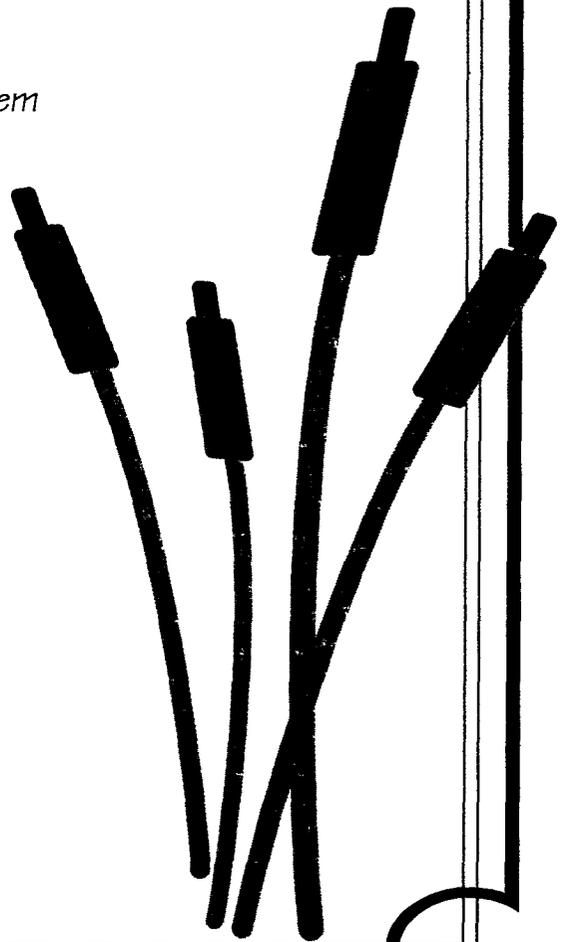


TWITCHELL ISLAND M A N A G E M E N T O P P O R T U N I T I E S



WEST DELTA PLANNING

*The Bay-Delta estuary ecosystem
is rich in biodiversity,
inhabited by more than
400 species of fish, mammals,
reptiles, amphibians, and birds,
including nearly half the
shorebirds and waterfowl
that migrate on the
Pacific Flyway.*



Introduction

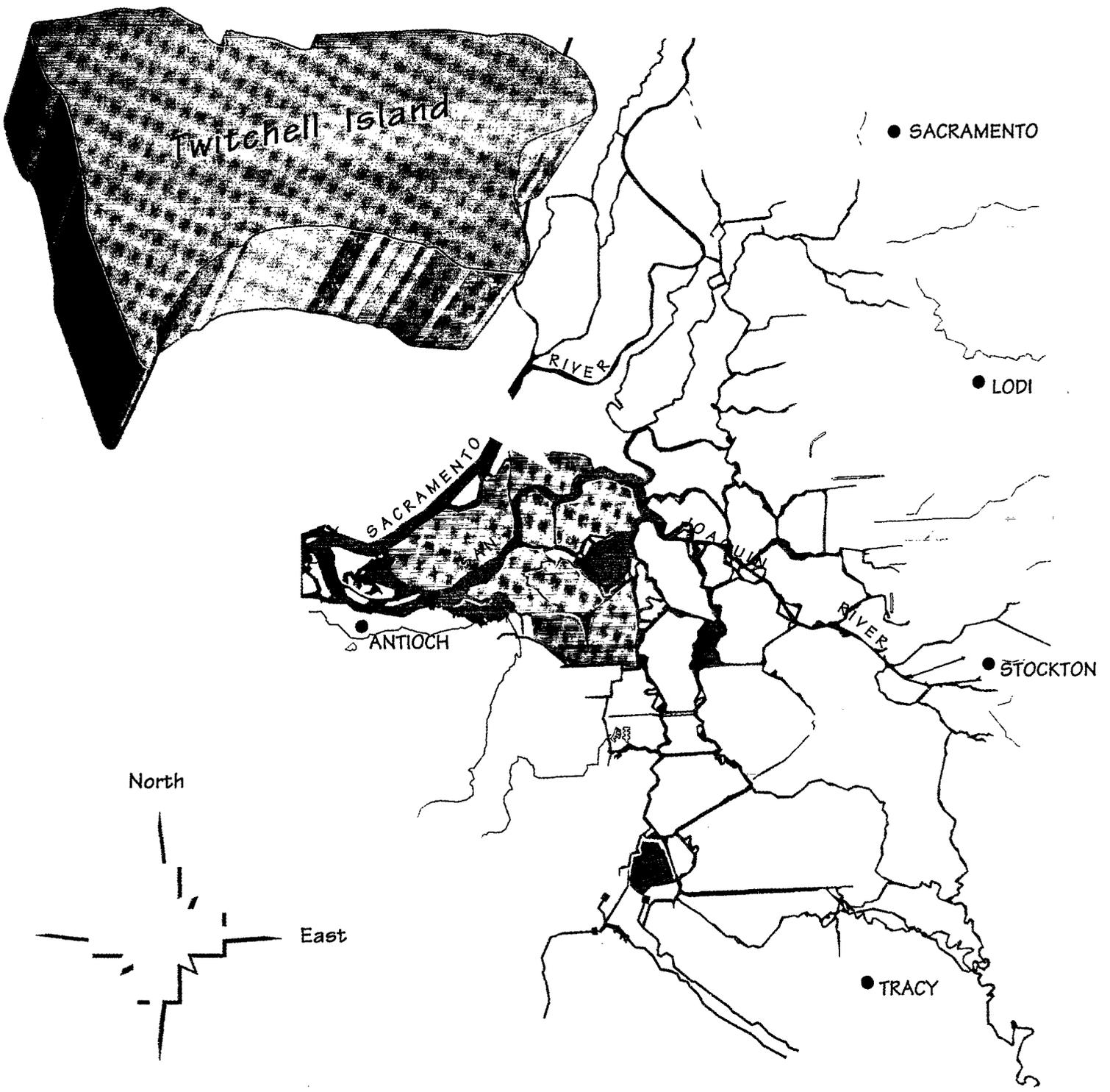
The Department of Water Resources strives to protect and restore the Sacramento-San Joaquin Delta by controlling salinity, planning long-term solutions for environmental, water use, and water quality problems facing the region, and administering levee maintenance reimbursements and special flood control projects.

To achieve these goals, the Department carries out water management programs in the north, south, and west Delta. West Delta planning activities on Twitchell Island make up a unique program that will change land use practices to stop or reverse ongoing land subsidence and develop a varying mix of permanent and seasonal wetlands and wildlife habitat. This concept of creating a mosaic of habitats, combined with methods to reduce fish loss to local siphons, will contribute significantly toward protecting the ecosystem of the Bay-Delta estuary.

Twitchell Island also provides opportunities to conduct programs that will address nonflow-related factors, such as screened water diversions and habitat restoration, identified in the federal/state accord on Bay-Delta standards.



The West Delta



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Objectives of West Delta Planning

The program focuses on achieving four major objectives:

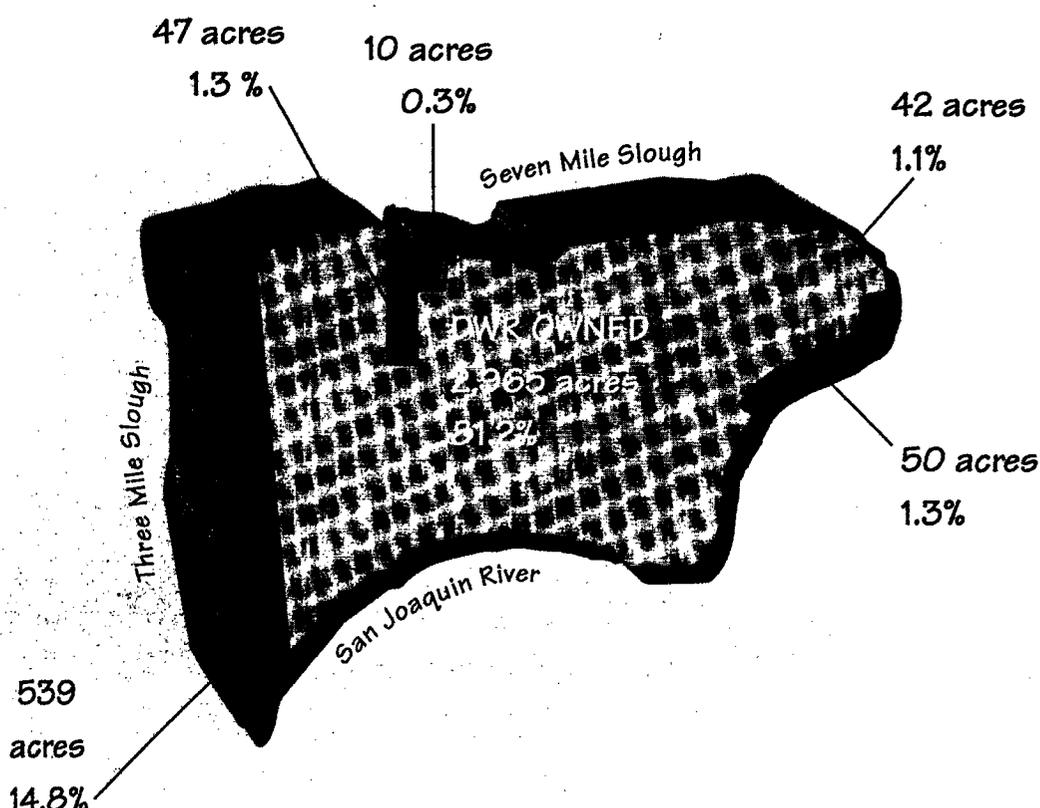
-  **Increase Flood Protection**
by improving levees, implementing changes in land use to reduce subsidence, and protecting agriculture and wildlife habitat
-  **Protect Delta Water Quality**
safeguard drinking water quality by improving levees and managing agricultural drainage
-  **Improve Water Supply Reliability**
for State Water Project and Central Valley Project operations
-  **Protect Delta Fish and Wildlife**
through developing and managing diverse habitats, advancing knowledge of fish screens, and modifying water diversions to reduce fish loss to local siphons

Chronology

-  **June 1988**
Contract with Wildlife Conservation Board to negotiate with Sherman Island landowners
-  **June 1988**
Planning concept report: "West Delta Water Management Program"
-  **July 1989**
Contract with Fish and Game to hire consultant to prepare wildlife plan
-  **April 1990**
Filed Notice of Exemption with Office of Planning and Research



TWITCHELL ISLAND



The size of Twitchell Island is about 3,600 acres. Between 1991 and 1994, the Department acquired over 80 percent of the island with State Water Project funds. Most of the land is 10 or more feet below sea level.

Privately owned land is shown in green.



Twitchell Island Management Program Opportunities

The Department's plan of action for Twitchell Island provides opportunities for managed agricultural use and wetland/wildlife habitat development, as well as opportunities for mitigation, levee improvement, and recreation.

Habitat for Protected Species

Converting the island's land use to managed wildlife habitat will improve conditions for protected plants and animals, while reducing subsidence and



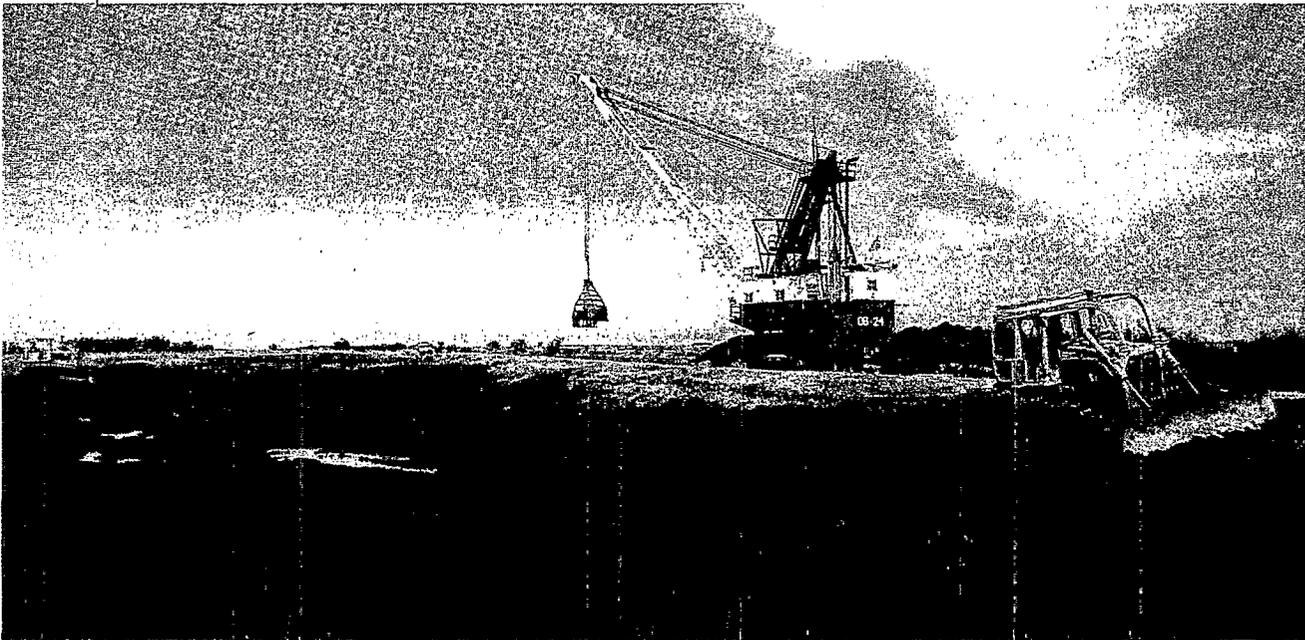
increasing biodiversity. Agricultural drainage water and siphon diversions can also be managed to provide benefits for water quality and fisheries.

Diverse habitat is critical to the protection and enhancement of wildlife.



Improved Flood Control

Portions of Twitchell Island are now more than 20 feet below sea level. Preliminary study findings show that land subsidence can be controlled by changing to land uses which maintain saturated soil moisture conditions. Reducing subsidence reduces the probability of future island flooding which can temporarily halt operations for the State Water Project and Central Valley Project as well as for local diverters.



Levee maintenance and improvement requires the use of large equipment.





Managed agricultural use assists in providing habitat for wildlife.

Wildlife Habitat Development

While agriculture and lands owned by hunting clubs provide habitat for wildlife, a managed habitat program on Twitchell Island will create a mosaic of habitats for a wide variety of animals during all months of the year. Managed agriculture on a portion of the island can provide additional habitat.

February 1991
DWR approval to purchase land on Twitchell Island

October 1991
First purchase of land

November 1991
Framework agreement on the suitability of Twitchell and Sherman Islands to serve as mitigation
- signed by DFG and DWR



Opportunities for Mitigation Banking

Developing wildlife habitat on the island to mitigate for future Delta projects has several advantages.



The Delta provides important waterfowl habitat.

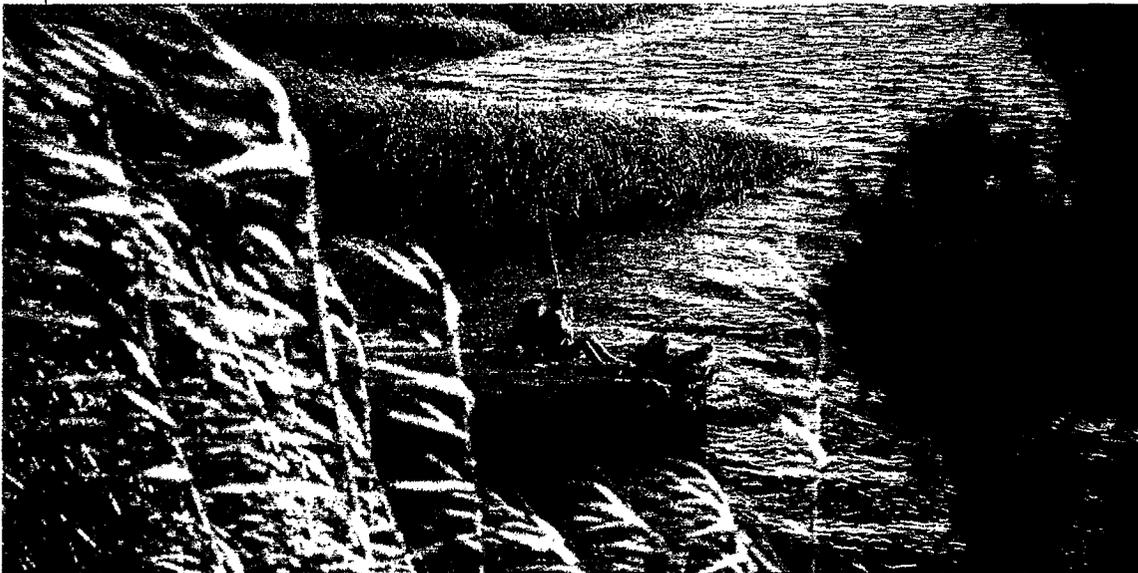
Such wetland development on Twitchell Island is promoted by the Sacramento-San Joaquin Valley Wetlands Mitigation Bank Act passed in 1993. The act authorizes the Department of Fish and Game to create wetland mitigation banks in areas where wetlands are removed or filled.

- Immediate habitat for wildlife is created and fish loss to local diversions is reduced.
- The permitting agency can see in advance what mitigation will occur and the success of that mitigation.
- The developer will know in advance what the cost for mitigation will be and obtaining approval to construct a project should be quicker.



Recreational Opportunities

Private property and limited access mean limited recreational opportunities in the Delta. The Department is evaluating Twitchell Island's potential for added recreational activities.



Fishing from the bank is a popular Delta activity.

- December 1991
 - Contract for feasibility study and interim management plan
 - Twitchell Island water resource plan finalized
 - Contract for potential wetlands, riparian, irrigated, and other habitats
- June 1992
 - USGS starts subsidence posts
- June 1992
 - Levee construction improvements started
- July 1992
 - Election of new trustees for Reclamation District 1601 with a Delta representative



Coordinated Activities

Twitchell Island planning activities can benefit from other ongoing programs in the Delta. Among them are:



Wetland and Habitat Development

The Department is evaluating the applicability of a number of federal, state, and private programs that provide technical and financial assistance for wetland and habitat development. Wetlands and upland habitat types are being considered .

Twitchell Island has managed agriculture that provides excellent pheasant habitat.



The benefits of restoring wetlands include creating new habitat for migratory waterfowl and other wildlife, increasing open space and aesthetic values, improving water quality, providing environmental education opportunities, and reducing subsidence.

Environmental Restoration

The Army Corps of Engineers, the Reclamation Board, and the Department are cooperating on a reconnaissance study of the Delta, with emphasis on environmental restoration, flood control, and navigation. Federal government funding may be available for habitat development on Twitchell Island if the special study shows that federal involvement is warranted.

 August 1992
Changed the debt structure on the properties so that the Department could pay off its share of the debt.

 June 1992
Removal of unsafe wastes including structures from purchased property

 June 1994
Completion of levee improvements

 Ongoing
All land leased for agricultural purposes as soon as purchased



Pheasant Hunting

During 1993 and 1994, the Department of Fish and Game, in cooperation with DWR, implemented a pheasant hunting program on 1,000 acres of agricultural land on Twitchell Island. The availability of land in future years will be based on DWR policy and the success of getting crops harvested before hunting season begins in mid-November. The 1993 and 1994 hunts were very successful and featured junior hunts to encourage people to enjoy the sport. DFG hopes to continue the program into the future.



*Managed
hunting can
provide
recreation
use.*



Levee Improvement

The Department has improved 5 miles of island levees under the Delta Flood Protection Act of 1988. The Special Flood Control Projects portion of the act provides funding for levee maintenance and improvement on eight western Delta islands, including Twitchell Island.

Fish Protection

DWR is investigating the impacts of the Delta's 1,800 unscreened agricultural diversions on fish loss. These studies are expected to indicate periods during the year when siphons can be operated to prevent the diversion of sensitive species. One such study will test siphons on Twitchell Island.



Drinking Water Supplies

Sound water resources management requires comprehensive data collection to understand factors that can affect water quality. DWR, in cooperation with other water agencies, initiated the Interagency Delta Health Aspects Monitoring Program in 1983, in response to recommendations by a scientific panel appointed by the Department's Director. The program will assess the human health aspects of Delta water supplies, including the effect of agricultural drainage on water quality and the potential for new land management techniques to improve drinking water for 20 million Californians.

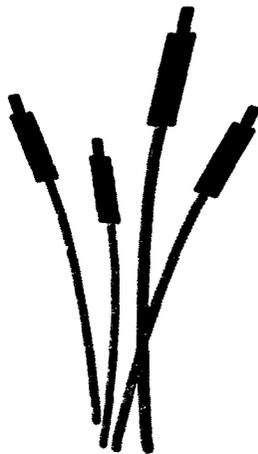


*Agricultural
drain on
Twitchell Island.*

For the Future

DWK has also purchased significant acreage on Sherman Island for wildlife habitat and is investigating other islands for their suitability. The creation of wetlands and other habitat types will enhance biodiversity and provide Delta benefits for generations to come.

For more information, please call the
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