

FEASIBILITY REVIEW OF CONWAY RANCH WILDLIFE AREA

The California Field Office of The Nature Conservancy hired Jones & Stokes Associates to analyze the potential for habitat restoration on the Conway Ranch. This letter report summarizes the findings and recommendations by Jones & Stokes Associates for the preliminary feasibility investigation.

STUDY AREA AND SETTING

The Conway Ranch consists of approximately 17,840 acres of farm property in Yolo County. About 7,000 acres are within the Yolo Bypass (including 1,000 acres in the Cache Creek Settling Basin) and the remainder is west of the Yolo Bypass levees. This large acreage is bounded on the west by County Road 103, on the north by the Cache Creek Settling Basin, on the south by County Road 28 (except the southeast corner, which extends south to the Willow Slough Bypass), and on the east by the eastern levee of the Yolo Bypass. Lands within the Yolo Bypass receive flood flows from the Sacramento River and Cache Creek during wet years. The Tule Canal connects with the Toe Drain, which conveys agricultural tailwater down the eastern side of the Yolo Bypass. The Conway Canal delivers Sacramento River water to farmlands within the Yolo Bypass and to the west of the Bypass.

The Conway Ranch is near the center of what was, historically, one of the largest and most spectacular riparian and wetland habitats in California. Early accounts of this area described thousands of acres of tule marsh and inland lakes surrounded by riparian forests and valley oak woodlands that stretched for miles. Hundreds of species of birds and mammals, including the California grizzly bear, tule elk, and pronghorn antelope once lived in the Yolo Basin. This area was also a major wintering habitat for waterfowl in the Pacific Flyway.

INTRINSIC AND POTENTIAL HABITAT VALUES

Even though most of the Conway Ranch and the remainder of the Yolo Bypass are currently under intensive agricultural use, this area attracts thousands of waterfowl, wading birds, and shorebirds when it is flooded with winter runoff. Aerial surveys conducted by the California Department of Fish and Game showed that an annual average of 320,000 wintering waterfowl used the Yolo Bypass during the 10-year period from 1978 to 1987. During dry years, however, the Conway Ranch provides limited wetland habitat and

migrating waterfowl must bypass this critical area in favor of wetlands to the north and south.

Waterfowl biologists consider the Yolo Bypass to be a vital but underrepresented link in the chain of public and private wetlands along the Pacific Flyway. Central Valley wetlands have disappeared at alarming rates in recent decades, and the Yolo Bypass has become increasingly vital to waterfowl and other waterbirds traveling between wetlands of the northern Sacramento Valley, the San Joaquin Valley, and the Suisun Marsh. Recognizing the need to protect remaining wetlands and to restore wetlands to historical sites, the California Legislature mandated the state to increase wetland acreage by 50 percent by 2000 (Senate Concurrent Resolution No. 28). The Conway Ranch would be a significant contribution to the statewide goal of restoring critical wetland habitat.

Many rare, threatened, and endangered species, such as Swainson's hawks, long-billed curlews, white-faced ibis, American white pelicans, and tricolored blackbirds occupy portions of the Conway Ranch. Habitat enhancement in this area could also increase its attractiveness to other sensitive wildlife and plant species, including bald eagles, peregrine falcons, Aleutian Canada geese, yellow-billed cuckoos, giant garter snakes, and California hibiscus.

STUDY METHODS

This study was prepared by Steve Chainey, a restoration ecologist, and Ted Beedy, a wildlife biologist at Jones & Stokes Associates, with additional assistance from other technical staff members. Mr. Chainey and Dr. Beedy are members of the Yolo Basin Wildlife Area Working Group, led by the California Department of Fish and Game (DFG), Region 2, and both are familiar with the issues, constraints, and opportunities for wildlife management in the Yolo Bypass area. The Working Group has prepared a series of technical working papers and a Concept Plan (attached). DFG is expected to sign a contract with Jones & Stokes Associates soon to undertake a technical feasibility study of water sources, water quality, water delivery, and potential economic impacts and benefits of restoring wetlands through farmland conversion on a 6,000-acre parcel centered in the Yolo Bypass 2 miles south of Interstate-80 (I-80).

The following methods were employed for a resource inventory and evaluation of the Conway Ranch:

- o inspection of November 1, 1988 aerial photographs at a scale of 1 inch = 2,000 feet (1:24,000);
- o review of 1:24,000 scale U. S. Geological Survey (USGS) topographic maps of the study area and mylar overlays recently prepared by Jones & Stokes Associates for a Yolo County survey of wetlands and riparian woodlands;

- o enlargement of Yolo County Soil Survey soils maps to match the aerial photograph scale; review of soil types and soil characteristics pertinent to wetland and forest restoration options and other soil-related constraints;
- o review of current public documents related to the Sacramento region flood control and levee stabilization plans by the U. S. Army Corps of Engineers and others;
- o aerial reconnaissance of the study area from a low-flying plane on May 13; and
- o all-day ground survey on May 16, participated in by Mr. David Paulli of Conaway Conservancy Group for half of the day; additional field surveys of the study area were conducted by Mr. Chainey and Dr. Beedy in 1990 prior to initiation of this feasibility study.

SITE CONSTRAINTS TO HABITAT RESTORATION

Identified site constraints to habitat restoration include soil characteristics, floodway operations, Sacramento Metropolitan Airport flight patterns, overhead power transmission line, Class I prime farmland, and water delivery and drainage infrastructure. A map of soil types and agricultural soil classifications is attached.

Soils

Laganour series soils in the Cache Creek Settling Basin are unsuitable for retention of surface water for managed wetlands. Furthermore, this area is undergoing extensive removal of flood-deposited sediment under direction of the California Department of Water Resources (DWR). All other soils in the study area are highly suitable for surface water retention, and most of the site is flooded for rice production.

Pescadero series soils, located primarily on the west side, are extremely saline-alkaline and are unsuitable for reforestation or growth of most plants that are not adapted to both high salinity (10-25 meq./ 100 grams exchangeable sodium) and high alkalinity (pH 8-9). However, *permanently* flooded conditions may support riparian and marsh vegetation because of the diluting effect of constant free water. Similar to Pescadero soils, but less acutely saline-alkali are the more extensive Willows series clays, also located in the same general area as the Pescadero soils. These soils may support remnant populations of *Cordylanthus palmatus*, an alkali sink endemic plant federally listed as endangered. A known population is found on county-owned land within a mile of the property boundary (along County Road 25).

Clayey soils having shallow water tables and subject to frequent flooding in the Bypass may restrict the establishment of more upland vegetation such as valley oaks, sycamores, and elderberries.

West of the Bypass levee is a 6,000- to 7,000-acre area of Class I and II prime agricultural soils under intensive cultivation in rice, corn, tomatoes, and alfalfa. The Yolo County Board of Supervisors is clearly in support of protecting prime agricultural lands from conversion and may oppose the idea of creating wetlands on farmlands outside the Yolo Bypass. Soils within the Bypass are rated as Class IV because of frequent flooding, siltation of topsoil, and shallow water tables. Soils in both areas display a high potential for conversion to restored wetlands and riparian forest.

Floodways and Utilities

Dense stands of trees and water retention berms may be considered floodway encroachments in the Yolo Bypass, subject to the authority of the state Reclamation Board and DWR. If more trees are permitted anywhere in the Bypass, they will have the least impact on flood conveyance if located along the west side, which is higher in elevation and presumably has lower flow velocity. The only uncontested method for predicting how riparian trees will affect floodway function is to perform a new HEC-2 hydraulic model of 100- to 200-year storm flows, incorporating one or more scenarios for reforestation within the Bypass.

The power transmission line represents a potential navigational hazard to waterfowl that may collide with the towers and lines during foggy nights or during other low-visibility conditions. This risk can be minimized by restricting wetland habitats that attract waterfowl to the east side of the power line, thereby reducing bird flight across the line.

The county sanitary landfill site and the City of Davis sewage treatment facility are located on the south border of the Conway Ranch property. Flooding for wetlands may not be allowed within several hundred feet or more of these facilities because of concerns about groundwater exchange of pollutants or sewage undergoing treatment. Currently, the county holds an easement on nearby private farmland that prohibits flooded rice culture activity near the landfill site.

Metropolitan Airport Flight Patterns

Air traffic is restricted within 5 miles of Sacramento Metropolitan Airport from ground level to an altitude of 4,100 feet. This outer limit of this zone extends in an arc that reaches as far as the Conway Ranch headquarters and includes most of the land within the Bypass. However, most low altitude flight patterns for landing and departing are directed to the areas north and west of the airport. Another 5- to 10-mile radius restricted zone is

established from 1,600 to 4,100 feet above ground level. Air traffic controllers may be concerned about a greater potential for bird-plane collisions if large flocks of waterfowl are attracted to the area near the airport.

SUMMARY OF RESTORATION CONCEPTUAL PLAN

A 6,000- to 8,000-acre Farmland Preserve is proposed on Class I and II soils primarily west of the levee and south of Willow Slough to the southern property limits. This preserve would remain in agriculture in perpetuity, with an easement that would require a certain percentage of crop types beneficial to wildlife (e.g., waste grain for winter waterfowl and alfalfa for Swainson's hawk and burrowing owl forage habitat in spring and summer). Some farmland can also be flooded with shallow water in winter to provide additional waterbird habitat (i.e., shorebirds, wading birds, and waterfowl).

A 1,000-foot-wide band of dense riparian forest is proposed within the Yolo Bypass east of and parallel to Conway Canal on the west side extending from the I-5 to I-80 causeways. Enhanced riparian and valley oak forest is proposed along the old channel of Willow Slough, along Cache Creek in the Settling Basin, and in large masses west of the levee in the southeast portion of the property. Additional shelterbelts of native trees (i.e., oaks and sycamores) are shown along roads and ditches within the Farmland Preserve.

A continuous band of native perennial grassland is proposed for a 500- to 2,000-foot-wide band parallel to the west side of the levee, within the Cache Creek Settling Basin, and along Willow Slough. These areas would require initial seeding, 1-2 years of weed control, and summer irrigation to enhance their establishment. Wooded areas of sycamore and valley oak, together with elderberry, would be appropriate for this upland habitat zone. Perennial grassland provides excellent nesting and foraging habitat for waterfowl and raptors, as well as mammals and reptiles.

Managed wetlands would be concentrated inside the Yolo Bypass and in the southeast corner of the property. Approximately 25 percent of this area would consist of permanent marsh and extensive tule stands, supporting large nesting colonies of special-status species, including the white-faced ibis that nests in a small tule marsh nearby. The remainder of the wetlands would be divided between very shallow seasonal wetlands or mudflats for shorebirds and deeper water-seasonal wetlands managed to attract large flocks of geese, ducks, and swans. These latter wetlands are located as far as possible from the restricted flight zone at Metropolitan Airport.

Managed seasonal wetlands would be flooded incrementally starting in October and gradually drained in March-June, promoting maximum diversity of wildlife habitat and vegetation types. River water and tailwater would be shared and managed with agricultural operations in the Farmland Preserve, using the existing infrastructure for water conveyance and delivery.

FUTURE MANAGEMENT CONSIDERATIONS

Water-Related Concerns

Water sources, water rights, water quality, and the delivery and management of water resources for both farming and wildlife habitat are major considerations for the proposed project, including:

- o potential rice herbicide toxicity in tailwater (peaks in May and June);
- o water quality of Tule Canal water originating from the Colusa Drain via Knight's Landing Ridgecut (north of Cache Creek);
- o future protected water rights and entitlements to Sacramento River water via the current intake and Conway Canal;
- o long-term, ongoing operation and maintenance costs of the extensive water supply, delivery, and drainage pump facilities vital to both farming and wetland management; and
- o coordination of water supply management with farm operations.

Floodway-Related Concerns

The primary function of the Yolo Bypass is flood control. Other land uses must be consistent with floodway management and easements that restrict land use. Factors to consider include:

- o permits from Reclamation Board for floodway encroachments and variances for allowing more extensive riparian vegetation in the Yolo Bypass;
- o infrequent deposition and scour of managed wetland berms caused by major flood events;
- o periodic loss of managed wetland acreage due to occasional and prolonged deep flooding in the Yolo Bypass; safe upland refugia required for upland wildlife; and
- o periodic removal of woody vegetation in areas of the Yolo Bypass where large trees are not permissible because of limited floodway capacity.

Staff Needs for Wetlands Management

A wildlife management area of this size, in close proximity with major urban areas, will require maintenance and management personnel. Factors to consider include:

- o minimum staff required to manage wildlife and water for wetlands;
- o personnel required for extensive habitat restoration implementation and supervision/coordination; and
- o other land management demands (coordination with Farmland Preserve; protection of lands and wildlife from poaching, trespassing, and vandalism; public and local agency relations; wetland area viewing and hunting).

Table 1. Recommended Habitat Types for Conway Ranch Enhancement

Vegetation Type	Acres	Miles ²	Percent
Valley oak woodland	320	0.5	
Oak/sycamore	640	1.0	14 percent wooded
Riparian forest average 1,000' wide	1,600	2.5	
Permanent tule marsh	1,600	2.5	
Seasonal wetland (deep water)	2,880	4.5	43 percent wetlands
Seasonal wetland/mudflats (shallow water)	2,560	4.0	
Alkali sink	640	1.0	
Perennial meadow	1,600	2.5	9 percent meadow
Farmland preserve	4,160	6.5	24 percent agricultural
Undetermined (northwest area)	1,600	2.5	10 percent other
Levees, roads, etc.	200	0.3	
Total area	17,800	27.8	100 percent