



## **Biological and Wetland Protection Technical Background Report**

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# BIOLOGICAL AND WETLAND PROTECTION

## TABLE OF CONTENTS

<b>I.</b>	<b>PURPOSE AND BACKGROUND</b> .....	<b>1</b>
	A. PURPOSE.....	1
	B. BACKGROUND AND METHODS.....	1
<b>II.</b>	<b>REGULATORY FRAMEWORK</b> .....	<b>2</b>
	A. SPECIAL-STATUS SPECIES.....	2
	1. Federal Authority.....	3
	2. State Authority.....	4
	B. SENSITIVE NATURAL COMMUNITIES.....	5
	1. Federal and State Authority.....	5
	C. WETLANDS.....	6
	1. Federal Authority.....	6
	2. State Authority.....	7
<b>III.</b>	<b>MAPPING SUMMARY</b> .....	<b>7</b>
<b>IV.</b>	<b>SETTING</b> .....	<b>17</b>
	A. SPECIAL-STATUS SPECIES.....	18
	B. SENSITIVE NATURAL COMMUNITIES.....	26
	C. WETLANDS.....	26
<b>V.</b>	<b>MARIN COUNTYWIDE PLAN REVIEW</b> .....	<b>26</b>
	A. Special-Status Species.....	42
	B. Sensitive Natural Communities.....	43
	C. Wetlands.....	44
	D. Wildlife Habitat and Connectivity.....	45
	E. Vegetation Management.....	45



# MARIN COUNTYWIDE PLAN

F. Interagency Coordination .....	46
G. MITIGATION ISSUES .....	46
VI. SUMMARY OF KEY ISSUES, TRENDS, AND OPPORTUNITIES .....	47
<b>VII. REFERENCES .....</b>	<b>47</b>
A. PEOPLE RESPONSIBLE FOR REPORT PREPARATION .....	47
B. PERSONS AND ORGANIZATIONS CONSULTED.....	47
C. BIBLIOGRAPHY .....	48

## LIST OF TABLES

1. Special-Status Species Known from Marin County .....	20
2. Evaluation of Existing Countywide Plan Biological and Wetlands Resources Policies and Programs .....	27

## LIST OF EXHIBITS

1. Vegetation Map of Marin County .....	9
2. Public Open Space Lands of Marin County.....	11
3. Special-Status Species and Sensitive Natural Communities of Marin County.....	13
4. Wetlands/Streams of Marin County .....	15



# BIOLOGICAL AND WETLAND PROTECTION

## I. PURPOSE AND BACKGROUND

### A. PURPOSE

This Biological and Wetland Protection Technical Background Report provides a description of the regulatory framework related to sensitive biological and wetland resources, a general description of resources within the County, and a review of the current policies of the current Countywide Plan (CWP). Its purpose is to provide background information on sensitive resource within the County, regulations and programs which provide for their protection, an evaluation of the degree to which the current CWP addresses these resources, and areas of necessary focus in updating the CWP to ensure greater protection and sustainability of the natural environment.

### B. BACKGROUND AND METHODS

The Environmental Quality Element Technical Report #3, *Species Protection in Marin*, served as the background report for the Environmental Quality Element of the 1994 CWP. It focused on special-status species known from the County, with limited information on "Significant Natural Areas". This species-specific information has become outdated, does not consider the larger issue of essential habitat and the importance of habitat connectivity in addressing sensitive resources, and provides no information on wetland resources. A major reorganization of certain aspects of the 1994 CWP was considered necessary to thoroughly address these issues and define clear polices and programs which provide for their protection and enhancement.

This Technical Report was based on the review of available information, existing mapping, and consultation with representatives of agencies with resource management authority. It was originally circulated in April 2002. This revision provides an updated version with the latest information on vegetative cover and wetlands mapping for Marin County, current status for special-status species which have changed over the past few years, and the most recent occurrence records for special-status species and sensitive natural communities. Available literature and resource mapping reviewed included: current policies and programs from The Marin Countywide Plan (1994); management plans for open space lands of the Marin County Open Space District (various dates); the Mount Tamalpais Area Vegetation Management Plan of the Marin Municipal Water District and Marin County Open Space District (Leonard Charles & Associates, 1995); the General Management Plan for Point Reyes National Seashore (National Park Service, 1980); the final report on county land use policies and management practices on anadromous salmonids and their habitats (Harris et. al, 2001); the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (2001); mapping prepared as part of the California Land Cover Mapping and Monitoring referred to as the CalVeg program (USDA Forest Service, 2004); mapping prepared as part of the National Wetland Inventory (U.S. Fish and Wildlife Service, various dates); and the occurrence records of the California Natural Diversity Data Base (CNDDDB). The National Wetland Inventory (NWI) wetlands mapping and occurrence records of the CNDDDB are maintained in Geographic Information System (GIS) of the Marin County Community Development Agency. The occurrence records of the CNDDDB provided information on the known distribution of sensitive natural communities and special-status species for Marin County.



# MARIN COUNTYWIDE PLAN

The NWI provided a general mapping of wetland resources for Marin County, which has been combined with mapping of perennial and intermittent streams.

Identification of the biological resources in the County was based on existing information, and no detailed field surveys were conducted as part of this assessment. The preparer of this Technical Report has been involved in a wide variety of proposed development and management projects throughout Marin County, and his familiarity with the biological and wetland resources allows for an overview of sensitive resources and major issues of focus in the CWP update.

## II. REGULATORY FRAMEWORK

Local, State, and federal regulations have been enacted to provide for the protection and management of sensitive biological and wetland resources. The U.S. Fish and Wildlife Service (USFWS) is responsible for implementation of the federal Endangered Species Act and the Migratory Bird Treaty Act, while the U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands under §404 of the Clean Water Act. The National Marine Fisheries Service (NMFS) has federal authority over anadromous fish and marine wildlife under the federal Endangered Species Act. At the state level, the California Department of Fish and Game (CDFG) is responsible for administration of the California Endangered Species Act, and for protection of streams and waterbodies through the Streambed Alteration Agreement process under §1601-1616 of the California Fish and Game Code. Certification from the California Regional Water Quality Control Board is also required when a proposed activity may result in discharge into navigable waters, pursuant to §401 of the Clean Water Act and EPA §404(b)(1) Guidelines.

### A. SPECIAL-STATUS SPECIES

Special-status species<sup>1</sup> are plants and animals that are legally protected under the State and/or federal Endangered Species Acts<sup>2</sup> or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the federal and California Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take" of these

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<sup>1</sup> Special-status species include:  
Officially designated (rare, threatened, or endangered) and candidate species for listing by the CDFG.  
Officially designated (threatened or endangered) and candidate species for listing by the USFWS.  
Species considered to be rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those identified on lists 1A, 1B, and 2 in the *Inventory of Rare and Endangered Plants of California* by the CNPS (1994).  
And possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those plant species included on list 3 in the CNPS *Inventory* or animals recognized as "California Special Concern (CSC) species by the CDFG. A CSC species does not necessarily have any legal protective status under the California Endangered Species Act but is of concern to the CDFG because of severe decline in breeding populations.

<sup>2</sup> The federal Endangered Species Act (ESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal taxa. The California Endangered Species Act (CESA) of 1984 parallels the policies of ESA and pertains to native California taxa.



## BIOLOGICAL AND WETLAND PROTECTION

species. "Take" as defined by the federal Endangered Species Act (ESA) means "to harass, harm, pursue, hunt, shoot, would, kill, trap, capture, or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e. breeding, feeding, or sheltering) through significant habitat modifications or degradation. The CDFG also considers the loss of listed species habitat as "take", although this policy lacks statutory authority and case law support under the California Endangered Species Act (CESA).

The primary information source on the distribution of special-status species in California is the CNDDDB inventory, which is maintained by the Natural Heritage Division of the CDFG. Occurrence data is obtained from a variety of scientific, academic, and professional organizations, private consulting firms, and knowledgeable individuals, and entered into the inventory as expeditiously as possible. The occurrence of a species of concern in a particular region is an indication that an additional population may occur at another location if habitat conditions are suitable. However, the absence of an occurrence in a particular location does not necessarily mean that special-status species are absent from the area in question; only that no data has been entered into the CNDDDB inventory. Detailed field surveys are generally required to provide a conclusive determination on presence or absence of sensitive resources from a particular location, where there is evidence of potential occurrence.

### I. Federal Authority

The USFWS and NMFS have jurisdiction over species that are formally listed as threatened or endangered under the federal ESA. The federal ESA is a complex law enacted in 1973 to protect and recover plant and animal species in danger of becoming extinct and to conserve their ecosystems, with an ultimate goal being the recovery of a species to the point where it is no longer in need of protection. An "endangered" plant or animal species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered within the foreseeable future. The USFWS also maintains a list of species proposed for listing as endangered or threatened which have been published in the *Federal Register*. In addition, the USFWS maintains a list of candidate species for which sufficient information is available to support issuance of a proposed listing rule.

It is illegal to take any listed species without specific authorization. Any activity that could result in take of a federally-listed species requires a §10 take permit authorization from the USFWS or NMFS. Should another federal agency be involved with permitting the project, such as the Corps under jurisdiction of the Clean Water Act, §7 of the ESA requires the federal lead agency to consult with the USFWS and/or NMFS before permitting any activity that may result in take of a listed species. Section 9 of the ESA and its applicable regulations restrict certain activities with respect to endangered and threatened plants. However, these restrictions are less stringent than those applicable to fish and wildlife species. The provisions prohibit the removal of, malicious damage to, or destruction of any listed plant species from areas under federal jurisdiction. Listed plants may not be cut, dug up, damaged or destroyed, or removed from any other area (including private lands) in knowing violation of a state law or regulation.

In addition to the protection offered under the ESA, the federal Migratory Bird Treaty Act (MBTA) provides for protection of migratory bird species, birds in danger of extinction, and their active nests. It



## MARIN COUNTYWIDE PLAN

is illegal to possess or take any bird protected under the act without a depredation permit from the USFWS, which includes protection of eggs, young, and nests in active use. Although the MBTA technically provides for protection of most bird species, it is typically applied as a mechanism to protect active nests of raptors and colonial nesting species through the breeding and nesting season.

### 2. State Authority

The CDFG has jurisdiction over threatened or endangered species that are formally listed under the CESA. The CESA is similar to the federal ESA both in process and substance, providing additional protection to listed species in California. The CESA does not supersede the federal ESA, but operates in conjunction, with some species having different listing status. The CESA is intended to conserve, protect, restore, and enhance listed species and their habitat. Compliance with the CESA is required when a take is considered likely by the CDFG.

The CDFG maintains informal lists of "California Special Concern" (CSC) species. These species are broadly defined as plants and animals that are of concern to the CDFG because of population declines and restricted distribution, and/or because they are associated with habitats that are declining in California. These species are inventoried in the CNDDDB, focusing on nesting, roosting, and congregation sites for non-listed species. Species designated as "Fully Protected" or "Protected" may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFG.

The CESA prohibits the take of any plant listed as endangered, threatened, or rare. A "rare" plant species is one not presently threatened with extinction but may become endangered if its present environment worsens. State listing of plants began in 1977 with passage of the Native Plant Protection Act (NPPA). The CESA expanded upon the NPPA and enhanced legal protection for plants. To align with federal regulations, CESA created the categories of threatened and endangered species. It grandfathered all rare animals into the CESA as threatened species, but did not do so for rare plants.

The California Native Plant Society (CNPS) is a non-profit conservation organization dedicated to the preservation of native flora in California. The CNPS has been involved in assembling, evaluating, and distributing information on special-status plant species in the state, as listed in the *Inventory of Rare and Endangered Plants of California* (2001). A list 1A plant is a species, subspecies, or variety that is considered to be extinct. A list 1B plant is considered rare, threatened, or endangered in California and elsewhere. A list 2 plant is considered rare, threatened, or endangered in California but is more common elsewhere. A list 3 plant is a species for which the CNPS lacks necessary information to determine whether or not it should be assigned to a list. A list 4 plant has a limited distribution in California and is considered a "watch list" by the CNPS.

All of the plant species on List 1 and List 2 meet the requirements of the NPPA (§1901, Chapter 10) or §2062 and 2067 of CESA, and are eligible for state listing. Species maintained by CNPS on Lists 1 and 2 should be considered special-status species under the California Environmental Quality Act (CEQA). Some List 3 plant species also meet the requirements for state listing. Very few List 4 plants are eligible for listing but may be locally important and their listing status could be elevated if conditions change.

The CEQA requires government agencies to consider environmental impacts of discretionary projects and to avoid or mitigate them where possible. Under §15380, CEQA provides protection for both





## BIOLOGICAL AND WETLAND PROTECTION

State-listed species and for any other species which can be shown to meet the criteria for State listing. The CDFG recognizes that Lists 1A, 1B, and 2 of the CNPS Inventory consist of plants that, in a majority of cases, would qualify for listing and these species should be addressed under CEQA review. In addition, the CDFG recommends, and local governments may require, protection of species which are regionally significant, such as locally rare species, disjunct populations, essential nesting and roosting habitat for more common species, or plants on Lists 3 and 4 of the CNPS *Inventory*.

### **B. SENSITIVE NATURAL COMMUNITIES**

In addition to species-oriented management, protecting habitat on an ecosystem-level is increasingly recognized as vital to the protection of natural diversity in the state. This is considered the most effective means of providing long-term protection of ecologically viable habitat, and can include whole watersheds, ecosystems, and sensitive natural communities. Providing habitat connectivity between natural areas is essential to sustaining healthy wildlife populations and allowing for the continued dispersal of native plant and animal species.

The CNDDDB is also responsible for maintaining up-to-date records of sensitive natural communities, those considered rare or threatened by the State. Until recently, the classification of natural communities used by the CNDDDB was generally a habitat-based approach defined by dominant or characteristic plant species as described in the *Preliminary descriptions of the terrestrial natural communities of California* (Holland, 1986). The classification system for "natural communities" now used by the CNDDDB is based on the system described in the *Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995). It is a floristically based system which uses two units of classification, called the alliance and the association in the National Vegetation Classification (Grossman et al., 1998). Although it is just now being used on a broad scale, this quantitative vegetation classification and systematic mapping method will allow conservationists and resource managers a greater understanding of natural ecosystems, their abundance, and their relative security.

The purpose of the CNDDDB natural community inventory was originally to identify and determine the significance and rarity of the various vegetation types in the state. While identifying and mapping sensitive natural communities continues to be a primary focus of the inventory, a more thorough understanding of all natural communities is essential to accurately define rarity, identify monitoring trends and threats, and broaden the approach to ecosystem-level conservation of biological diversity. This will presumably lead to mapping of vegetation throughout the state using the newer classification system. In the interim, sensitive natural community types recorded in the CNDDDB are still generally mapped according to other older Holland classification system. Considerable work is necessary in updating and refining existing mapping records, identifying new occurrences of sensitive natural communities, and expanding the data base to include the identification of high-quality stands of all natural communities.

#### **I. Federal and State Authority**

Although these natural communities have no legal protective status under the state or federal Endangered Species Acts, they are provided some level of protection under CEQA. The CEQA Guidelines identify potential impacts on a sensitive natural community as one of six significance criteria. For example, a discretionary project that has a substantial adverse effect on any riparian habitat, native



## MARIN COUNTYWIDE PLAN

grassland, valley oak woodland, or other sensitive natural community would normally be considered to have a significant effect on the environment. Further loss of a sensitive natural community could be interpreted as substantially diminishing habitat, depending on its relative abundance, quality and degree of past disturbance, and the anticipated impacts to the specific community type. Where determined to be significant under CEQA, the potential impact would require mitigation through avoidance, minimization of disturbance or loss, or some type of compensatory mitigation when unavoidable.

### C. WETLANDS

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the Corps and the USFWS, which generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

In recognition of the importance of wetlands, in 1977 the USFWS began a systematic effort to classify and map remaining wetlands in the country, now known as the National Wetlands Inventory Program (NWI). Using the USGS topographic maps as a base, the wetlands mapping effort provides a generalized inventory of wetlands according to the *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS, 1979) used by the USFWS. Mapping has been prepared through interpretation of aerial photographs, with only limited ground confirmation, which means that a more thorough ground and historical analysis may result in a revision to wetland boundaries in a specific location. The inventory is not an attempt to define the limits of proprietary jurisdiction of any governmental agency. This mapping effort also identifies features according to the broader definition of wetlands used by the USFWS where only one criteria (wetland hydrology, hydric soils, or hydrophytic vegetation) is typically necessary for the location to meet the wetland definition, rather than all three criteria as required by the Corps.

#### I. Federal Authority

The Clean Water Act was enacted to address water pollution, establishing regulations and permitting requirements regarding construction activities that affect storm water, dredge and fill material operations, and water quality standards. This regulatory program requires that discharges to surface waters be controlled under the National Pollutant Discharge Elimination System permitting requirements which apply to sources of water runoff, private developments, and public facilities.

Under §404 of the Clean Water Act, the Corps is responsible for regulating the discharge of fill material into waters of the United States. The term "waters" includes wetlands and non-wetland bodies of water ("other waters") that meet specific criteria as defined in the Code of Federal Regulations. As noted above, all three of the identified technical criteria must be met for an area to be identified as a wetland under Corps jurisdiction, unless the area has been modified by human activity. In general, a permit must be obtained before fill can be placed in wetlands or other waters of the U.S. The type of permit depends on the amount of acreage and the purpose of the proposed fill, subject to discretion of the Corps.



## BIOLOGICAL AND WETLAND PROTECTION

Certain activities in wetlands or "other waters" are automatically authorized, or granted a nationwide permit which allows filling where impacts are considered minor. Eligibility for a nationwide permit simplifies the permit review process. Nationwide permits cover construction and fill of waters of the U.S. for a variety of routine activities such as minor road crossings, utility line crossings, streambank protection, recreational facilities and outfall structures. To qualify for a nationwide permit, a project must demonstrate that it has no more than a minimal adverse effect on the aquatic ecosystem, including species listed under the ESA. This typically means that there will be no net loss of either habitat acreage or habitat value, resulting in appropriate mitigation where fill activities are proposed.

The Corps assumes discretionary approval over proposed projects where impacts are considered significant, requiring adequate mitigation and permit approval. To provide compliance with the Environmental Protection Agency's §404(b)(1) Guidelines, an applicant must demonstrate that the proposed discharge is unavoidable and is the least environmentally damaging practicable alternative that will achieve the overall project purpose. The 1990 Memorandum of Agreement between the EPA and Corps concerning the Determination of Mitigation under the Guidelines prioritizes mitigation, with the first priority to avoid impacts, the second to minimize impacts, and the third to provide compensatory mitigation for unavoidable impacts.

### **2. State Authority**

Jurisdictional authority of the CDFG over wetland areas is established under §1601-1616 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the CDFG, incorporating necessary mitigation, and obtaining a Streambed Alteration agreement. The Wetlands Resources Policy of the CDFG states that the Fish and Game Commission will "strongly discourage development in or conversion of wetlands...unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat values or acreage". The Department is also responsible for commenting on projects requiring Corps permits under the Fish and Wildlife Coordination Act of 1958.

In addition, the California Regional Water Quality Control Board is responsible for upholding state water quality standards. Pursuant to §401 of the Clean Water Act, projects that apply for a Corps permit for discharge of dredge or fill material, and projects that qualify for a Nationwide Permit must obtain water quality certification.

## **III. MAPPING SUMMARY**

The GIS section of the Community Development Agency has prepared several maps which summarize existing information on biological and wetland resources in the County. These include:

- Map 2-1, Vegetation - showing vegetation cover modified from the CalVeg mapping program of the U.S. Forest Service (2004). Cover types have been merged to simplify major vegetation associations in the exhibit. The Vegetation Exhibit gives a generalized indication of the various vegetation types, and their relationship to major drainages, roadways, and urban development in the



## MARIN COUNTYWIDE PLAN

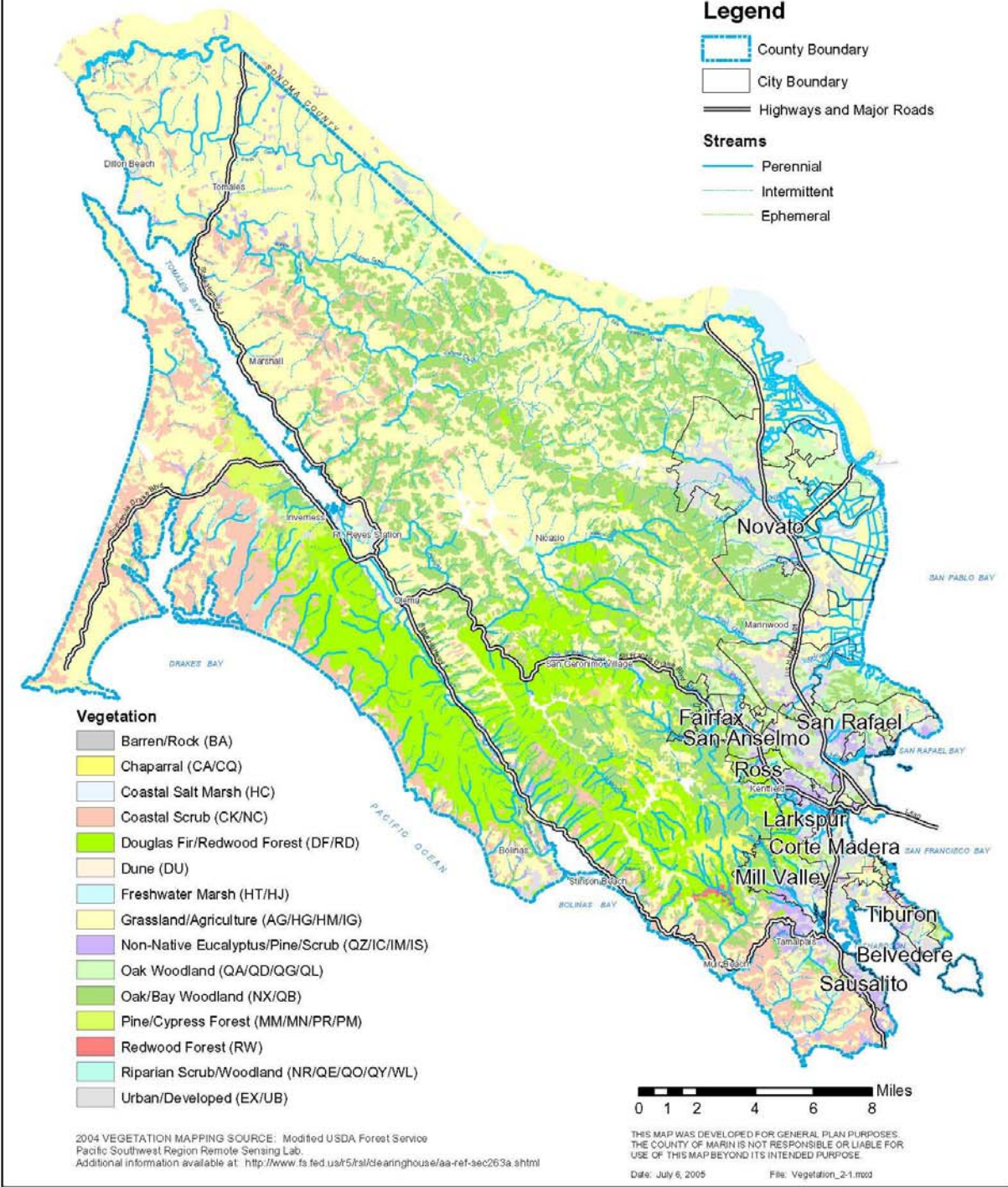
County. More accurate mapping of vegetation using the new CNDDDB methodology from the Manual of California Vegetation is not available for most of the central and eastern parts of Marin County. This floristic based system of mapping has actually been completed for most of West Marin, including areas encompassed by the Golden Gate National Recreation Area, Point Reyes National Seashore, parts of Mount Tamalpais State Park, and some of the watershed lands of the Marin Municipal Water District. Completing this mapping effort for the entire county would provide quantitative data on the distribution and abundance of plant associations, and would allow for monitoring of trends in their abundance, vulnerability, and rarity in Marin County.

- • Map 2-17, Open Space and Parks - showing designated public open space and watershed lands in the County, distinguishing federal, state, local and water district lands. These open space and watershed lands are vital to maintaining viable habitat for native plants and wildlife in the County. Consideration should be given to how these protected lands are interconnected and where additional open space lands must be secured to maintain critical habitat links, particularly along stream corridors, bayfronts, and ridgelines.
- • Map 2-2, Special-Status Species and Sensitive Natural Communities - showing recorded occurrences of special-status species plant and animal species and of sensitive natural communities based on the CNDDDB records. Streams with known occurrences of coho salmon and steelhead trout mapped by the County are also indicated in the exhibit. Designated critical habitat for several federally-listed species mapped by the USFWS is also shown in Map 2-2. Most of the occurrences of special-status species and sensitive natural communities are from the state and federally-protected lands of Point Reyes and Mount Tamalpais, and the marshlands along San Francisco and San Pablo bays. The occurrence records vary in their specificity and the mapped data varies accordingly, with some locations considered very accurate and others covering a wide area of several miles considered to be potential habitat. Streams with known occurrences of the federally-threatened coho salmon and steelhead trout extend throughout the County, including Redwood, Olema, Lagunitas, San Geronimo, Walker, Novato, Miller, Sleepy Hollow, Fairfax, San Geronimo, Ross, Corte Madera, and Arroyo Corte Madera del Persidio creeks.
- • Map 2-3, Wetlands and Streams - showing wetlands and streams based on the NWI and designated perennial and intermittent stream on USGS topographic maps mapped by the County. The wetland mapping has been simplified to show major wetland systems, including marine estuarine, riverine, lacustrine, and palustrine. Summaries of these different systems are contained in the exhibit. Marshland, mudflats, and open water of the bays and lagoons are classified as part of the estuarine system. The rocky shoreline and open waters of the Pacific Ocean are classified as part of the marine system. The man-made reservoirs and channels are classified as part of the lacustrine system. The creeks and streams, scattered smaller stockponds, and seasonal wetlands are classified as part of the palustrine and riverine systems. Most of these features are not technically wetlands but unvegetated “other waters” according to Corps definition, but the mapping provides an indication of the extent of known aquatic and wetland habitat in Marin County.



# BIOLOGICAL AND WETLAND PROTECTION

## EXHIBIT 1 VEGETATION





# MARIN COUNTYWIDE PLAN

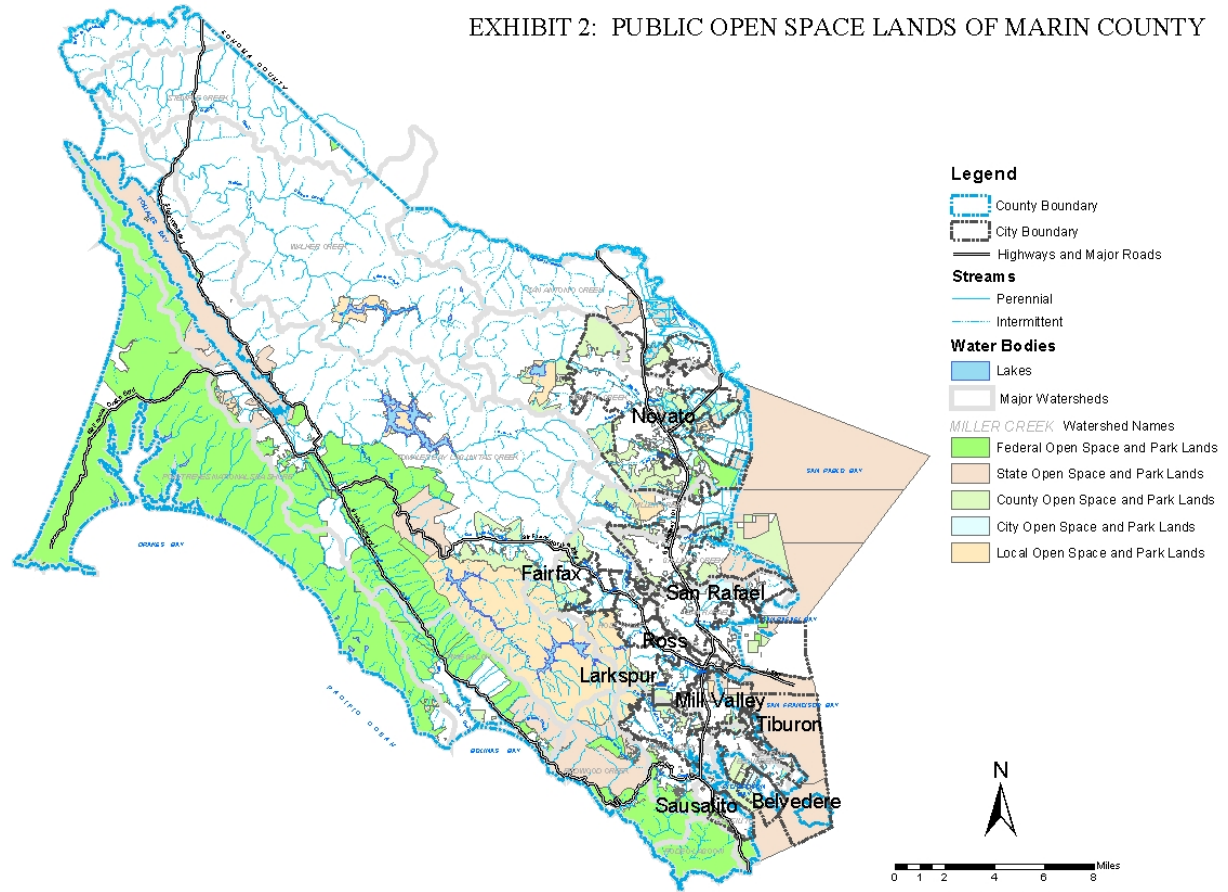
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# BIOLOGICAL AND WETLAND PROTECTION

SOURCE: COUNTY OF MARIN JANUARY 2002

## EXHIBIT 2: PUBLIC OPEN SPACE LANDS OF MARIN COUNTY



THE MAP WAS DEVELOPED FOR GENERAL PLAN PURPOSES.  
THE COUNTY OF MARIN IS NOT RESPONSIBLE OR LIABLE FOR USE OF THIS MAP BEYOND ITS INTENDED PURPOSE.  
January 18, 2002 File: EM/DC/OWP Update WSP/Wetland/Map1\_01.mxd

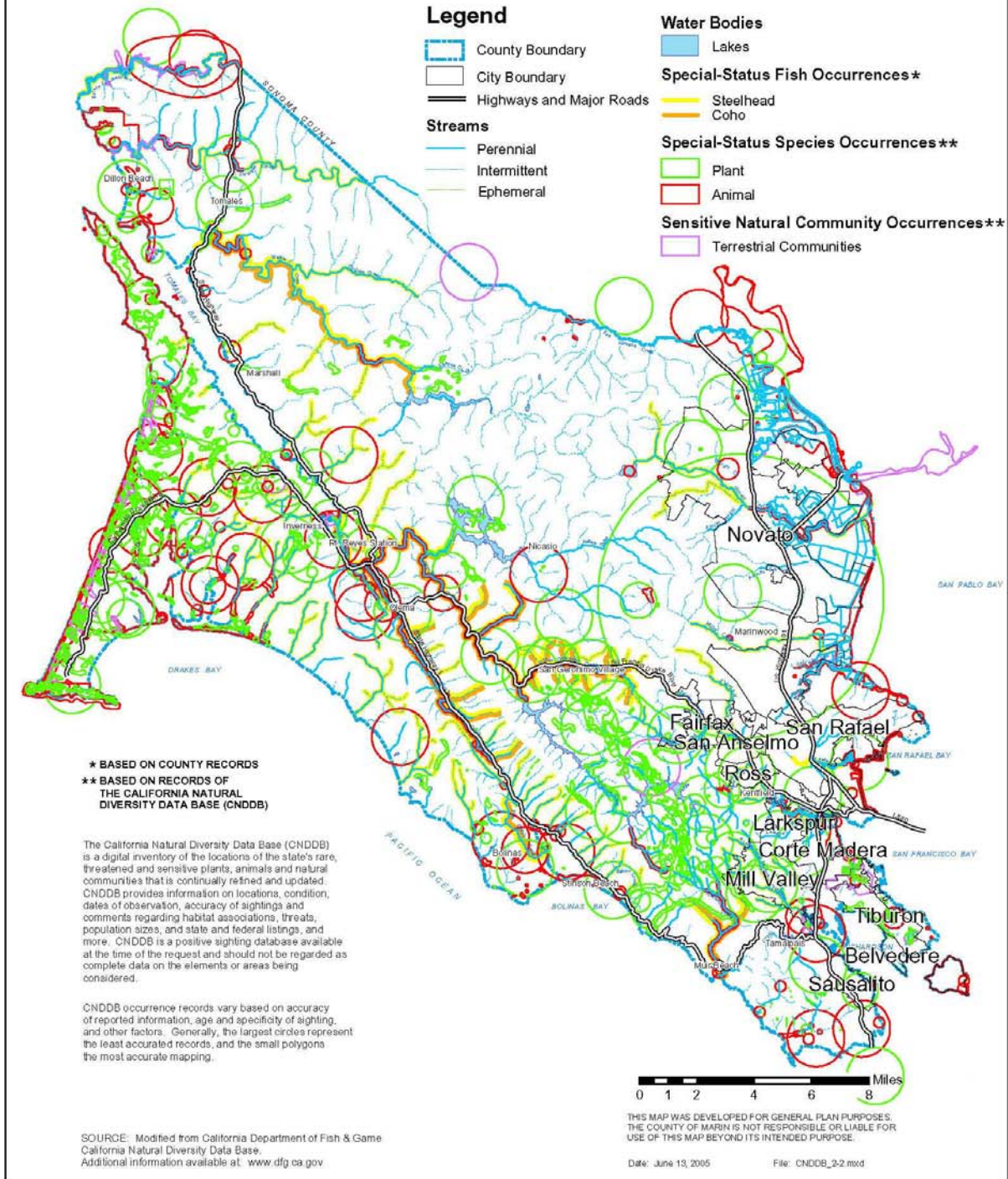
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# BIOLOGICAL AND WETLAND PROTECTION

## EXHIBIT 3 SPECIAL-STATUS SPECIES AND SENSITIVE NATURAL COMMUNITIES



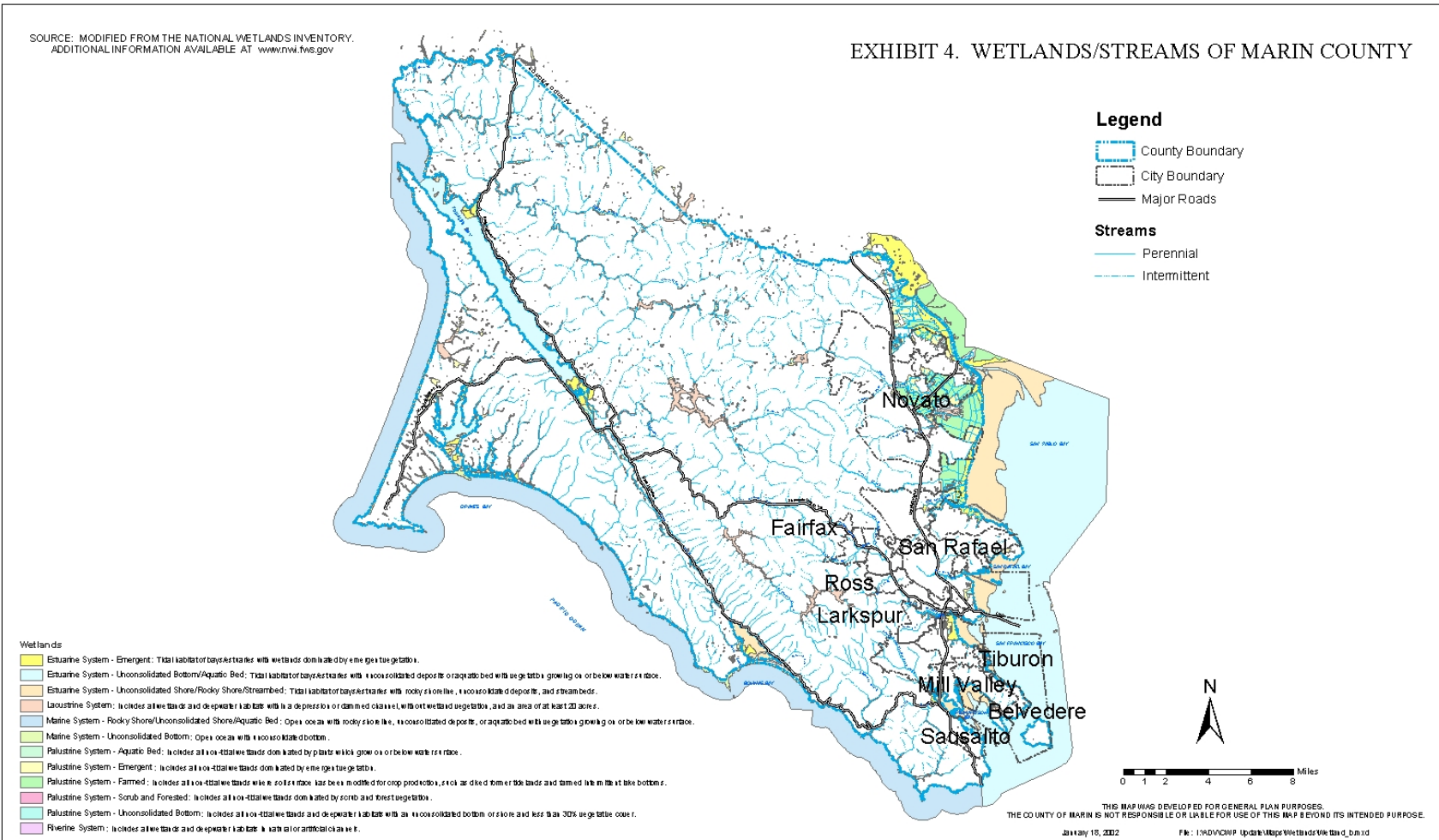
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# BIOLOGICAL AND WETLAND PROTECTION

SOURCE: MODIFIED FROM THE NATIONAL WETLANDS INVENTORY.  
ADDITIONAL INFORMATION AVAILABLE AT [www.nwi.fws.gov](http://www.nwi.fws.gov)

EXHIBIT 4. WETLANDS/STREAMS OF MARIN COUNTY



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## BIOLOGICAL AND WETLAND PROTECTION

### IV. SETTING

Marin County is well known for its natural beauty and diversity of natural resources, ranging from the marine environments of the coastal zone to the forests, chaparral, woodlands and grasslands of Mount Tamalpais. Of the total 332,928 acres of land area in Marin County, approximately 50 percent are under public management as parks, open space, conservation easements, and watershed lands. This includes 117,809 acres of park and open space lands, 22,731 acres of public watershed lands managed by the Marin Municipal Water District and the North Marin Water District, and 27,196 acres of easement lands held by the Marin Agricultural Land Trust and the Marin County Open Space District. The majority of the developed urban and suburban uses in Marin County are in the City-Centered Corridor in east Marin County. The remainder is generally in private ownership as grazing land and woodlands at the northcentral and northwest part of the County.

Natural communities in Marin County support a wide diversity of plant and animal species, including a high number of special-status species. Natural community types in the County include: mixed evergreen forest, oak woodland, pine forest, douglas fir/redwood forest, grassland, coastal beach dune, northern coastal scrub, chaparral, coastal salt marsh, riparian, and freshwater marsh. Exhibit 1 shows the distribution of vegetative cover in the county, modified from the 2004 CalVeg mapping program of the U.S. Forest Service. Major distinguishable characteristics include: the extensive grasslands to the north which intergrade with scrub and forest lands in the Point Reyes Peninsula; the forests, woodland, and chaparral covered slopes of Mt. Tamalpais; the grasslands and woodlands of the northcentral and northwestern part of the County; and a mosaic of grassland, woodland, and urban development in the City-Centered Corridor.

Historic land use has altered much of the landscape in the County, including the plant communities and wildlife dependent upon them. Beginning in the mid-nineteenth century and continuing into the present, activities such as livestock grazing, timber operations, clearing and disking for agricultural production, road building, and urban and suburban development have markedly altered the remaining natural communities. Native perennial grasslands have been largely replaced by non-native annual grasslands, and a number of highly invasive species now threaten the remaining grasslands. Fire suppression, livestock grazing, and more recently the affects of Sudden Oak Death have greatly altered the extent of woodland and forest cover. The past affects of timber harvesting and overgrazing continue to affect the aquatic habitat of the streams and creeks in the County, and limits the viability of the anadromous fisheries. These influences on the natural landscape have changed in the past few decades, from one of primarily agricultural-related activities to one of increased development pressure, particularly along the western fringe of the City-Centered Corridor and scattered locations in the Inland Rural and Coastal Recreation Corridors. Urban and suburban development has contributed to considerable fragmentation of the remaining natural areas associated with the system of local parks and open space lands along stream corridors and ridgelines throughout the City-Centered Corridor.

Although past influences have greatly altered the natural landscape, the extensive system of open space lands provides a unique opportunity to work toward the protection and enhancement of biological and wetland resources in the County. However, this can only be successfully achieved through coordinated management efforts between private landowners and public agencies, and through implementation of



## MARIN COUNTYWIDE PLAN

effective policies defining permissible uses and necessary development controls established as part of the CWP. Exhibit 2 shows the relationship between public and privately-held lands in the County, identifying watershed lands, federal parks and facilities, state parks and facilities, and County and local parks. This includes the major federal holdings of Pt. Reyes National Seashore, Golden Gate National Recreation Area, Muir Woods National Monument and Point Reyes National Seashore in West Marin; the state park and Marin Municipal Water District watershed lands around Mount Tamalpais; smaller County-held and local parks in the City-Centered Corridor; and state-held lands along the shoreline and open water of the bay.

### A. SPECIAL-STATUS SPECIES

The records of the CNDDDB indicate that special-status plant and animal species occur in a wide range of habitat types throughout all of Marin County. Most of the reported occurrences are from the National Park Service lands of Point Reyes National Seashore and Golden Gate National Recreation Area, and the State Park and Marin Municipal Water District watershed lands on Mount Tamalpais. Many others occur along the shoreline of the bay, or unique habitat types such as the serpentine-derived soils and outcrops along the Tiburon Ridge. Still others are dependent on the creeks and streams throughout the County for dispersal and essential breeding habitat. Table 1 provides a list of the 75 animal species and 78 plant species reported from Marin County which are monitored by the CNDDDB, together with several listed, proposed, and candidate species not carefully monitored by the CNDDDB. Exhibit 3 shows the distribution of special-status plant and animal species throughout the County based on the CNDDDB occurrence records, with the highest concentrations in the undeveloped lands of West Marin, the Mount Tamalpais vicinity, and shoreline of the bay. Areas of designated critical habitat mapped by the USFWS for a number of federally-listed species are also shown in Exhibit 3. This mapping effort has been simplified to shown occurrences of plant and animal species, together with streams known to support coho salmon and steelhead trout.

It should be noted that the occurrence records of the CNDDDB tend to focus on listed species or those with a high inventory priority. Occurrence information for numerous special-status species which are known from or frequent Marin County is either not monitored at all or is recorded on only a sporadic basis by the CNDDDB. This includes the possible seasonal occurrence of both listed and non-listed bird species, the limited status of some animal species as a CSC species by the CDFG, the limited status of Species of Concern (SC) to the USFWS, and the limited status of many plant species on Lists 2, 3, or 4 in the CNPS *Inventory*. Some of these species are identified in Table 1, but the number of occurrences from the CNDDDB records does not accurately reflect their generally greater abundance and distribution than species that are actually listed under the state or federal Endangered Species Acts.

The USFWS also maintains information on special-status species as part of their project review and consultation responsibilities, and will prepare lists of known or suspected species from a particular county or USGS quadrangle. A request for special-status species known or suspected to occur in Marin County generated a list of 190 species which are listed, candidate, or SC (generally former candidate species in a previous classification system used by the USFWS). These include 55 listed species, 5 proposed and candidate species, and 130 recognized as SC by the USFWS or NMFS. A copy of the species list from the USFWS is contained in Appendix A for review. The much greater number of species in the USFWS list compared to the CNDDDB records is due in part to the inclusion of numerous candidate, SC, and species considered to be of local or regional concern due to conservation



## BIOLOGICAL AND WETLAND PROTECTION

significance. A number of marine wildlife species not in the CNDDDB inventory are also included in the USFWS list. Discrepancies between the two lists provide an indication of the limitations in collecting and monitoring data on special-status species, and need for detailed assessments when proposed development could affect sensitive habitat.

The USFWS list contained in Appendix A also identifies designated and proposed critical habitat for listed species, where these areas have been mapped within portions of the County by the USFWS and NMFS. Species with designated critical habitat within or extending into parts of Marin County include: coho salmon, winter run chinook salmon, steelhead, marbled murrelet, western snowy plover, Steller sea-lion, Baker's larkspur, and yellow larkspur. These designated critical habitat areas are shown in Exhibit 3, with mapping prepared as part of their official listings contained in Appendix A.

For many of the special-status species known from Marin County, habitat suitability is severely limited by the direct and indirect affects of development. These include the direct loss of habitat as a result of conversion to urban uses, affects of on-going habitat modifications due to vegetation management and agricultural practices, and indirect affects such as non-point discharge into aquatic habitat and recreational activities in the open space lands. The affect of habitat fragmentation is an important consideration in evaluating the recovery of listed species and the viability of natural communities as a whole.

Identification and protection of essential habitat for special-status species must be recognized during the environmental review of proposed development applications and in planning future open space acquisitions. Detailed surveys should be conducted for sites where there is a potential for occurrence of special-status plant and animal species.



# MARIN COUNTYWIDE PLAN

**TABLE I  
SPECIAL-STATUS ANIMAL SPECIES KNOWN OR SUSPECTED FROM MARIN COUNTY**

Common Name (Scientific Name)	Status Federal/State	Habitat
<b>Amphibians/Reptiles</b>		
California tiger salamander ( <i>Ambystoma californiense</i> )	FT/CSC	Breeds in pools and adults occupy surrounding grasslands/open woodlands.
Loggerhead sea turtle ( <i>Caretta caretta</i> )	FT / -	Open ocean.
Green sea turtle ( <i>Chelonia mydas</i> )	FT / -	Open ocean.
Northwestern pond turtle ( <i>Clemmys marmorata marmorata</i> )	SC / CSC	Streams/ponds/lakes.
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	FE / -	Open ocean.
Ridley sea turtle ( <i>Lepidochelys olivacea</i> )	FT / -	Open ocean.
California horned lizard ( <i>Phrynosoma coronatum frontale</i> )	SC / CSC	Forests/woodlands/grasslands with loose soil.
Northern red-legged frog ( <i>Rana aurora aurora</i> )	SC / CSC	Forests/woodlands/grasslands along streamsides.
California red-legged frog ( <i>Rana aurora draytonii</i> )	FT / CSC	Forests/woodlands/grasslands along streamsides.
Foothill yellow-legged frog ( <i>Rana boylei</i> )	SC / CSC	Streams with rocky substrate.
Western spadefoot toad ( <i>Spea hammondi</i> )	SC / CSC	Grasslands/open woodlands with seasonal pools.
<b>Birds</b>		
Tricolored blackbird ( <i>Agelaius tricolor</i> ) (nesting colony)	SC / CSC	Freshwater marsh and surrounding fields.
Great egret ( <i>Ardea alba</i> ) (rookery)	- / -	Colonial nester in large trees.
Great blue heron ( <i>Ardea herodias</i> ) (rookery)	- / -	Colonial nester in trees, cliff-sides, marshes.
Golden eagle ( <i>Aquila chrysaetos</i> )	- / CSC; FP	Open grasslands/woodlands.
Burrowing owl ( <i>Athene cunicularia</i> ) (burrow sites)	- / CSC	Open grasslands/scrub.
Marbled murrelet ( <i>Brachyramphus marmoratus</i> )	FT / SE	Old growth forest/coastal estuaries/open ocean.
Western snowy plover ( <i>Charadrius alexandrinus nivosus</i> ) (nesting)	FT / CSC	Nesting along sandy beaches and shorelines
Northern harrier ( <i>Circus cyaneus</i> ) (nesting)	- / CSC	Nesting in marsh and low shrubs.
Back swift ( <i>Cypseloides niger</i> ) (nesting)	SC / CSC	Nesting on cliffs and behind falls.
Yellow warbler ( <i>Dendroica petechia brewsteri</i> ) (nesting)	SC / CSC	Nesting in willows and riparian cover.





## BIOLOGICAL AND WETLAND PROTECTION

Common Name (Scientific Name)	Status Federal/State	Habitat
Snowy egret ( <i>Egretta thula</i> ) (rookery)	- / -	Colonial nester in trees, cliff-sides, near marshland.
White-tailed kite ( <i>Elanus leucurus</i> ) (nesting)	SC / FP	Nesting in grassland/marshland with trees.
Tufted puffin ( <i>Fratercula cirrhata</i> )	- / CSC	Colonial nester on off-shore islands/cliffs.
Saltmarsh common yellowthroat ( <i>Geothlypis trichas sinuosa</i> )	SC / CSC	Salt and brackish water marsh.
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	FT / SE	Open water of lakes, bays, and ocean shoreline.
Loggerhead shrike ( <i>Lanius ludovicianus</i> )	SC / CSC	Open grassland/scrub.
California black rail ( <i>Laterallus jamaicensis coturniculus</i> )	- / ST; FP	Coastal saltmarsh.
Black-crowned night heron ( <i>Nycticorax nycticorax</i> ) (rookery)	- / -	Colonial nester in trees/shrubs near marshland.
Ashy storm-petrel ( <i>Oceanodroma homochroa</i> ) (rookery)	SC/ CSC	Colonial nester on off-shore islands.
Osprey ( <i>Pandion haliaetus</i> ) (nesting)	- / CSC	Nesting in trees associated with water bodies.
California Brown pelican ( <i>Pelecanus occidentalis californicus</i> )	FE / SE; FP	Coastal/bay shorelines and open water.
California clapper rail ( <i>Rallus longirostris obsoletus</i> )	FE / SE	Salt and brackish marsh.
California least tern ( <i>Sterna antillarum browni</i> )	FE / SE; FP	Coastal/bay shorelines and open water.
Northern spotted owl ( <i>Strix occidentalis caurina</i> )	FT / -	Forest and woodland.
Fish		
Green sturgeon ( <i>Acipenser medirostris</i> )	PT / CSC	Brackish water, marsh/bays.
Tidewater goby ( <i>Eucyclogoriscus newberryi</i> )	FE / CSC	Brackish water, marsh/bays.
Tomaes roach ( <i>Lavinia symmetricus ssp. symmetricus</i> )	- / CSC	Tributaries of Tomales Bay.
Coho salmon ( <i>Oncorhynchus kisutch</i> )	FT / SE	Spawns in freshwater streams.
Chinook salmon ( <i>Oncorhynchus tshawytscha</i> )	FT / -	Spawns in freshwater streams.
Steelhead trout ( <i>Oncorhynchus mykiss</i> )	FT / CSC	Spawns in freshwater streams.
Invertebrates		
Tomaes isopod ( <i>Caecidotea tomalensis</i> )	- / -	Freshwater marsh/ponds.
Monarch butterfly ( <i>Danaus plexippus</i> ) (colonies)	- / -	Overwinters in blue gum eucalyptus.
Black abalone ( <i>Haliotis cracherodii</i> )	C / -	Rocky intertidal zone and ocean waters.
White abalone ( <i>Haliotis sorensi</i> )	FE / -	Rocky intertidal zone and ocean waters.
Williams' bronze shoulderband ( <i>Helminthoglypta arrosa williamsi</i> )	- / -	Known only from Hogg Island.



## MARIN COUNTYWIDE PLAN

Common Name (Scientific Name)	Status Federal/State	Habitat
Peninsula coast range shoulderband snail ( <i>Helminthoglypta nickliniana awanaia</i> )	- / -	Known only from Point Reyes headland.
Ricksecker's water scavenger beetle ( <i>Hydrochara rickseckeri</i> )	- / -	Aquatic habitat/pools and ponds.
Mission blue butterfly ( <i>Icaricia icarioides missionensis</i> )	FE / -	Shrubs/grasslands with lupine host.
San Bruno elfin ( <i>Incisalia mossii bayensis</i> )	FE / -	Coastal scrub with stonecrop host plant.
Bumblebee scarab beetle ( <i>Lichnanthe ursina</i> )	- / -	Coastal dunes.
Tiburon micro-blind harvestman ( <i>Microcina tiburona</i> )	- / -	Serpentine outcrops near spring/seeps.
Myrtles silverspot ( <i>Spexeria zereue myrtleae</i> )	FE / -	Scrub/grassland with larval host.
California freshwater shrimp ( <i>Syncaris pacifica</i> )	FE / SE	Freshwater streams with undercut banks.
<b>Mammals</b>		
Pallid bat ( <i>Antrozous pallidus</i> )	- / CSC	Roosts in protected locations.
Point Reyes mountain beaver ( <i>Aplodontia rufa phaea</i> )	- / CSC	Springs/ seeps with dense cover.
Guadalupe fur seal ( <i>Arctocephalus townsendi</i> )	FT / ST; FP	Open ocean, beaches.
Sei whale ( <i>Balaenoptera borealis</i> )	FE / -	Open ocean.
Blue whale ( <i>Balaenoptera musculus</i> )	FE / -	Open ocean.
Finback whale ( <i>Balaenoptera physalus</i> )	FE / -	Open ocean.
Townsend's western big-eared bat ( <i>Corynorhinus townsendii townsendii</i> )	- / CSC	Roosts in protected locations.
Grey whale ( <i>Eschrichtius robustus</i> )	FE / -	Open ocean.
Right wale ( <i>Eubalaena glacialis</i> )	FE / -	Open ocean.
Steller seal-lion ( <i>Eumetopias jubatus</i> )	FT / -	Open ocean, beaches.
Greater western mastiff-bat ( <i>Eumops perotis californicus</i> )	SC / SCS	Roosts in protected locations.
Southern sea otter ( <i>Enhydra lutris nereis</i> )	FT / FP	Nearshore marsh habitat.
Humpback whale ( <i>Megaptera novaengliae</i> )	FE / -	Open ocean.
Long-eared myotis bat ( <i>Myotis evotis</i> )	SC / -	Roosts in protected locations.
Fringed myotis bat ( <i>Myotis thysanodes</i> )	SC / -	Roosts in protected locations.
Long-legged myotis bat ( <i>Myotis volans</i> )	SC / -	Roosts in protected locations.
Yuma myotis bat ( <i>Myotis yumanensis</i> )	SC / - C	Roosts in protected locations.
Sperm whale ( <i>Physeter catodon</i> )	FE / -	Open ocean.
Salt marsh harvest mouse ( <i>Reithrodontomys raviventris</i> )	FE / SE; FP	Coastal saltmarsh.
Angel Island mole ( <i>Scapanus latimanus isularis</i> )	- / CSC	Coastal scrub/prairie on Angel Island.
Point Reyes jumping mouse ( <i>Zapus trinotatus orarius</i> )	- / CSC	Coastal scrub/grassland from Point Reyes.



# BIOLOGICAL AND WETLAND PROTECTION

**TABLE I  
SPECIAL-STATUS PLANT SPECIES KNOWN OR SUSPECTED FROM MARIN COUNTY**

Common Name (Scientific Name)	Status Federal/ State/CNPS	Habitat
Pink sand-verbena ( <i>Abronia umbellata</i> ssp. <i>breviflora</i> )	SC / - / 1B	Coastal dunes/stand.
Blasdale's bent grass ( <i>Agrostis blasdalei</i> )	SC / - / 1B	Coastal dunes/scrub/prairie.
Point Reyes bent grass ( <i>Agrostis clivicola</i> var. <i>punta-reyesensis</i> )	SC / - / -	Coastal scrub/prairie/ coniferous forest.
Sonoma alopecurus ( <i>Alopecurus aequalis</i> var. <i>sonomensis</i> )	FE / - / 1B	Freshwater marsh/riparian scrub.
Napa false indigo ( <i>Amorpha californica</i> var. <i>napensis</i> )	- / - / 1B	Forest/chaparral/woodland.
Bent-flowered fiddleneck ( <i>Amsinckia lunaris</i> )	- / - / 1B	Coastal bluff scrub/woodland/ grassland.
Mt. Tamalpais manzanita ( <i>Arctostaphylos hookeri</i> ssp. <i>montana</i> )	SC / - / 1B	Chaparral/grassland.
Marin manzanita ( <i>Arctostaphylos virgata</i> )	- / - / 1B	Coniferous forest/chaparral.
Coastal marsh milk-vetch ( <i>Astragalus pynostachyas</i> var. <i>p.</i> )	- / - / 1B	Dunes/marshes/swamps.
Point Reyes blennosperma ( <i>Blennosperma nanum</i> var. <i>robustum</i> )	SC / SR / 1B	Coastal prairie/scrub.
Small groundcone ( <i>Boschniakia hookeri</i> )	- / - / 2	Coniferous forests.
Thurber's reed grass ( <i>Calamagrostis crassiglumis</i> )	SC / - / 2	Coastal scrub/freshwater marsh.
Tiburon mariposa lily ( <i>Calochortus tiburonensis</i> )	FT / ST / 1B	Serpentine grassland.
Coastal bluff morning-glory ( <i>Calystegia purpurata</i> ssp. <i>saxicola</i> )	- / - / 1B	Dunes/coastal scrub.
Swamp harebell ( <i>Campanula californica</i> )	SC / - / 1B	Bogs/ferns/ marshes in coniferous forest.
Flaccid sedge ( <i>Carex leptalea</i> )	- / - / 2	Bogs/fens/meadows/sceeps.
Lyngbye's sedge ( <i>Carex lyngbyei</i> )	- / - / 2	Marshes/swamps.
Tiburon indian paintbrush ( <i>Castilleja affinis</i> ssp. <i>neglecta</i> )	FE / ST / 1B	Serpentine grassland.
Humboldt Bay owl's clover ( <i>Castilleja ambigua</i> ssp. <i>humboldtensis</i> )	SC / - / 1B	Coastal saltmarsh.
Mt. Vision ceanothus ( <i>Ceanothus gloriosus</i> var. <i>porrectus</i> )	SC / - / 1B	Coniferous forest/coastal scrub/prairie.
Mason's ceanothus ( <i>Ceanothus masonii</i> )	SC / SR / 1B	Chaparral/serpentine.
San Francisco Bay spineflower ( <i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> )	SC / - / 1B	Coastal scrub/prairie/dunes.
Woolly-headed spineflower ( <i>Chorizanthe cuspidata</i> var. <i>villosa</i> )	- / - / 1B	Coastal scrub/prairie/dunes.
Robust spineflower ( <i>Chorizanthe robusta</i> var. <i>robusta</i> )	FE / - / 1B	Woodlands, coastal dunes/scrub.
Sonoma spineflower ( <i>Chorizanthe valida</i> )	FE / SE / 1B	Coastal prairie.
Franciscan thistle ( <i>Cirsium andrewsii</i> )	- / - / 1B	Forest/coastal bluff scrub/prairie/ coastal scrub.
Mt. Tamalpais thistle ( <i>Cirsium hydrophilum</i> var. <i>vaseyi</i> )	SC / - / 1B	Forest/chaparral.
Raiche's red ribbons ( <i>Clarkia concinna</i> ssp. <i>raichei</i> )	SC / - / 1B	Coastal bluff scrub.
Round-headed chinese houses ( <i>Collinsia corymbosa</i> )	- / - / 1B	Coastal dunes.



# MARIN COUNTYWIDE PLAN

Common Name ( <i>Scientific Name</i> )	Status Federal/ State/CNPS	Habitat
Point Reye's bird's beak ( <i>Cordylanthus maritimus ssp. palustris</i> )	SC / - / 1B	Coastal saltmarsh/dunes.
Soft bird's beak ( <i>Cordylanthus mollis ssp. mollis</i> )	FE / SR / 1B	Coastal saltmarsh.
Baker's larkspur ( <i>Delphinium bakeri</i> )	FE / SR / 1B	Coastal scrub.
Yellow larkspur ( <i>Delphinium luteum</i> )	FE / SR / 1B	Chaparral/coastal scrub/prairie.
Western leatherwood ( <i>Dirca occidentalis</i> )	- / - / 1B	Forest/chaparral/woodland.
Supple daisy ( <i>Erigeron supplex</i> )	- / - / 1B	Coastal bluff scrub/prairie.
Minute pocket-moss ( <i>Fissidens pauperculus</i> )	- / - / 1B	Forest floor along coast.
Marin checker lily ( <i>Fritillaria affinis var. tristulis</i> )	- / - / 1B	Coastal bluff scrub/prairie.
Fragrant fritillary ( <i>Fritillaria liliacea</i> )	SC / - / 1B	Coastal scrub/prairie/ grassland.
Dune gilia ( <i>Gilia capitata ssp. chamissonis</i> )	- / - / 1B	Dunes/coastal scrub.
Wooly-headed gilia ( <i>Gilia capitata ssp. tomentosa</i> )	- / - / 1B	Coastal bluff scrub/outcrops.
Dark-eyed gilia ( <i>Gilia millefoliata</i> )	- / - / 1B	Coastal dunes.
San Francisco gumplant ( <i>Grindelia hirsutula var. maritima</i> )	- / - / 1B	Coastal bluff scrub/coastal scrub/ grassland.
Diablo helianthella ( <i>Helianthella castanea</i> )	- / - / 1B	Forest/chaparral/woodland/coastal scrub/grassland.
Short-leaved evax ( <i>Hesperovax sparsiflora var. brevitolia</i> )	- / - / 2	Coastal bluff scrub/dunes.
Marin western flax ( <i>Hesperolinon congestum</i> )	FT / ST / 1B	Chaparral/grassland.
Santa Cruz tarplant ( <i>Holocarpha macradenia</i> )	FT / SE / 1B	Coastal prairie/coastal scrub/ grassland.
Kellogg's horkelia ( <i>Horkelia cuneata ssp. sericea</i> )	SC / - / 1B	Coniferous forest/coastal scrub/ chaparral.
Point Reyes Horkelia ( <i>Horkelia marinensis</i> )	SC / - / 1B	Coastal scrub/prairie/dunes.
Thin-lobed horkelia ( <i>Horkelia tenuiloba</i> )	- / - / 1B	Coastal scrub/chaparral.
Baker's goldfields ( <i>Lasthenia macrantha ssp. bakeri</i> )	- / - / 1B	Coniferous forest/coastal scrub.
Perennial goldfields ( <i>Lasthenia macrantha ssp. macrantha</i> )	- / - / 1B	Coastal bluff scrub/dunes/coastal scrub.
Beach layia ( <i>Layia carnosa</i> )	FE / SE / 1B	Coastal dunes.
Tamalpais lessingia ( <i>Lessingia micradenia var. micradenia</i> )	SC / - / 1B	Chaparral/grassland in serpentine.
Maison's lilacopsis ( <i>Lilacopsis masonii</i> )	SC / SR / 1B	Fresh and brackish marsh.
Coast lily ( <i>Lilium maritimum</i> )	- / - / 1B	Forest/prairie/coastal scrub/marshes/ swamps.
Point Reyes meadowfoam ( <i>Limnanthes douglasii ssp. sulphurea</i> )	SC / SE / 1B	Freshwater marsh/prairie/seeps.
Large-flowered linanthus ( <i>Linanthus grandiflorus</i> )	SC / - / 4	Coastal bluff scrub.
Tidestrom's lupine ( <i>Lupinus tidestromii</i> )	FE / SE / 1B	Coastal dunes.
Marsh microseris ( <i>Microseris paludosa</i> )	- / - / 1B	Forest/woodland/coastal scrub/ grassland.
Baker's navarretia ( <i>Navarretia leucocephala ssp. bakeri</i> )	- / - / 1B	Woodland/seeps/pools/grassland/ forest.
Marin County navarretia ( <i>Navarretia rosulata</i> )	- / - / 1B	Coniferous forest/chaparral.
White-rayed pentachaeta ( <i>Pentachaeta bellidiflora</i> )	FE / SE / 1B	Grassland on serpentine.



## BIOLOGICAL AND WETLAND PROTECTION

Common Name ( <i>Scientific Name</i> )	Status Federal/ State/CNPS	Habitat
North Coast phacelia ( <i>Phacelia insularis</i> var. <i>continentis</i> )	SC / ST / 1B	Coastal bluff scrub/dunes.
Hairless popcorn flower ( <i>Plagiobothrys glaber</i> )	/ / 1A	Meadows/seeps/marshes/swamps.
Point Reyes rein orchid ( <i>Piperia elegans</i> ssp. <i>decurtata</i> )	- / - / 1B	Coastal bluff scrub only from Pt. Reyes National Seashore.
North Coast semaphore grass ( <i>Pleuropogon hooverianus</i> )	SC / SB / 1B	Forest/steeps.
Marin knotweed ( <i>Polygonum marinense</i> )	SC / - / 3	Marshes/swamps.
Tamalpais oak ( <i>Quercus parvula</i> var. <i>tamalpaisensis</i> )	- / - / 1B	Coniferous forest only on Mt. Tamalpais.
California beaked-rush ( <i>Rhynchospora californica</i> )	SC / - / 1B	Bogs/marshes/seeps/coniferous forest.
Point Reyes checkerbloom ( <i>Sidalcea calycosa</i> ssp. <i>rhizomata</i> )	- / - / 1B	Marshes/swamps.
Marin checkerbloom ( <i>Sidalcea hickmanii</i> ssp. <i>viridis</i> )	SC / - / 1B	Chaparral.
Purple-stemmed checkerbloom ( <i>Sidalcea malviflora</i> ssp. <i>purpurea</i> )	- / - / 1B	Forest/prairie.
Tamalpais jewel-flower ( <i>Streptanthus batrachopus</i> )	SC / - / 1B	Coniferous forest/chaparral.
Mt. Tamalpais jewel-flower ( <i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i> )	- / - / 1B	Chaparral/grassland.
Santa Cruz microseris ( <i>Stebbinsoseris decipiens</i> )	SC / - / 1B	Forest/chaparral/coastal scrub and prairie.
Tiburon jewel-flower ( <i>Streptanthus niger</i> )	FE / SE / 1B	Grassland on serpentine.
Showy Indian clover ( <i>Trifolium amoenum</i> )	FE / - / 1B	Grassland/coastal bluff scrub.
San Francisco owl's clover ( <i>Triphysaria floribunda</i> )	SC / - / 1B	Coastal prairie/grassland.

### STATUS DESIGNATIONS

#### Federal:

FE = Listed as "endangered" under the federal Endangered Species Act.

FT = Listed as "threatened" under the federal Endangered Species Act.

PE = Proposed for federal listing as "endangered".

PT = Proposed for federal listing as "threatened".

C = A candidate species under review for federal listing. Candidates include taxa for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened.

SC = Species of Concern; formerly considered a candidate species for listing by the USFWS.

#### State:

SE = Listed as "endangered" under the California Endangered Species Act.

SR = Listed as "rare" under the California Endangered Species Act.

ST = Listed as "threatened" under the California Endangered Species Act.

CP = California fully protected species; individual may not be possessed or taken at any time.

CSC = Considered a species of special concern by the CDFG; taxa have no formal legal protection but nest sites and communal roosts are generally recognized as significant biotic features.

#### CNPS:

1A = Plants of highest priority; plants presumed extinct in California.

1B = Plants of highest priority; plants rare and endangered in California and elsewhere.

3 = Plants requiring additional information; a review list.

4 = Plants of limited distribution; a watch list.



## MARIN COUNTYWIDE PLAN

### **B. SENSITIVE NATURAL COMMUNITIES**

Several of the natural communities within the planning area are considered to have a high inventory priority with the CNDDDB, and should receive appropriate recognition in planning for the CWP update. These communities have been designated as sensitive due to rarity and continuing loss as a result of development, flood control improvements, and other factors. As indicated in Exhibit 3, sensitive natural communities mapped by the CNDDDB in the County include: coastal and valley freshwater marsh, coastal brackish marsh, coastal terrace prairie, central dune scrub, northern coastal salt marsh, northern maritime chaparral, northern vernal pool, and serpentine bunchgrass. Additional stands of native grasslands not mapped by the CNDDDB occur in many locations throughout the County, as do the sensitive riparian forest, and scrub communities along creeks and larger drainages. Detailed surveys should be conducted for sites where there is a potential for occurrence of sensitive natural communities, including native grasslands, seeps, riparian scrub and woodland, valley oak woodland, coastal salt marsh, and coastal bluff scrub, among others.

While oak woodlands in general are not considered to have a high inventory priority with the CNDDDB, they should be recognized as an important habitat type in the County due to their high wildlife value and their vulnerability to the affects of Sudden Oak Death Syndrome (SOD). Tanoaks and coast live oaks are dying in large numbers, and black oaks, California buckeye, California bay, madrone, huckleberry, and rhododendron are suspected to be hosts or potential carriers of the fungus suspected to cause oak mortality. This fungus, a species of *Phytophthora*, and several beetle species are consistently associated with the dying oaks. It is contributing to significant changes in vegetative cover over large parts of the County, altering habitat for woodland-dependent species and exacerbating hazardous fire conditions where wildlands interface with developed areas.

### **C. WETLANDS**

Wetlands in the County include areas of salt and brackish water marsh along the shoreline of the coast and bay, riparian habitat along creeks and streams, and scattered freshwater seeps and springs. Exhibit 4 shows the extent of major wetland systems mapped as part of the NWI, which consist of a range of characteristic wetland types, together with streams mapped by County staff. These include the marine and estuarine system of the ocean, bays, and lagoons; the riverine and lacustrine systems of major creeks and channels; and the palustine system comprising freshwater marsh, riparian scrub and woodland, and scattered stock ponds. Some wetland features, such as freshwater seeps and springs were generally not identified as part of the NWI because of the general scale of the mapping effort. Detailed wetland delineations would be required to determine the extent of jurisdictional wetlands and other waters as specific locations, particularly where development is proposed.

## **V. MARIN COUNTYWIDE PLAN REVIEW**

The 1994 CWP serves as the principal planning document regulating development and providing for conservation of important resources on a local level for the unincorporated areas of Marin County. Policies and programs from the Environmental Quality Element of the CWP are of particular relevance to the conservation of natural resources, focusing on stream and creekside conservation areas, bayfront



# BIOLOGICAL AND WETLAND PROTECTION

conservation areas, mineral resources, and the built environment. The Community Development Agency is responsible for reviewing individual development applications to ensure compliance with the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPS).

Table 2 provides a review of each of the policies and programs from the current CWP related to biological and wetland resources. This includes a summary statement on whether they still apply and how they should be refined or replaced as part of the CWP update process.

**TABLE 2  
EVALUATION OF EXISTING COUNTYWIDE PLAN BIOLOGICAL AND WETLAND  
RESOURCES POLICIES AND PROGRAMS**

**Environmental Quality Element**

RESOURCE CONSERVATION AREAS	
1. Stream and Creekside Conservation Areas	
<p>Policy EQ-2.1 Value of Riparian Systems. Riparian systems, streams and their riparian and woodland habitat are irreplaceable and should be officially recognized and protected as essential environmental resources, because of their values for erosion control, water quality, fish and wildlife, aesthetics, recreation, and the health of human communities.</p>	Needs Refinement - Need to define "riparian" and include reference to function as "movement corridors" for fish and wildlife and importance in function as habitat connectivity.
<p>Policy EQ-2.2 Streams Defined as Blue Lines on USGS Quad Maps. All perennial and intermittent streams, which are defined as natural watercourses shown as solid or dashed blue lines on the most recent appropriate USGS quad sheet, should be subject to these stream and creekside protection policies. A perennial stream is further defined as: a watercourse that flows throughout the year (except for infrequent or extended periods of drought), although surface water flow may be temporarily discontinuous in some reaches of the channel such as between pools. An intermittent stream is further defined as: <i>a watercourse that flows during the wet season, continues to flow after the period of precipitation, and ceases surface flow during at least part of the dry season.</i> An ephemeral stream should be subject to these policies if it supports riparian vegetation for a length of 100 feet or more. An ephemeral stream which does not support vegetation for 100 feet or more may also be subject to the SCA policies if it is demonstrated that the stream has value for flood control, water quality, or habitat which supports rare, endangered, or migratory species. An ephemeral stream is defined as: <i>a watercourse which carries only surface runoff and flows during and immediately after periods of precipitation.</i></p>	Needs Refinement - The SCA policies are perhaps the most important in the Plan. Some ambiguity in that "riparian vegetation" is not defined in the SCA policies but is used as a controlling factor in applicability for ephemeral streams and width in perennial and intermittent streams with major areas of stream side vegetation. Need to define riparian as a term in the SCA. May be useful to reorganize SCA as part of larger wetland/streams focus.



# MARIN COUNTYWIDE PLAN

<p><b>Policy EQ-2.3</b> Definition of Stream Conservation Areas. A Stream Conservation Area (SCA) should be designated along all natural watercourses shown as a solid or dashed blue line on the most recent appropriate USGS quad sheet, or along all watercourses supporting riparian vegetation for a length of 100 feet or more. The zones consist of the watercourse itself between the tops of the banks and a strip of land extending laterally outward from the top of both banks, to a width of 100 feet on each side in the Coastal Recreation and Inland Rural Corridors and to a width of 50 feet on each side in the City-Centered Corridor on smaller infill lots. Where large tracts of land in the City-Centered Corridor are proposed for development, the 100-foot buffer should be applied, where consistent with legal requirements, and other planning and environmental goals. In the Coastal Recreation and Inland Rural Corridors, the zone should be extended if necessary to include an area 50 feet landward from the edge of riparian vegetation.</p>	<p>Needs Refinement - Some ambiguity regarding "riparian vegetation" as in Policy EQ-2.2.</p>
<p><b>Program EQ-2.3a</b> <i>Protection of Stream Conservation Area.</i> The County shall implement the policies for Stream Conservation Areas through its established permit review processes and/or through adoption of specific new ordinances. When a development permit is applied for, staff will determine whether the proposed development falls within the zone, generally 100 feet from the banks of streams (50 feet from the banks of streams in the City-Centered Corridor). If the project is in this zone, staff will determine whether the proposed use is permitted by right under the Stream Conservation policies, as well as by the underlying zoning.</p> <p>If the proposed use is not a permitted use in Policy EQ-2.4 and it is not a prohibited use in Policy EQ-2.5 of Stream Conservation policies, but it is allowed under the zoning, the applicant may apply for a development permit. In order for such a permit to be issued for an existing parcel, it should be determined that the parcel either:</p> <ul style="list-style-type: none"> <li>Falls entirely within the Stream Conservation Area; or</li> <li>Development on any other portion of the parcel (outside the SCZ) would have greater impacts on water quality.</li> </ul> <p>If the proposal involves the creation of a new parcel, any needed modifications should be made to assure that no development occurs within the Conservation Area to the extent possible.</p> <p>Applicants shall be required to submit adequate information to determine whether the Stream Conservation Area policies are being met. All development permit applications shall be reviewed for conformity with these policies, and in accordance with the California Environmental Quality Act. Proposals which do not conform to Stream Conservation policies, and which cannot be modified or mitigated so that they do conform, shall be denied. Information on 100-year floodplains should be made available for public and staff reference and shall be incorporated into all planning reviews</p>	<p>Needs Refinement - Should include reference to process used by staff to determine applicability of SCA. Is this simply reference to the County's Wetlands/Stream GIS or does it include a site inspection? There may be a need for an independent review by a qualified vegetation ecologist in some instances to define limits of riparian vegetation.</p>
<p><b>Program EQ-2.3b</b> <i>Establish a Fund to Fence Sensitive Stream Areas.</i> The County should explore the feasibility of creating a fund, established in conjunction with the Resource Conservation District and the Soil Conservation Service, and other relevant agencies, to pay the cost of fencing sensitive streamside areas (on private property) which could be impacted by cattle grazing.</p>	<p>Still Applicable - Unsure of status. May be useful to include reference to Marin County Open Space District as a participating agency.</p>





## BIOLOGICAL AND WETLAND PROTECTION

<p>Policy EQ-2.4 Land uses in Stream Conservation Areas (SCAs). The following uses are permitted in the SCA by development permits, provided these uses are allowed by the underlying zoning:</p> <ul style="list-style-type: none"> <li>• all currently existing structures and uses including reconstruction and repairs necessary water supply projects</li> <li>• flood control projects</li> <li>• projects to improve fish and wildlife habitat</li> <li>• grazing of livestock and other agricultural uses</li> <li>• maintenance of water channels for erosion control and other purposes</li> <li>• road and utility line crossings</li> <li>• water monitoring installations</li> <li>• trails</li> </ul>	<p>Needs Refinement - Need to include reference to minimizing disturbance in the SCA for permitted uses as well. Trails should be preferably sited outside a SCA to minimize disturbance to sensitive wildlife habitat, particularly through riparian vegetation. Livestock grazing and agricultural uses may be permitted by historical precedent, but should be discouraged in the SCA. Program EQ-2.3b should be implemented to control disturbance.</p>
<p>Policy EQ-2.5 Prohibited Land Uses in Stream Conservation Areas. The following new uses are prohibited in the SCA:</p> <ul style="list-style-type: none"> <li>• roads and utility lines, except at crossings</li> <li>• confinement of livestock</li> <li>• dumping or disposal of refuse</li> <li>• use of motorized recreational vehicles</li> <li>• any structural improvement (excluding repairs) other than those identified in Policy EQ-2.4, including residences, barns, and storage buildings, unless allowed by a development permit in Policy EQ-2.6.</li> </ul>	<p>Still Applicable - May be appropriate to review prohibited uses.</p>
<p>Policy EQ-2.6 Other Allowable Land Uses in the Stream Conservation Areas. Other uses may be allowed in the SCA by development permit, provided these uses conform to all other policies for SCAs and are:</p> <ul style="list-style-type: none"> <li>• allowed by the underlying zoning</li> <li>• on existing parcels that fall entirely within the zone</li> <li>• on existing parcels where it can be conclusively demonstrated that development on any other part of the parcel would have a more adverse effect on water quality or other environmental impacts.</li> </ul>	<p>Still Applicable - These parcels may be a priority for acquisition as open space by the Marin County Open Space District.</p>
<p>Policy EQ-2.7 Consideration of Costs. All concerned agencies should take aesthetic, scenic, environmental, and recreational benefits into full consideration when computing costs of alternatives for modifications of streams (applicants will be required to obtain a Streambed Alteration Agreement from the State Department of Fish and Game).</p>	<p>Still Applicable - Unsure of status and how applied.</p>
<p>Policy EQ-2.8 Retention of the Natural Vegetation. The retention of the natural vegetation in an SCA should be encouraged in order to realize benefits such as soil erosion prevention, stream, shade, etc. When vegetation must be removed and soil disturbed within the SCA, or when vegetation has been destroyed or eliminated, the area should be re-seeded or replanted with native plants of the habitat as soon as possible. Broom and other aggressive exotic plants should be removed and replaced with native plants.</p>	<p>Needs Refinement - Need reference to monitoring to ensure re-establishment where vegetation removal is necessary.</p>
<p>Policy EQ-2.9 Minimal Disturbance of Vegetation. Disturbance of vegetation within the SCA should be minimized or avoided whenever possible. Minimizing or avoiding disturbance of streamside vegetation is particularly important for trees and shrubs which provide shade, stability for the streambank, and wildlife habitat. Vegetation may partially block streams creating a ponding effect which may be beneficial fish habitat. Tree growth may be cleared from the stream channel when it unduly restricts flood flows, to protect health, safety, and welfare.</p>	<p>Needs Refinement - Redundant to Policy EQ-2.8 except for reference to flood control maintenance. Perhaps could include reference to flood control improvements that are designed with sufficient capacity to allow for retention of native vegetation in the channel, thereby improving habitat and minimizing need for routine maintenance.</p>



## MARIN COUNTYWIDE PLAN

<p>Policy EQ-2.10 Tree and Shrub Plantings. Trees and shrubs to be planted along watercourses should include a variety of species that would naturally grow in or near the creek. In general, the planting of exotic trees should be avoided. When removal of riparian vegetation is unavoidable, and mitigation is required, replacement should be at a 2:1 ratio, whenever feasible. Enhancement and restoration of culverted streams is encouraged, whenever feasible.</p>	<p>Needs Refinement - Reference to "in general" should be deleted and exotic trees prohibited for planting in SCA. Need reference to monitoring to ensure re-establishment where vegetation removal is necessary.</p>
<p>Policy EQ-2.11 Modification of Natural Channels. Modification of natural channels within SCAs for flood control, etc., should be done in a manner that retains and protects the vegetation forming ground cover and shade. Special attention should be given to the protection of riparian vegetation.</p>	<p>Still Applicable - As with EQ-2.9 any flood control improvements should be designed with sufficient capacity to allow for retention of native vegetation in the channel.</p>
<p>Policy EQ-2.12 Protection of Riparian Vegetation. At the time of a site specific development application, the County shall evaluate impacts on riparian vegetation, when the riparian vegetation extends beyond the Streamside Conservation Zone, and incorporate measures to protect the riparian vegetation into the project design.</p>	<p>Needs Refinement - Need to define riparian vegetation and setback standard where it falls outside the SCA.</p>
<p>Policy EQ-2.13 Importance of Stream Conservation Areas (SCAs) to Wildlife Habitat. SCAs are the most important land areas for wildlife, possessing greater numbers and variety than any other area. The value of SCAs for this purpose is therefore recognized. Fishery resources are directly dependent upon the protection of SCAs to provide quality aquatic habitats.</p> <p>It is important that the wildlife habitat areas in streamside communities be permanently maintained and enhanced. Human use of these areas should be restricted as necessary to protect these communities. However, designation of SCAs shall not in any manner authorize trespass upon private property, or increase the right of public agencies to gain access to private property.</p>	<p>Needs Refinement - Need to expand policy to address fishery resources and function of SCA as a movement corridor for aquatic and terrestrial species. Need to address secondary impacts of development and nonpoint discharge on water quality degradation.</p>
<p>Policy EQ-2.14 Monitoring Stream Conservation Areas. A system of monitoring SCAs should be established to assure the protection of vegetation, soils, water quality, and wildlife habitat along streams.</p>	<p>Needs Refinement - Unsure of status and how implemented.</p>
<p>Policy EQ-2.15 Stream Alterations. Before any stream alterations are permitted, the minimum water flows necessary to protect fish habitats, water quality, riparian vegetation, groundwater recharge areas, and downstream users should be determined in conjunction with the State Department of Fish and Game and the Division of Water Rights of the State Water Resources Control Board.</p>	<p>Needs Refinement - Should include clear reference to Streambed Alteration Agreement process of CDFG and possibly Corps permit authorization. Should include reference to other policies regarding protection of vegetation and habitat.</p>
<p>Policy EQ-2.16 Modification and Mitigation of Development Within Stream Conservation Areas. When a fish or other wildlife resource may be substantially affected by development in this zone, modifications and mitigation should be required in the project, to be determined in consultation with the State Department of Fish and Game.</p>	<p>Needs Refinement - Should be coordinated with other policies related to vegetation disturbance and re-establishment. Need to address secondary impacts of development and nonpoint discharge on water quality degradation.</p>
<p>Policy EQ-2.17 Stream Management Programs. Projects and stream management programs which improve the opportunity for fishing and enhance the abundance of sport fish should be encouraged and supported.</p>	<p>Needs Refinement - Should include monitoring for sensitive species and habitat values, in addition to recreational benefits.</p>
<p>Policy EQ-2.18 Soil Disturbance. Soil disturbance should be discouraged within the SCA. Where absolutely necessary it should be limited to the smallest surface area and volume of soil possible and for the shortest practical length of time.</p>	<p>Needs Refinement - Should include program for revegetation of disturbed areas.</p>
<p>Policy EQ-2.19 Surface Runoff. Surface runoff rates in excess of pre-development levels should not be allowed where a new problem will be created or where the runoff will exacerbate an existing problem.</p>	<p>Still Applicable</p>



## BIOLOGICAL AND WETLAND PROTECTION

<p>Policy EQ-2.20    Retention of Sediment. On-site facilities for the retention of sediments or contribution toward regional sediment control measures produced by development should be provided during construction and, if necessary, upon project completion. Continued maintenance of these facilities should be required.</p>	<p>Still Applicable</p>
<p>Policy EQ-2.21    Roads, Road Spoils, and Roadfill Slopes. New roads and roadfill slopes should be located outside the SCA, except at stream crossings. No spoil from road construction should be deposited within the SCA. At road crossings in the SCAs, special effort should be taken to stabilize soil surfaces.</p>	<p>Still Applicable</p>
<p>Policy EQ-2.22    Altering Stream Flow, Bed, or Banks. Filling, grading excavating, obstructing flow, or altering the bed or banks of the stream channel and riparian system shall be discouraged. Such activity will only be allowed after completion of environmental review, identification of appropriate mitigation measures, and issuance of a permit by the Department of Public Works.</p>	<p>Needs Refinement - Altering should be allowed as part of stream habitat enhancement and removal of barriers to fish and wildlife movement. Should acknowledge CDFG Streambed Alteration Agreement process.</p>
<p>Policy EQ-2.23    Seasonal Development Factors. Development work adjacent to and affecting SCAs should be done during the dry season only, except for emergency repairs. Disturbed surfaces should be stabilized and replanted, and areas where woody vegetation has been removed should be replanted with suitable species before the beginning of the rainy season.</p>	<p>Needs Refinement - Should specify period of restricted/permitted activity, with restrictions typically applied from October 15 through April 15.</p>
<p>Policy EQ-2.24    Enhancement of Stream Conservation Areas. Uses and development within SCAs should enhance the appearance of the streamside environment and protect native vegetation. Through careful site analysis and development, views should be preserved and the integrity of the streamside environment should be protected. The County should work in close cooperation with the flood control districts, water districts, and wildlife agencies in the design and choice of materials for construction and alterations within the SCAs.</p>	<p>Still Applicable</p>
<p>Policy EQ-2.25    Public Access to Stream Conservation Areas. Access to publicly owned lands within the SCA should be encouraged and improved where feasible by means of pathways, access points, and bridges. Public access should respect and enhance the environment and will not be allowed if access will destroy or degrade the riparian habitat. Trails should be situated at an adequate distance from the stream course to afford protection of wildlife corridors. Trails may occasionally diverge to the creek to provide visual access. Public lands should be added adjacent to streams where possible to make resources more accessible and usable for passive recreation and to protect and enhance streamside habitat.</p>	<p>Needs Refinement - Trails and other open space improvements should be designed outside or at the edge of the SCA to minimize potential for disturbance to habitat.</p>
<p>Policy EQ-2.26    Restoration of Damaged Portions of Stream Conservation Areas. Damaged portions of SCAs should, wherever possible, be restored to their natural state. When it is not possible to return the SCA to a natural state, the portions of the channels that have been significantly altered for flood control should be improved for urban open space uses such as landscaped areas and paths. These improvements should enhance habitat values.</p>	<p>Needs Refinement - Need to accommodate flood flow capacity and allow for routine disturbance as part of long-term maintenance.</p>
<p>Policy EQ-2.33    Streams in Development Plans. Streams which are part of lands to be developed are a resource for their aesthetic and wildlife values. Vegetated buffer areas of native plants should be included in plans in order to protect the habitat for wildlife, to preserve and focus views, and to assure public safety. Vegetated buffer areas, rather than fencing, should be utilized except where safety issues or specific environmental concerns need to be addressed.</p>	<p>Still Applicable</p>
<p>Policy EQ-2.34    Land Divisions in Stream Conservation Areas. Land divisions should be reviewed for size of parcels and property line locations relative to creeks to allow management of the creek by one property owner, to the greatest extent possible.</p>	<p>Needs Refinement - Need specific reference to avoid creating conditions allowed under Policy EQ-2.6.</p>



# MARIN COUNTYWIDE PLAN

<p>Policy EQ-2.35 Responsible Agencies/Individuals. Any agency or individual responsible for management of SCAs should undertake the responsibility for implementation of all SCA policies.</p>	<p>Needs Refinement - Unsure of status and how to implement.</p>
<p>3. Bayfront Conservation Areas</p>	
<p>Policy EQ-2.42 Wildlife and Aquatic Habitats. The County shall preserve and enhance the diversity of wildlife and aquatic habitats found in the Marin County bayfront lands, including tidal marshes, seasonal marshes, lagoons, wetlands, agricultural lands, and low-lying grasslands overlying historical marshlands.</p>	<p>Needs Refinement - Need to address secondary impacts of development and nonpoint discharge on water quality degradation.</p>
<p>Policy EQ-2.43 Development and Access Limitations in Bayfront Conservation Areas. Development shall not encroach into sensitive wildlife habitats, limit normal range areas, create barriers which cut off access to food, water, or shelter, or cause damage to fisheries or fish habitats. Buffer zones between development and identified or potential wetland areas shall be provided. On residential and industrial parcels which are already filled and at least 50% developed, minor redevelopment involving less than 25% of the structure may be excluded from policies which apply to the Bayfront Conservation Zone. No additional fill will be allowed. Access to environmentally sensitive marshland and adjacent habitat shall be restricted, especially during spawning and nesting seasons.</p>	<p>Needs Refinement - Minor redevelopment should adhere to minimum setback standards beyond no filling.</p>
<p><i>Program EQ-2.43a Wetland Impact Mitigation.</i> Development should be sited to avoid wetland areas so that the existing wetlands are preserved. The next priority would be to restore or enhance the wetland environment on-site, provided that no net loss of wetlands occurs. Restoration of wetlands off-site should only be allowed when it has been demonstrated that on-site restoration is not possible and there is no net loss of wetlands. For each acre of wetland lost, two acres shall be restored and should be of the same type of wetland habitat as the wetland which was lost.</p>	<p>Needs Replacement - This program could be used as a new policy standard regarding all wetlands in the County, including those in the BCA, SCA, and other wetlands such as seasonal wetlands and seeps. The new Policy/Program should be revised to reflect need for a wetland delineation where jurisdictional waters may be affected, coordination with trustee agencies, and preparation of a detailed wetland mitigation plan if complete avoidance is infeasible. Any replacement wetlands should result in an increase in habitat acreage and values. The new Policy/Program should acknowledge that off-site mitigation may be preferable where on-site wetlands are of low value and are isolated from other habitat.</p>
<p><i>Program EQ-2.43b Reduce Impacts to Wetlands.</i> All technically feasible measures will be taken to reduce impacts and losses to the original wetland.</p>	<p>Still Applicable - Unsure of status or how "feasible" is defined.</p>



## BIOLOGICAL AND WETLAND PROTECTION

<p><i>Program EQ-2.43c Criteria for Evaluating Projects.</i> The following criteria shall be considered when evaluating development projects which may impact wetland areas and should be incorporated into mitigation measures:</p> <ol style="list-style-type: none"> <li>a) No net losses shall occur in wetland acreage, functions, and values.</li> <li>b) Mitigation should be implemented prior to, or concurrently with, the project component which is causing the adverse impact.</li> <li>c) An area of adjacent upland habitat should be provided for wetland species that require such habitat.</li> <li>d) Mitigation sites should be permanently guaranteed for open space and wildlife habitat purposes.</li> <li>e) Mitigation for wetland destruction should be implemented on a non-wetland site, or a historical wetland site.</li> <li>f) Restoration of wetlands is preferred to creation of new wetland areas, due to the greater likelihood of success.</li> <li>g) Mitigation projects should minimize the need for long-term maintenance and operational manipulation (dredging, artificial water level controls, etc.). Self sustaining projects are encouraged.</li> <li>h) All plans to mitigate or minimize adverse impacts to wetland environments shall include provisions to monitor the success of the restoration project. The measures taken to avoid adverse impacts may be modified if the original plans prove to be unsuccessful. Performance bonds may be required.</li> </ol> <p>Mitigation must be commensurate with adverse impacts of the wetland alteration and consist of providing similar values and greater wetland acreage than those of the wetland area adversely affected. All restored or created wetlands shall have the same or equivalent habitat value as the wetland lost.</p>	<p>Still Applicable - Could be incorporated as part of the new Policy/Program EQ-2.43a. Should also address consideration of flood flow requirements in design and protection of wetlands, as indicated in Policies EQ-2.9 and 2.11. Need to address secondary impacts of development and nonpoint discharge on water quality degradation.</p>
<p><i>Program EQ-2.43d Establish Criteria for Buffer Zones.</i> The County Community Development Agency shall establish criteria for determining the size of upland habitat areas (buffer zones) between development and wetland areas to be used to in review of individual development applications.</p>	<p>Still Applicable - Unsure of status and whether criteria for buffer zone has been established.</p>
<p><i>Policy EQ-2.44 Tidelands Subzone.</i> The purpose of this subzone is to define those areas which should be left in their natural state because of their biological importance to the estuarine ecosystem. The County shall prohibit diking, filling, or dredging in areas subject to tidal action (Tidelands subzone) unless the area is already developed and currently being dredged. Current dredging operations for maintenance purposes may continue subject to environmental review, if necessary. In some cases, exceptions may be made for areas which are isolated or limited in productivity. In tidal areas, only land uses which are water-dependent shall be permitted, as consistent with federal, state, and regional policy. These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• ports</li> <li>• water-related industry and utilities</li> <li>• essential water conveyance</li> <li>• wildlife refuge</li> <li>• water-oriented recreation</li> </ul> <p>Exemptions may be granted for emergency or precautionary measures taken in the public interest, e.g., protection from flood or other natural hazard. Removal of vegetation shall be discouraged. Alteration of hydrology should only be allowed when it can be demonstrated that the impact will be beneficial or non-existent.</p>	<p>Needs Refinement - Need to address secondary impacts of development and nonpoint discharge on water quality degradation.</p>



# MARIN COUNTYWIDE PLAN

<p>Policy EQ-2.45 Diked Historic Marshlands Subzone. The County shall, through its land use and development regulations, foster the enhancement of the wildlife and aquatic habitat value of the diked historic marshlands subzone. Land uses which provide or protect wetland or wildlife habitat, and which do not require diking, filling, or dredging, shall be encouraged. These uses include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• restoration to tidal status</li> <li>• restoration to seasonal wetlands</li> <li>• agricultural use</li> <li>• flood basin, and</li> <li>• wastewater reclamation area.</li> </ul> <p>In addition, other uses which do not require diking, filling, or dredging, may be allowed if such uses are consistent with the zoning designation and it can be demonstrated that impacts to the bayfront environment are minimized and mitigated. Land uses that provide protection from flood or other natural hazards may be allowed if necessary to protect public health and safety. Existing dredging operations in developed areas may continue, subject to environmental review, if necessary.</p> <p>When development is proposed, priority should be given to water oriented uses such as public access and low intensity passive recreational and educational opportunities.</p> <p>Housing uses, with an emphasis on affordable housing, would provide substantial public benefit and may be considered if environmental impacts can be mitigated. The protection of the bayfront environment should take precedence over the provision of affordable housing.</p>	<p>Still Applicable</p>
<p>Policy EQ-2.46 Freshwater Habitats. Freshwater habitats in the bayfront areas associated with freshwater streams and small former marshes should be preserved and/or expanded so that the circulation, distribution, and flow of the fresh water supply is facilitated.</p>	<p>Needs Refinement - Raises same issues as with Program EQ-2.43a and how policies pertaining to wetlands are organized. This is the only policy that specifically refers to freshwater habitats and it is limited to the BCA, rather than county-wide and including the SCAs. Does not address freshwater seeps and freshwater marsh habitat types specifically.</p>
<p>Policy EQ-2.47 Use of Flood Barriers for Seasonal Habitat. Natural or managed flood basins should be utilized to provide seasonal habitat for waterfowl and shorebirds.</p>	<p>Still Applicable - Unsure of status or how to implement. Does the policy refer to "Flood Barriers" or "Flood Control Basins"? Need specific provisions prohibiting or restricting development within flood basins and flood zones.</p>
<p>Policy EQ-2.48 Transfer of Development Rights. The County shall allow the transfer of the development potential of diked historic marshlands which are restored to tidal status or enhanced as wetlands habitat to upland sites, provided that development on the upland site complies with development standards for the protection of adjacent habitat areas.</p>	<p>Still Applicable - Unsure of status and how implemented.</p>
<p>Policy EQ-2.49 Planned District Development Review with Environmental Assessment. The County shall review all proposed development within the Bayfront Conservation Zone in accordance with the planned district review procedure in order to ensure maximum possible habitat restoration and protection. An Environmental Assessment of existing environmental conditions (biologic, geologic, hazard, and aesthetic) shall be required prior to submittal of development plans.</p>	<p>Needs Refinement - Consideration should be given to similar Planned District Development Review with environmental assessment for areas with SCA and other jurisdictional wetlands as well.</p>



## BIOLOGICAL AND WETLAND PROTECTION

<p><i>Program EQ-2.49a Environmental Assessment of Bayfront Lands.</i> Environmental assessment (biologic, geologic, hazard, and aesthetic) of existing conditions on proposed development sites will be completed prior to preparation of master plans and development plans. These assessments will include recommendations for siting and design that will avoid adverse environmental impacts. When it is not possible to avoid impact, recommendations shall include provisions for minimizing environmental impact. The assessment should serve as a portion of the Environmental Impact Report on the project and recommendations should be incorporated into the project itself. Refer to Program 2.43a for detailed criteria to be used in formulating recommendations for siting and design.</p>	<p>Needs Refinement - Refer to the comments under Program EQ-2.43a for clarification of wetland policies.</p>
<p>Policy EQ-2.50 Coordination with Trustee Agencies within Bayfront Conservation Areas. The County shall facilitate consultation and coordination with the trustee agencies (Department of Fish and Game, U.S. Fish and Wildlife Service, the Corps of Engineers, EPA, Regional Water Quality Control Board, and BCDC) during environmental review and during review of other proposals for lands within the Bayfront Conservation Zone.</p>	<p>Needs Refinement - Refer to the comments under Program EQ-2.43a for clarification of wetland policies. Typically not the County's responsibility to facilitate consultation for individual development applications affecting jurisdictional waters or special-status species. Evidence of authorization from jurisdictional agencies should be provided to County before issuance of a grading or construction permit as an assurance that coordination has been performed.</p>
<p><i>Program EQ-2.50a Early Consultation with Other Agencies.</i> Any development project within the Bayfront Conservation Zone is subject to the review, and possibly the permit process, of federal and state agencies with jurisdiction over wetlands. It is critical that the applicant consult with these agencies at the very outset of a development project. The County will make every effort to coordinate its review process with the review process of other agencies, consulting with them on the environmental assessment and the master plan. The applicant will be informed at the first contact with the Community Development Agency which other agencies are likely to claim jurisdiction and what the policies and standards of those agencies are regarding development activities in the Bayfront Conservation Zone. The National Wetland Inventory Maps (NWI) will aid County staff in providing this information to applicants.</p>	<p>Needs Refinement - Refer to the comments under Program EQ-2.43a for clarification on wetland policies.</p>
<p>Policy EQ-2.51 Minimal Impacts Within Bayfront Conservation Zone. The County shall ensure that development in the County occurs in a manner which minimizes the impact of earth disturbance, erosion, and water pollution within the Bayfront Conservation Zone.</p>	<p>Needs Refinement - Refer to the comments under Program EQ-2.43a for clarification on wetland policies.</p>
<p>Policy EQ-2.58 Protection of Existing Agricultural Lands. The County shall protect existing agricultural lands in the Bayfront Conservation Zone. These lands are an important resource for the County because they:</p> <ul style="list-style-type: none"> <li>• are a visual and scenic resource;</li> <li>• play an integral role in other agricultural and dairy operations in Marin County;</li> <li>• are a productive economic resource; and</li> <li>• are compatible with water-related wildlife habitat.</li> </ul> <p>Such agricultural activities could consist primarily of grazing operations and crop production harmonious with adjoining marshes, wetlands, grasslands, or other sensitive lands. Agricultural lands provide habitat for many wildlife species. These habitats may be important for migratory species during times of flood and after silage has been cut.</p>	<p>Needs Refinement - Need to address potential conflicts where poor agricultural practices contribute to severe erosion and water quality degradation. Need to recognize and protect sensitive habitat features consistent with other policies</p>
<p>Policy EQ-2.59 Natural Vegetation. Agricultural activities should minimize removal of natural vegetation and avoid the removal of wetland vegetation, where possible.</p>	<p>Still Applicable</p>



# MARIN COUNTYWIDE PLAN

<p>Policy EQ-2.60 Pesticides, Insecticides and Similar Materials. The County will encourage the use of integrated pest management practices to control pests with the least possible hazard to people, property, and the environment. It is a suggested goal of the County to urge the reduction in the use of pesticides and chemical treatments whenever possible. Non-toxic strategies for pest control, such as modifying habitats, using physical controls, and biological controls are encouraged as an alternative to chemical treatment.</p>	<p>Still Applicable</p>
<p>Policy EQ-2.66 Use of Shoreline Areas. Public use of the shoreline areas is desirable and should be encouraged consistent with ecological and safety considerations.</p>	<p>Needs Refinement - Needs to acknowledge appropriate setbacks and potential for disturbance of special-status species and sensitive natural communities.</p>
<p>Policy EQ-2.67 Ensuring Public Access of Shoreline Areas. The County shall ensure that public access is provided and protected along the bayfront and significant waterways. Public access easements are the primary means available for increasing public access opportunities. Dedications of these easements result from a condition imposed on development plan approval. Public access should be allowed only where access can be accommodated without damaging the wildlife habitat.</p>	<p>Needs Replacement - Redundant to Policy EQ-2.66. Could merge two policies into one.</p>
<p>Policy EQ-2.69 Evaluation of New Public Access Areas. The County shall evaluate potential new public access areas in order to determine the feasibility of providing access and the priorities for acquisition, based on the following criteria:</p> <ul style="list-style-type: none"> <li>• desirability of the site;</li> <li>• capacity to sustain use without significant adverse impacts on the bayfront habitat and wildlife;</li> <li>• potential for hazard to public safety or health;</li> <li>• availability of other public access points in the area; and,</li> <li>• compatibility with adjacent land uses.</li> </ul>	<p>Needs Refinement - As with the general wetland policies, this policy needs to address public access along the SCAs as well.</p>
<p>Policy EQ-2.70 Siting and Design of Public Access. Public access should be sited and designed to facilitate public use and enjoyment of the bayfront lands, along with protection of wildlife habitat. Where possible, buffers and upland habitat should remain, or be constructed, between wetland habitats and public use areas. Public areas should be clearly marked, and continuous ten-foot walkways from the nearest roads to the shoreline and along the shoreline should be provided. Public access areas should be designed to minimize possible conflicts between public and private uses on the properties. In general, walkways should be set back at least ten feet from any proposed structure. Public access shall designed to avoid disturbance of wetlands and sensitive wildlife habitat areas.</p>	<p>Needs Refinement - Redundant to Policy EQ-2.69. Could merge two policies into one.</p>
<p>5. Mineral Resources</p>	
<p>Policy EQ-2.84 Reclamation of Mined Lands. The County shall assure that all mining operations provide for adequate reclamation of mined lands before issuing mining or quarrying permits.</p>	<p>Still Applicable - Unsure of status and provisions for protection of special-status species, sensitive natural communities, and wetlands.</p>
<p><i>Program EQ-2.84a Reclamation Requirements.</i> The County shall continue to enforce the reclamation requirements of Marin County Code Section 23.06.</p>	<p>Still Applicable</p>
<p><i>Program EQ-2.84b Wetlands.</i> The County shall augment Section 23.06.40(5) Application to require Reclamation Plans to include a) protection of wetlands, if any and b) reduction of negative visual impacts.</p>	<p>Still Applicable - Unsure of status and how implemented.</p>





## BIOLOGICAL AND WETLAND PROTECTION

<p>Policy EQ-2.85    Excavation of Wetlands. Wetlands proposed for excavation shall be reviewed for significant habitat value and will be protected in lieu of mining where significant mineral resources have been identified.</p>	<p>Needs Revision - Need to acknowledge possible jurisdictional permitting and requirement for replacement mitigation. Loss of any wetland habitat is typically considered significant, requiring mitigation.</p>
<p><i>Program EQ-2.85a Return to Wetland Status.</i> Wetlands that are mined shall be reclaimed and returned to wetland status after conclusion of mining operations.</p>	<p>Needs Revision - Reclamation to wetland may be a suitable long-term use, but this policy does not address loss during mining operation. Off-site mitigation may be required to address wetland loss if avoidance is not possible and jurisdictional wetlands are affected by mining activities.</p>
<p>Policy EQ-2.86    Removing a Site from Application of these Policies. When a site is mined and satisfactory evidence is presented that it no longer contains the threshold amount of resource, the County shall institute action to remove the site from the application of these mineral resource preservation policies.</p>	<p>Still Applicable - Unsure of status.</p>
<p>6.            Species Protection</p>	
<p>Policy EQ-2.87    Species Preservation in the Environmental Review Process. Environmental review of development applications shall consider the impact of the proposed development on species and habitat diversity. Environmental review documents should propose mitigation measures for ensuring the protection of the habitat and species therein.</p>	<p>Needs Replacement - This section needs major reorganization. Special-status species should be broken out as a separate focus issue from sensitive natural communities and from wildlife habitat and movement corridors. Along with wetlands, these should be the major focus issue of the relevant policies of the updated Plan.</p>
<p><i>Program EQ-2.87a Species and Habitat Protection.</i> All project permits, including development, grading, and tidelands permits, shall include conditions or mitigation measures to ensure the continued health and survival of the habitat and the plants and wildlife, to the greatest extent possible.</p>	<p>Needs Refinement - Need to establish standards and integrate with other relevant policies such as BCA and SCA.</p>
<p><i>Program EQ-2.87b Wildlife Corridors.</i> Development permits shall include conditions or mitigation measures to ensure that corridors for wildlife movement and dispersal are not destroyed or altered in such a way as to destroy or significantly diminish the use of the site as a corridor for animal movement and dispersal.</p>	<p>Needs Refinement - Need to establish standards and refer to other relevant policies such as BCA and SCA. These programs and policies should be integrated into a functional method to provide adequate protection and identify key areas for acquisition and restoration. The revised program/policy should address both terrestrial and aquatic species, using the SCA and upland wildlife corridors as a mechanism to provide habitat connectivity and sustainability.</p>
<p><i>Program EQ-2.87c Edge Habitats.</i> Development applications shall be conditioned or modified to ensure that edge habitats are not destroyed or altered in such a way as to destroy or significantly diminish the diversity of species using the site.</p>	<p>Needs Refinement - Need to establish standards and integrate with other relevant policies such as BCA and SCA.</p>



## MARIN COUNTYWIDE PLAN

<p><i>Program EQ-2.87d Regeneration of Species.</i> The County should encourage plans to regenerate plant species, when an environmental assessment indicates this is the preferred course of action.</p>	<p>Needs Replacement - Unsure what purpose the policy serves, unless this is in regards to special-status plant species vulnerable to extirpation in some or all locations in the County. Use of native plant species should be encouraged as part of mitigation, buffering, and habitat enhancement and restoration.</p>
<p><i>Program EQ-2.87e Development Near Park Lands.</i> When development is proposed on lands adjacent to State or Federal parklands, the County shall require the removal of all invasive exotic vegetation prior to development.</p>	<p>Needs Replacement - Separate policies and supporting programs should be developed addressing invasive exotics, for both aquatic and terrestrial habitats. These policies should apply for the entire County, not just adjacent to parklands.</p>
<p>Policy EQ-2.88 Protection of Special Status Species. Development shall be restricted or modified in areas which contain special status species and migratory species of the Pacific Flyway and/or significant natural areas, wetlands, riparian habitats, and freshwater habitats, to ensure the continued health and survival of these species and areas</p>	<p>Needs Replacement - As indicated under EQ-2.87, the issues of special-status species and sensitive natural communities should be separate policy areas, each with supporting programs. Both policy areas should have requirements for identification of any sensitive resources as part of the environmental review process, preservation and restoration, coordination with trustee agencies, and appropriate mitigation where avoidance is not feasible.</p>
<p><i>Program EQ-2.88a Special Status Species and Significant Natural Areas.</i> Development permits shall include conditions or mitigation measures to ensure the continued health and survival of special status species, migratory species of the Pacific Flyway and Significant Natural Areas (as defined by the California Department of Fish &amp; Game), wetlands, riparian habitats, and freshwater habitats. Development projects shall be modified to either avoid impact to sensitive communities or mitigate impacts by providing on- or off-site replacement.</p>	<p>Needs Replacement - Should be revised as part of other policy modifications to provide for coordination with jurisdictional agencies and adequate mitigation where sensitive resources are adversely affected by proposed development.</p>
<p><i>Program EQ-2.88b Environmental Assessment for Significant Natural Areas.</i> The County shall require that applicants provide an environmental assessment for development proposed on sites identified as Significant Natural Areas. The assessment shall be conducted by a qualified biologist and shall identify the presence of specific sensitive species and measures for protecting the species and habitat.</p>	<p>Needs Replacement - Should be expanded to include environmental assessment for special-status species, sensitive natural communities, and wetlands. Should include assessment of all undeveloped lands with potential for occurrence of sensitive resources, not just identified Significant Natural Areas.</p>



## BIOLOGICAL AND WETLAND PROTECTION

<p><i>Program EQ-2.88c Species Protection Resource Center:</i> The County Community Development Agency should establish and maintain a Species Protection Resource Center in order to accurately assess the potential impacts of proposed development on species and habitat diversity. The Resource Center shall contain:</p> <ol style="list-style-type: none"> <li>1) All up-to-date information on verified sightings of special-status species and significant natural areas as compiled by the California Department of Fish and Game, Non-Game Heritage Division;</li> <li>2) All reports and recovery programs for special-status species and significant natural areas;</li> <li>3) All up-to-date information from the United States Fish and Wildlife Service, including sightings and inventories of the migratory species of the Pacific Flyway; and,</li> </ol> <p>Reports, siting and recovery programs from reliable, local sources such as the Point Reyes Bird Observatory and the Marin Audubon Society.</p>	<p>Needs Refinement - Need to reconsider role County can serve as a resource center. It is important to maintain current files on occurrences of special-status species, sensitive natural communities, and wetlands/streams, but may be unrealistic to assume County can adequately function in a role as a resource center. To address site specific resources, adequate controls should be in place which require applicant's to conduct thorough studies as part of environmental review, provides coordination with jurisdictional agencies, and incorporates adequate mitigation when sensitive resources could be affected by a proposed project. On a larger scale, the County can address habitat connectivity, restoration, and enhancement by developing policies and programs which encourage interagency and private landowner coordination on a watershed or County-wide basis.</p>
<p><b>THE BUILT ENVIRONMENT</b></p>	
<p>1. General Policies</p>	
<p>Policy EQ-3.2 Air, Water, and Noise Pollution. Air, water, and noise pollution shall be prevented or minimized.</p>	<p>Still Applicable</p>
<p>Policy EQ-3.27 Identification of Wetlands Outside the BFC Zone. At the time of a site specific development application, the County shall require the applicant to identify seasonal and year-round wetlands which may be located outside the BFC zone. Development shall be situated so that wetlands are protected and preserved to the maximum extent feasible. Policy EQ-2.43 shall apply to wetlands outside the BFC zone.</p>	<p>Needs Replacement - Policies should be developed specifically for wetlands outside the BCA zone, not dependent on a deferral to Policy EQ-2.43. This is a major deficiency in the current Plan, creating confusion on applicability to wetlands outside the BCA zone.</p>
<p>Policy EQ-3.3 Radioactive, Chemical, and Biological Health Hazards. Radioactive, chemical, and biological health hazards to humans or wildlife shall not be created, and existing levels shall be reduced. The most current technical information will be utilized to implement this policy.</p>	<p>Still Applicable - Not sure of status or how implemented.</p>
<p>Policy EQ-3.4 Changes to Hydrological and Biological Processes. No operation shall cause irreversible damage or more than minimum reversible change to natural hydrological and biological processes. .</p>	<p>Needs Replacement - Policy should be expanded or incorporated into other policies that address wetlands, water quality, and control of secondary impacts and nonpoint contamination.</p>
<p>Policy EQ-3.6 Wildlife, Vegetation and Habitats. A diversity and abundance of wildlife and marine life shall be maintained. Vegetation and animal habitats shall be preserved wherever possible.</p>	<p>Needs Replacement - Need policy that identifies resources worthy of preservation and enhancement in built environment, such as SCAs, BCAs, and parklands. Restoration and enhancement may be an appropriate emphasis in the built environment as there may be little left to "maintain".</p>



# MARIN COUNTYWIDE PLAN

<p>Policy EQ-3.13    <b>Aggressive Exotic Plants.</b> The planting of aggressive exotic plants such as broom and pampas grass should be avoided in any development over which the County has review authority.</p>	<p>Needs Replacement - Policy should be expanded to include program for removal and control of invasive exotics, both plant and animal. Should include requirement for removal as part of development approval and on-going management, perhaps identify target species for terrestrial and marine environments. Recommendation for removal or control of blue gum eucalyptus must recognize its importance as habitat for nesting raptors and Monarch butterflies.</p>
<p>Policy EQ-3.14    <b>Protection of Trees.</b> The County shall strive to protect large trees, trees with historical importance, and oak woodland habitat, and prevent the untimely removal of trees through implementation of a tree preservation ordinance.</p> <p><i>Program EQ-3.14a Tree Preservation Ordinance.</i> The County Community Development Agency shall develop a tree preservation ordinance which will protect significant trees (native, heritage, and large street trees) prior to a specific development proposal. The ordinance will address the following issues:</p> <ol style="list-style-type: none"> <li>1. Removal of a certain size of tree (generally greater than 6" in diameter) or type of tree (heritage trees) and establishment of a permit procedure if removal is absolutely necessary. Replacement of tree(s) will be required.</li> <li>2. Require a permit prior to clearing a site for development. The applicant should provide a diagram which indicates the size and location of trees which will be removed, as well as a plan for replacement of trees. Replacement should occur at a ratio of 2:1, except where physical conditions on the site make this ratio infeasible.</li> <li>3. Protection of the oak woodland environment to allow opportunities for regeneration and survival of seedlings and saplings. Specifically protect trees with a diameter of 6" or greater, and require replacement at a ratio of 2:1.</li> <li>4. Enforcement mechanisms (including penalties) for unlawful removal of trees.</li> <li>5. Protection of Redwood Groves and the California woodland habitat, including provisions to protect regeneration of seedlings and saplings.</li> <li>6. Protection of trees during construction and specifying a maximum percentage of trees which may be removed.</li> <li>7. Protection of significant stands of trees (10 trees per acre).</li> </ol>	<p>Needs Refinement. Need to acknowledge County's Tree Preservation Ordinance NO. 3291 and adjust recommendations accordingly. Need to review adequacy of Tree Preservation Ordinance.</p>
<p>Policy EQ-3.17    <b>Discourage Use of Pesticides.</b> The County will encourage the use of integrated pest management practices to control pests with the least possible hazard to people, property, and the environment. It is a suggested goal of the County to urge the reduction in the use of pesticides and chemical treatments whenever possible. Non-toxic strategies for pest control, such as modifying habitats, using physical controls, and biological controls are encouraged as an alternative to chemical treatment.</p>	<p>Still Applicable -</p>
<p>Land Uses</p>	
<p>Policy EQ-1.2    <b>Land Use of the Inland Rural Corridor.</b> Agricultural land uses will be emphasized in the Inland Rural Corridor along with other uses that are compatible with agriculture and enhance agricultural preservation in a significant way such as resource and habitat preservation. Existing communities shall be preserved.</p>	<p>Needs Refinement - Need to revise policy to include importance of habitat preservation, restoration and enhancement.</p>



## BIOLOGICAL AND WETLAND PROTECTION

<p>Policy EQ-1.1 Land Use of the City-Centered Corridor. Urban development will be concentrated in the City-Centered Corridor where infrastructure and facilities can be made available to serve urban development. Although urban development is generally concentrated within this corridor, areas within the corridor are designated for resource protection. These areas include the Ridge and Upland Greenbelt Area, the Streamside Conservation Area, and the Bayfront Conservation Zone.</p>	<p>Needs Refinement - Need to revise policy to include opportunities for restoration and enhancement of important habitat to serve as movement corridors and links between open space areas.</p>
<p>Policy EQ-1.3 Land Use of the Coastal Recreation Corridor. Open space, recreational, and agricultural land uses will be emphasized in the Coastal Recreation Corridor along with the preservation of existing coastal communities.</p>	<p>Needs Refinement - Need to revise policy to include importance of habitat preservation, restoration and enhancement.</p>
View Protection	
<p>Policy EQ-3.20 Ridge and Upland Greenbelt-Wooded Hillides. The preservation of trees on wooded hillides is of paramount concern. A general scattering of buildings at a very low density may be desirable in order to preserve trees. The intent of this policy is to maximize protection of visual resources (see Figure EQ-12).</p>	<p>Needs Refinement. Policy should encourage “clustering” of buildings to avoid trees rather than allowing a “general scattering”.</p>
<p>Policy EQ-3.21 Creekside Development. Along creeks, development must retain the natural vegetation, prevent water pollution, and minimize flood hazards from runoff (see Figure EQ-13).</p>	<p>Needs refinement. Needs to indicate considerations as part of proposed development.</p>
<p>Policy EQ-3.22 Mudflats and Tidal Areas. On low-lying mudflats or tidal fill areas, protection of plant and wildlife habitat is of primary importance. The provision of public access to creeks, streams, and the shoreline should also be encouraged (see Figure EQ-13).</p>	<p>Needs Refinement. Should separate out access to creeks or expand policy to combine both objectives of protection and access.</p>
Environmental Hazards Element	
<p>Policy EH-11.6 Hazardous Vegetation. The County should plan for the systematic and environmentally sound reduction of hazardous vegetation, in order to reduce the buildup of old and hazardous vegetation created by effective fire suppression activities over the last 40 years.</p>	<p>Needs Replacement. Policy should be replaced and expanded to address sensitive biological resources which could be affected by fuel reduction efforts, and long term changes resulting from Sudden Oak Death and other factors.</p>
Community Development Element	
<p>Policy CD-2.7 Discouraging Development in Natural Resource or Hazard Areas. T Development should be discouraged in areas which have high natural resource value or which pose a significant hazard to life or property. Where development is permitted in such areas, the development density should be low and structures should be sited in order to minimize adverse impacts. This policy is consistent with the policies in the Environmental Quality and Environmental Hazards Elements. Transfer of development rights (TDRs) from high resource areas to appropriate receiver sites could be used to protect resource values.</p>	<p>Still Applicable. Should be expanded to acknowledge need to minimize conflicts with vegetation management, both for fuel reduction and habitat protection.</p>

The following provides a discussion of the major issues which need to be addressed as part of the update process. These include reorganizing the natural resources portion of the CWP to provide specific policies regarding special-status species, sensitive natural communities, wetlands, wildlife habitat connectivity, and vegetation management. New policies regarding the need to encourage interagency coordination as part of watershed and resource protection, and establishing policies on the appropriateness of mitigation banking should be considered.



## MARIN COUNTYWIDE PLAN

### A. Special-Status Species

The Environmental Quality Element of CWP includes two policies and associated programs related to species protection. Policy EQ-2.87 presumably addresses "species preservation in the environmental review process", but then includes specific programs that cover a wide range of issues that are only remotely related to species preservation, and includes no clear standards for how these programs are to be implemented. Policy EQ-2.88 addresses "protection of special status species" but then is combined with protection of wetlands, significant natural areas, and sensitive natural communities. Programs under Policy EQ-2.88 include the need for an environmental assessment of proposed development, but this is inappropriately focused on "significant natural areas". Programs related to wildlife corridors, edge habitat, "regeneration of species", and development near park lands are inappropriately combined into this single subsection of the Element, they lack any standards for review and implementation, and are not directly linked to any regulatory basis for County oversight. Revised policies and programs should include acknowledgement of state and federal jurisdiction over sensitive resources, and the need for a thorough inventory and assessment of these resources as part the environmental review process where potential habitat may be affected by proposed development. There are no County ordinances or habitat management plans related to the protection and recovery of special-status species.

A number of special-status species known from Marin County are wide-ranging and the focus of management efforts by trustee agencies. Species of particular concern include California red-legged frog, northern spotted owl, coho salmon, and steelhead trout. The following provides a summary of relevant management issues for each of these species.

Northern Spotted Owl. The USFWS listed the northern spotted owl as a threatened species in 1990. The southern limit of their range extends into Marin County where they occur in Golden Gate National Recreation Area, Muir Woods National Monument, Point Reyes National Seashore, and other parts of the County. On-going studies have been conducted to monitor population health and further define essential habitat, including annual status reports (Fehring et. al, 2001). According to the latest status report, the Marin County population of spotted owl is subject to several threats, including: 1) urban development along park boundaries; 2) disturbance due to intense urban recreational pressures; 3) hazardous fuel management; 4) potential for catastrophic wildfire along the urban/wildland interface; 5) possible genetic isolation; and 6) continued range expansion of the barred owl. Of particular concern is the continuing die-off of tanbark and coast live oaks throughout spotted owl habitat due to SOD, and the long-term impacts this may have on prey populations and owl nesting habitat. Refined policies related to vegetation management should be incorporated into the CWP update which address essential habitat of spotted owl and other special-status species.

Coho Salmon and Steelhead Trout. Coho salmon and steelhead trout are both listed as threatened under the federal ESA within the Central California Coast Evolutionarily Significant Unit. These species are anadromous, spawning in coastal streams and rivers and then migrating to and maturing in the ocean. Both species are known from streams in Marin County. Streams with established or historic records of these species are indicated in Exhibit 3. Where a record of salmon or steelhead has been reported from a stream, the entire drainage has been indicated as supporting the species, although habitat conditions have generally not been confirmed in the field.



## BIOLOGICAL AND WETLAND PROTECTION

Marin County is currently participating in the FishNet 4C program, which is a county-based, regional salmonid protection and restoration program created under a Memorandum of Agreement between the six central California coastal counties of Marin, Mendocino, Monterey, San Mateo, Santa Cruz, and Sonoma. FishNet 4C recognizes the need for these counties to meet the requirements of the ESA in protecting anadromous salmonids and their habitats. Given these requirements, a prime objective of the FishNet 4C program has been to evaluate the land management practices of each county and any written policies related to protecting salmonid populations, and to make recommendations for improving these practices and policies.

Based on the FishNet 4C review, Marin County has a number of policies in place that serve to protect fish habitat. These policies are most comprehensive in the coastal zone where strict development standards protect salmonid streams with riparian buffers. Coastal zone regulations restrict building in floodplains, channel modifications, streamflow withdrawals, and grading. In the non-coastal zone, fish habitat protection measures are less stringent and less consistent. The most important policies pertain to riparian buffers and grading, and all of the county is covered by a comprehensive storm water pollution prevention ordinance.

Identified deficiencies in the FishNet 4C report relate to policy gaps regarding wildlife habitat, streamflow quantity modifications, riparian corridor protection, sedimentation, channel modification, water quality, and fish passage. A summary of Marin County policies relating to anadromous fish habitat conservation is available for review at the Marin County Community Development Agency. These include identified and potential policy gaps in the 1994 CWP. These policy deficiencies should be considered as part of the CWP update. Additional detailed survey work is necessary to confirm habitat conditions and opportunities for restoration and enhancement for coho and steelhead.

California red-legged frog. The USFWS recently designated 209,000 acres of west Marin as critical habitat for the federally-threatened California red-legged frog. Of this land, approximately 52 percent are managed by the National Park Service, the State Department of Parks and Recreation, and the Marin Municipal Water District. The remaining 48 percent are privately owned and are generally under agricultural zoning and used for grazing. Agency management plans include consideration of this species, although some conflicts with agricultural use and water quality degradation are of concern. Future development in the Coast Recreation Zone and the Inland Rural Corridor, including plans for habitat restoration, must consider the affects on this listed species.

### **B. Sensitive Natural Communities**

As noted above under the discussion of special-status species, Policies EQ-2.87 and 2.88 provide some limited acknowledgement of the importance of species habitat protection. This includes programs related to species and habitat protection, wildlife corridors, edge habitat, "regeneration of species", and development near park lands. However, these are inappropriately combined into a single subsection of the Element, they lack any standards for review and implementation, and are not directly linked to any regulatory basis for County oversight. Policies pertaining to the Stream Conservation Areas and Bayfront Conservation Areas provide some degree of protection for riparian and coastal salt marsh communities, respectively. However, additional refinement of these policies is necessary to establish County definitions for critical terms such as "riparian", "tidal marshes", and "seasonal marshes".



## MARIN COUNTYWIDE PLAN

Along with wetland resources, the issues of special-status species, sensitive natural communities, and wildlife habitat connectivity should be expanded into separate subsections of the Element to provide a framework for effective protection and restoration of viable habitat for sensitive natural resources. There are no County ordinances related to the protection and enhancement of sensitive natural communities.

The County's Tree Preservation and Protection Ordinance (Ordinance #3291) established regulations for the preservation and protection of native trees, providing some protection of tree resources and woodland habitat in the non-agricultural unincorporated areas of the County. Protected trees under the ordinance are generally native species with trunk diameters of either six or 10 inches, depending on species. The ordinance is intended to: control the removal of protected trees; prevent the unpermitted wholesale removal of a majority of native trees on a parcel prior to application for a development permit; protect woodland environments on agricultural land through an educational outreach program; educate residents of the County about the functions, benefits and values of tree; and allow removal of protected trees when appropriate. A permit is typically required to removal a protected tree unless assessed as part of environmental review of a proposed development application.

### C. Wetlands

The Environmental Quality Element of the CWP contains a number of policies and programs which address wetland resources. However, these are spread throughout the element, making it difficult to understand the County's position on wetland resources and how to provide for their protection through the multi-agency permitting process. Relevant policies include those associated with the Stream Conservation Areas (Policies EQ-2.2 through 2.35) and the Bayfront Conservation Areas (Policies EQ-2.42 through 2.70). There are no specific County ordinances addressing protection of creeks, marshlands, or other wetland resources.

The policies addressing the Bayfront Conservation Areas (BCA) include identification of protected lands, development review, coordination with trustee agencies, and general controls to protect sensitive habitat and maintain existing agricultural uses. Programs under Policy EQ-2.43 identify mitigation ratios, list criteria for evaluating proposed project impacts, and mention the need to establish criteria for buffers. However, there is no direct reference to jurisdiction of other agencies, and how the County's review process provides for oversight of coordination called for in Policy EQ-2.50. As noted above, definitions to critical wetlands related terms should be established as part of the update process.

The policies pertaining to preservation and enhancement of Stream Conservation Areas (SCA) provide for general protection of wetlands associated with perennial and intermittent streams. However, there is no direct acknowledgement of the authority of other jurisdictions, process for County oversight, and mitigation framework. Policy EQ-3.27 provides an indirect reference to identification and protection of wetlands outside the BCA, which applies to jurisdictional wetlands in the SCAs as well. The process to verify jurisdictional wetlands as part of development review, provide for their protection and replacement, and ensure adequacy of mitigation and enhancement should be presented in its own subsection of the Element.





## BIOLOGICAL AND WETLAND PROTECTION

### **D. Wildlife Habitat and Connectivity**

The 1994 CWP provides very little discussion of the importance of protecting important wildlife habitat, and maintaining and improving habitat connectivity as a method of sustaining viable habitat for native plants and wildlife. An important task of the CWP update process should be to identify essential habitat links, prioritize land acquisition goals for habitat connectivity purposes, and to determine restoration and enhancement opportunities for fish and wildlife movement corridors,

No specific policies in the CWP relate directly to wildlife habitat protection or maintenance of wildlife movement corridors. Policies EQ-2.13 and 2.42 generally call for the preservation and enhancement of wildlife and aquatic habitats in the Stream Conservation and Bayfront Conservation Areas, respectively. Policy EQ-2.87 generally requires that environmental review of proposed development consider the potential impacts on "species and habitat diversity". Program EQ-2.87b calls for the protection of wildlife corridors, but does not indicate how these features are to be identified or what minimum criteria would ensure that they remain viable. Program EQ-2.87c pertains to edge habitats, but again does not provide any minimum standards to protect these transitional areas. Program EQ-2.87d refers to "regeneration" of plant species, but the intent of this program is unclear. It may have been intended to encourage the use of the identical plant species in replacement plantings or restoration of habitat affected by development with similar species.

### **E. Vegetation Management**

Vegetation management is only briefly addressed in the 1994 CWP. A number of policies call for the protection and monitoring of riparian and marshland habitat, such as Policy EQ-2.14, although no details are provided on whether and how they are implemented. The critical issues of hazardous fuel management, invasive exotics such as broom and star thistle, SOD, and affects on essential habitat for special-status species such as northern spotted owl, contribute to the need to develop clear policies on vegetation management in the CWP update.

Policy EQ-3.13 calls for avoiding planting of exotic species such as broom and pampas grass, but does not provide the restrictions warranted given the affects of these and other invasive species on native vegetation. Appropriate policies should be more restrictive in use of invasive species, require their removal as part of proposed development throughout the County, and include programs to encourage their control and management on public and private lands. Program EQ-2.87e requires the removal of invasive exotic vegetation when development is proposed on lands adjacent to state or federal parklands, but this should be expanded to include restrictions on undesirable plantings and elimination of these species from all lands to be developed, and control where they interface open space. One non-native species of particular note is the blue gum eucalyptus. Although blue gum is an invasive species, it does provide important habitat for native wildlife such as nesting raptors and migrating monarch butterflies. Recommendations for removal or control of blue gum should recognize and balance its value as a biological and aesthetic resource in the County.

### **F. Interagency Coordination**

The coordinated management efforts of the Tomales Bay Watershed Council (TBWC) provides a possible model for countywide implementation of an interagency planning process. The TBWC is



## MARIN COUNTYWIDE PLAN

initiating preparation of a draft watershed management plan addressing water quality and health of the 220-square mile Tomales Bay watershed and developing recommendations for the implementation of technically sound management practices. The goals of the watershed management plan are to: ensure water quality in Tomales Bay and tributary streams sufficient to support natural resources and sustain beneficial uses; restore and preserve the integrity of natural habitats and native communities; develop strategies to implement the plan and protect the watershed; and involve and educate the public as watershed stewards. An outline for the draft watershed management plan, including goals and objectives is available for review at the Marin County Community Development Agency.

### **G. MITIGATION ISSUES**

Compensatory mitigation for potential impacts is generally required when complete avoidance of sensitive biological and wetland resources is not feasible. When compensatory mitigation is required, it can be met through a number of different approaches. These can include creating or restoring habitat (either on-site or an alternative location), securing similar habitat in an alternative location in fee title or through establishment of a conservation easement, and more recently, through use of a mitigation banking program. A mitigation bank allows an applicant to meet their mitigation requirements by purchasing "credits" in an area established and approved by trustee agencies for such purposes. While avoidance of sensitive resources is generally the preferred method of mitigating potential impacts, there may be instances where the replacement mitigation is actually of greater habitat value and ecological benefit. One example of this would be allowing the loss of a small, degraded seasonal wetland surrounding by existing development and hydrologically isolated from other wetlands in exchange for creating new wetlands of increased acreage and habitat value as part of a permanently protected wetlands complex.

The Marin County Open Space District has developed a draft policy regarding use of their lands for environmental mitigation projects. The draft policy states that District approval for mitigation on their land does not mean support or approval by the District of the event or project requiring mitigation. Proposed conditions associated with the draft policy include: approval by the Parks, Open Space, and Cultural Commission; the proposed mitigation must be consistent with the approved Land Management Plan or where no plan is available, it must be consistent with general land management practices and/or approved by the District's Resource Ecologist; additional site specific conditions may be required by the District; and projects may be carried out by the District or a third party through issuance of a mitigation project permit by the District.

The CWP update process should consider the appropriateness of the various mitigation options, and whether the County chooses to encourage a particular approach to mitigation. Possible use of District property for mitigation purposes raises questions about its appropriateness and whether providing this mitigation option is actually facilitating development and impacts to sensitive resources. Establishment and use of mitigation banks, whether public or private, is also a controversial approach to mitigation, although of increasing acceptance by local and state agencies where they are of demonstrated success.



## BIOLOGICAL AND WETLAND PROTECTION

### **VI. SUMMARY OF KEY ISSUES, TRENDS, AND OPPORTUNITIES**

The CWP update process provides an opportunity to reevaluate the appropriateness of current policies and associated programs, assess the organizational effectiveness of the current CWP, and determine any additional goals and policies necessary to provide a framework for comprehensive management of natural resources within the County. As described in detail in Section V, numerous aspects of the Environmental Quality Element of the 1994 CWP require considerable reorganization and refinement to provide for adequate protection of sensitive biological and wetland resources, acknowledge the authority of jurisdictional agencies, and define new goals and policies pertaining specifically to special-status species, sensitive natural communities, wetlands, wildlife habitat and connectivity, vegetation management, and interagency coordination.

### **VII. REFERENCES**

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## MARIN COUNTYWIDE PLAN

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