

## **EXECUTIVE SUMMARY**



# EXECUTIVE SUMMARY

## CHAPTER 1. INTRODUCTION

### Background and Purpose

This Natural Resources Report was prepared at the request of the Placer County Planning Department (Planning Department) to provide background information on the biological and other natural resources that occur in western Placer County. This information will be used in the preparation of a Natural Community Conservation Plan/Habitat Conservation Plan (NCCP /HCP) for the Phase 1 Planning Area of western Placer County (Phase 1 Planning Area) that includes the Auburn area west to the County's border with Sacramento and Sutter counties. This area comprises 39 watersheds and encompasses an area of approximately 111,000 hectares (270,000 acres). This report was designed to provide the comprehensive and accurate maps and data compilations of ecosystems and land-cover types, covered and other special-status species, and sensitive natural communities that will be pivotal to developing the NCCP/HCP for the Phase 1 Planning Area.

### Goals and Objectives

The goal of this Natural Resources Report is to provide a scientifically accurate account of the distribution and characteristics of the watersheds, ecosystems, and plant and animal species, including special-status species. The data and findings of this report are not intended to be a substitute for site-specific surveys and biological resource analysis on lands that are proposed for future development or land use conversions. However, this report and its associated maps and electronic databases should enable the County to make more informed decisions on the immediate and cumulative effects of various projects on the County's natural resources. It should also provide much useful information on the biological resources of the Phase 1 Area for local, state and federal agencies, private landowners, land trusts, developers, scientific organizations, and members of the general public.

### Watershed-Based Approach

This report uses a watershed-based approach for compiling and summarizing biological and natural resource information for the Phase I Planning Area. A watershed is an area of land that drains into a particular stream, river, or lake. Western Placer County is bounded by two major rivers: the Bear River on the north and the American River on the south. Many perennial, intermittent, and ephemeral creeks are also present. This report is a data summary only and it does not contain any conclusions, recommendations, or rankings of the county's watersheds or natural resources.

## CHAPTER 2. METHODS

### Phase I Planning Area Watersheds and Ecosystems

The California Watershed Map (CALWATER 2.0) lists 38 watersheds greater than 150 acres in the Phase 1 Planning Area; the surface of Folsom Lake was also included as a watershed but no surveys were performed there. Vegetation and land cover types in the Phase 1 Planning Area that could be mapped and field-verified at a watershed scale (i.e., continuous patches > 0.2 hectare [0.5 acre]) were defined as "large-patch ecosystems" and were classified using the California Wildlife Habitat Relationship (CWHR) system, modified slightly to reflect conditions in western Placer County. CWHR was selected over other vegetation classification systems because it is widely used by foresters, ecologists, and wildlife biologists throughout California; it is also the system most easily understood by decision makers and the general public. All mapping information was stored and analyzed in a Geographic Information System (GIS) database.

The approximate locations of small-patch ecosystems (i.e., biologically important plant, soil, or aquatic communities that are too small to be mapped at a watershed scale [ $<0.2$  hectare]) also were mapped in each watershed. Small-patch ecosystems that were mapped in this report included: Landscape and Golf Course Ponds, Stock Ponds, Springs and Seeps, Mehrten Formation Soils, and Serpentine Soils. Other themes that were entered into the GIS database include canals, dams and reservoirs, public/private roads, roads in streamside zones, and public or private land ownership.

### Plant and Animal Diversity

Species lists of vascular plants and vertebrate animals were compiled from university and agency databases, published literature, and consultations with agency personnel and knowledgeable local naturalists. These lists include all vascular plant and vertebrate species known to occur in Placer County, including introduced species and extremely rare species known from only a few isolated occurrences. All species on these lists are supported by published literature and/or museum/herbarium specimens. A list of invasive plants present in Placer County also was prepared.

Lists of special-status plants and animals were compiled after conducting a literature review of their regional status and distribution; these lists also provide legal status, distribution, habitat preferences, and known or potential occurrence in the Phase I Planning Area. Species were chosen for possible coverage under the NCCP/HCP based on their current state or federal listing status, their potential to be listed in the foreseeable future, or their local importance to Phase I Planning Area ecosystems. For the purposes of this report, species referred to as “covered” indicate their presence on the County’s Phase I Planning Area Working List of Covered Species. During the NCCP/HCP planning process species may be added to or removed from the covered list.

A Placer County Wildlife Habitat Relationship (PCWHR) matrix was prepared to summarize the occurrence of native vertebrates in each of the county’s large-patch ecosystems. A matrix of the PCWHR habitat associations of special-status plants also was prepared.

### Ecosystem and Land Cover Mapping

Jones & Stokes botanists who were experienced with interpretation of aerial photographs and with the vegetation of the Phase I Planning Area mapped large- and small-patch ecosystems and other land-cover types from rectified, year 2002 aerial photographs by tracing vegetation outlines onto acetate laid over the photographs. When complete, the acetates were electronically scanned and imported into a GIS to create maps of the Phase I Planning Area and for each watershed. A GIS is a set of computerized maps that are linked to electronic databases; this set of maps is composed of individual layers, or data themes, each representing a unique kind of mapped information. Biological and physical resource information for each watershed was obtained from a variety of published sources and existing electronic databases that are maintained by universities and local, state, and federal agencies. Only the most current, scientifically accurate information available was used. Jones & Stokes GIS specialists and biologists evaluated more than 130 electronic databases, but only about 40 of these were incorporated into the GIS database.

### Verification of Watershed Data Themes

Jones & Stokes botanists and wildlife biologists conducted field surveys of all 38 watersheds comprising the Phase I Planning Area from February 27 through May 4, 2003. Standardized survey protocols and field data forms were used to verify individual habitat and land use maps and data themes in the field. Each of these watersheds was assigned to a survey team that included an experienced Jones & Stokes botanist and wildlife biologist. The overall objectives of these surveys were to: verify the accuracy of the GIS watershed-based maps and data themes; perform reconnaissance-level field surveys of each watershed; evaluate the presence or absence of various large- and small-patch ecosystems in individual watersheds; and to assess the extent and condition of the individual ecosystem types on public lands. The following major data themes were verified at randomly selected polygons in each watershed: mapped vegetation and land-use polygons, land uses and impacts, characteristics of surrounding areas, types and levels of disturbance, problems with interpretation, covered and other special-status species observations and suitable habitat areas, and the presence and extent of invasive nonnative species.

Approximately 16 person-hours were spent surveying each watershed. All field survey work was conducted from public roads or on public lands. Public or private road status was determined from GIS-generated road maps provided by the Placer County Planning Department and USGS 7.5-minute topographical maps. In the Phase I Planning Area, public lands comprise state or county parks, fire and sanitation districts, and city-owned lands. No trespassing on private lands occurred during the field surveys.

## CHAPTER 3. RESULTS OF WATERSHED ANALYSIS

### Phase I Planning Area Watersheds

The Phase I Planning Area comprises 38 watersheds totaling about 110,760 hectares (273,690 acres). One additional watershed includes the surface of Folsom Lake and no surveys were performed there. Approximately 106,650 hectares (263,515 acres), or about 96% of the Phase I Planning Area, are in private ownership. Individual watersheds in this study varied from 1,395 to 5,984 hectares (3,446 to 14,787 acres) in area. A total of 34 large-patch ecosystems and land-cover types and six small-patch ecosystems were mapped and verified in the field. Elevations in the Phase I Planning Area range from approximately 9 meters (30 feet) in the extreme western part of the county to 677 meters (2,220 feet) northeast of Auburn.

### Plant diversity

Placer County supports a rich flora, with 1,586 plant taxa (including subspecies and varieties) recorded or documented as occurring in the county. The flora comprises 525 genera of plants in 107 families. Flowering plants comprise 97% of the flora, of which 22% (346 taxa) are monocots (i.e., grasses, grass-like plants, orchids, and lilies) and 75% (1,191 taxa) are dicots (all other flowering plants). The remaining taxa are ferns and fern-allies, which make up 2% of the county's flora (32 taxa), and gymnosperms (conifers), which constitute only 1% of the total number (17 taxa). The most species-rich families are the Asteraceae (sunflower family) with 212 taxa, Poaceae (grass family) with 159 taxa, Scrophulariaceae (figwort family) with 100 taxa, and Fabaceae (the legume or bean family) with 95 taxa. These four families together account for more than a

third of the total taxa listed for the county. In contrast, 40 families are represented by one or two species each. Two ecosystems in the Phase I Planning Area support unique and distinctive plant communities: Vernal Pool Complexes and Serpentine Soils.

### Non-native Plants

Of the 1,586 plant taxa found in Placer County, about 15% are naturalized, nonnative species. These nonnative species have been introduced since Europeans first colonized California. Some of these species are aggressive, invasive exotics that present serious problems. They degrade natural areas, exclude native species, disrupt ecosystem processes, alter fire frequencies, reduce recreational values, and restrict economic returns on crops. The most widespread invasive plants in the Phase I Planning Area are yellow star-thistle, Himalayan blackberry, ripgut brome, medusa-head, puncture vine, and Italian thistle. Scotch broom, and cheatgrass also are frequent pests in some areas.

### Animal diversity

The Phase I Planning Area provides habitat for about 268 regularly occurring native vertebrates, 35 introduced species, and 40 extremely rare species (i.e., recorded five or fewer times in the county). Fourteen other species may occur in the county, based on their known ranges and habitat requirements, but no definite records for these species exist. In all, representatives of 104 vertebrate families are known to occur in the Phase I Planning Area. Fishes are represented by 12 families, with 12 native species and 26 nonnative introduced species. Amphibians are represented by seven families with six native species and one nonnative introduced species (bullfrog). Reptiles are represented by eight families, with 20 native species and no introduced species. Birds, the most diverse vertebrate group in the Phase I Planning Area, are represented by 54 families, with 190 native species that occur regularly (i.e., at least once per year) in the County and 39 other species that have extremely rare and/or irregular occurrences. The County bird list also includes five introduced species. A total of 235 regular, extremely rare, and introduced bird species have been documented in Placer County. Mammals, the second most diverse vertebrate group in the Phase I Planning Area, are represented by 23 families, with 40 native species and six nonnative, introduced species.

## Wildlife and Habitat Relationships

A matrix of the occurrence and breeding status of each of the regularly occurring native and nonnative fishes, amphibians, reptiles, birds, and mammals in the 34 PCWHR large-patch ecosystems in the Phase I Planning Area shows that two habitat types, Valley Foothill Riparian Woodland and Foothill Hardwood Woodland, support more than 150 vertebrate species, including visitors and breeding species. Large-patch ecosystems supporting the fewest total species (<60 visitors and breeding species) are Disturbed Lands, Row Crops, Alfalfa, Vineyards, Orchards, and Urban Wetlands.

## Mapped Ecosystems of the Phase I Planning Area

### *Aquatic and Open Water Ecosystems*

*Riverine* ecosystems occupy a relatively small proportion of the total landscape in western Placer County, but they are extremely important ecologically. These ecosystems support about 95 vertebrate species—54 breeding species and 41 species that primarily visit during winter or in migration. Riverine ecosystems in western Placer County also support a diverse fish fauna comprising 12 native species and 18 nonnative species; these include two special-status fishes: chinook salmon (fall/winter runs) and Central Valley steelhead. Riverine ecosystems at lower elevations in western Placer County have been heavily impacted by hydraulic mining, dam construction, the introduction of exotic fishes and amphibians, and poor water quality. As a result, many species of invertebrates, fish, and amphibians inhabiting these ecosystems are in decline. About 146 hectares (360 acres) of Riverine ecosystems were mapped in the Phase I Planning Area at elevations of about 15–458 meters (50–1,500 feet).

*Lacustrine* ecosystems include natural ponds and lakes and manmade features such as reservoirs. Most of the natural lakes in the Phase I Planning Area are small and shallow, and most reservoirs lack a well-developed fringe of wetland and riparian plants due to their steep-sided slopes and fluctuations in water level. However, where shallow water does occur in ponds and reservoirs in the foothills of Placer County, common aquatic and emergent plants often exist. The native amphibians and invertebrates originally found in them have been heavily impacted by the introduction of non-native fish. Artificial reservoirs and ponds are attractive to waterfowl, raptors, swallows, bats, and many other wildlife species. Approximately 1,938 hectares (4,790 acres) of

Lacustrine ecosystems were mapped in western Placer County; these are widespread across the Phase I Planning Area.

### *Barren Ecosystems*

*Rock Outcrops, Cliffs, and Disturbed Land* include natural features such as rock outcrops and cliffs and manmade features such as mine tailings and graded soils. In both types, vegetative cover is typically sparse or absent; however, pockets of Foothill Chaparral and Annual Grassland may be present within natural Barren areas. Rock Outcrops and Cliffs are surprisingly rich in wildlife and approximately 50 vertebrate species—34 breeding species and 16 visitors—occur in these ecosystems and some special-status animals use them for breeding. Several special-status plants are also known to occur or could potentially occur on Barren rock outcrops in river canyons of the Phase I Planning Area. Approximately 202 hectares (500 acres) of rocks and cliffs were mapped in western Placer County. Disturbed Lands are widespread in developed and agricultural areas and they occupy about 640 hectares (1,580 acres) in western Placer County. Together, these barren ecosystems constitute much less than 1% of the Phase I Planning Area.

### *Herbaceous Ecosystems*

*Annual Grasslands* in western Placer County are dominated by nonnative Mediterranean annual grasses. Upon European settlement, alien annual grasses were accidentally introduced and became widely distributed throughout California. Despite the dominance of introduced species, Annual Grasslands are still home to many native plant species, particularly native bulbs and early- and late-season annual wildflowers. The original grassland ecosystem in western Placer County was most likely an open Oak Savanna dominated by native bunchgrasses. Two state-listed plants and five other special-status plants may occur in Annual Grasslands of the Phase I Planning Area. Despite the dominance of introduced plants and their relative lack of vertical structure, Annual Grasslands support a higher diversity of animals than some other large-patch ecosystems in western Placer County. A total of 98 vertebrate species—34 breeding species and 64 visitors—occur in these ecosystems, including up to 14 special-status species. In western Placer County, nonnative Annual Grasslands and grassland-savanna communities occur at elevations of approximately 12–563 meters (38–1,850 feet). Almost 23,000 hectares (57,000 acres) of Annual Grasslands were mapped, constituting about 17% of the Phase I Planning Area.

*Fresh Emergent Wetlands* are defined by the presence of tall, grass-like plants such as cattails and bulrushes that are rooted in permanently or seasonally inundated soils. Plant species composition of these ecosystems can vary both between marshes and within a given marsh depending on the basin contours that influence the depth and duration of flooding. These ecosystems provide essential habitat for many species of waterbirds, amphibians, and reptiles and may support up to 97 vertebrate species—40 breeding species and 57 visitors—in the Phase I Planning Area. Two species of special-status plants and approximately 14 special-status animals may use these ecosystems in western Placer County. Fresh Emergent Wetlands also provide extremely important ecological functions such as water filtration and erosion control, regulation of stream flow and groundwater levels, and detoxification of wastes and other pollutants. These ecosystems are being lost to various types of conversion, and their biological integrity is threatened by invasive species. In western Placer County, Fresh Emergent Wetlands span a large elevational gradient, occurring at elevations of about 15–538 meters (50–1,765 feet). These ecosystems occupy about 518 hectares (1,280 acres), or less than 1% of the Phase I Planning Area.

*Seasonal Wetlands* are defined as isolated wetlands and swales that pond water during the rainy season, but that lack the distinctive flora and many of the physical characteristics that characterize Vernal Pools. They support a lower diversity of plant species than Vernal Pools, with a much higher proportion of nonnative species. Seasonal wetlands in the Phase I Planning Area may support up to nine special-status plants and approximately 10 special-status animals. These ecosystems may support up to 94 vertebrate species—15 breeding species and 79 visitors. In western Placer County, Seasonal Wetlands are found at elevations of 15–580 meters (50 feet–1,906 feet). These ecosystems occupy approximately 541 hectares (1,338 acres), or approximately 0.5% of the Phase I Planning Area.

*Vernal Pools and Vernal Pool Complexes* are a unique type of wetland that form in seasonally flooded depressions in Annual Grasslands under a combination of specific climatic, soil, hydrologic, and topographic conditions. These conditions include a Mediterranean climate, a restrictive subsurface layer, impermeable to water infiltration, on which a shallow water table is perched during the wet season. Vernal Pools and Vernal Pool Complexes support a distinctive set of plants and animals that are adapted to periodic or continuous inundation during the wet season and desiccated soils during the dry season. About 200 plant species are

restricted to or closely associated with these ecosystems in California, and five special-status plant species occur in Vernal Pools in western Placer County. Vernal Pools provide habitat for animals that can tolerate the extreme range of conditions that characterize these ecosystems. A variety of special-status species inhabit Vernal Pools including three crustaceans, two amphibians, and several birds. In the Phase I Planning Area, Vernal Pool and Vernal Pool Complexes may support up to 67 vertebrate species—7 breeding species and 60 visitors. In western Placer County, these ecosystems occur at elevations of 9–160 meters (30–525 feet). They occupy about 9,085 hectares (22,450 acres), or approximately 8% of the land area in the Phase I Planning Area.

### *Shrub Ecosystems*

*Foothill Chaparral* often occurs in settings that are too hot, dry, rocky, and steep to support tree-dominated habitats. In western Placer County this shrub-dominated ecosystem is found primarily along the slopes of the American River and near the City of Auburn. Chamise, whiteleaf manzanita, buckbrush, and shrubby interior live oaks are the dominant species. Foothill Chaparral ecosystems may support up to 15 special-status plants, especially in serpentine soils (see Small-Patch Ecosystems below). These ecosystems are very important to wildlife in the Phase I Planning Area and 120 vertebrate species—53 breeding species and 67 visitors occur there; about five special-status animals may visit these ecosystems. Major losses and fragmentation of Foothill Chaparral are occurring throughout the Sierra Nevada foothills because of rural residential development. Noxious weeds such as yellow star thistle and medusa-head may invade disturbed Foothill Chaparral ecosystems. In western Placer County, Foothill Chaparral ecosystems occur at elevations of about 140–650 meters (460–2,130 feet), and they occupy about 247 hectares (610 acres), or much less than 1% of the Phase I Planning Area.

### *Forested Ecosystems*

*Valley Foothill Riparian Woodland* includes all stands of deciduous trees near perennial or intermittent streams in western Placer County. These water-dependent ecosystems include widely distributed riparian habitats dominated by a variety of riparian trees and shrubs. The plant species composition in a riparian corridor is largely determined by the depth of the summer water table, the local flooding frequency, and adjacent land uses. Non-native Himalayan blackberry is a dominant species in many riparian areas of the foothills; other

noxious weeds and invasive plants are usually present in these ecosystems. Valley Foothill Riparian Woodlands provide food; water; migration and dispersal corridors; and escape, nesting, and thermal cover for a high diversity of wildlife species. These ecosystems may support up to 193 vertebrate species—133 breeding species and 60 visitors—in western Placer County. Almost 20 special-status animals may visit Valley Foothill Riparian Woodland ecosystems in the Phase I Planning Area. These ecosystems occur at elevations of about 14–543 meters (45–1,780 feet), and they occupy about 2,456 hectares (6,070 acres), or about 2% of the Phase I Planning Area.

*Foothill Hardwood Woodland* consists of a zone of oak-dominated ecosystems found between the Annual Grassland at the edge of the Central Valley and the Oak-Foothill Pine Woodlands and Ponderosa Pine Forest at higher elevations. Three distinct subtypes were mapped in western Placer County: Blue Oak Woodland, Interior Live Oak Woodland, and Valley Oak Woodland. These ecosystems support a diverse assemblage of native shrubs and herbaceous plants, and they provide habitat for about 14 special-status plants. Foothill Hardwood Woodland (all three subtypes) is one of the richest wildlife habitats in California. These ecosystems provide habitat for about 152 vertebrate species—101 breeding species and 51 visitors. Approximately 10 special-status animals may visit these ecosystems in the Phase I Planning Area. In western Placer County, Foothill Hardwood Woodlands occur at elevations of 21–677 meters (73–2,221 feet). These ecosystems occupy about 12,647 hectares (31,253 acres), or about 11% of the Phase I Planning Area, comprising about 8,510 hectares (21,025 acres) of Mixed Oak Woodland, 3,628 hectares (8,964 acres) of Blue Oak Woodland, 240 hectares (594 acres) of Interior Live Oak Woodland, and 270 hectares (670 acres) of Valley Oak Woodland. Researchers have expressed concern about Foothill Hardwood ecosystems since little natural regeneration has occurred during the last century.

*Oak-Foothill Pine Woodland* ecosystems are dominated by blue oaks, black oaks, or interior live oaks, but they have at least 10% canopy cover of foothill pine. Stands usually have well-developed shrub and herbaceous layers. These ecosystems also support a diverse assemblage of native shrubs and herbaceous plants, and they provide habitat for approximately 14 special-status plants. Because of the abundance of seeds, fruits, and acorns, this ecosystem provides habitat for a large number of animal species although none seems to be completely dependent on it. In the Phase I Planning Area, these

ecosystems may support up to 143 vertebrate species—98 breeding species and 45 visitors; approximately 10 special-status animals may visit these ecosystems. In western Placer County, Oak-Foothill Pine Woodland occurs at elevations of about 58–645 meters (190–2,115 feet). These ecosystems occupy about 5,220 hectares (12,900 acres), or about 5% of the Phase I Planning Area. Researchers have expressed concern about Foothill Hardwood ecosystems since little natural regeneration has occurred during the last century.

*Oak Woodland-Savanna* ecosystems were characterized by an open canopy of large oak trees with <30% cover and an understory of introduced Mediterranean grasses and forbs. The shrub layer is generally sparse. Because they often grow in canopy openings in woodland, the special-status plants that could occur in Foothill Hardwood Woodland could also occur in Oak Woodland-Savanna ecosystems. Oak Woodland-Savanna provides habitat for a large number of animals, although no species are totally dependent on this ecosystem, which supports many of the wildlife species associated with Foothill Hardwood Woodland and Annual Grassland ecosystems. In the Phase I Planning Area, Oak Woodland-Savanna provides habitat for about 136 vertebrate species—76 breeding species and 60 visitors including up to 15 special-status animals may visit these ecosystems. In western Placer County, Oak Woodland-Savanna occurs at elevations of about 22–593 meters (71–1,946 feet). This ecosystem occupies about 4,303 hectares (10,632 acres), or 3.9% of the Phase I Planning Area.

*Ponderosa Pine Forest* is defined in this report as a conifer forest with 50% or more ponderosa pine trees in the canopy. Historically, these ecosystems consisted of open, park-like stands of large ponderosa pines with a few scattered understory trees and shrubs. This structure was maintained by frequent surface fires that prevented the buildup of excess small trees and brush. Fire suppression and the selective harvest of large trees during the last hundred years resulted in a large increase in the density of small to medium-sized trees. This change in structure altered fire behavior in this ecosystem from frequent surface fires to infrequent high-intensity, stand-destroying fires. Plant species composition of the understory of Ponderosa Pine Forest varies widely with elevation, aspect, and fire history of individual stands. However, in most areas, the shrub and herb layers occur primarily at forest edges or in canopy openings, such as rock outcrops and other natural or artificial clearings. Ponderosa Pine Forests of western Placer County have

the potential to support one of the highest vertebrate diversities of any of the county's large-patch ecosystems. Approximately 134 vertebrate species—92 breeding species and 42 visitors—occur in these ecosystems in the Phase I Planning Area; these ecosystems also provide suitable habitat for approximately nine special-status animals. In western Placer County, Ponderosa Pine Forest occurs at elevations of about 416–650 meters (1,365–2,130 feet). These ecosystems occupy about 400 hectares (990 acres), or less than 1% of the Phase I Planning Area.

### *Agricultural Ecosystems*

*Rice, Row Crops, Unidentified Croplands, Alfalfa, Irrigated Pasture, Vineyard, and Orchard* were the primary agriculture crops mapped in this report. In the Phase I Planning Area, Agricultural Ecosystems occur at elevations of 11–562 meters elevation (35–1,844 feet). These ecosystems occupy about 18,270 hectares (45,150 acres), or about 16.5% of the Phase I Planning Area. Of this total, Rice is the single, largest crop in Placer County occupying about 8,183 hectares (20,220 acres). Of the agricultural crop types, Rice has the highest value to wildlife, especially migratory and resident waterfowl, shorebirds, and wading birds. Rice fields support about 99 vertebrate species—10 breeding species and 89 visitors and approximately 11 special-status animals may visit these ecosystems. Agricultural Ecosystems that support the fewest total species (<60 visitors and breeding species) are Row Crops, Alfalfa, Vineyards, and Orchards. However, Alfalfa has high value to some wildlife species, especially foraging raptors. Vineyards typically provide habitat for the fewest wildlife species of the major Agricultural crop types, and only approximately 52 vertebrate species—seven breeding species and 45 visitors might be found there. A variety of introduced grasses and forbs are usually present in Agricultural fields, in addition to the target crop. Special-status plants are typically absent from these ecosystems. Invasive weeds such as yellow star-thistle can become problems, and poorly managed agricultural lands can serve as foci for invasion of these species into nearby natural ecosystems.

### *Urban Ecosystems*

*Urban Ecosystems* are found throughout western Placer County and they are not limited to any particular physical setting, occurring on level agricultural lands, valleys, gently to moderately sloping areas, and level ridges. The habitat values of Urban Ecosystems vary depending on the extent and type of development. The eight types of Urban Ecosystems recognized in this report are sim-

ilar to General Plan land use categories used by the Planning Department: Urban/Suburban, Rural-Residential, Rural-Residential Forested, Urban Parks, Golf Courses, Urban Riparian, Urban Woodland, and Urban Wetland. Generally, the highest wildlife values can be found in Rural-Residential Forested and Urban Riparian ecosystems, and the lowest values usually exist in commercial and Urban/Suburban types where mass-grading of the soil has occurred. Older neighborhoods with an abundance of mature trees and native landscaping usually support the greatest number of animal species. Plant species composition includes various non-native ornamentals, a few natives, and an increasing number of invasive, nonnative species. No special-status plants are known to occur in Urban or Residential areas of the Phase I Planning Area, but at least two special-status animals may frequent these ecosystems. In western Placer County, Urban/Suburban Ecosystems occur at elevations of 10–660 meters elevation (33–2,165 feet), but most occur below 305 meters (1,000 feet). These ecosystems occupy about 31,180 hectares (77,047 acres), or 28% of the Phase I Planning Area.

### *Small-Patch Ecosystems*

*Small-Patch Ecosystems* were defined in this report as isolated or unique communities that are small (usually less than 4 hectares [10 acres], and often less than 0.2 hectares [0.5 acre]) and that have unusual qualities or species associated with them. Five Small-Patch Ecosystem types were identified and mapped in this report: Landscape and Golf Course Ponds, Stock Ponds, Seeps and Springs, Mehrten Formation Soils, and Serpentine Soils. On the watershed maps they appear as point locations within large-patch ecosystems. Some small patch ecosystems are associated with unusual soils or geologic formations or they may support special-status plants and animals (e.g., Serpentine and Mehrten Formation soils). In California, approximately 300 rare plant taxa are associated with Serpentine Soils, representing more than 14% of all rare plants in the state. In western Placer County Serpentine Soils may support approximately nine special-status plants. Other small-patch ecosystems are associated with hydrologic features (e.g., Seeps and Springs, and various types of small ponds), or they may be locally or regionally scarce and therefore vulnerable to disturbance. For these reasons, Serpentine and Mehrten Formation soils and Springs and Seeps are recognized by state and/or federal resource agencies as sensitive habitats in California.

## CHAPTER 4. SPECIAL-STATUS SPECIES

Placer County has identified a working list of plant and animal species that may be covered in the Phase I Planning Area NCCP/HCP. For each of these species, Jones & Stokes prepared individual accounts that include the following sections: Status (i.e., federal and state listing status, existence of recovery plans, and Placer County NCCP/HCP Phase I Category); Distribution (California and the Phase I Planning Area); Population Status and Trends (California and the Phase I Planning Area); Natural History (habitat requirements, reproduction, dispersal patterns, longevity, sources of mortality, ecological relationships); and, Population Threats (habitat loss and degradation, predators, pesticides, pathogens, etc.). These accounts also include photographs and range maps of each species' occurrence and suitable habitats by watershed.

### Special-Status Plants

A total of 51 special-status plants are either known from Placer County or have high potential to occur there based on the presence of suitable habitat and occurrences in nearby areas. Two of these, Boggs Lake hedge-hyssop and Tahoe yellow cress, are listed as Endangered under the California Endangered SA. Twenty-seven special-status plant species, including Bogg's Lake hedge-hyssop, could occur in the Phase I Planning Area. Five species (Bogg's Lake hedge-hyssop, dwarf downingia, Ahart's dwarf rush, Red Bluff dwarf rush, and legenera) may be covered under the Phase I Planning Area NCCP/HCP; all five are associated primarily with Vernal Pool ecosystems. There is little distributional information for several of the special-status plants that could potentially occur in the Phase I Planning Area. For example, True's manzanita, dissected-leaved toothwort, tripod buckwheat, and stinkbells may occur there, but apparently they have not been documented with specimen records.

### Special-Status Plant and Habitat Relationships

A matrix of the special-status plant richness for the 34 PCWHR large-patch ecosystems and one small-patch ecosystem shows that three large-patch ecosystems—Foothill Chaparral, Foothill Hardwood Woodland, and Oak–Foothill Pine Woodland—potentially support approximately half of the special-status plants in the Phase I Planning Area that are not Vernal Pool ecosystem associates. Three other ecosystems—Seasonal

Wetlands, Serpentine Soils, and Oak Woodland-Savanna—provide suitable habitat for approximately 10 species. Most of the special-status plants that could occur in these ecosystems are associated with specific microhabitat conditions, such as small canopy openings, disturbed soils, or seasonally moist sites. Other species are geographically restricted in distribution; consequently, not all areas of a particular ecosystem have equal potential for occurrence of these species.

### Special-Status Animals

Twenty-seven animal species with known or potential occurrence in western Placer County were included on the list of target species that may be covered under the Phase I Planning Area NCCP/HCP. These species are: vernal pool fairy shrimp, vernal pool tadpole shrimp, California linderiella, valley elderberry longhorn beetle, Central Valley chinook salmon (fall/winter runs), Central Valley steelhead, California tiger salamander, foothill yellow-legged frog, California red-legged frog, western spadefoot toad, northwestern pond turtle, giant garter snake, bald eagle, Swainson's hawk, northern harrier, ferruginous hawk, rough-legged hawk, American peregrine falcon, California black rail, California burrowing owl, western yellow-billed cuckoo, bank swallow, yellow warbler, yellow-breasted chat, Modesto song sparrow, grasshopper sparrow, and tricolored blackbird. No focused surveys for special-status animals were conducted for this report but many were observed incidentally during the watershed surveys.

Three species—California red-legged frog, giant garter snake, and western yellow-billed cuckoo—were included on the working list of covered species for the Phase I NCCP/HCP because they are known to occur in adjacent counties, and because potentially suitable habitat areas exist for them in western Placer County. However, none of these species has been documented recently in the Phase I Planning Area. Two species, the California black rail and grasshopper sparrow are extremely rare in the Phase I Planning Area.

## Special-Status Animal and Habitat Relationships

Some large-patch ecosystems are more likely to support special-status animals than others. The highest numbers of special-status vertebrates can be found in Fresh Emergent Wetlands, Valley Foothill Riparian Woodland, Annual Grassland, and Riverine ecosystems. Vernal Pool Complexes provide the only suitable habitat for special-status invertebrates: vernal pool fairy shrimp, vernal pool tadpole shrimp, and California linderiella.

## APPENDICES

This Natural Resources Report contains the following technical appendices:

- Appendix I. Placer County—Watershed Survey Protocol.
- Appendix II. Vascular Plant Species With Documented or Recorded Occurrence in Placer County.
- Appendix III. Special-Status Plants With Known or Potential Occurrence in Placer County.
- Appendix IV. Placer County Phase I Planning Area Special-Status Plant and Habitat Relationships Matrix.
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- Appendix VII. Placer County Phase I Planning Area Wildlife and Habitat Relationships Matrix.
- Appendix VIII. Compiled and Evaluated Data Themes for the Phase I NCCP/HCP Planning Area.
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- Appendix X. Watershed Statistics.
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- Appendices XI-3 to XI-40. Watershed Summaries.