

# 5. Biological Resources

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## **BACKGROUND**

Existing Biological Resources: A list of the special status plants, fish and animals known to occur or expected to occur within the Lower Mokelumne River Watershed is included in Table 5-B.

Vegetation Types: A list of the plant, fish and wildlife habitats found within the Lower Mokelumne River Watershed is included in Table 5-A. Habitat types are classified pursuant to the California Wildlife Habitat Relationships System (CWHR), as described in *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, CDFG, 1988) and its supplements.

## **EXISTING BIOLOGICAL RESOURCES MANAGEMENT PROGRAMS:**

**Woodbridge Irrigation District (WID) & the City of Lodi Lower Mokelumne River Restoration Program:** WID and the City of Lodi are implementing the Lower Mokelumne River Restoration Program. The goal of the project is to improve fish passage while maintaining WID's Mokelumne River water rights. The program has undertaken environmental and engineering studies and proposes to improve fish passage and monitoring at Woodbridge Dam, replace fish screens at WID and North San Joaquin diversions, and implement riparian corridor improvements. The program intends to restore 200 acres of riparian habitat.

**East Bay Municipal Utility District's (EBMUD) Lower Mokelumne River Project Joint Settlement Agreement and Water Quality and Resource Management Program:** The Joint Settlement Agreement (Agreement) and Water Quality Resource Management Program (WQRMP) are coordinated by EBMUD pursuant to the Federal Energy Regulatory 1998 Order Amending the License for EBMUD's Lower Mokelumne River Project. The Agreement is among EBMUD, the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG).

Under the terms of the Agreement, EBMUD, USFWS and CDFG have established the Lower Mokelumne River Partnership with the following objectives:

- ✓ Protection and enhancement of anadromous fisheries
- ✓ Protection and improvement of the Mokelumne River ecosystem
- ✓ Encouragement of stakeholder participation and cooperation
- ✓ Integration of Mokelumne River strategies with the Bay-Delta Accord, Central Valley Project Improvement Act implementation and similar measures.

- ✓ The Agreement specifies minimum flow releases downstream of Camanche Dam and commits to ecosystem protection and enhancement. Under the direction of the WQRMP, EBMUD is conducting surveys of fish, amphibians, reptiles, birds and mammals as well as mapping vegetation and aquatic communities. The Partnership has established a fund to support implementation of the Partnership objectives.

**San Joaquin Council of Governments (COG) Multi-Species Habitat Conservation and Open Space Plan (SJMSCP):**

COG has been overseeing the preparation of a countywide habitat conservation and open space plan since February, 1994. The plan went into effect with the issuance of permits by the U.S. Fish and Wildlife Service and the California Department of Fish and Game on July 13, 2001. The plan anticipates acquiring lands through easement and fee-title purchase for the management of biological resources to offset the impacts to these resources associated with development activities within the county's seven cities and within San Joaquin County itself. The program is anticipated to acquire approximately 100,841 acres of land for biological management purposes from willing sellers for the management of 97 covered species through the year 2051. The program intends for existing agricultural practices on lands currently under agricultural production to continue within Preserves.



**San Joaquin Resource Conservation District (RCD) - Vernal Pool/Agriculture Education & Demonstration Program, Neotropical Migratory Bird Monitoring, & Riparian Restoration Program:** The RCD is working with the Central Valley Project Improvement Act (CVPIA) and others to acquire vernal pool grasslands for the purposes of demonstrating economically viable agriculture in a vernal pool environment.

Working through the Lower Mokelumne River (LMR) Partnership Fund, the RCD also is overseeing Swainson's hawk surveys within the Lower Mokelumne River Watershed.

Also working through the Lower Mokelumne River (LMR) Partnership Fund, the RCD is undertaking a riparian restoration program at the Natural Resources Conservation Service's Plant Materials Facility (approximately 106 acres) located on the Mokelumne River west of Elliot Road.

**Central Valley Project Improvement Act/Anadromous Fish Restoration Plan:** The Central Valley Project Improvement Act (CVPIA) of 1992 [Section 3405(b)(1)] directed the Secretary of the Interior to develop and implement a program which makes all reasonable efforts to double natural production of anadromous fish in Central Valley rivers and streams by 2002. In response, the U.S. Fish and Wildlife Service prepared the Anadromous Fish Restoration Program

Plan (AFRP). The plan identifies multiple anadromous fish habitat deficiencies in each tributary of the Central Valley of California including the Mokelumne River system.

The AFRP, combined with the CVPIA Restoration Fund, affords the opportunity to provide funding for habitat improvement actions. The AFRP effort includes a process to collaborate with other agencies, organizations and the public by augmenting and assisting restoration efforts presently conducted or proposed by local watershed groups, CDFG, and others to increase natural production of anadromous fish in the Central Valley.

**Multi-Agency/U.S. Army Corps of Engineers (ACE) Mokelumne River Feasibility Study:**

EBMUD is working with the ACE to evaluate potential ecosystem restoration and non-traditional flood damage reduction methods in the Mokelumne River flood plain from Woodbridge Dam to the confluence of the San Joaquin River. Restoration measures include breaching levees and restoring habitats through plantings and other natural revegetation efforts. Measures will be designed in cooperation with landowners and other water users to protect private property rights, water rights and the economic viability of land.

**Lodi-Woodbridge Winegrape Commission (LWWC):** LWWC has produced the *Lodi Winegrower's Workbook* (please refer to the Education Element for a more detailed description). This self-assessment guide to integrated farming practices includes a habitat component which sites the benefits of biological resources in integrated farming practices. These benefits include control of animal pests (e.g., by raptors and other birds of prey), control of insect pests, reducing erosion, providing filters to improve water quality and A...the presence of wildlife and diverse habitats in and around vineyards adds quality to the experience of anyone touring the Lodi region. As the LWWC district matures, wine tourism is bound to become an important aspect of winegrape growing.@

The workbook includes recommendations for farming practices which can assist farmers in realizing the benefits of managed biological resources and avoiding practices that could increase threats to farming practices (e.g., retaining oaks to reduce the potential for *Armillaria* root rot on grape vines). The workbook also provides information on funding sources which can assist in implementation of biological resources-friendly farming practices [e.g., Wildlife Habitat Incentive Program (WHIP) and the Environmental Quality Incentives Program (EQIP) offered through the Natural Resources Conservation Service (NRCS)].

**GOALS:**

- ✓ **Maintain and, where possible, improve the quality and quantity of biological resources in the watershed;**
- ✓ **Increase educational opportunities through the study of biological resources;**
- ✓ **Support existing biological resources education programs; and**
- ✓ **Encourage conservation of biological resources and habitats.**



**IMPLEMENTATION PROGRAMS:**

1. **Promote Improvement of Spawning Habitat for Salmon and Steelhead**

Implement a public outreach program to identify additional landowners along the Mokolumne River willing to provide access to the Mokolumne River for gravel restoration projects (e.g., those being undertaken by EBMUD, USFWS and CDFG) for improvement of salmon spawning habitat.

**Time Frame for Implementation:** Begin within 2 years of adopting LMSP.

2. **Support the Study of Salmon and Steelhead Survival Rates in the Lower Mokolumne**

Promote and support the undertaking of a study(ies) using sound science and accounting that shows passage rates of salmon and steelhead through the Lower Mokolumne River and which investigate the improvement or implementation of measures proven to improve passage rates.

**Time Frame for Implementation:** Ongoing.

3. **Support Surveys**

Support the efforts of landowners and groups undertaking studies to evaluate the distribution, populations and habitat use patterns of species within the watershed by working with these groups to gain permission from landowners to enter private property to conduct surveys. All access to land for such surveys and/or studies shall require

authorization by the landowner. Discuss potential uses of data with landowners and, when willing, work with landowners to use data to identify opportunities for restoration and habitat protection efforts while protecting property rights.

**Time Frame for Implementation:** Ongoing.

4. **Promote and Encourage Landowner Participation in Lower Mokelumne River Riparian Restoration Projects**

Support riparian restoration efforts of groups including the Woodbridge Irrigation District (WID), the City of Lodi, the Lower Mokelumne River Partnership, the USDA Natural Resources Conservation Service and others. These groups are undertaking riparian restoration efforts including the Lower Mokelumne River Restoration Program and the Natural Resources Conservation Service Plant Materials Center Riparian Restoration Project. Wherever feasible, enlist community volunteers to assist in these programs to gain knowledge and support of and for the watershed program. Consider involving local schools in the efforts to expand educational opportunities.

**Time Frame for Implementation:** Ongoing.

5. **Identify Opportunities for Coordination with San Joaquin County's County-Wide Habitat Conservation Plan**

Inform interested landowners of opportunities for selling easements for management of biological resources. Where feasible, such efforts should coordinate with those of the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) to reduce the overall costs of land management and restoration so long as such efforts protect private property rights, do not contribute to the removal of productive agricultural lands and protect neighboring properties.

**Time Frame for Implementation:** Ongoing.

6. **Provide Representation from the LMSP to the Tri-County Weed Management Area Committee to Foster Control of Non-Native Invasive Species**

Provide representation from the LMSP to the Tri-County Weed Management Area Committee to foster control of non-native invasive species which reduce biological resource values. Work in cooperation with the County Agricultural Commissioner's Office and the Natural Resources Conservation Service. WMA's require:

- ✓ The definition of a management area (which may be a watershed),
- ✓ Involvement of stakeholders,
- ✓ Organization of a steering committee,

- ✓ Development of a memorandum of understanding,
- ✓ Identification of problems, and
- ✓ Development of weed control projects (e.g., mapping, eradication).

Include, where feasible in this program, provisions for replacing non-native invasive species through (re) establishing native plants along the river, tributaries and uplands of the watershed.

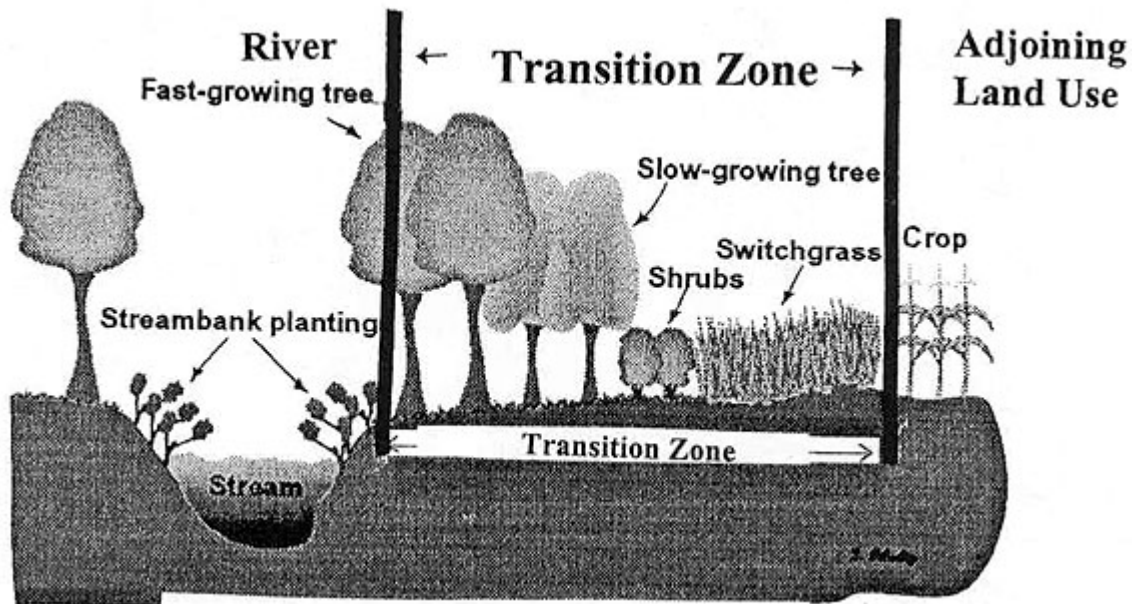
**Time Frame for Implementation:** Begin within 2 years of adopting LMSP.

7. **Support the RCD-s Vernal Pool/Agriculture Education & Demonstration Program**

Support the RCD-s planned vernal pool/agriculture education & demonstration program intended to test alternative methods of maintaining economically viable agriculture in a vernal pool setting.

**Time Frame for Implementation:** Ongoing after commencement of the demonstration program anticipated to begin in late 2004.

8. **Encourage Establishment of a Voluntary “River-Adjoining-Land Use” Transition Zone Program**



Source: Adapted for use from Iowa State University, 1995

Encourage management of transition zones to increase the quantity and quality of biological resources along the river and to provide flood control/runoff areas to help ease flood concerns.

Transition zones are those areas which separate the Mokelumne River from adjoining land uses (e.g., river-residential, river-urban, or river-agricultural).

Assist interested landowners located adjacent to the river in formulating plans to enhance transition zones. Assist willing landowners in undertaking the necessary actions to implement these plans. The voluntary-participation plans shall address:

- ✓ Protecting private property rights including protection of neighboring land uses;
- ✓ Who will maintain and bear the costs of maintenance;
- ✓ Avoiding involvement of biological resources regulatory agencies;
- ✓ Providing incentives;
- ✓ Addressing mosquito and vector control on a case-by-case basis (especially when used for flood control/runoff areas or the establishment of setback levees)

To assist in enhancing transition zones while protecting adjacent land uses, the following resource is recommended:

*Bringing Farm Edges Back to Life!*® (Yolo County Resource Conservation District, 1999)

Additional resources may be found in Chapter 15.

**Time Frame for Implementation:** Begin within 3 years of adopting LMSP.

9. **Expand Self-Evaluation/Self-Assistance Educational Programs (e.g., Farm\*A\*Syst/Home\*A\*Syst Models) to Other Land Uses to Improve Water Quality for Biological Resources**

Facilitate the expansion of self-evaluation/self-assistance educational programs (e.g., Farm\*A\*Syst/Home\*A\*Syst) throughout the watershed to encourage the implementation of best management practices to improve the quality and quantity of biological resources and reduce non-point source pollution. In addition to targeting winegrape growers, the effort should, at a minimum, be expanded to include public and private landowners undertaking residential uses, municipal uses, cattle grazing and similar uses within the watershed. In addition, consider the use of this model to assist in the long-term maintenance of existing biological resource areas (e.g., address the need to maintain and use existing pathways and provide barriers to bicycles and similar uses which may stray from the pathways and degrade or destroy biological resources).

**Time Frame for Implementation:** Commence new programs within one year of the adoption of the LMSP. Ongoing for existing programs.

10. **Encourage Submittal of Funding Requests to the Lower Mokelumne River Partnership's Partnership Fund**

Encourage organizations and landowners to request funding support from the Lower Mokelumne River Partnership's (EBMUD, USFWS, CDFG) Partnership Fund. The Partnership Fund was established to make funds available to interested stakeholders to support activities that protect and enhance the Lower Mokelumne River ecosystem.

**Time Frame for Implementation:** Ongoing.



**View of a Portion of the Northeastern Lower Mokelumne River Watershed**



**TABLE 5-A  
Plant, Fish and Wildlife Habitat Types Occurring  
In the Lower Mokelumne River Watershed/a/**

<b>Habitat Type</b>	<b>Dominant/Associate Species</b>
<b>Agricultural Lands</b>	
Deciduous Orchard (DOR)	Almonds, walnuts, peaches
Dryland Grain Crops (DGR)	Cereal rye, barley, wheat
Irrigated Grain Crops (IGR)	Corn, dry beans, safflower
Irrigated Hayfield (IRH)	Alfalfa, hay
Irrigated Row and Field Crops (IRF)	Tomatoes, cotton, lettuce
Pasture (PAS)	Bermuda grass, ryegrass, tall fescue
Vineyard (VIN)	Grapes, kiwi, boysenberries
<b>Urbanized Lands</b>	
Urban (URB)	Grass lawns, trees, hedges
Barren (BAR)	Rock, pavement, sand
<b>Natural Lands</b>	
Annual Grass (AGS)	Wild oats, soft chess, brome
Blue Oak Woodland (BOW)	Live oak, Valley oak
Blue Oak-Foothill Pine (BOP)	Foothill pine, live oak, Valley oak, California buckeye
Estuarine (EST)	Plankton, algae, eel grass
Eucalyptus (EUC)	Blue gum, red gum
Fresh Emergent Wetland (FEW)	Big leaf sedge, bulrush, redroot nutgrass
Lacustrine (LAC)	Plankton, duckweed, water lilies
Mixed chaparral (MCH)	Oaks, ceanothus, manzanita
Perennial Grass (PGS)	California oatgrass, hairgrass, sweet vernalgrass
Riverine (RIV)	Water moss, algae, duckweed
Valley foothill riparian (VRI)	Cottonwood, sycamore, valley oak
Valley Oak Woodland (VOW)	Sycamore, black walnut, foothill pine

**KEY to TABLE 5-B**

**FEDERAL**

**C** = Taxa for which the USFWS has on file sufficient information on biological vulnerability and threats to support proposals to list them as endangered or threatened species

**E** = endangered

**T** = threatened

**PE** = proposed endangered

**PT** = proposed threatened

**R** = Taxa for which currently available information does not support issuance of a proposed listing

**SPOC** = Species of Concern

**CH** = Critical Habitat

**ESA** = Federal Endangered Species Act

**STATE**

**E** = endangered

**T** = threatened

**R** = rare

**SA** = California Natural Diversity Database special animal (may include taxa considered endangered or rare under Section 15380(d) of CEQA guidelines; taxa that are biologically rare, very restricted in distribution or declining throughout their range; population(s) in California that may be peripheral to the major portion of a taxon's range, but which are threatened with extirpation in California; and taxa closely associated with habitat that is declining in California --e.g. wetlands, riparian, old growth forest, desert aquatic systems, native grasslands); this category may apply to species at specific stages--e.g. wintering, rookery, breeding, nesting activities.

**SP** = California Natural Diversity Database special plant

**SSC** = California Department of Fish and Game Species of Special Concern (may apply to species at particular stages--e.g. wintering, rookery, breeding, or nesting activities)

**FPS** = California Department of Fish and Game fully protected species, as described in Section 4700 of Chapter 8, Section 5050 of Chapter 2, Division 6, Chapter 1, Section 5515 of the California Fish and Game Code

**CESA** = California Endangered Species Act

**CEQA** = California Environmental Quality Act

**OTHER**

**CNPS** = California Native Plant Society

**CNPS 1A** = plants presumed extinct in California but which may occur in the Plan area over the life of the SJMSCP Permits.

**CNPS 1B** = plants rare, threatened, or endangered in California and elsewhere

**CNPS 2** = plants rare, threatened or endangered in California, but more common elsewhere

**MBTA** = birds protected under the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.) which implements treaties with Great Britain (for Canada), Mexico, Japan and Russia for protection of migratory birds whose welfare is a federal responsibility

**BGEPA** = the Bald and Golden Eagle Protection Act (USC Sections 668-668d) which prohibits the taking of bald and golden eagles.

**TABLE 5-B  
SPECIAL STATUS SPECIES OCCURRING OR POTENTIALLY OCCURRING  
IN THE LOWER MOKELUMNE RIVER WATERSHED**



Valley Elderberry Longhorn Beetle

SPECIES NAME	Federal /State Status	Other Status
<b>Invertebrates</b>		
Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )	T	
Valley elderberry longhorn beetle ( <i>Desmocerus californicus dimorphus</i> )	T, CH	
Vernal pool tadpole shrimp ( <i>Lepidurus packardii</i> )	E	
Mid-valley fairy shrimp ( <i>Branchinecta</i> sp. <i>nova</i> )	/c/	
<b>Plants</b>		
Succulent owl's clover aka fleshy owl's clover ( <i>Castilleja campestris</i> ssp. <i>succulenta</i> fmr <i>Orthocarpus succulentus</i> )	T/E	CNPS 1B

**Lower Mokelumne River Watershed Stewardship Plan**

SPECIES NAME	Federal /State Status	Other Status
Orcutt grass/Greene's tuctoria ( <i>Tuctoria greenei</i> )	E/R	CNPS 1B
Boggs Lake hedge-hyssop ( <i>Gratiola heterosepala</i> )	SPOC/E	CNPS 1B
Delta button-celery/Delta covote thistle ( <i>Eryngium racemosum</i> )	SPOC/E	CNPS 1B
Suisun marsh aster ( <i>Aster lentus</i> )	SPOC	CNPS 1B
Hoover's calycadenia ( <i>Calycadenia hooveri</i> )	SPOC	CNPS 1B
Bristly sedge ( <i>Carex comosa</i> )	--	CNPS 2
Slough thistle ( <i>Cirsium crassicaule</i> )	SPOC/SP	CNPS 1B
California hibiscus/rose mallow ( <i>Hibiscus lasiocarpus</i> )	SPOC	CNPS 2
Red Bluff dwarf rush ( <i>Juncus leiospermus</i> var. <i>leiospermus</i> )	SPOC	CNPS 1B
Delta tule pea ( <i>Lathyrus jepsonii</i> var. <i>jepsonii</i> )	SPOC	CNPS 1B
Legenere ( <i>Legenere limosa</i> )	SPOC	CNPS 1B
<b>Fish</b>		
Delta smelt ( <i>Hypomesus transpacificus</i> )	T, CH/T	
Sacramento splittail ( <i>Pogonichthys macrolepidotus</i> )	T/SSC	
Chinook salmon ( <i>Oncorhynchus tshawytscha</i> ) - Winter-run	E/E	
Chinook salmon ( <i>Oncorhynchus tshawytscha</i> ) - Fall-run	C/SSC	
Chinook salmon ( <i>Oncorhynchus tshawytscha</i> ) - Spring-run	T/T	
Steelhead trout ( <i>Oncorhynchus mykiss irideus</i> )	T	
<b>Amphibians</b>		
California red-legged frog ( <i>Rana aurora draytonii</i> )	T/SSC	

**Lower Mokelumne River Watershed Stewardship Plan**

SPECIES NAME	Federal /State Status	Other Status
<i>California tiger salamander (Ambystoma californiense)</i>	C/SSC	
<i>Foothill yellow-legged frog (Rana boylei)</i>	SPOC/SSC	
<i>Western spadefoot toad (Scaphiopus hammondi)</i>	SPOC/SSC	
<b>Reptiles</b>		
<i>Giant garter snake (Thamnophis gigas)</i>	T/T	
<i>Western pond turtle (Clemmys marmorata)/b/</i>	SPOC/SSC	
<b>Birds</b>		
<i>Aleutian Canada goose (Branta canadensis leucopareia)</i>	T	MBTA
<i>Mountain plover (Charadrius montanus)</i>	T/SSC	MBTA
<i>Western yellow-billed cuckoo (Coccyzus americanus occidentalis)</i>	/h/E	MBTA
<i>Greater sandhill crane (Grus canadensis tabida)</i>	B/T	MBTA, FPS
<i>California black rail (Laterallus jamaicensis coturniculus)</i>	SPOC/T	MBTA, FPS
<i>Bank swallow (Riparia riparia)</i>	B/T	MBTA
<i>Swainson's hawk (Buteo swainsoni)</i>	SPOC/T	MBTA
<i>Cooper's hawk (Accipiter cooperi)</i>	B/SSC	MBTA
<i>Sharp-shinned hawk (Accipiter striatus)</i>	B/SSC	MBTA
<i>Western grebe (Aechmophorus occidentalis)</i>	B/SA	MBTA
<i>Tricolored blackbird (Agelaius tricolor)</i>	SPOC/SSC	MBTA
<i>Golden eagle (Aquila chrysaetos)</i>	B/SSC	MBTA, BGEPA.

**Lower Mokelumne River Watershed Stewardship Plan**

SPECIES NAME	Federal /State Status	Other Status
Great egret ( <i>Ardea albus</i> formerly <i>Casmerodius albus</i> )	B/SA	MBTA
Great blue heron ( <i>Ardea herodias</i> )	B/SA	MBTA
Short-eared owl ( <i>Asio flammens</i> )	B/SSC	MBTA
Ferruginous hawk ( <i>Buteo regalis</i> )	SPOC/SSC	MBTA
Northern harrier ( <i>Circus cyaneus</i> )	B/SSC	MBTA
Yellow warbler ( <i>Dendroica petechia brewsteri</i> )	B/SSC	MBTA
Snowy egret ( <i>Egretta thula</i> )	B/SA	MBTA
White-faced ibis ( <i>Plegadis chichi</i> )	SPOC/SSC	MBTA
Burrowing owl ( <i>Speotyto cunicularia</i> )	B/SSC	MBTA
<b>Mammals</b>		
Ringtail/ringtail cat ( <i>Bassaricus astutus</i> )	--	FPS/f/
Red Bat ( <i>Lasiurus blossevilli</i> )	B/SSC/a/	
Small-footed myotis/bat ( <i>Myotis ciliolabrum</i> )	SPOC	
Long-eared myotis/bat ( <i>Myotis evotis</i> )	SPOC	
Fringed myotis/bat ( <i>Myotis thysanodes</i> )	SPOC	
Long-legged myotis/bat ( <i>Myotis volans</i> )	SPOC	
Yuma myotis/bat ( <i>Myotis yumanensis</i> )	SPOC	
Pale big-eared bat ( <i>Plecotus townsendii pallescens</i> aka <i>Corynorhinus townsendii pallescens</i> ) aka Pacific western big-eared bat ( <i>Plecotus townsendii townsendii</i> aka <i>Corynorhinus townsendii townsendii</i> )	SPOC/SSC	

## **Lower Mokelumne River Watershed Stewardship Plan**

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- /a/ This species is currently pending designation and is believed to be widely distributed in the County.
- /b/ The Western and Southwestern Pond Turtles (*Clemmys marmorata marmorata* and *Clemmys marmorata pallida*, respectively) have been combined into a single category for the SJMSCP due to disagreements among experts as to the correct taxonomic classification.
- /c/ The Mid-Valley fairy shrimp (*Branchinecta* sp. *nova*) is a newly discovered species of fairy shrimp which is not yet fully described, but has the potential for federal listing.
- /f/ Pursuant to Fish and Game Code Sections 3511, 4700, 5050, and 5515 these are fully protected species.
- /g/ Personal Communication (September, 2000) - Elizabeth Pierson and Steve Stocking confirm identification and collection of species in San Joaquin County.
- /h/ The USFWS has been petitioned to list this species by the Southwest Center for Biodiversity, et al. in 1999.