heermanni morroensis*	CE, FE
San Diego desert woodrat	*Neotoma lepida intermedia*	Cat. 2
Ringtail	*Bassariscus astutus*	CFP
Badger	*Taxidea taxus*	CSC

This table was developed before comprehensive field surveys of Diablo Canyon Lands were conducted. The table lists the endangered, threatened, and sensitive wildlife species that could potentially use the study area. The main source of information for status designations is the CDFG's Natural Diversity Data Base (CNDDB) 1991 Special Animals List. Under Section 15380 of the California Environmental Quality Act, a species not included in any formal listing identified by the state "shall nevertheless be considered rare or endangered if the species can be shown to meet the criteria" for listing. Thus, Species of Special Concern (Remsen 1978, Williams 1986) and Special Animals (CNDDB 1992) are included in our table.

* = Species eliminated from further consideration during preliminary surveys because of lack of suitable habitat.

U.S. FISH AND WILDLIFE SERVICE

FE Listed as endangered.

FT Threatened: any species that is likely to become an endangered species (a species in danger of extinction) within the foreseeable future throughout all or a significant portion of its range. These species receive special legal protection under the Endangered Species Act.

FPE Proposed endangered (May 1994).

Cat. 1 Candidate Species, Category 1: taxa that are under review, and for which sufficient biological information exists to support a proposal to list as an endangered or threatened species.

Cat. 2 Candidate Species, Category 2: taxa for which existing information indicates listing may be warranted, but for which substantial biological information to support a proposal is not currently available. These species do not receive special legal protection as candidates, but if they become listed before a project begins, all legal ramifications of the Endangered Species Act apply.

BEPA Federal Bald Eagle Protection Act: golden eagles receive legal protection under this act.

CALIFORNIA DEPARTMENT OF FISH AND GAME

CE Listed as endangered.

CT California Threatened: a native species or subspecies that, although not currently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.

CSC Species of Special Concern: a designation given by the CDFG to animal species whose state breeding populations are of special concern because they may face extirpation. These species receive no special legal protection, but the CDFG recommends consideration of project-related impacts to them to avoid a future listing as threatened or endangered.

CFP Fully Protected Species in California: these species cannot be taken in any manner at any time of the year except for scientific purposes under special permit.

SA Special Animals: taxa that are biologically rare, very restricted in distribution, or declining throughout their range; taxa whose California population is threatened with extirpation; or taxa closely associated with a habitat that is rapidly declining in California (e.g., wetlands, riparian, or old growth forests) (CNDDB 1992).

absence of predators. We selected several seining sites, including the mouth of Coon Creek, Trout Pond, and the reservoirs on the south property. Two biologists swept three separate sections of each pond using a 4- by 6-foot fish seine with 1/8-inch mesh. Each section was less than 4 feet deep. Aquarium dip nets were used in smaller pools. In addition, biologists used binoculars to scan the shoreline of each site to look for adult red-legged frogs. The timing of the surveys varied for each species. The Coast Range newt and tiger salamander surveys were conducted in early and late April 1993; the red-legged frog survey was conducted in late May.

2.2.3.4 Reptile Surveys

Southwestern pond turtle surveys. We conducted simultaneous surveys for southwestern pond turtles and amphibians (Figure 2-2). Before seining for amphibians, we used binoculars to scan the surface and banks of each aquatic site.

Silvery legless lizard surveys. We surveyed for silvery legless lizards in areas with loose, sandy soils and leaf litter. We located sandy or sandy/loam soils by reviewing a soils map. Based on this map, we visited several sites that could have appropriate soil and raked the area to search for legless lizards. We also selected sites with accumulated leaf litter, primarily in oak woodland, and raked several large areas for lizards. Surveys were conducted in early April 1993, when surface soils were still moist.

Southern rubber boa surveys. Our evaluation of this species was based on local records and the occurrence of suitable habitat. No field surveys were conducted.

2.2.3.5 Bird Surveys

Raptor winter surveys. Raptor winter surveys focused on ferruginous hawks, northern harriers, white-tailed kites, and merlins. An observer walked or drove along the coastal marine terrace bordering the property (Figure 2-3). Stopping every 0.5 mile, the observer used binoculars to scan the area for 15 minutes. Two 4-hour surveys were conducted on successive days.

Cooper's and sharp-shinned hawk breeding surveys. We conducted surveys in stands of mature oak and riparian woodland (Figure 2-4). Belt transect surveys were conducted with each observer stopping every 25 meters and scanning the woodland canopy in a 360-degree sweep. We conducted four 4-hour surveys in late May and early June 1993.

Golden eagle breeding surveys. We surveyed for breeding golden eagles in areas with potential nesting sites such as large trees, cliffs, and transmission line towers. An observer drove along roads and surveyed ridgelines for golden eagles and scanned trees, cliff faces, and towers. Two 4-hour surveys were conducted in late April and early May 1993.

Northern harrier and white-tailed kite breeding surveys. An observer surveyed for breeding northern harriers and white-tailed kites by walking or driving along the inland edge of the coastal marine terrace that borders the entire length of the property. Stopping every 0.5 mile, the observer used binoculars to scan the area for 15 minutes. Two 4-hour surveys were conducted on successive days during the last week of April 1993.

Burrowing and short-eared owl winter surveys. In January 1993, an observer conducted a meandering survey along the entire length of the coastal marine terrace. The observer periodically stopped and used binoculars to scan the immediate area, looking for owls perched on the ground.

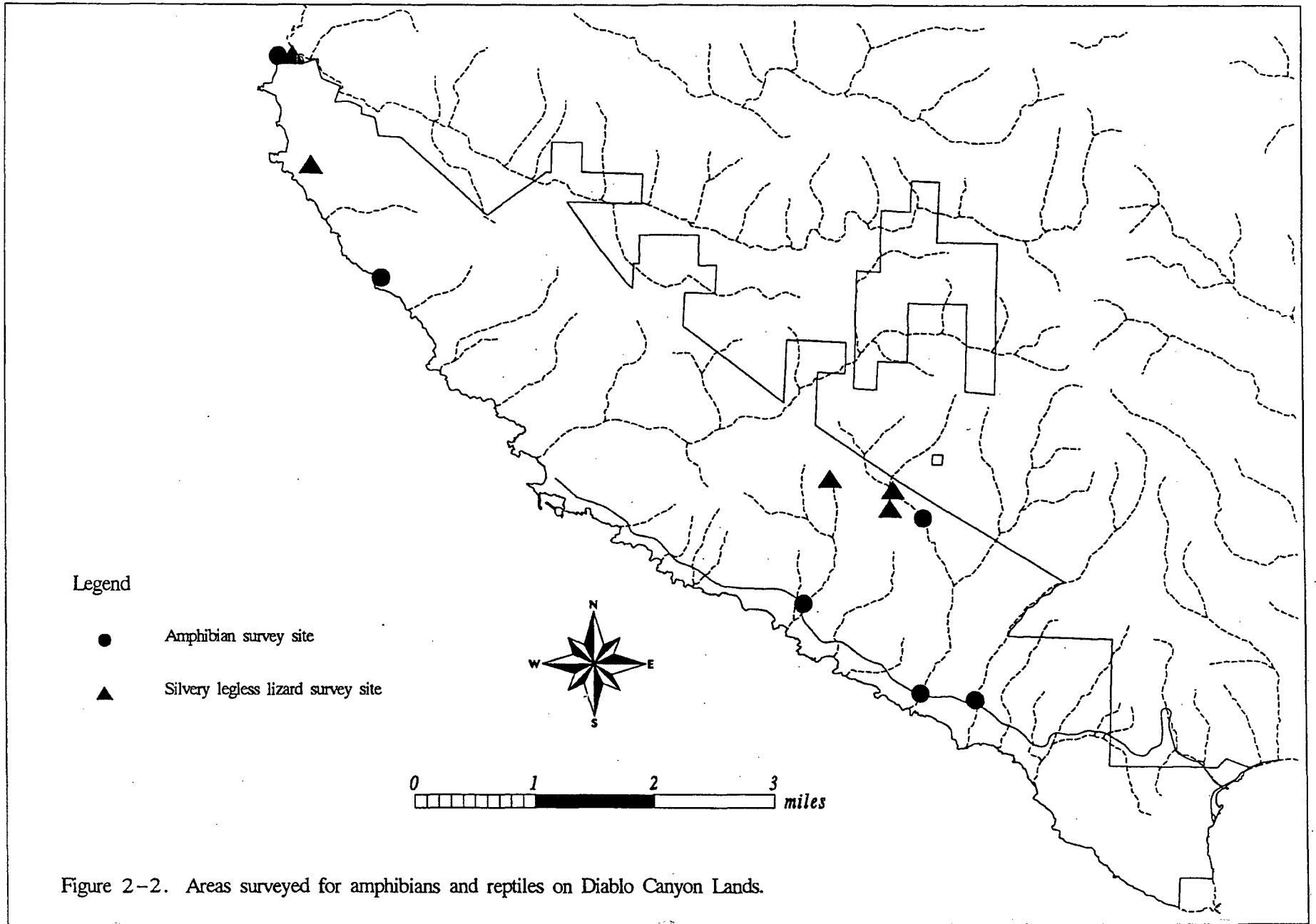

Figure 2-2. Areas surveyed for amphibians and reptiles on Diablo Canyon Lands.

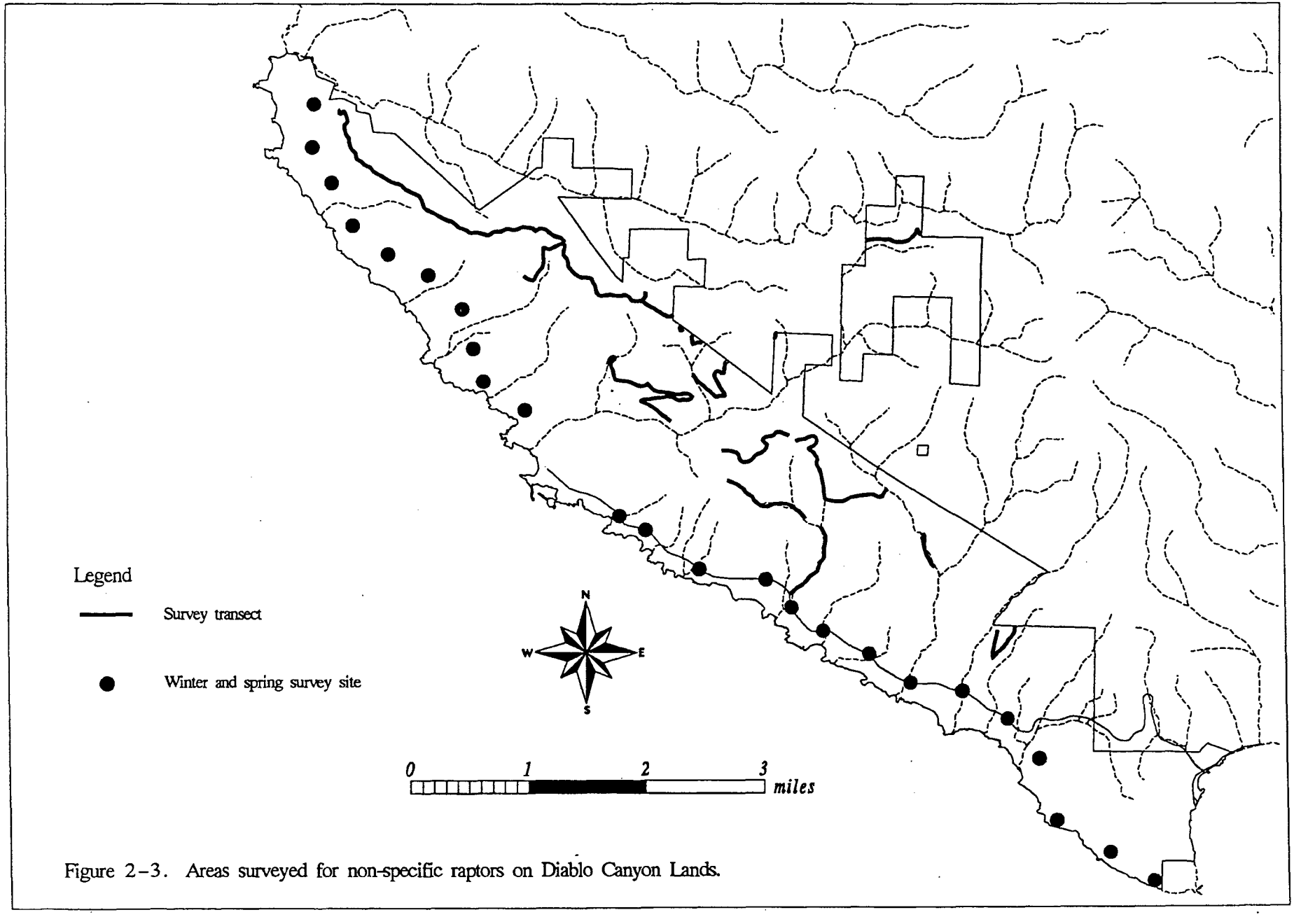

Figure 2-3. Areas surveyed for non-specific raptors on Diablo Canyon Lands.

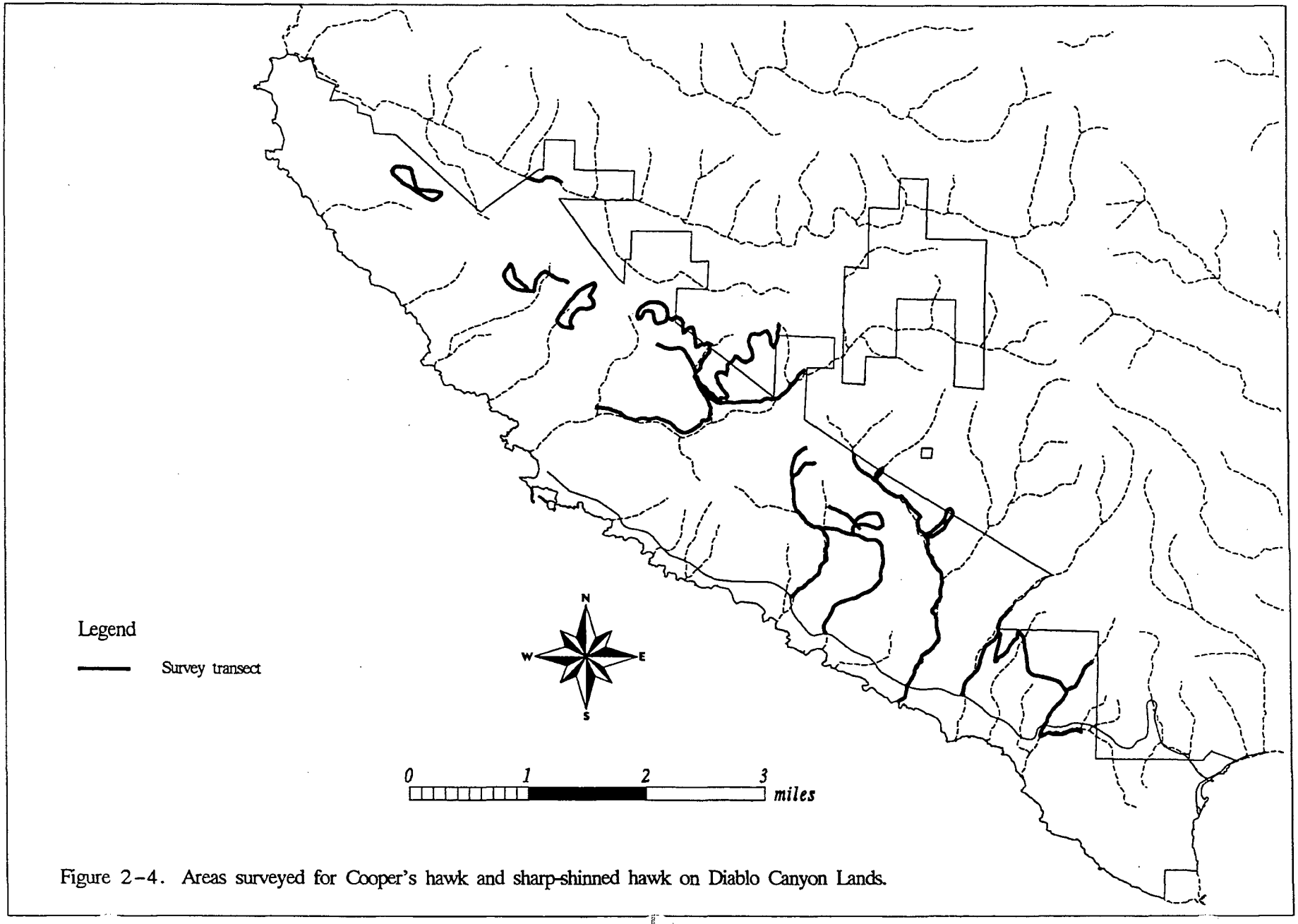

Figure 2-4. Areas surveyed for Cooper's hawk and sharp-shinned hawk on Diablo Canyon Lands.

The observer also examined squirrel colonies for owl pellets, feathers, and scat. Two 4-hour surveys were conducted during the early morning on successive days (Figure 2-5).

Burrowing owl breeding surveys. We conducted burrowing owl breeding surveys along the marine terrace north of the power plant (Figure 2-5). An observer performed a meandering survey, stopping every 100 meters and using binoculars to scan the immediate area. The observer also examined squirrel colonies for owl pellets, feathers, and scat. In early April 1993, we conducted two 4-hour surveys during the early morning on successive days. We also returned to three burrows that were occupied in winter to check if they were still occupied.

Long-eared owl breeding surveys. Riparian thickets in Coon Creek and Irish Canyon were surveyed for breeding long-eared owls (Figure 2-5). In early April 1993, an observer walked through and along dense riparian thickets to flush roosting birds.

California Spotted owl breeding surveys. We conducted nighttime spotted owl breeding surveys along trails in the densely wooded canyon bottoms of Diablo Canyon and the upper part of Irish Canyon (Figure 2-6). Two observers walked along a trail and stopped every 100 meters to play a recorded spotted owl call and listened for a response for 10 minutes. Two 3-hour calling surveys were conducted in late March and early April 1993.

Open habitat passerine breeding surveys. We targeted the California horned lark, loggerhead shrike, and Bell's sage sparrow for spring breeding surveys in coastal scrub chaparral and grassland habitats (Figure 2-7). Specific habitat types surveyed for each species were as follows:

- California horned lark: grassland.
- Loggerhead shrike: grassland with scattered trees and shrubs or along woodland borders.
- Bell's sage sparrow: coastal scrub and chaparral vegetation.

An observer walked along a straight line or trail and stopped every 100 meters to scan the area and listen for songs. Scolding calls and pygmy owl calls were used to attract birds to the observation station. In March and April 1993, we conducted two 4-hour surveys for each species during morning hours. These were then repeated for each species 2 weeks later.

Riparian passerine breeding surveys. We targeted the yellow warbler and yellow-breasted chat for surveys in all of the major drainages containing riparian vegetation, including Coon Creek, Diablo, Pecho, Irish, Deer, and Rattlesnake canyons (Figure 2-7). An observer walked a riparian corridor and stopped for 10 minutes every 100 meters. The observer listened for calls and songs and used binoculars to scan the vegetation and surrounding habitat. Each area was surveyed twice in May and June 1993, with a minimum of 2 weeks between surveys.

Tricolored blackbird breeding surveys. We surveyed for tricolored blackbirds in the two ponds with emergent wetland and at the mouth of Coon Creek. One observer surveyed the entire area at each site once in April 1993.

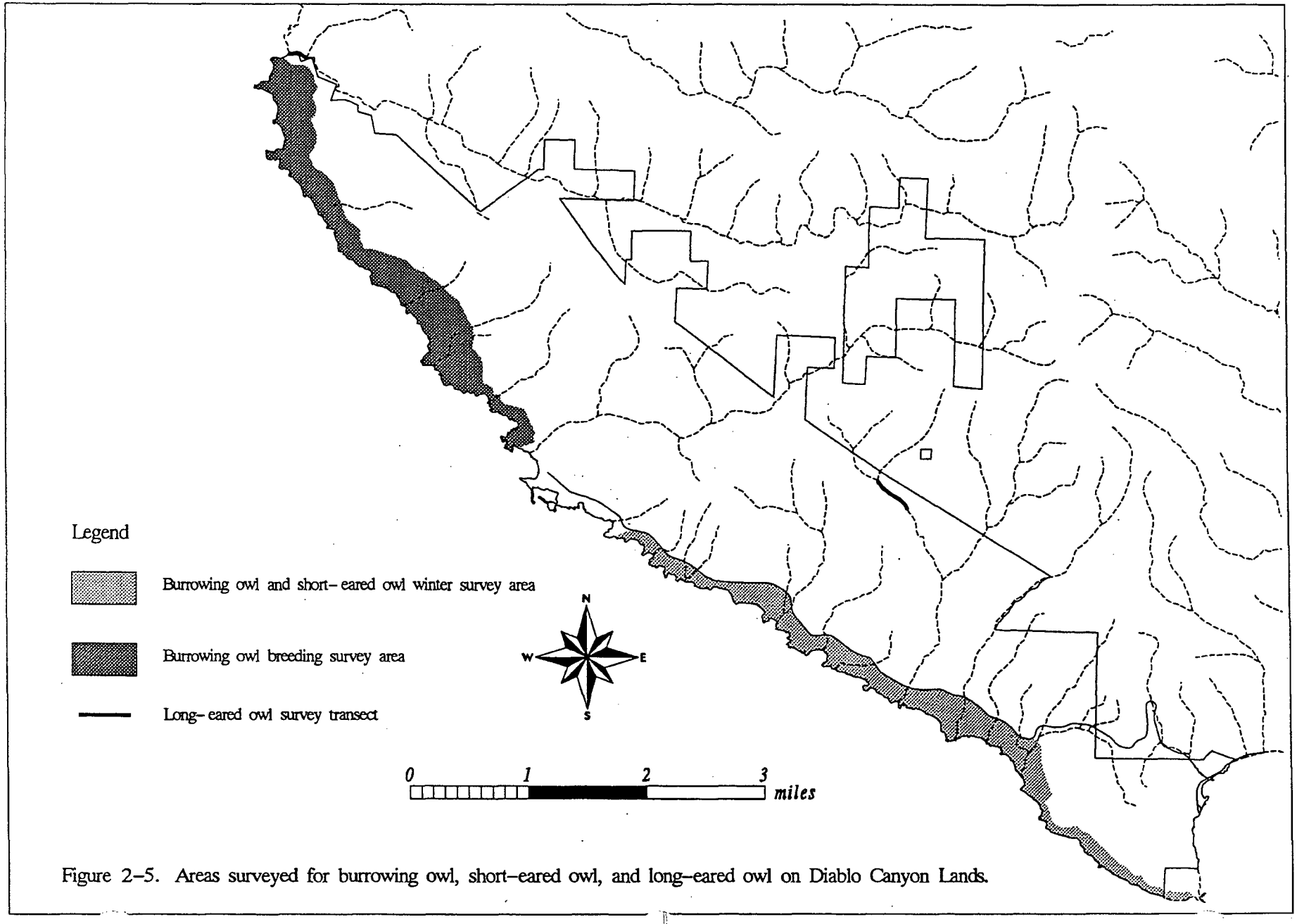

Figure 2–5. Areas surveyed for burrowing owl, short–eared owl, and long–eared owl on Diablo Canyon Lands.

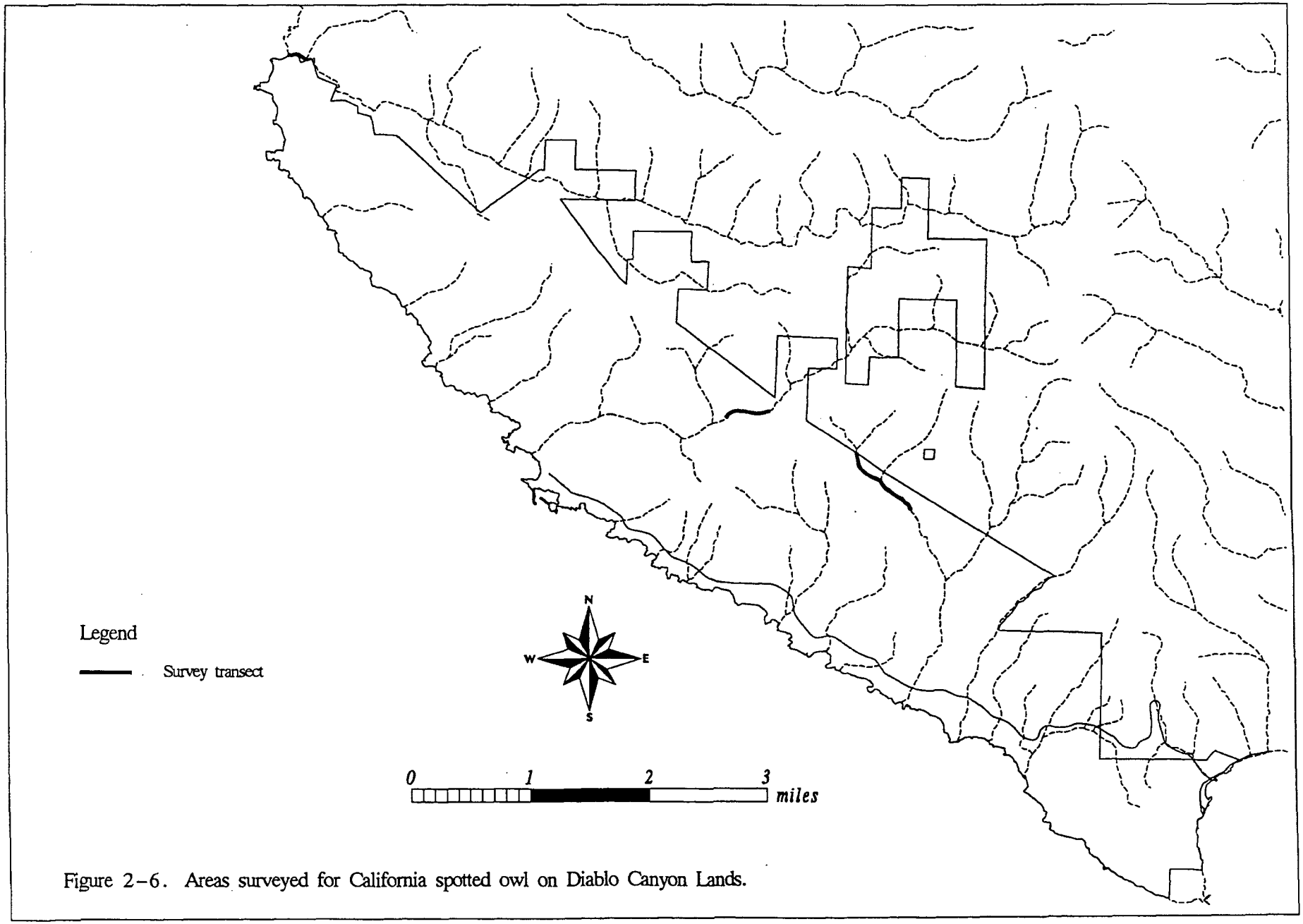

Figure 2-6. Areas surveyed for California spotted owl on Diablo Canyon Lands.

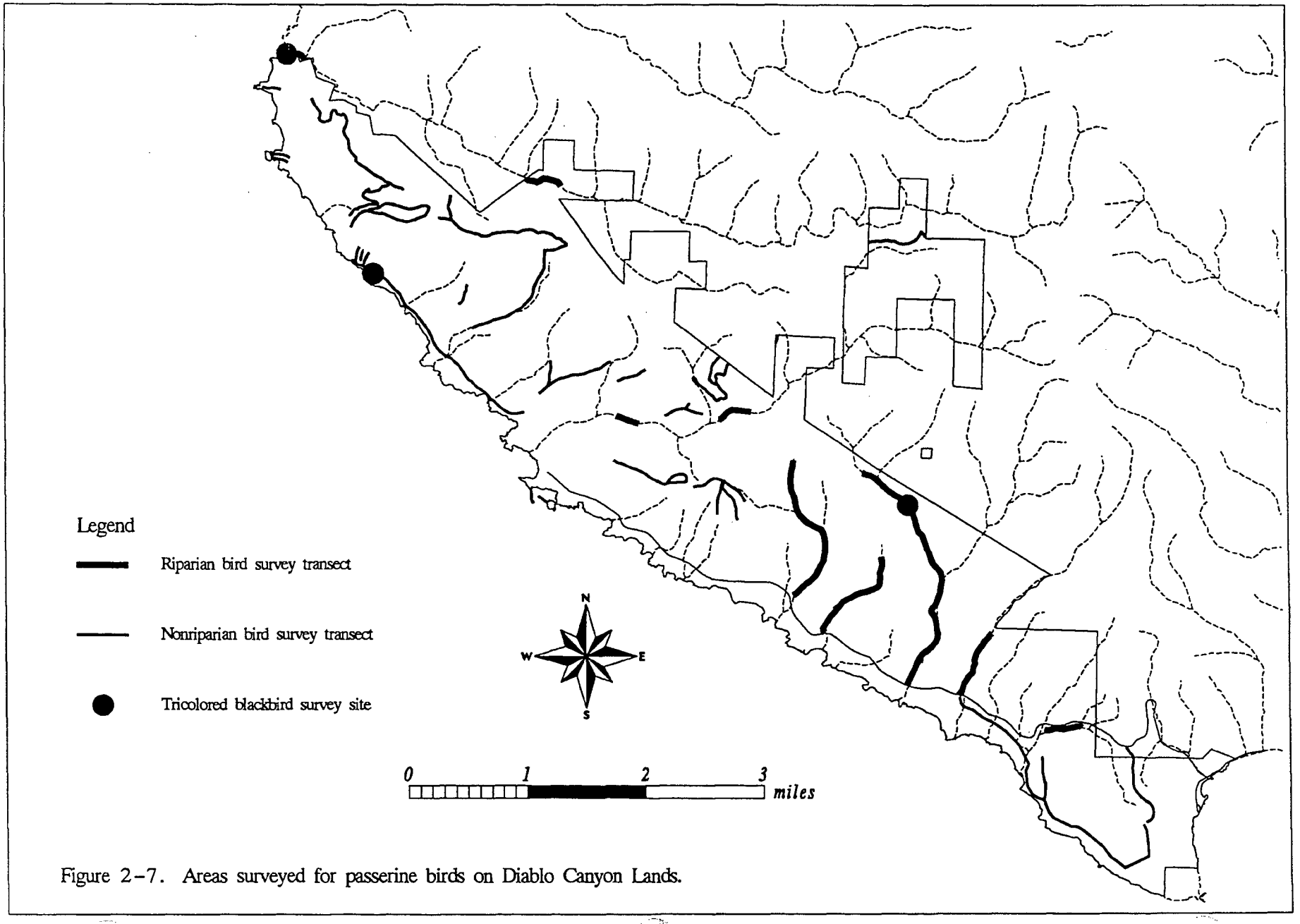

Figure 2-7. Areas surveyed for passerine birds on Diablo Canyon Lands.

2.2.3.6 Mammal Surveys

Townsend's big-eared and pallid bat surveys. We used a combination of techniques to survey for Townsend's big-eared and pallid bats (Figure 2-8). During daytime surveys, we searched for potential roost sites and foraging habitat. On two nights, we placed mist nets in Pecho and Irish canyons along likely foraging areas such as streambeds, across ponds, or within oak woodlands near water. The nets were set from dusk to midnight. At the same time, we conducted acoustic surveys using a Pettersen 980 bat detector.

Ringtail surveys. We conducted camera surveys to detect the presence of ringtail and other carnivores (Figure 2-9). In October and November 1992, we placed eight Trailmaster cameras with infrared trip switches and bait in canyons near water. We placed camera stations in Coon Creek, Ruda, Crowbar, Irish, Pecho, Diablo, and Rattlesnake canyons and one unnamed site east of Deer Canyon. Cameras were left in place for an average of 10 days and checked every 3-4 days to replace film and bait.

Badger surveys. Badger surveys were conducted simultaneously with burrowing owl winter and spring breeding surveys (Figure 2-9). We examined large burrows along the entire length of the lower marine terrace for evidence of digging by badgers.

Morro Bay kangaroo rat surveys. We did not survey for Morro Bay kangaroo rat because our literature review, consultations with species experts, and a reconnaissance survey for suitable habitat strongly suggested they would not occur on the property.

San Diego desert woodrat surveys. In October 1992, we conducted a reconnaissance survey to search for San Diego desert woodrat nests in rock outcrops in grassland, coastal scrub, and chaparral habitats (Figure 2-9). We selected four woodrat nest sites for trapping. In addition, we selected two sites without known nests in what otherwise appeared to be suitable habitat. In early April 1993, we placed traplines of 10-20 Sherman small mammal traps at the six sites for one night. Traps were baited with small seeds and checked early the following morning. Standard morphological measurements, sex, and age class were noted for all captures prior to release.

2.2.4 Mapping of Suitable Habitat

Criteria for mapping suitable habitat were based on surveys on the property, existing literature, and expert opinion. PG&E's GIS data base provided the variables used to map suitable habitat, including plant communities, slope, and aspect. In some instances, important wildlife features such as rock outcrops and wetland sites were added to the data base to more accurately represent suitable habitat. Plant community coverage is only a rough representation of wildlife habitat because it does not consider specific microhabitat characteristics within the community to determine whether a habitat is suitable for a particular species. For this reason, suitable wildlife habitat is undoubtedly overrepresented in most cases.

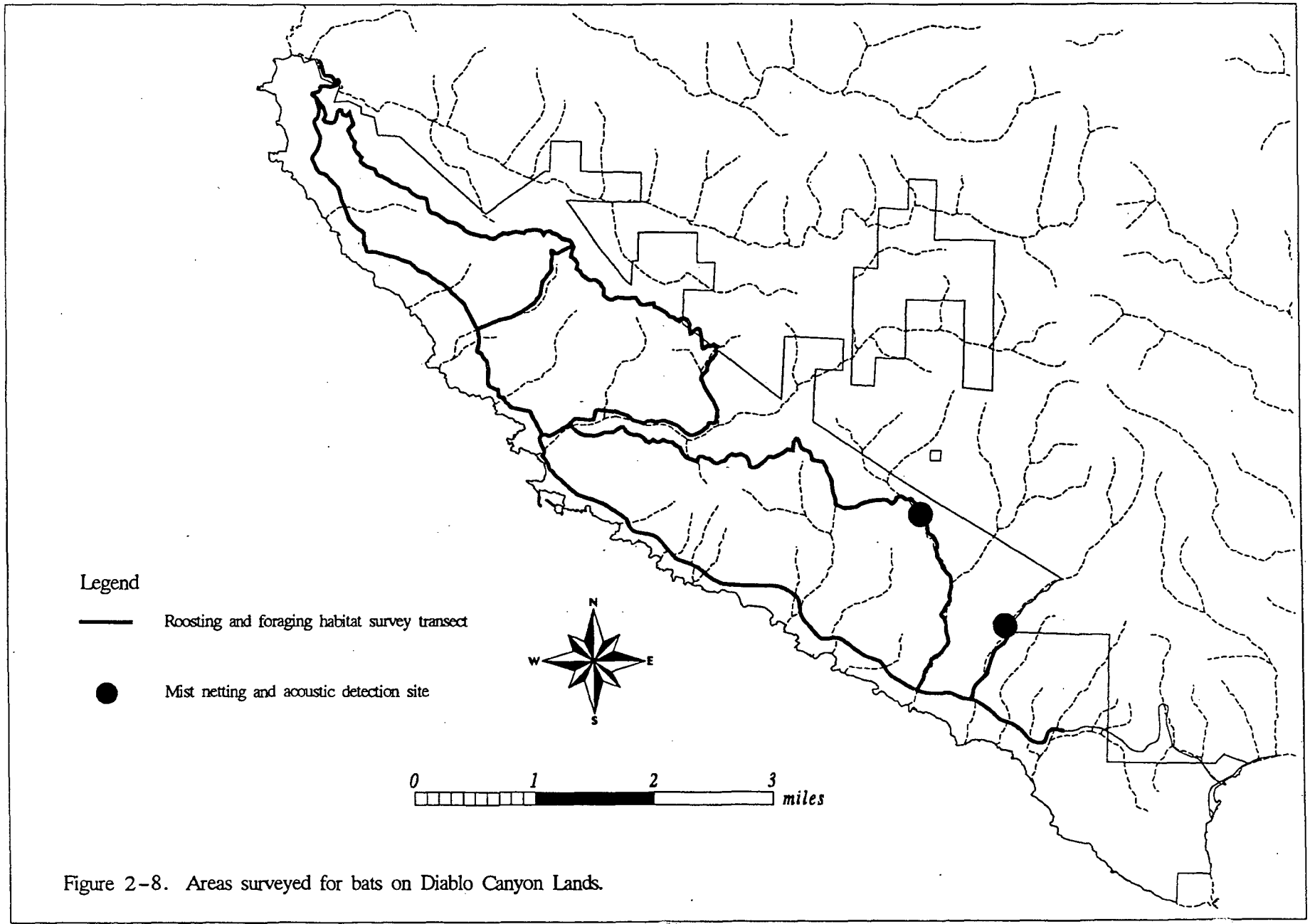

Figure 2-8. Areas surveyed for bats on Diablo Canyon Lands.

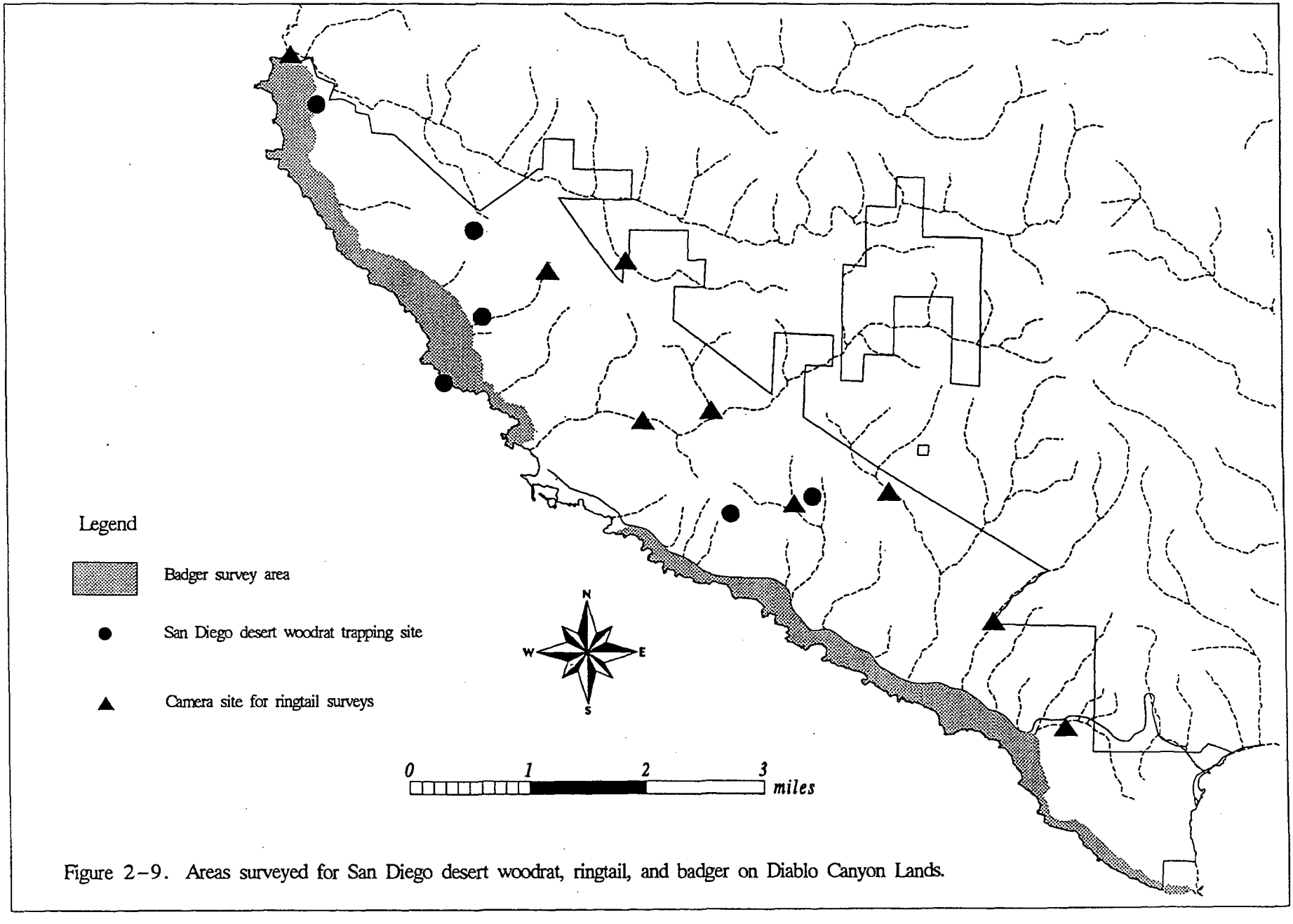

Figure 2-9. Areas surveyed for San Diego desert woodrat, ringtail, and badger on Diablo Canyon Lands.

3.0 RESULTS

3.1 VEGETATION

Over 400 species of vascular plants were identified during our surveys. These included 11 species of ferns and fern allies, 2 species of cone-bearing seed plants, more than 60 monocotyledonous flowering plants, and more than 320 species of dicots. The most commonly encountered vascular plant families on the property are the sunflower family (Asteraceae), represented by more than 70 species, and the legume (Fabaceae) and grass families (Poaceae), each with more than 35 species. All vascular plants identified within the study area are listed in Appendix B. The list does not include undocumented taxa located outside of the survey corridors and polygons shown in Figure 2-1.

The results of sensitive plant and habitat surveys are summarized in Table 3-1. Additional detailed information (including habitat maps) of each special status plant species known to or likely to occur on the property is contained in Volume II. Four target sensitive plant species were identified on Diablo Canyon Lands. Each is currently classified under List 1B (plants rare, threatened, endangered or presumed extirpated or extinct in California and elsewhere) of the CNPS. Two of these species are also currently listed by the USFWS under Category 2 of the federal Endangered Species Act. One additional species, Indian Knob mountainbalm, though not found during field surveys, is a likely candidate to occur on Diablo Canyon Lands based on the extent of suitable habitat and the presence of nearby populations. This species is currently listed as endangered under the California Endangered Species Act and the federal Endangered Species Act.

Three species of botanical interest (Hoover's bentgrass, Santa Lucia lupine, and straggly gooseberry) were also identified on Diablo Canyon Lands. These species do not warrant specific management efforts at this time.

Of the eight communities identified in Table 2-2 as target sensitive plant communities, five were identified as occurring on Diablo Canyon Lands. These include northern coastal bluff scrub, central maritime chaparral, central coast live oak riparian forest, central coast riparian scrub, and southern Bishop pine forest. In addition, two other sensitive plant communities, coastal terrace prairie and valley needlegrass grassland, were found to occur as scattered remnants within the grassland cover type and locally in association with several other community types found throughout the property. This is of particular interest as neither of these types has been previously described from this part of California. Each of the occurring sensitive natural communities has been mapped and is described in detail in Volume II of the inventory.

No serpentine derived soils or serpentine rock outcrops were identified on Diablo Canyon Lands during review of the literature or during field surveys.

3.2 WILDLIFE

Twelve special status wildlife species were identified during surveys on the property. Ten of these are classified as California Species of Special Concern (CDFG 1992c). In addition, five are listed under Category 2 of the federal Endangered Species Act. One additional species of interest, the grasshopper sparrow, was identified on the property. This species does not warrant specific management efforts at this time. Table 3-2 identifies those species known to or likely to occur on

Table 3-1. Survey results for target sensitive community types and plants known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands.

Species[1] or Habitat[2]	USFWS Status[3]	Status Trend[4]	State Status[5]	CNPS Status[1]	Habitat Type[1, 6]	Distribution by County[1]	Acres of Suitable Habitat	Location in Project Area
Central maritime chaparral	None	None	*	N/A	N/A	MNT SBA SLO	2,644	Widespread
Bishop pine forest	None	None	*	N/A	N/A	DNT HUM MNT MRN SBA SLO	322	Widespread
Central coast riparian scrub	None	None	*	N/A	N/A	MNT SBA SLO	166	Moist canyons
Northern coastal bluff scrub	None	None	*	N/A	N/A	MNT SBA SLO	302	Coastal bluffs and
Coastal terrace prairie/ valley needlegrass grassland	None	None	*	N/A	N/A	MNT SBA SLO	—[7]	Coastal terraces and slopes
Central coast live oak riparian forest	None	None	*	N/A	N/A	MNT SBA SLO	<100	Diablo Creek and Irish Canyon
La Cruz manzanita *Arctostaphylos cruzensis*	Cat. 2	U	None	2-2-3 List 1B	Central maritime chaparral, coastal scrub, closed-cone conifer forest	MNT SLO	3,756	Coon Creek cluster, Last Peak
Pecho manzanita *Arctostaphylos pechoensis*	Cat. 2	U	None	2-2-3 List 1B	Central maritime chaparral, coastal scrub, closed-cone conifer forest	SLO	3,756	Saddle and Green Peak cluster, Last Peak, Devils Ridge
Edna manzanita *Arctostaphylos wellsii*	None	None	None	2-3-3 List 1B	Central maritime chaparral	SLO	3,756	San Luis Hill
Coulter's saltbush *Atriplex coulteri*	None	None	None	3-3-2 List 1B	Coastal scrub and sea stacks, bluffs	ANA LAX ORA RIV SBA SBD SCT SCZ SDG SMI SRO, Baja California	302	Sea stacks, coastal bluff near Crowbar Peak
San Luis Obispo morning glory *Calystegia subacaulis* ssp. *episcopalis*	Cat. 2	U	None	?-?-3 List 3	Coastal scrub and woodland	SLO	8,719	Not found
Beach spectaclepod *Dithyrea maritima*	Cat. 1	D	None	3-3-2 List 1B	Coastal dunes and strand	BA LAX SBA SLO SMI* SNI VEN	321	Not found

Table 3-1. Survey results for target sensitive community types and plants known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

Species[1] or Habitat[2]	USFWS Status[3]	Status Trend[4]	State Status[5]	CNPS Status[1]	Habitat Type[1, 6]	Distribution by County[1]	Acres of Suitable Habitat	Location in Project Area
Indian Knob mountainbalm *Eriodictyon altissimum*	FE	U	Endangered	3-3-3 List 1B	Chaparral	SLO	1,063	Not found but occurs in Hazard Canyon to the north of Coon Creek
Jones' layia *Layia jonesii*	Cat. 2	U	None	3-2-3 List 1B	Chaparral, valley grasslands	MNT SLO	3,813	Not found
Gairdner's yampah *Perideridia gairdneri* ssp. *gairdneri*	Cat. 2	U	None	1-2-3 List 1B	Chaparral	KRN LAX* MNT MRN NAP ORA* SCL SCR SDG* SLO SMT* SOL SON	1,063	Not found
California sueada *Sueada californica*	None	None	None	3-3-3 List 1B	Coastal salt marsh, strand	ALA* CCA* MRN* NAP* SBA SCL* SFO* SLO SMT* SOL* SON*	321	Not found
Gray's clover *Trifolium grayi*	None	None	None	?-?-2 List 3	Moist meadows and grasslands	MEN MNT MRN SCR SLO SMT SOL SON	2,750	Not found

[1] Listing and nomenclature corresponds to Smith and Berg (1988) and CNPS (1994). Counties abbreviated by a three-letter code; * = plants presumed extinct in these counties.
[2] Nomenclature follows Holland (1986) and CDFG (1992b).
[3] Cat. 1 = under review, sufficient information to justify listing; Cat. 2 = under review, insufficient information; Cat. 2* = species possibly extinct; Cat. 3c = not currently threatened; FE = listed as endangered.
[4] I = improving, S = stable, D = declining, U = unknown (USFWS 1993).
[5] Section 1904, California Fish and Game Code (CDFG 1992a).
[6] Hoover (1970), Smith (1976), Hickman (1993).
[7] Native perennial grasses occur as scattered single-species populations or aggregate populations of several species occupying small areas (usually less than 1 acre) within the greater annual grassland community. In addition, these species may occur as a minor component of other community types including chaparral, coastal scrub, oak woodland, Bishop pine, and coastal bluffs. For this reason, a precise calculation of suitable habitat area could not be made.
*Communities rare in California (Holland 1986).

Table 3-1. Survey results for target sensitive community types and plants known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

CNPS R-E-D CODE

R (Rarity)

1-Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
2-Occurrence confined to several populations or to one extended population.
3-Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1-Not endangered.
2-Endangered in a portion of its range.
3-Endangered throughout its range.

D (Distribution)

1-More or less widespread outside California.
2-Rare outside California.
3-Endemic to California.

Diablo Canyon Lands. Volume II contains a detailed account (including location maps) for each of these wildlife species.

Based on the lack of suitable habitat observed during reconnaissance and subsequent surveys, as well as the lack of observations during collecting surveys, we eliminated 9 of the 19 target species (Table 2-3). We eliminated seven species based on the absence of appropriate habitat during a preliminary survey of Diablo Canyon Lands on November 23, 1992. Two additional species, the Atascadero June beetle and the California brackish water snail, were eliminated following subsequent surveys. The Atascadero June beetle has only been collected near Atascadero, California (Young 1988), and black light surveys on Diablo Canyon Lands failed to attract any individuals. The only two likely locations for the California brackish water snail were the mouth of Coon Creek and Trout Pond. Both of these sites appeared to be too low in salinity to provide suitable habitat.

After seining for California tiger salamanders, we determined that all potential breeding sites were unsuitable. Coon Creek and Trout Pond contained predatory fish, and reservoirs on the south property were drained during the breeding season. For these reasons, we removed the tiger salamander from further consideration in this report. If the practice of draining the reservoirs is changed or abandoned, the aquatic habitat may become suitable. The upland habitat appears to be suitable for terrestrial adults.

Table 3-2. Survey results for target sensitive invertebrate and vertebrate wildlife species known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands.

Species	Status	Species Observed on Site	Habitat Use	Acres of Suitable Habitat	Habitat Descriptions
INVERTEBRATES					
Morro Bay blue butterfly *Icaricia icarioides moroensis*	Cat. 2	No	Host plant	14	Coastal dunes associated with dune lupine (*Lupinus chamissonis*).
Smith's blue butterfly *Euphilotes enoptes smithi*	FE	No	Larval food plants	568	Coastal dunes and coastal scrub associated with wild buckwheat (*Eriogonum latifolium, E. parvifolium*, and *E. nudum*).
San Emigdio blue butterfly *Plebejus emigdionis*	Cat. 2	No	Larval food plants	139	Saltbush (*Atriplex canescens*) and occasionally *Lotus purshianus*.
Monarch butterfly *Danaus plexippus*	SA	Yes	Overwintering	1	Trees such as Monterey pine (*Pinus radiata*) and blue gum (*Eucalyptus globulus*) usually within 1 mile of the coastline.
Unsilvered fritillary butterfly *Speyeria adiaste adiaste*	Cat. 2	No	Food plants	1,448	Larvae: associated with grassland habitats containing food plants such as violets (*Viola quercetorum* and *V. purpurea*). Adults: thistles (*Cirsium* spp.), mint (*Monardella*), and buckeye tree (*Aesculus californica*).
Morro Bay shoulderband snail *Helminthoglypta walkeriana*	Cat. 1	No	Year-round	268	Duff beneath various dune plants in coastal strand and coastal sage scrub.
VERTEBRATES					
Amphibians					
Coast Range newt *Taricha torosa torosa*	CSC	No	Breeding	Moderate: 27,501 Low: 79,431 (stream feet)	Streams, ponds, and any other available surface water.
California red-legged frog *Rana aurora draytoni*	CSC, FT	No	Breeding	107,108 (stream feet)	Breeds in temporary and permanent water sources with pools and ponds. Breeding sites are usually greater than 2 feet deep and contain emergent vegetation.

Table 3-2. Survey results for target sensitive invertebrate and vertebrate wildlife species known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

Species	Status	Species Observed on Site	Habitat Use	Acres of Suitable Habitat	Habitat Descriptions
Reptiles					
Southwestern pond turtle *Clemmys marmorata pallida*	CDC, Cat. 2	No	Breeding	Moderate: 27,501 Low: 79,431 (stream feet)	Lives in or near any temporary or permanent water sources, usually in ponds and deeper pools in permanent streams.
Silvery legless lizard *Anniella pulchra pulchra*	CSC	No	Year-round	2,676	Found in areas with sandy or loose organic soils or where there is abundant leaf litter.
Southern rubber boa *Charina bottae umbratica*	CT, Cat. 2	*	Year-round	High: 322 Low: 9,538	Seeks cover beneath rotting logs, rocks, and bark of fallen and dead standing trees. Bishop pine forest and riparian areas are most suitable habitats on Diablo Canyon Lands.
Birds					
White-tailed kite *Elanus caeruleus*	CFP, SA	No	Breeding	1,669	Inhabits grasslands, agricultural fields, marshes, and roadsides where rodents are common. Nests are constructed in oak, willow, or other tree stands.
Northern harrier *Circus cyaneus*	CSC	No	Breeding	527	Inhabits fresh and saltwater marshes, grasslands, and agricultural fields. Nests are usually on the ground near wet areas such as marshes, where they use dense grasses or shrubby vegetation for cover.
Sharp-shinned hawk *Accipiter striatus*	CSC	Yes	Breeding	380	No nesting individuals were observed. Nests are often found near water and in dense woodlands next to open areas.
Cooper's hawk *Accipiter cooperi*	CSC	Yes	Breeding	High: 1,427 Moderate: 1,681 Low: 153	One nesting pair was observed in Irish Canyon; a few other individuals were observed and may have been breeding on the property. Generally associated with riparian areas and other woodlands; dense stands near water are preferred. Forage in broken woodlands and woodland edges.

Table 3-2. Survey results for target sensitive invertebrate and vertebrate wildlife species known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

Species	Status	Species Observed on Site	Habitat Use	Acres of Suitable Habitat	Habitat Descriptions
Ferruginous hawk *Buteo regalis*	CSC, Cat. 2	Yes	Winter foraging	2,996	Prefers open habitats such as grasslands and agricultural areas to forage for small mammals.
Golden eagle *Aquila chrysaetos*	CFP, CSC, BEPA	Yes	Breeding	2,999	Observed foraging for ground squirrels near Crowbar Rock; prefers open, sloping landscapes such as foothills and canyons, with cliffs and trees for nesting and cover. Adjacent, open terrain such as grasslands is used for hunting. Nests are located in large trees, cliffs, or transmission towers with an unobstructed view.
Merlin *Falco columbarius*	CSC	Yes	Winter foraging	1,247	Observed soaring over project area. Inhabits coastal areas, open woodlands, savannahs, and grasslands. Prefers open country and is often nomadic during the winter.
Burrowing owl *Speotyto cunicularia*	CSC	Yes	Year-round	525	Observed occupying squirrel burrows on marine terrace north of the power plant. Prefers open, dry grasslands; agricultural areas; and rolling hills at low elevations. Abandoned ground squirrel and other mammal burrows are used for nesting.
California spotted owl *Strix occidentalis occidentalis*	CSC, Cat. 2	No	Breeding	388	Prefers mature stands of woodland habitats that provide dense canopy cover. Suitable habitat occurs in the mature oak and riparian woodlands of large canyons such as Diablo and Irish canyons.
Long-eared owl *Asio otus*	CSC	No	Breeding	166	Prefers riparian habitat or other thickets with a dense canopy for nesting and roosting. Usually hunts in open areas and occasionally woodlands.
Short-eared owl *Asio flammeus*	CSC	No	Breeding	2,780	Found in open country, marshes, wet meadows, and fields. Nests are on the ground in grasslands below a 2,000-foot elevation.
California horned lark *Eremophila alpestris actia*	CSC, Cat. 2	Yes	Breeding	2,780	Several nesting pairs were observed in grazed pastureland. Found in open habitats such as coastal grasslands and pastureland, where they breed on the ground.

Table 3-2. Survey results for target sensitive invertebrate and vertebrate wildlife species known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

Species	Status	Species Observed on Site	Habitat Use	Acres of Suitable Habitat	Habitat Descriptions
Loggerhead shrike *Lanius ludovicianus*	Cat. 2	Yes	Breeding	1,861	No breeding pairs were observed. Nests are located in the dense foliage of shrubs and trees adjacent to open habitat, where they prefer to forage.
Yellow warbler *Dendroica petechia brewsteri*	CSC	Yes	Breeding	High: 50 Low: 116	No breeding pairs were observed. Prefers dense, multi-layered tree canopy and heavy brush understory in riparian woodlands.
Yellow-breasted chat *Icteria virens*	CSC	No	Breeding	High: 81 Low: 85	Nests are usually found near water in dense thickets of willows or other brushy tangles.
Bell's sage sparrow *Amphispiza belli belli*	CSC, Cat. 2	No	Breeding	3,242	Nests are located in fairly dense stands of coastal scrub and chaparral, with a marked preference for chamise. Prefers to forage in same habitat.
Tricolored blackbird *Agelaius tricolor*	CSC, Cat. 2	Yes	Breeding	1	No breeding pairs were observed. Typically breeds in cattails and tules but is known to use partially submerged willow thickets, blackberries, and stinging nettles.
Mammals					
Townsend's big-eared bat *Plecotus townsendii townsendii*	CSC, Cat. 2	No	Foraging/ roosting	2,842	Uses very large tree cavities, large crevices, caves, buildings, and other manmade structures for roosting. Prefers mesic sites such as riparian corridors, springs, and stock ponds for foraging.
Pallid bat *Antrozous pallidus*	CSC	Yes	Foraging/ roosting	2,676	Uses caves, rock crevices, and occasionally tree cavities, buildings, and other manmade structures for roosting. Prefers oak trees for roost sites and forages extensively in oak woodlands.
San Diego desert woodrat *Neotoma lepida intermedia*	CSC, Cat. 2	Yes	Year-round	3,751	Found throughout the property. Builds nests in rock outcrops in coastal scrub and chaparral habitat. May also use rock outcrops in grassland.

Table 3-2. Survey results for target sensitive invertebrate and vertebrate wildlife species known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

Species	Status	Species Observed on Site	Habitat Use	Acres of Suitable Habitat	Habitat Descriptions
Ringtail *Bassariscus astutus*	CFP	No	Year-round	5,738	May occupy a wide range of habitat types, especially where there is water nearby and rock areas for den sites. Common habitat types include riparian, oak woodland, and chaparral.
American badger *Taxidea taxus*	CSC	No	Year-round	6,237	Occurs in a wide variety of open, uncultivated habitats, with dry friable soils and sufficient prey. Prefers habitats such as grasslands, oak savannas, sparse scrub, and chaparral.

* No field surveys were conducted for this species.

U.S. FISH AND WILDLIFE SERVICE

FE Listed as endangered.

FT Threatened: any species that is likely to become an endangered species (a species in danger of extinction) within the foreseeable future throughout all or a significant portion of its range. These species receive special legal protection under the Endangered Species Act.

FPE Proposed endangered (May 1994).

Cat. 1 Candidate Species, Category 1: taxa that are under review, and for which sufficient biological information exists to support a proposal to list as an endangered or threatened species.

Cat. 2 Candidate Species, Category 2: taxa for which existing information indicates listing may be warranted, but for which substantial biological information to support a proposal is not currently available. These species do not receive special legal protection as candidates, but if they become listed before a project begins, all legal ramifications of the Endangered Species Act apply.

BEPA Federal Bald Eagle Protection Act: golden eagles receive legal protection under this act.

Table 3-2. Survey results for target sensitive invertebrate and vertebrate wildlife species known to occur, likely to occur, or for which suitable habitat is present on Diablo Canyon Lands (continued).

CALIFORNIA DEPARTMENT OF FISH AND GAME

CT California Threatened: a native species or subspecies that, although not currently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts.

CSC Species of Special Concern: a designation given by the CDFG to animal species whose state breeding populations are of special concern because they may face extirpation. These species receive no special legal protection, but the CDFG recommends consideration of project-related impacts to them to avoid a future listing as threatened or endangered.

CFP Fully Protected Species in California: these species cannot be taken in any manner at any time of the year except for scientific purposes under special permit.

SA Special Animals: taxa that are biologically rare, very restricted in distribution, or declining throughout their range; taxa whose California population is threatened with extirpation; or taxa closely associated with a habitat that is rapidly declining in California (e.g., wetlands, riparian, or old growth forests) (CNDDB 1992).

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Appendix A

Vascular Plants Sorted by Habitat on Diablo Canyon Lands

RUDERAL AND DEVELOPED AREAS

Conifers

CUPRESSACEAE
- *Cupressus* sp.

Flowering Plants-Dicots

APIACEAE
- *Conium maculatum*
- *Foeniculum vulgare*

ASTERACEAE
- *Agoseris grandiflora*
- *Anthemis cotula*
- *Artemisia douglasiana*
- *Brickellia californica*
- *Carduus pycnocephalus*
- *Centaurea melitensis*
- *Chamomilla suaveolens*
- *Cirsium vulgare*
- *Gnaphalium purpureum*
- *Gnaphalium stramineum*
- *Heterotheca grandiflora*
- *Hypochoeris glabra*
- *Logfia gallica*
- *Madia gracilis*
- *Madia sativa*
- *Psilocarphus tenellus* var. *tenellus*
- *Silybum marianum*
- *Soliva sessilis*
- *Sonchus asper*
- *Sonchus oleraceus*
- *Xanthium spinosum*

BETULACEAE
- *Betula* sp.

BRASSICACEAE
- *Brassica rapa*
- *Capsella bursa-pastoris*
- *Hirschfeldia geniculata*
- *Lepidium nitidum*
- *Lepidium oblongum*
- *Raphanus sativus*

CARYOPHYLLACEAE
- *Cerastium glomeratum*
- *Minuartia douglasii*
- *Silene gallica*
- *Spergularia marina*
- *Spergularia rubra*
- *Spergularia villosa*
- *Stellaria media*

CHENOPODIACEAE
- *Atriplex lentiformis* ssp. *lentiformis*
- *Chenopodium murale*

CONVOLVULACEAE
- *Calystegia macrostegia* ssp. *cyclostegia*
- *Convolvulus arvensis*

EUPHORBIACEAE
- *Euphorbia lathyris*
- *Euphorbia spathulata*

FABACEAE
- *Genista monspessulanus*
- *Lotus junceus*
- *Lupinus hirsutissimus*
- *Lupinus succulentus*
- *Melilotus indica*
- *Trifolium fragiferum*
- *Trifolium hirtum*
- *Trifolium incarnatum*

GERANIACEAE
- *Erodium cicutarium*
- *Geranium dissectum*
- *Geranium molle*

HYDROPHYLLACEAE
- *Phacelia parryi*

LAMIACEAE
- *Marrubium vulgare*

LINACEAE
- *Linum lewisii*

LYTHRACEAE
- *Lythrum hyssopifolia*

MALVACEAE
- *Malva neglecta*
- *Malva nicaeensis*

OXALIDACEAE
Oxalis pes-caprae

PAPAVERACEAE
Eschscholtzia californica
Papaver rhoeas

PLANTAGINACEAE
Plantago coronopus
Plantago lanceolata

POLEMONIACEAE
Navarretia squarrosa

POLYGONACEAE
Chorizanthe palmeri
Chorizanthe staticoides
Rumex obtusifolius
Rumex crispus

PORTULACACEAE
Claytonia perfoliata ssp. *perfoliata*

PRIMULACEAE
Anagallis arvensis

SOLANACEAE
Nicotiana glauca

URTICACEAE
Urtica urens

Monocots
JUNCACEAE
Juncus bufonius var. *bufonius*
Juncus patens

POACEAE
Aira caryophyllea
Avena fatua
Avena sativa
Brachypodium distachyon
Bromus diandrus
Bromus hordeaceus
Bromus madritensis ssp. *rubens*
Cynodon dactylon
Dactylis glomerata
Festuca pratensis
Hordeum marinum ssp. *gussoneanum*
Hordeum marinum ssp. *leporinum*
Lamarckia aurea
Lolium multiflorum
Pennisetum clandestinum
Phalaris aquatica
Phalaris minor
Poa annua
Vulpia microstachys var. *pauciflora*
Vulpia octoflora var. *hirtella*

BISHOP PINE FOREST

Ferns and Fern Allies
DENNSTAEDTIACEAE
Pteridium aquilinum var. *pubescens*

DRYOPTERIDACEAE
Polystichum imbricans ssp. *curtum*

Conifers
Pius muricata

Flowering Plant Dicots
ANACARDIACEAE
Toxicodendron diversilobum

ASTERACEAE
Cirsium brevistylum
Sonchus oleraceus

BORAGINACEAE
Cryptantha clevelandii

BRASSICACEAE
Cardamine californica var. *integrifolia*

CAPRIFOLIACEAE
Lonicera hispidula vacilans

CARYOPHYLLACEAE
Silene laciniata ssp. *major*

ERICACEAE
Arbutus menziesii
Arctostaphylos cruzensis
Arctostaphylos pechoensis
Arctostaphylos tomentosa ssp. *crinita*
Gaultheria shallon
Vaccinium ovatum

FABACEAE
Lathyrus vestitus
Lupinus cervinus
Lupinus concinnus
Vicia americana

FAGACEAE
Castanopsis chrysophylla
Lithocarpus densiflora var. *densiflora*
Quercus agrifolia
Quercus chrysolepis

PRIMULACEAE
Trientalis latifolia

RHAMNACEAE
Ceanothus cuneatus var. *fascicularis*
Ceanothus papillosus var. *roweanus*

ROSACEAE
Rosa gymnocarpa
Rubus ursinus

RUBIACEAE
Galium californicum ssp. *flaccidum*

SCROPHULARIACEAE
Castilleja foliolosa

URTICACEAE
Hesperocnide tenella

Monocots
CYPERACEAE
Carex globosa

POACEAE
Agrostis exarata
Agrostis hooveri
Agrostis pallens

COASTAL BLUFF SCRUB

Ferns and Fern Allies
POLYPODIACEAE
Polypodium californicum var. *californicum*

Flowering Plants-Dicots
AIZOACEAE
Carpobrotus edulis

ANACARDIACEAE
Toxicodendron diversilobum

APIACEAE
Foeniculum vulgare

ASTERACEAE
Ambrosia chamissonis
Artemisia californica
Baccharis pilularis
Erigeron glaucus
Eriophyllum confertiflorum var. *confertiflorum*
Eriophyllum staechadifolium
Hazardia squarrosa var. *squarrosa*
Lasthenia californica
Lasthenia maritima
Solidago spathulata

BORAGINACEAE
Amsinckia spectabilis

CARYOPHYLLACEAE
Spergularia macrotheca
Spergularia marina

CHENOPODIACEAE
Atriplex coulteri
Atriplex leucophylla

CRASSULACEAE
Dudleya lanceolata

ERICACEAE
Gaultheria shallon

EUPHORBIACEAE
Eremocarpus setigerus

FABACEAE
Astragalus nuttallii var. *nuttallii*
Lupinus chamissonis

PLANTAGINACEAE
Plantago coronopus
Plantago erecta

POLYGONACEAE
Eriogonum parvifolium

PORTULACACEAE
Claytonia perfoliata ssp. *mexicana*

Monocots
IRIDACEAE
Sisyrinchium bellum

LILIACEAE
Fritillaria biflora

POACEAE
Distichlis spicata
Hordeum marinum ssp. *leporinum*

NORTHERN MIXED AND MARITIME CHAPARRAL

Conifers
PINACEAE
Pinus muricata

Flowering Plants-Dicots
ANACARDIACEAE
Toxicodendron diversilobum

ASTERACEAE
Cirsium vulgare
Logfia gallica
Sonchus asper
Stylocline gnaphalioides

BRASSICACEAE
Lepidium nitidum
Thysanocarpus laciniatus

CARYOPHYLLACEAE
Minuartia douglasii
Silene antirrhina
Silene gallica

CISTACEAE
Helianthemum scoparium

CRASSULACEAE
Dudleya lanceolata

ERICACEAE
Arctostaphylos cruzensis
Arctostaphylos pechoensis
Arctostaphylos wellsii
Arctostaphylos tomentosa ssp. *crinita*
Vaccinium ovatum

FABACEAE
Lotus junceus
Lotus scoparius var. *scoparius*
Lotus strigosus
Lupinus albifrons var. *albifrons*
Lupinus nanus
Pickeringia montana

FAGACEAE
Quercus agrifolia

GROSSULARIACEAE
Ribes malvaceum var. *viridifolium*

HYDROPHYLLACEAE
Phacelia rattanii

ONAGRACEAE
Camissonia micrantha

PAPAVERACEAE
Dendromecon rigida

POLEMONIACEAE
Navarretia hamata ssp. *parviloba*

POLYGONACEAE
Chorizanthe palmeri
Chorizanthe staticoides
Eriogonum fasciculatum var. *foliolosum*

RHAMNACEAE
Ceanothus cuneatus var. *fascicularis*

ROSACEAE
Adenostoma fasciculatum
Cercocarpus betuloides

SCROPHULARIACEAE
Castilleja foliolosa

VISCACEAE
Phoradendron villosum

Monocots
POACEAE
Nassella lepida

LUCIAN COASTAL SCRUB VARIANT

Ferns and Fern Allies
DENNSTAEDTIACEAE
Pteridium aquilinum var. *pubescens*

DRYOPTERIDACEAE
Dryopteris arguta

POLYPODIACEAE
Polypodium californicum var. *californicum*

SINOPTERIDACEAE
Pellaea andromedaefolia
Pellaea mucronata var. *mucronata*

Flowering Plants-Dicots
ANACARDIACEAE
Toxicodendron diversilobum

APIACEAE
Apiastrum angustifolium
Conium maculatum
Daucus pusillus
Sanicula crassicaulis
Torilis nodosa
Yabea microcarpa

ASTERACEAE
Achillea millefolium
Artemisia californica
Artemisia douglasiana
Baccharis pilularis
Eriophyllum confertiflorum var. *confertiflorum*
Eriophyllum staechadifolium
Filago californica
Gnaphalium bicolor
Gnaphalium californicum
Gnaphalium canescens ssp. *beneolens*
Gnaphalium ramosissimum
Logfia gallica
Rafinesquia californica
Solidago californica
Solidago spathulata
Uropappus lindleyi

BRASSICACEAE
Arabis glabra var. *glabra*

CARYOPHYLLACEAE
Silene gallica
Stellaria nitens

CHENOPODIACEAE
Chenopodium californicum

CONVOLVULACEAE
Calystegia macrostegia ssp. *cyclostegia*

CUCURBITACEAE
Marah fabaceus var. *agrestis*

FABACEAE
Lotus scoparius var. *scoparius*
Lupinus albifrons var. *albifrons*
Lupinus hirsutissimus
Trifolium gracilentum var. *gracilentum*
Trifolium willdenovii
Vicia gigantea

FAGACEAE
Quercus agrifolia

HYDROPHYLLACEAE
Phacelia imbricata ssp. *imbricata*
Phacelia parryi
Phacelia rattanii
Phacelia viscida

LAMIACEAE
Salvia mellifera
Salvia spathacea

LAURACEAE
Umbellularia californica

LINACEAE
Linum lewisii

NYCTAGINACEAE
Mirabilis californica

OXALIDACEAE
Oxalis albicans ssp. *pilosa*

PAEONIACEAE
Paeonia californica

PAPAVERACEAE
Dendromecon rigida

POLEMONIACEAE
Gilia clivorum

POLYGONACEAE
Eriogonum elongatum var. *elongatum*
Eriogonum parvifolium
Pterostegia drymarioides

PRIMULACEAE
Anagallis arvensis

RANUNCULACEAE
Thalictrum fendleri var. *polycarpum*

RHAMNACEAE
Ceanothus griseus
Rhamnus californica ssp. *californica*
Rhamnus crocea

ROSACEAE
Fragaria vesca
Heteromeles arbutifolia
Rosa gymnocarpa

SCROPHULARIACEAE
Antirrhinum kelloggii
Antirrhinum nuttallianum
Linaria texana
Mimulus aurantiacus

SOLANACEAE
Nicotiana glauca

URTICACEAE
Parietaria hespera var. *californica*
Urtica dioica var. *holosericea*

VERBENACEAE
Verbena lasiostachys var. *lasiostachys*

Monocots
ALLIACEAE
Dichelostemma capitatum

LILIACEAE
Fritillaria biflora

MELANTHIACEAE
Zigadenus fremontii

POACEAE
Agrostis pallens
Bromus hordeaceus
Bromus madritensis ssp. *rubens*
Cortaderia jubata
Gastridium ventricosum
Lamarckia aurea
Leymus condensatus
Nassella lepida
Nassella pulchra

COASTAL LIVE OAK SCRUB

Flowering Plants-Dicots
ANACARDIACEAE
Toxicodendron diversilobum

ASTERACEAE
Achillea millefolium
Gnaphalium purpureum
Lagophylla ramosissima
Logfia gallica
Madia gracilis
Solidago californica
Uropappus lindleyi

BORAGINACEAE
Amsinckia menziesii var. *intermedia*

EUPHORBIACEAE
Eremocarpus setigerus

FABACEAE
Trifolium depauperatum var. *truncatum*

GERANIACEAE
Erodium cicutarium

LAMIACEAE
Monardella villosa subsp. obispoensis

ONAGRACEAE
Clarkia bottae
Clarkia affinis

PLANTAGINACEAE
Plantago erecta

RUBIACEAE
Galium andrewsii

SCROPHULARIACEAE
Castilleja exserta ssp. *exserta*

VIOLACEAE
Viola pedunculata

Monocots
IRIDACEAE
Sisyrinchium bellum

ORCHIDACEAE
Piperia elongata

POACEAE
Festuca californica
Hordeum brachyantherum
Koeleria macrantha
Vulpia bromoides
Agrostis hoovevi

ANNUAL GRASSLAND

Flowering Plants-Dicots
APIACEAE
Daucus pusillus
Sanicula arguta
Sanicula crassicaulis

ASTERACEAE
Agoseris heterophylla
Anthemis cotula
Centaurea melitensis
Evax sparsiflora
Gnaphalium purpureum
Hemizonia paniculata
Hesperevax sparsiflora
Heterotheca grandiflora
Hypochoeris glabra
Hypochoeris radicata
Lactuca saligna
Lactuca serriola
Lagophylla ramosissima
Lasthenia californica
Layia platyglossa
Lessingia filaginifolia var. *filaginifolia*
Logfia gallica
Madia gracilis
Micropus californicus var. *subvestitus*
Microseris douglasii ssp. *douglasii*
Microseris elegans
Psilocarphus tenellus var. *tenellus*
Senecio vulgaris
Silybum marianum
Soliva sessilis
Sonchus asper
Stebbinsoseris heterocarpa

BORAGINACEAE
Amsinckia menziesii var. *intermedia*
Cryptantha clevelandii
Plagiobothrys nothofulvus

BRASSICACEAE
Capsella bursa-pastoris
Hirschfeldia geniculata
Sisymbrium officinale
Thysanocarpus laciniatus

CARYOPHYLLACEAE
Cerastium glomeratum
Sagina decumbens
Silene gallica

CRASSULACEAE
Crassula connata

EUPHORBIACEAE
Eremocarpus setigerus

FABACEAE
Astragalus gambelianus
Lotus micranthus
Lotus strigosus
Lotus wrangelianus
Lupinus bicolor
Lupinus hirsutissimus
Trifolium albopurpureum var. *olivaceum*
Trifolium ciliolatum
Trifolium depauperatum var. *truncatum*
Trifolium fragiferum
Trifolium hirtum
Trifolium microcephalum
Trifolium willdenovii
Vicia sativa var. *sativa*

GERANIACEAE
Erodium botrys
Erodium cicutarium
Erodium moschatum

LINACEAE
Linum lewisii

ONAGRACEAE
Clarkia modesta

PAPAVERACEAE
Eschscholtzia californica
Platystemon californicus

PLANTAGINACEAE
Plantago erecta

POLEMONIACEAE
Gilia clivorum
Microsteris gracilis

POLYGONACEAE
Rumex pulcher

PORTULACACEAE
Calandrinia ciliata

RANUNCULACEAE
Ranunculus californicus

ROSACEAE
Aphanes occidentalis

SCROPHULARIACEAE
Castilleja densiflora ssp. *obispoensis*
Castilleja exserta ssp. *exserta*
Triphysaria pusilla

VALERIANACEAE
Plectritis brachystemon

VIOLACEAE
Viola pedunculata

Monocots
IRIDACEAE
Sisyrinchium bellum

JUNCACEAE
Juncus bufonius var. *bufonius*

POACEAE
Avena barbata
Bromus diandrus
Bromus hordeaceus
Bromus madritensis ssp. *rubens*
Danthonia californica var. *californica*
Gastridium ventricosum
Nassella pulchra
Vulpia bromoides
Vulpia microstachys var. *pauciflora*
Vulpia myuros var. *myuros*

PONDS, SEEPS, AND STREAMS

Ferns and Fern Allies
AZOLLACEAE
Azolla filiculoides

BLECHNACEAE
Woodwardia fimbriata

Flowering Plants-Dicots
APIACEAE
Berula erecta
Cicuta douglasii
Hydrocotyle verticillata

ASTERACEAE
Artemisia biennis
Baccharis douglasii
Cotula coronopifolia
Gnaphalium stramineum
Helenium puberulum
Sonchus asper
Xanthium strumarium

BORAGINACEAE
Amsinckia spectabilis

BRASSICACEAE
Brassica rapa
Nasturtium officinale

CARYOPHYLLACEAE
Spergularia marina

CORNACEAE
Cornus sericea ssp. *occidentalis*

FABACEAE
Medicago polymorpha
Melilotus alba
Melilotus indica
Trifolium repens
Vicia gigantea

GERANIACEAE
Geranium dissectum

HALORAGIDACEAE
Myriophyllum brasiliense

LAMIACEAE
Melissa officinalis
Mentha arvensis

LYTHRACEAE
Lythrum hyssopifolia

ONAGRACEAE
Epilobium ciliatum ssp. *ciliatum*

PLANTAGINACEAE
Plantago major

SALICACEAE
Salix lasiolepis

SCROPHULARIACEAE
Mimulus guttatus

TROPAEOLACEAE
Tropaeolum majus

URTICACEAE
Urtica dioica var. *holosericea*

VERBENACEAE
Verbena lasiostachys var. *lasiostachys*

CYPERACEAE
Scirpus acutus
Scirpus cernuus
Scirpus microcarpus

JUNCACEAE
Juncus bufonius var. *bufonius*
Juncus patens
Juncus phaeocephalus var. *phaeocephalus*

Monocots
LEMNACEAE
Lemna minuscula
Wolffiella lingulata

POACEAE
Agrostis stolonifera
Distichlis spicata

POTAMOGETONACEAE
Potamogeton foliosus

ZANNICHELLIACEAE
Zannichellia palustris

COAST LIVE OAK WOODLAND

Ferns and Fern Allies
DENNSTAEDTIACEAE
Pteridium aquilinum var. *pubescens*

DRYOPTERIDACEAE
Dryopteris arguta

SINOPTERIDACEAE
Adiantum jordanii
Pellaea andromedaefolia
Pentagramma triangularis var. *triangularis*

Conifers
PINACEAE
Pinus muricata

Flowering Plants-Dicots
ANACARDIACEAE
Toxicodendron diversilobum

APIACEAE
Osmorhiza chilensis
Sanicula crassicaulis
Torilis arvensis ssp. *purpurea*
Yabea microcarpa

APOCYNACEAE
Vinca major

ASTERACEAE
Acourtia microcephala
Agoseris grandiflora
Aster radulinus
Baccharis pilularis
Eriophyllum confertiflorum var. *confertiflorum*
Gnaphalium californicum
Gnaphalium canescens ssp. *beneolens*
Silybum marianum
Sonchus oleraceus
Stephanomeria virgata ssp. *pleurocarpa*

BRASSICACEAE
Cardamine californica var. *integrifolia*
Sisymbrium officinale
Thysanocarpus laciniatus

CAPRIFOLIACEAE
Lonicera hispidula vacillans
Sambucus mexicana
Symphoricarpos mollis

CARYOPHYLLACEAE
Silene laciniata ssp. *major*
Stellaria media

CONVOLVULACEAE
Calystegia macrostegia ssp. *cyclostegia*

CUSCUTACEAE
Cuscuta californica var. *californica*

ERICACEAE
Gaultheria shallon
Vaccinium ovatum

EUPHORBIACEAE
Euphorbia spathulata

FABACEAE
Lathyrus vestitus
Lotus purshianus
Lotus strigosus
Lupinus albifrons var. *albifrons*
Lupinus latifolia var. *latifolia*
Lupinus truncatus
Medicago polymorpha
Rupertia physodes
Trifolium gracilentum var. *gracilentum*
Vicia ludoviciana ssp. *ludoviciana*

FAGACEAE
Quercus agrifolia

GERANIACEAE
Geranium molle

GROSSULARIACEAE
Ribes speciosum

HYDROPHYLLACEAE
Eucrypta chrysanthemifolia
Phacelia cicutaria var. *hispida*
Phacelia distans
Phacelia imbricata ssp. *imbricata*
Phacelia nemoralis
Phacelia rattanii
Pholistoma auritum var. *auritum*

LAMIACEAE
Marrubium vulgare
Salvia mellifera
Salvia spathacea
Satureja douglasii
Stachys bullata

LAURACEAE
Umbellularia californica

ONAGRACEAE
Clarkia epilobioides

PAEONIACEAE
Paeonia californica

POLYGONACEAE
Pterostegia drymarioides

PORTULACACEAE
Claytonia parviflora ssp. *parviflora*
Claytonia perfoliata ssp. *mexicana*

PRIMULACEAE
Dodecatheon clevelandii ssp. *sanctarum*

RANUNCULACEAE
Actaea rubra
Ranunculus californicus
Thalictrum fendleri var. *polycarpum*

RHAMNACEAE
Rhamnus californica ssp. *californica*
Rhamnus crocea

ROSACEAE
Aphanes occidentalis
Heteromeles arbutifolia
Holodiscus discolor
Potentilla glandulosa ssp. *glandulosa*

RUBIACEAE
Galium aparine
Galium porrigens var. *porrigens*

SAXIFRAGACEAE
Lithophragma cymbalaria
Saxifraga californica

SCROPHULARIACEAE
Antirrhinum kelloggii
Castilleja affinis ssp. *affinis*
Collinsia heterophylla
Linaria texana
Mimulus aurantiacus
Scrophularia californica ssp. *californica*

SOLANACEAE
Solanum douglasii
Solanum umbelliferum

URTICACEAE
Parietaria hespera var. *californica*
Urtica urens

VERBENACEAE
Verbena lasiostachys var. *lasiostachys*

VIOLACEAE
Viola pedunculata

VISCACEAE
Phoradendron villosum

Monocots
ALLIACEAE
Dichelostemma capitatum

CONVALLARIACEAE
Smilacina racemosa
Smilacina stellata

IRIDACEAE
Sisyrinchium bellum

JUNCACEAE
Luzula subsessilis

LILIACEAE
Fritillaria affinis

POACEAE
Agrostis exarata var. *exarata*
Bromus carinatus var. *carinatus*
Bromus diandrus
Melica imperfecta
Poa howellii
Vulpia octoflora var. *hirtella*

CENTRAL COAST RIPARIAN SCRUB

Ferns and Fern Allies
EQUISETACEAE
Equisetum telmateia var. *braunii*

SINOPTERIDACEAE
Pentagramma triangularis var. *triangularis*

Flowering Plants-Dicots
ACERACEAE
Acer macrophyllum

ANACARDIACEAE
Toxicodendron diversilobum

APIACEAE
Cicuta douglasii
Conium maculatum
Sanicula crassicaulis

ASTERACEAE
Baccharis pilularis
Helenium puberulum

CAPRIFOLIACEAE
Lonicera involucrata var. *ledebourii*
Sambucus mexicana

CORNACEAE
Cornus sericea ssp. *occidentalis*

FABACEAE
Vicia gigantea

GROSSULARIACEAE
Ribes divaricatum var. *pubiflorum*
Ribes menziesii

LAMIACEAE
Marrubium vulgare
Stachys bullata

LAURACEAE
Umbellularia californica

MYRICACEAE
Myrica californica

PLANTAGINACEAE
Plantago major

POLYGONACEAE
Polygonum hydropiper

PRIMULACEAE
Anagallis arvensis

RANUNCULACEAE
Clematis ligusticifolia
Thalictrum fendleri var. *polycarpum*

RHAMNACEAE
Rhamnus californica ssp. *californica*

ROSACEAE
Rubus parviflorus var. *parviflorus*
Rubus ursinus

SALICACEAE
Salix lasiolepis
Salix lucida ssp. *lasiandra*

SCROPHULARIACEAE
Mimulus aurantiacus
Mimulus guttatus
Scrophularia californica ssp. *californica*

SOLANACEAE
Solanum douglasii

URTICACEAE
Urtica dioica var. *holosericea*

VERBENACEAE
Verbena lasiostachys var. *lasiostachys*

Monocots
CYPERACEAE
Cyperus eragrostis
Scirpus microcarpus

JUNCACEAE
Juncus patens

POACEAE
Agrostis exarata var. *exarata*
Pennisetum clandestinum

INLAND ROCK OUTCROPS

Ferns and Fern Allies
SINOPTERIDACEAE
Pellaea mucronata var. *mucronata*

Conifers
PINACEAE
Pinus muricata

Flowering Plants-Dicots
ANACARDIACEAE
Toxicodendron diversilobum

ASTERACEAE
Malacothrix phaeocarpa
Senecio aphanactis

BORAGINACEAE
Cryptantha muricata

CARYOPHYLLACEAE
Spergula arvensis

CRASSULACEAE
Crassula connata
Dudleya pulverulenta
Dudleya lanceolata

FABACEAE
Lupinus cervinus
Lupinus concinnus

HYDROPHYLLACEAE
Phacelia parryi

LAMIACEAE
Salvia columbariae

ONAGRACEAE
Clarkia epilobioides

PAPAVERACEAE
Dendromecon rigida
Eschscholtzia caespitosa

POLEMONIACEAE
Gilia achilleifolia ssp. *achilleifolia*

POLYGONACEAE
Eriogonum elongatum var. *elongatum*
Pterostegia drymarioides

SCROPHULARIACEAE
Antirrhinum kelloggii
Antirrhinum multiflorum
Antirrhinum nuttallianum
Mimulus aurantiacus

Monocots
POACEAE
Lamarckia aurea
Poa secunda

ROCKY BEACH

AIZOACEAE
Tetragonia tetragonioides

BRASSICACEAE
Cakile maritima

GERANIACEAE
Erodium moschatum

COASTAL GRASSLAND TERRACES

Flowering Plants-Dicots
ASTERACEAE
Achillea millefolium
Hemizonia fasciculata
Lasthenia californica
Layia platyglossa
Lessingia filaginifolia var. *filaginifolia*
Sonchus asper

BORAGINACEAE
Amsinckia menziesii var. *intermedia*
Amsinckia spectabilis

GERANIACEAE
Erodium moschatum

MALVACEAE
Sidalcea malviflora ssp. *californica*

PAPAVERACEAE
Eschscholtzia californica

PLANTAGINACEAE
Plantago coronopus

POACEAE

Avena barbata
Bromus diandrus
Bromus marginatus var. *maritima*
Bromus mollis
Danthonia californica
Distichlis spicata
Elymus glaucus
Hordeum brachyantherum
Hordeum geniculatum
Hordeum leporinum
Koeleria macranthe
Leymus pacificus
Lolium multiflorum
Melica californica
Melica imperfecta
Nassella pulchra
Vulpia myuvos

SCROPHULARIACEAE

Castilleja densiflora ssp. *obispoensis*

SUBMERGED AQUATICS

Monocots

ZOSTERACEAE

Phyllospadix scouleri

Appendix B

Provisional List of Vascular Plants on Diablo Canyon Lands

Ferns and Fern Allies

AZOLLACEAE
Azolla filiculoides

BLECHNACEAE
Woodwardia fimbriata

DENNSTAEDTIACEAE
Pteridium aquilinum var. *pubescens*

DRYOPTERIDACEAE
Dryopteris arguta
Polystichum imbricans ssp. *curtum*

EQUISETACEAE
Equisetum telmateia var. *braunii*

POLYPODIACEAE
Polypodium californicum var. *californicum*

SINOPTERIDACEAE
Adiantum jordanii
Pellaea andromedaefolia
Pellaea mucronata var. *mucronata*
Pentagramma triangularis var. *triangularis*

Conifers

PINACEAE
Pinus muricata

Flowering Plants-Dicots

ACERACEAE
Acer macrophyllum

AIZOACEAE
Carpobrotus edulis
Tetragonia tetragonioides

ANACARDIACEAE
Toxicodendron diversilobum

APIACEAE
Apiastrum angustifolium
Berula erecta
Cicuta douglasii
Conium maculatum
Daucus pusillus
Foeniculum vulgare
Hydrocotyle verticillata
Osmorhiza chilensis
Sanicula arguta
Sanicula crassicaulis
Torilis arvensis ssp. *purpurea*
Torilis nodosa
Yabea microcarpa

APOCYNACEAE
Vinca major

ASTERACEAE
Achillea millefolium
Acourtia microcephala
Agoseris grandiflora
Agoseris heterophylla
Ambrosia chamissonis
Anthemis cotula
Artemisia biennis
Artemisia californica
Artemisia douglasiana
Aster radulinus
Baccharis douglasii
Baccharis pilularis
Brickellia californica
Carduus pycnocephalus
Centaurea melitensis
Chamomilla suaveolens
Cirsium brevistylum
Cirsium vulgare
Cotula coronopifolia
Erigeron glaucus
Eriophyllum confertiflorum var. *confertiflorum*
Eriophyllum staechadifolium
Evax sparsiflora
Filago californica
Gnaphalium bicolor
Gnaphalium californicum
Gnaphalium canescens ssp. *beneolens*
Gnaphalium purpureum
Gnaphalium ramosissimum
Gnaphalium stramineum
Hazardia squarrosa var. *squarrosa*
Helenium puberulum
Hemizonia fasciculata
Hemizonia paniculata
Hesperevax sparsiflora
Heterotheca grandiflora
Hypochoeris glabra

Hypochoeris radicata
Lactuca saligna
Lactuca serriola
Lagophylla ramosissima
Lasthenia californica
Layia platyglossa
Lessingia filaginifolia var. *filaginifolia*
Logfia gallica
Madia gracilis
Madia sativa
Malacothrix phaeocarpa
Micropus californicus var. *subvestitus*
Microseris douglasii ssp. *douglasii*
Microseris elegans
Psilocarphus tenellus var. *tenellus*
Rafinesquia californica
Senecio aphanactis
Senecio vulgaris
Silybum marianum
Solidago californica
Solidago spathulata
Soliva sessilis
Sonchus asper
Sonchus oleraceus
Stebbinsoseris heterocarpa
Stephanomeria virgata ssp. *pleurocarpa*
Stylocline gnaphalioides
Uropappus lindleyi
Xanthium spinosum
Xanthium strumarium

BETULACEAE
Betula sp.

BORAGINACEAE
Amsinckia menziesii var. *intermedia*
Amsinckia spectabilis
Cryptantha clevelandii
Cryptantha muricata
Plagiobothrys nothofulvus

BRASSICACEAE
Arabis glabra var. *glabra*
Brassica rapa
Cakile maritima
Capsella bursa-pastoris
Cardamine californica var. *integrifolia*
Hirschfeldia geniculata
Lepidium nitidum
Lepidium oblongum
Nasturtium officinale
Raphanus sativus
Sisymbrium officinale
Thysanocarpus laciniatus

CAPRIFOLIACEAE
Lonicera hispidula
Sambucus mexicana
Symphoricarpos mollis

CARYOPHYLLACEAE
Cerastium glomeratum
Minuartia douglasii
Sagina decumbens
Silene antirrhina
Silene gallica
Silene laciniata ssp. *major*
Spergula arvensis
Spergularia macrotheca
Spergularia marina
Spergularia rubra
Spergularia villosa
Stellaria media
Stellaria nitens

CHENOPODIACEAE
Atriplex coulteri
Atriplex lentiformis ssp. *lentiformis*
Atriplex leucophylla
Chenopodium californicum
Chenopodium murale

CISTACEAE
Helianthemum scoparium

CONVOLVULACEAE
Calystegia macrostegia ssp. *cyclostegia*
Convolvulus arvensis

CORNACEAE
Cornus sericea ssp. *occidentalis*

CRASSULACEAE
Crassula connata
Dudleya pulverulenta
Dudleya lanceolata

CUCURBITACEAE
Marah fabaceus var. *agrestis*

CUPPRESSACEAE
Cupressus sp.

CUSCUTACEAE
Cuscuta californica var. *californica*

ERICACEAE
Arctostaphylos pechoensis
Arctostaphylos tomentosa ssp. *crinita*
Gaultheria shallon
Vaccinium ovatum

EUPHORBIACEAE
Eremocarpus setigerus
Euphorbia lathyris
Euphorbia spathulata

FABACEAE
Astragalus gambelianus
Astragalus nuttallii
Genista monspessulanus
Lathyrus vestitus
Lotus corniculatus
Lotus micranthus
Lotus purshianus
Lotus scoparius var. *scoparius*
Lotus strigosus
Lotus wrangelianus
Lupinus albifrons var. *albifrons*
Lupinus bicolor
Lupinus cervinus
Lupinus chamissonis
Lupinus concinnus
Lupinus hirsutissimus
Lupinus latifolia var. *latifolia*
Lupinus nanus
Lupinus succulentus
Lupinus truncatus
Medicago polymorpha
Melilotus alba
Melilotus indica
Pickeringia montana
Rupertia physodes
Trifolium albopurpureum var. *olivaceum*
Trifolium ciliolatum
Trifolium depauperatum var. *truncatum*
Trifolium fragiferum
Trifolium gracilentum var. *gracilentum*
Trifolium hirtum
Trifolium incarnatum
Trifolium microcephalum
Trifolium repens
Trifolium willdenovii
Vicia americana
Vicia gigantea
Vicia ludoviciana ssp. *ludoviciana*
Vicia sativa var. *sativa*

FAGACEAE
Castanopsis chrysophylla
Lithocarpus densiflora var. *densiflora*
Quercus agrifolia
Quercus chrysolepis

GERANIACEAE
Erodium botrys
Erodium cicutarium
Erodium moschatum
Geranium dissectum
Geranium molle

GROSSULARIACEAE
Ribes divaricatum var. *pubiflorum*
Ribes malvaceum var. *viridifolium*
Ribes menziesii
Ribes speciosum

ALORAGIDACEAE
Myriophyllum brasiliense

HYDROPHYLLACEAE
Eucrypta chrysanthemifolia
Phacelia cicutaria var. *hispida*
Phacelia distans
Phacelia imbricata ssp. *imbricata*
Phacelia nemoralis
Phacelia parryi
Phacelia rattanii
Phacelia viscida
Pholistoma auritum var. *auritum*

LAMIACEAE
Marrubium vulgare
Melissa officinalis
Mentha arvensis

Salvia columbariae
Salvia mellifera
Salvia spathacea
Satureja douglasii
Stachys bullata

LAURACEAE
Umbellularia californica

LINACEAE
Linum lewisii

LYTHRACEAE
Lythrum hyssopifolia

MALVACEAE
Malva neglecta
Malva nicaeensis
Sidalcea malviflora ssp. *californica*

MYRICACEAE
Myrica californica

NYCTAGINACEAE
Mirabilis californica

ONAGRACEAE
Camissonia micrantha
Clarkia epilobioides
Clarkia modesta
Epilobium ciliatum ssp. *ciliatum*

OXALIDACEAE
Oxalis albicans ssp. *pilosa*
Oxalis pes-caprae

PAEONIACEAE
Paeonia californica

PAPAVERACEAE
Dendromecon rigida
Eschscholtzia caespitosa
Eschscholtzia californica
Papaver rhoeas
Platystemon californicus

PLANTAGINACEAE
Plantago coronopus
Plantago erecta
Plantago lanceolata
Plantago major

POLEMONIACEAE
Gilia achilleifolia ssp. *achilleifolia*
Gilia clivorum
Microsteris gracilis
Navarretia hamata ssp. *parviloba*
Navarretia squarrosa

POLYGONACEAE
Chorizanthe palmeri
Chorizanthe staticoides
Eriogonum elongatum var. *elongatum*
Eriogonum fasciculatum var. *foliolosum*
Eriogonum parvifolium
Polygonum hydropiper
Pterostegia drymarioides
Rumex obtusifolius
Rumex crispus
Rumex pulcher

PORTULACACEAE
Calandrinia ciliata
Claytonia parviflora ssp. *parviflora*
Claytonia perfoliata ssp. *mexicana*

PRIMULACEAE
Anagallis arvensis
Dodecatheon clevelandii ssp. *sanctarum*
Trientalis latifolia

RANUNCULACEAE
Actaea rubra
Clematis ligusticifolia
Ranunculus californicus
Thalictrum fendleri var. *polycarpum*

RHAMNACEAE
Ceanothus cuneatus var. *fascicularis*
Ceanothus griseus
Ceanothus papillosus var. *roweanus*
Rhamnus californica ssp. *californica*
Rhamnus crocea

ROSACEAE
Adenostoma fasciculatum
Aphanes occidentalis
Cercocarpus betuloides

Fragaria vesca
Heteromeles arbutifolia
Holodiscus discolor
Potentilla glandulosa ssp. *glandulosa*
Rosa gymnocarpa
Rubus parviflorus var. *parviflorus*
Rubus ursinus

RUBIACEAE
Galium aparine
Galium californicum ssp. *flaccidum*
Galium porrigens var. *porrigens*

SALICACEAE
Salix lasiolepis
Salix lucida ssp. *lasiandra*

SAXIFRAGACEAE
Lithophragma cymbalaria
Saxifraga californica

SCROPHULARIACEAE
Antirrhinum kelloggii
Antirrhinum multiflorum
Antirrhinum nuttallianum
Castilleja affinis ssp. *affinis*
Castilleja foliolosa
Castilleja densiflora ssp. *obispoensis*
Castilleja exserta ssp. *exserta*
Collinsia heterophylla
Linaria texana
Mimulus aurantiacus
Mimulus guttatus
Scrophularia atrata
Scrophularia californica ssp. *californica*
Triphysaria pusilla

SOLANACEAE
Nicotiana glauca
Solanum douglasii
Solanum umbelliferum

TROPAEOLACEAE
Tropaeolum majus

URTICACEAE
Hesperocnide tenella
Parietaria hespera var. *californica*
Urtica dioica var. *holosericea*
Urtica urens

VALERIANACEAE
Plectritis brachystemon

VERBENACEAE
Verbena lasiostachys var. *lasiostachys*

VIOLACEAE
Viola pedunculata

VISCACEAE
Phoradendron villosum

Monocots
ALLIACEAE
Dichelostemma capitatum

CONVALLARIACEAE
Smilacina racemosa
Smilacina stellata

CYPERACEAE
Carex globosa
Cyperus eragrostis
Scirpus acutus
Scirpus cernuus
Scirpus microcarpus

IRIDACEAE
Sisyrinchium bellum

JUNCACEAE
Juncus bufonius var. *bufonius*
Juncus patens
Juncus phaeocephalus var. *phaeocephalus*
Luzula subsessilis

LEMNACEAE
Lemna minuscula
Wolffiella lingulata

LILIACEAE
Fritillaria affinis
Fritillaria biflora

MELANTHIACEAE
Zigadenus fremontii

POACEAE

Agrostis exarata var. *exarata*
Agrostis pallens
Agrostis stolonifera
Aira caryophyllea
Avena barbata
Avena fatua
Avena sativa
Brachypodium distachyon
Bromus carinatus var. *carinatus*
Bromus diandrus
Bromus hordeaceus
Bromus madritensis ssp. *rubens*
Cortaderia jubata
Cynodon dactylon
Dactylis glomerata
Danthonia californica var. *californica*
Distichlis spicata
Festuca californica
Festuca pratensis
Gastridium ventricosum
Hordeum brachyantherum
Hordeum marinum ssp. *gussoneanum*
Hordeum marinum ssp. *leporinum*
Koeleria macrantha
Lamarckia aurea
Leymus condensatus
Lolium multiflorum
Melica imperfecta
Nassella lepida
Nassella pulchra
Pennisetum clandestinum
Phalaris aquatica
Phalaris minor
Poa annua
Poa howellii
Poa secunda
Vulpia bromoides
Vulpia microstachys var. *pauciflora*
Vulpia myuros var. *myuros*
Vulpia octoflora var. *hirtella*

POTAMOGETONACEAE

Potamogeton foliosus

ZANNICHELLIACEAE

Zannichellia palustris

ZOSTERACEAE

Phyllospadix scouleri

Appendix C

Legal and Regulatory Context of Laws and Regulations Pertaining to Special Status Plant Species

Summarized below are the major federal and California laws pertaining to special status plant species that may apply to the Diablo Canyon Lands.

- The **National Environmental Policy Act** of 1969 (42 USC 4321–4347) requires federal agencies to foster environmental quality and preservation by requiring evaluation of potential impacts of proposed projects to biological resources, including special status species.

- The **Endangered Species Act** (ESA) of 1973 (16 USC 1531 et seq.) allows the U.S. Fish and Wildlife Service (USFWS) to designate endangered or threatened species of plants based on the best available scientific and commercial data, prohibits federal agencies from initiating or approving any action that would jeopardize any listed species, and provides for recovery efforts to aid listed species.

- The **California Environmental Quality Act (CEQA)** of 1970 requires state agencies to evaluate potential impacts of proposed projects to biological resources. Section 15380 (d) of CEQA provides that a species not formally included in any state listing shall nevertheless be considered to be rare or endangered if the species can be shown to meet the biological criteria for listing. Under Section 15065(a), *Mandatory Findings of Significance*, a lead agency shall find that a project may have a significant impact when it can "reduce the number or restrict the range of a rare or endangered plant or animal, including species qualifying under Section 15380(d)."

- The **California Native Plant Protection Act** (NPPA) of 1977 (SB 308) established a framework for the California Department of Fish and Game (CDFG) to designate plants as rare or endangered, and requires that permits to collect, transport, or sell such plants be obtained from the Fish and Game Commission. The NPPA contains a salvage provision whereby owners of property supporting listed species must notify the Commission prior to any land use change.

- The **California Endangered Species Act** (CESA) of 1984 (AB 3270 and AB 3309) replaces provisions of the NPPA, allowing the Fish and Game Commission to designate endangered or threatened plants (Chapter 1.5, sec. 2050 et seq., Title 14, Code of California Regulations 670.2).

In addition to the federal laws and regulations summarized above, many regulations, policy directives, and administrative manual sections dealing with the treatment of special status plants have been promulgated by the U.S. Army Corps of Engineers, Bureau of Land Management, U.S. Forest Service, and other agencies. These typically respond in agency-specific detail to the more general laws and regulations summarized above.

At the state level, Diablo Canyon Power Plant projects must also comply with California Public Utilities Commission procedures.

FEDERAL LEGAL AND REGULATORY REQUIREMENTS

U.S. Fish and Wildlife Service. Through a series of regulatory notices, the USFWS has formulated procedures for designating listed species under the ESA. Listed species are taxa that have been

subject to proposed and final rules published in the *Federal Register*. Listed species can be designated in two categories (Section 3 of the ESA):

1. **Endangered**—any species, including infraspecific taxa, in "danger of extinction throughout all or a significant portion of its range."

2. **Threatened**—any species, including infraspecific taxa, "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."

Proposed Species. These are species for which a proposed rule has been published in the *Federal Register*; they are afforded particular consideration in formal consultations under regulations promulgated for the ESA. Under Section 7 of the ESA, proposed species must be included in all USFWS Biological Assessment documents issued for a given project. Also, federal agencies must confer with the USFWS regarding any action "likely to jeopardize the continued existence" of a proposed species. As the result of such a conference, the USFWS may issue recommendations to another agency to modify the project or to undertake protective measures to avoid impacts to proposed species, but these recommendations are not required or binding.

Candidate Species. These are taxa that the USFWS is considering for listing, but that have not been subject to a proposed rule published in the *Federal Register*. The USFWS publishes a *Notice of Review* for candidate species at approximately 5-year intervals. The most recent notice of review was issued on 30 September 1993 (Federal Register 58: 51144-51190, USFWS 1993). The USFWS designates candidate species in two groups [50 CFR 424.02 (b)]:

> **Category 1** species are taxa for which the USFWS currently has on file substantial information on biological vulnerability and threats that supports the appropriateness of proposing to list the taxa as endangered or threatened.
>
> **Category 2** species are taxa for which information now in the possession of the USFWS indicates that proposing to list the taxa as endangered or threatened is possibly appropriate; however, substantial data on biological vulnerability and threat(s) that supports the immediate preparation of rules are not currently known or on file.

Former candidate species that have been eliminated from consideration by the USFWS are designated as Category 3 taxa, including three subcategories:

> **Category 3A**—species known to be extinct.
>
> **Category 3B**—synonyms or other taxonomically invalid names not meeting the USFWS definition of a species.
>
> **Category 3C**—taxa that have proven more abundant or widespread than previously thought, or less common taxa for which no identifiable threat is known.

Category 1 and Category 2 species differ solely on the basis of supporting information available to the USFWS, not on their endangerment status.

The latest innovation in the proposed USFWS rules is a column that portrays status trend, where known. According to the notice, the USFWS cautions that "status trend is only a small part of the whole picture of a taxon's status and may undergo frequent and/or rapid reversals owing to natural and man-made causes." The USFWS identified species status trend as "I" = improving, "S" = stable, "D" = declining, or "U" = unknown.

"Improving" species are those known to be increasing in numbers or to which threats are decreasing. "Stable" species have documented stable numbers or threats that are constant over time. "Declining" species are decreasing in numbers and increasingly threatened according to the USFWS. "Unknown" denotes species that require more survey work "to determine current trends."

STATE LEGAL AND REGULATORY REQUIREMENTS

State of California

Project permitting and approval requires compliance with CEQA, CESA, and NPPA. CESA authorizes the Fish and Game Commission to designate endangered or threatened plants, and to regulate their take (§2050-2098, Fish and Game Code).

The Natural Heritage Division of the CDFG administers the state's rare plant program. The CDFG maintains a list of designated endangered, threatened, or rare native plants. Species on this list were either designated under the NPPA or under CESA by the Fish and Game Commission. The CESA and NPPA recognize three endangerment categories for plants (§1901, 2062, and 2067), closely paralleling the equivalent categories under federal law:

> **Endangered**—a species is endangered when "its prospects of survival and reproduction are in immediate jeopardy from one or more causes."
>
> **Threatened**—a species is threatened when, "although not presently threatened with extinction, it is likely to become an endangered species in the foreseeable future in the absence of . . . special protection and management efforts . . ."
>
> **Rare**—a species is rare when, "although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens."

In addition to recognizing listed species of these three levels of endangerment, the CDFG can afford interim protection to candidate species while they are under review by the Fish and Game Commission.

Under provisions of CEQA, specifically Section 15380(d), the CDFG can treat nonlisted species as equivalent to listed species if such species satisfy the minimum biological criteria for listing. In general, CDFG policy affords status to species under this section of CEQA based on the current listing for the species in The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (1994). The CNPS recognizes four listing categories for special status plants:

List 1—plants rare, threatened, endangered or presumed extirpated or extinct in California and elsewhere.

List 2—plants rare, threatened or endangered in California but more common elsewhere.

List 3—plants about which more information is needed to assess endangerment status (a review list).

List 4—plants of limited distribution (a watch list).

The CNPS further characterizes each species in its statewide inventory with a three-character code describing its rarity, endangerment classification, and distribution. The R-E-D code descriptors are presented below:

CNPS R-E-D CODE

R (Rarity)

1-Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
2-Occurrence confined to several populations or to one extended population.
3-Occurrence limited to one or a few highly restricted populations, or present in such small numbers that it is seldom reported.

E (Endangerment)

1-Not endangered.
2-Endangered in a portion of its range.
3-Endangered throughout its range.

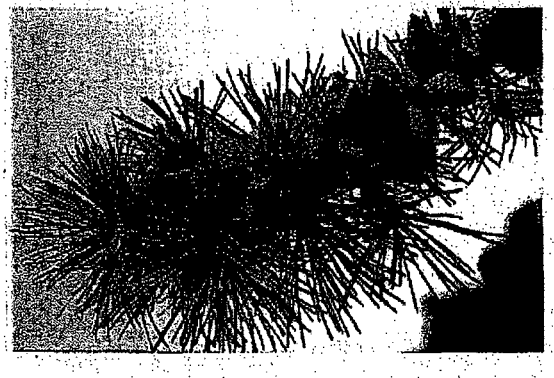
D (Distribution)

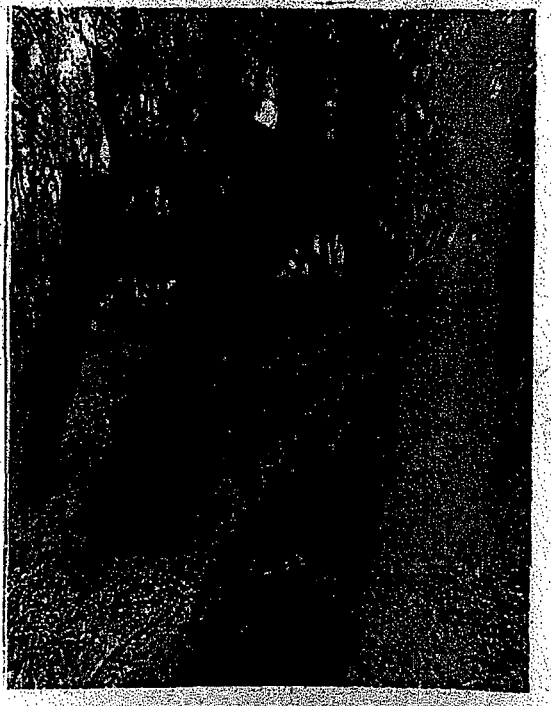
1-More or less widespread outside California.
2-Rare outside California.
3-Endemic to California.

Species on CNPS List 1b are usually considered by the CDFG to automatically qualify for consideration under CEQA Section 15380(d). In some cases, most species on List 2 and even a few species on List 4 may fall under this section.

A Sensitive Resource Inventory for Diablo Canyon Lands

A report of the Diablo Canyon Land Stewardship Committee





Volume II

A SENSITIVE PLANT AND WILDLIFE RESOURCE INVENTORY OF DIABLO CANYON LANDS, VOLUME II:

DETAILED RESULTS OF FIELD SURVEYS, INCLUDING MAPPED LOCATIONS OF SENSITIVE BIOLOGICAL RESOURCES

Prepared by:

BioSystems Analysis, Inc.
303 Potrero Street, Suite 29-101
Santa Cruz, California 95060

and

Pacific Gas and Electric Company
Technical and Ecological Services
3400 Crow Canyon Road
San Ramon, California 94583

Prepared for:

Pacific Gas and Electric Company
Diablo Canyon Land Stewardship Committee
Diablo Canyon Power Plant
Avila Beach, California

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