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FISH AND WILDLIFE RESTORATION OF THE LAGUNA DE SANTA ROSA
SONOMA COUNTY, CALIFORNIA

Laguna Technical Advisory Committee

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INTRODUCTION *see insert.*

BACKGROUND

The Laguna de Santa Rosa is a complex system of wetland and upland habitats, including: open water, emergent marsh, riparian forest, vernal pools, oak savannah, oak woodland, and grassland. It is located in south central Sonoma County, 50 miles north of San Francisco, in the Russian River watershed. The Laguna may once have been an extension of San Francisco Bay at a time when the Russian River drained into the Bay.

CULTURAL RESOURCES

For centuries before the arrival of European man, the Laguna de Santa Rosa was home to a substantial population of native Americans -- the Pomo. The Laguna provided a favorable climate for the Pomo and an abundance of food in the wildlife, fish, acorns, grass seeds, berries, and bulbs. The wetlands of the Laguna provided the sedges needed for baskets. In the Laguna de Santa Rosa, 76 archaeological sites have been identified below the 90-foot contour level. Currently the 100-year flood level is considered to be the 75-foot contour; prior to the construction of the two flood control dams in the Russian River watershed the 100-year flood was estimated to be about the 80-foot level. All the archaeological sites are specifically related to the Laguna as a food production area. With further exploration archeologists expect to find many more sites. Archeologists

consider the Laguna to be an exceptional and unique data base for the study of pre-historic coastal California.

Archeological study will serve a secondary purpose in the reconstruction of the biotic resources of the Laguna. Pollen analysis and midden excavation will identify the pre-historic plant and animal communities.

BIOTIC RESOURCES

Early reports indicate the Laguna was a vast expanse of marsh land including a substantial area of open water in the form of a chain of lakes. The wetlands of the Laguna extended much further to the south than is apparent today and included much of what is now the City of Rohnert Park.

A unique and important feature of the Laguna wetlands was the great diversity of habitat types. The abundance and diversity of wildlife and habitat changed suddenly in the 1830's with the grazing of thousands of cattle on the Spanish ranchos.

The Laguna de Santa Rosa still supports a great diversity of plants and animals, including 12 State listed rare, threatened, or endangered plant species and three rare or endangered animal species. Surveys indicate that 286 species of plants, 230 birds, 25 mammals, 20 fishes, 7 amphibians, and 9 species of reptile have been found in the Laguna.

*****WATERFOWL

The Laguna de Santa is an important nesting area for mallards and cinnamon teal. It is an important stop on the Pacific Flyway for large numbers of migrating waterfowl.?????????

Rare or endangered plant species, listed by the California Department of Fish and Game, found in the Laguna de Santa Rosa area include: white sedge (Carex albida), Burke's goldfields (Lasthenia burkeii), Sebastopol meadowfoam (Limnanthes vinculans), many flowered navarretia (Navarretia plientha) and Hoover's semaphore grass (Pleuropogon hooverianus). Other plants in the Laguna appearing on the California Native Plant Society list of rare plants include: Baker's blennosperma (Blennosperma bakeri), swamp harebell (Campanula californica), Gairdner's yampah (Perideridia gairdneri spp. gairdneri) and showy Indian clover (Trifolium amoenum), a species considered to be extinct.

Other plants of secondary concern to the California Native Plant Society, because they are uncommon or restricted to special habitats, such as vernal pools, include: dwarf downingia (Downingia humulis), Douglas' pogogyne (Pogogyne douglasii spp. parviflora) and Lobb's buttercup (Ranunculus lobbii).

The California yellow-billed cuckoo (Coccyzus americanus occidentalis) is a State listed endangered bird associated with mature riparian forest habitat. It inhabited the Laguna de Santa Rosa in the past, but was last observed in the 1950's before channelization of the Laguna destroyed its

habitat. The bald eagle (Haliaeetus leucocephalus) and American peregrine falcon (Falco peregrinus anatum), Federal and State listed endangered species, occur in the Laguna. Other birds of special concern which inhabit the Laguna include the marsh harrier (Circus cyanus) and burrowing owl (Athene cunicularia).

The California freshwater shrimp (Syncaris pacifica) a State and Federal listed endangered invertebrate species is currently found in Blucher Creek, a tributary to the Laguna, and in several other nearby streams. There is evidence that the freshwater shrimp was once found in Santa Rosa Creek and it is likely that it also occurred in the Laguna. The Laguna has not been surveyed well enough to determine whether the shrimp now exists there.

CURRENT CONDITIONS

Much of the natural wetland habitat of the Laguna has been affected by sedimentation. Agriculture has played a major role in sedimentation, but more recently, urban development has increased its percentage as a contributor of sediment. Sedimentation has caused a gradual change from wetland to upland type eco-systems in the Laguna.

Urban development in the Santa Rosa Plain during the past 30 years has forced agriculture from the prime soils of the plain into the marginal lands nearer the Laguna. Riparian forests and oak woodlands have been cleared for agriculture or for the excavation of flood control or drainage channels, wetlands have been drained. Past waste disposal practices from municipal, industrial, and agricultural activities has adversely affected Laguna water quality. Spray disposal of treated wastewater has been detrimental to the survival of the valley oak in the Laguna as the excess summer water promotes the growth of oak root fungus.

Much of the water quality degradation which occurred through the mid-1970's has been reversed through a combination of improved wastewater treatment and improved agricultural management practices. Additional water quality benefits may be realized through the use of advance wastewater treatment and wetlands for wildlife enhancement and water reclamation.

6-75 Today the wetlands of the Laguna cover only acres. In 1941 wetlands covered over 1000 acres, which was much less than existed under pristine conditions. Between 1941 and 1988, acres of wetland have been lost. The oak woodland upland habitat has been similarly reduced.

Even though much of the Laguna wetlands have been degraded or lost, there is still a significant amount of habitat left. This remaining habitat must be protected against further loss and other areas restored and enhanced for wildlife and preservation of the rare and endangered plants and the unique plant communities of the Laguna. Much of the habitat that has been lost or altered can be restored, if restoration is started before additional development results in a permanent committment of the land and resources to uses not compatible with wetland protection or restoration.

Other uses which now occur within the Laguna de Santa Rosa include: the City of Santa Rosa water reclamation system, including spray irrigation fields, storage ponds, and a wastewater treatment plant; the Sonoma County Water Agency aqueduct; flood control channels of the Sonoma County Water Agency; agriculture; and lands which have already been developed including the City of Sebastopol, and parcels along Highway 12 and Llano Road. Some of the lands involved with these uses may be compatible with restoration for wildlife, other lands may not be compatible.

Some preservation and restoration efforts are already underway. The Department of Fish and Game owns four parcels within the Laguna de Santa Rosa, including the Laguna de Santa Rosa Ecological Reserve, totalling 295 acres; and two conservation easements totalling 50 acres. Three additional parcels, totalling 70 acres, have been proposed for acquisition. Proposition 70 from the June 1988 California election provides \$4,000,000 for acquisition of land around San Pablo Bay and coastal wetlands including the Laguna de Santa Rosa. It is the intention of the California Department of Fish and Game to emphasize acquisition in the Laguna. Other Proposition 70 funds, designated for local use and for rare and endangered species, may also be used in the Laguna.

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The geographic extent of the Laguna is difficult to define as it grades gradually into the Santa Rosa Plain to east. Depending on the definition used, the Laguna covers between 7,422 acres and 8,320 acres. The larger figure includes most of the Santa Rosa Plain, which is the upland component of the Laguna. While this area was at one time an integral part of the fish and wildlife habitat system of the Laguna, it is now mostly developed and, except for a few small parcels, beyond preservation or restoration. The smaller figure includes the 100-year flood plain at the 75-foot contour. This area is mostly free from development, other than agricultural development, and is generally capable of being protected and restored. The 100-year flood plain line does not include many of the significant habitats, primarily vernal pools and oak woodland.

FINDINGS

The Laguna de Santa Rosa supports a great diversity of plants and animals, including five endangered plant species.

Two endangered bird species are found in the Laguna and one other endangered bird was formerly found in the Laguna.

The endangered California freshwater shrimp is found in a stream tributary to the Laguna and, in the past, was probably found throughout the Laguna and many of its tributaries.

Two tributaries of the Laguna, Mark West Creek and Santa Rosa Creek, now support important runs of anadromous steelhead trout. Much of the Laguna and many of its other tributaries probably provided spawning and nursery habitat for these fish at one time.

The extensive wildlife populations of the Laguna, the many useful and food producing plants, such as the rushes, sedges, and oaks, and the mild climate made the Laguna de Santa Rosa an attractive home to the Pomo Indians for thousands of years.

The Laguna is now surrounded by urban development including the cities of Santa Rosa, Sebastopol, Rohnert Park, and Cotati, and by suburban development in the adjacent, unincorporated portions of the County.

The urban and suburban areas are developing in a direction which will put the wetlands of the Laguna at an ever greater risk.

Much of the wetland habitat of the Laguna has been drained to facilitate flood control and conversion to agriculture. Drainage included dredging of the low water channel of the Laguna and clearing of much of the riparian forest.

Agricultural practices and the spray disposal of reclaimed wastewater have eliminated much of the upland valley oak woodland and prevented the regeneration of these oaks which were the dominant native vegetation of the Santa Rosa plain.

Portions of the Laguna have been filled for the construction of waste water storage ponds and to "reclaim" the land for development.

OBJECTIVES

It is the objective of the Laguna Technical Advisory Committee to assist in the establishment of a Laguna de Santa Rosa ^{Area} National Wildlife Refuge to protect and restore the native fish, wildlife, and plant communities of the Laguna de Santa Rosa.

GOALS

- 1) Establish a [?] National Wildlife ^{Area} Refuge in the Laguna de Santa Rosa.
- 2) Acquisition of lands by Federal, State, and local agencies from willing sellers only is estimated to be about 6000 acres.
- 3) In cooperation with all public agencies, land owners, and user groups involved with the Laguna, prepare a Specific Land Use Plan for the Laguna area to identify and coordinate all special interests.
- 4) Develop a coordinated management plan to protect, restore, and enhance the natural ~~habitat~~ ^{resources} of the Laguna de Santa Rosa.

ACTION PLAN

- 1) Protect, restore, enhance and, develop wetland habitat for migratory waterfowl and other native wetland species within the Laguna.

- 2) Protect, restore, enhance and, develop fish habitat in the waters of the Laguna.
- 3) Protect and restore the native plant communities of the Laguna.
- 4) Restore endangered species or other species that have been lost to the Laguna.
- 5) Protect archeological and historical sites in the Laguna.
- 6) Manage water supplies in the Laguna to best satisfy the needs of the native plant and wildlife communities. Where appropriate, develop enhancement water supplies to restore and create wetlands. Water management plans must emphasize the maintenance of a high standard of water quality for downstream users.
- 7) Encourage management practices in the Laguna watershed to further the goals of Laguna rehabilitation. *Prepare a Basin Management Plan, etc.*
- 8) Provide public use opportunities.
- 9) Develop facilities and programs for education in natural resources and native American history.
- 10) Encourage the maintenance of agriculture in the Laguna and peripheral lands as an important socio-economic and cultural resource compatible with wildlife management. Impose no new level of regulation on agriculture.
- 11) Maintain the flood control capacity of the Laguna and, where appropriate and compatible with protection of developed urban areas, allow sections of the Laguna which have been channelized to revert to a natural form.
- 12) Coordinate the land use and water policies and practices of the various public agencies involved in the Laguna.
- 13) Encourage better enforcement of existing Federal, State, and local regulations for environmental protection.
- 14) Encourage citizen participation in Laguna management in a stewardship role.

ACQUISITION / MANAGEMENT

Lands acquired within the Laguna de Santa Rosa National Wildlife, ²¹⁻²² by either the U.S. Fish and Wildlife Service or the California Department of Fish and Game, will be on a willing seller basis only. Other lands within the boundary of the Refuge will remain in the ownership of other public agencies and private individuals.

?????????????// WHY SHOULD FEDS ^{agencies} GET INVOLVED IN LAGUNA *(Joe's write-up in Sept)*

????????????? PATTERN AFTER Point Reyes National Seashore and Golden Gate National Recreation Area

????????????? Management of the Laguna de Santa Rosa National Wildlife Refuge should be the responsibility of the California Department of Fish and Game. The Department of Fish and Game is already the owner of four parcels within the Laguna de Santa Rosa, including the Laguna de Santa Rosa Ecological Reserve, totalling 295 acres; and two conservation easements totalling 50 acres. The Department of Fish and Game has a major involvement with wildlife mangement in the north San Francisco Bay area

Check this
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 Needs re-working
 - indicating a greater responsibility on part of U.S. F.W.S.

with substantial holdings in the nearby Petaluma Marsh, Napa Marsh, and Suisun Marsh. While the U.S. Fish and Wildlife service owns land in the north San Francisco Bay area, their management center is 80 miles away in Fremont at the south end of San Francisco Bay. The Fish and Wildlife Service has expressed a preference that the Department of Fish and Game assume ^{the} management responsibility for any lands acquired in the Laguna de Santa Rosa. Management of other public and private lands will continue to be performed by the respective land owners in coordination with the Department of Fish and Game and in accordance with mutually acceptable management practices.

WATER MANAGEMENT

Historic water flows in the Laguna de Santa Rosa are unknown, but hydrologic comparison of the Laguna watershed with other nearby watersheds for which records are available indicate that summer flows in the Laguna low flow channel ranged from 0 to 12^{9.5} depending on the amount of rainfall in the previous winter.

Substantial changes have occurred to alter the natural hydrology of the Laguna. Intensive grazing of the watershed has compacted the soils and reduced the amount of vegetation on the land. Urbanization has covered the soil with impervious surfaces. Streams have been channelized to drain the land and carry off flood waters. These actions have resulted in faster run-off of water from winter rains. Groundwater table levels have dropped in certain areas reducing the amount of groundwater naturally discharging to the streams. On the other hand, lawn irrigation in urban areas and the disposal of wastewater through spray irrigation in the Laguna area has contributed substantial summer water in some areas. In 1987, 48,000 acre-feet of water was imported to the Laguna watershed by the Sonoma County Water Agency. Over half of this water was used outdoors and a portion of this water was eventually added to the flow of Santa Rosa Creek and other tributaries to the Laguna. The remainder of the imported water was used for domestic purposes and a portion of it was ultimately added to the Laguna as wastewater. Most of the increased flow appears to be the result of a reduction in water withdrawals by farmers who now use reclaimed water for irrigation instead.

A result of these changes is that water is now more abundant in some places and times than it naturally would have been and in other places is less abundant. Many oak woodlands and vernal pools, for example, which naturally would have been dry in the summer are now being irrigated. Former wetlands associated with the smaller tributaries to the Laguna are now dry in the summer.

To protect and restore the native plant communities and wildlife habitat of the Laguna, water will have to be managed during the dry season. The major questions that will have to be answered are: when and where is water needed and how much water is needed? For vernal pools and valley oaks, summer water is not desirable; in many places summer irrigation should be reduced or eliminated. Riparian forests and marshes can be enhanced with