WEST DELTA

Conservation Opportunity Region Overview

Regional Setting

The West Delta Conservation Opportunity Region (COR) is located in northeastern Contra Costa County. It is a unique region characterized by open space and beautiful vistas, where the Bay Area, Delta, and Central Valley meet. Its convenient location near the San Francisco Bay Area, natural beauty, and mild climate have attracted many people to the area, with a predicted increase of 127,000 people in Contra Costa County between 2007 and 2025.[1] While retaining a rural lifestyle, the West Delta provides new housing, jobs, farms, and ranches. The West Delta also contains habitat for endangered species, where a significant portion of this urban growth will occur, creating a potential conflict between conservation and economic development. The East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCC HCP/NCCP)[2] seeks to avoid such conflict by providing an opportunity to preserve diverse ecosystems, unique species, and scenic landscapes while clearing regulatory obstacles to continued economic development and growth.

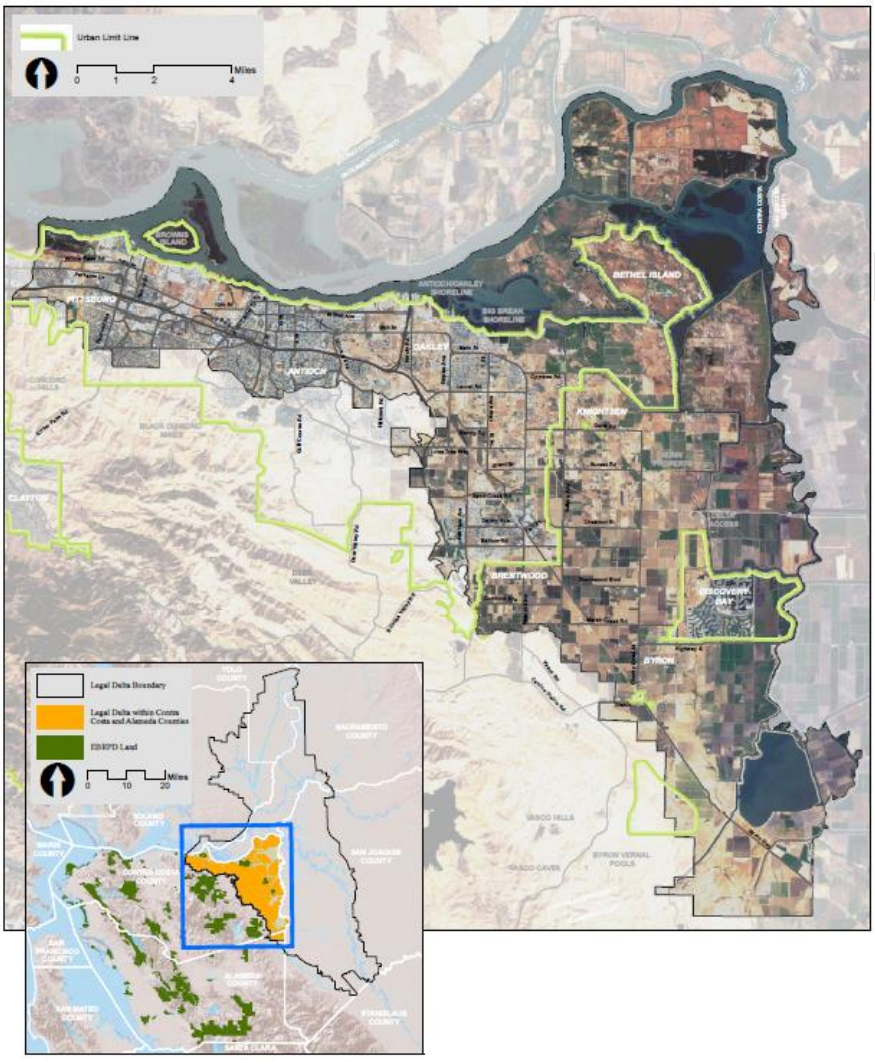

Figure 1: General overview map of the West Delta (Source: East Bay Regional Parks District) PLACEHOLDER ONLY

Planning Context

The West Delta COR includes areas identified in the ECCC HCP/NCCP, the Three Creeks Parkway Restoration Project, and the Contra Costa shoreline containing Antioch Dunes National Wildlife Refuge, Dow Wetlands, Big Break Regional Shoreline, and Dutch Slough Tidal Marsh Restoration[3]. The Antioch Dunes National Wildlife Refuge and Big Break Regional Shoreline are managed to provide public education, recreation, and wildlife benefits. The adjacent Dow plant manages the Dow Wetlands. Other public lands in the region include potential regional park sites as identified in the East Bay Regional Park District (EBRPD)'s Master Plan, Jersey Island owned by the Ironhouse Sanitary District and County Flood Control facilities that provide creek and riparian habitat.

The East Contra Costa County Habitat Conservancy is implementing the ECCC HCP/NCCP that provides a framework for natural resource conservation in eastern Contra Costa County, while offering an improved environmental permitting process for impacts on endangered species. This allows Contra Costa County, the Contra Costa County Flood Control and Water Conservation District (Flood and Water District), the EBRPD, and the Cities of Brentwood, Clayton, Oakley, and Pittsburg to coordinate endangered species permitting for activities and projects in the region that they perform or approve. The ECCC HCP/NCCP helps to avoid costly and time-consuming project-by-project permitting and uncoordinated, biologically ineffective mitigation. It provides a framework for comprehensive species, wetlands, and ecosystem conservation that contributes to the recovery of threatened and endangered species in northern California, such as the California tiger salamander (*Ambystoma californiense*). The City of Antioch originally elected not to participate in the ECCC HCP/NCCP; however, as of 2017, the City of Antioch is in the process of developing its own HCP/NCCP, modeled after the ECCC HCP/NCCP, to streamline their entitlement and permitting process.

Contra Costa County has an Urban Limit Line (ULL) that was voter-approved in 1990 and extended in 2006. The ULL restricts urban development to no more than 35 percent of the land in the County and requires that at least 65 percent of the land in the County be preserved for agriculture, open space, wetlands, parks, and other non-urban uses. Establishing an ULL in the region helps to prevent urban sprawl, provide more infill housing development near transit and existing urban infrastructure, and ensure that public infrastructure and services such as schools, fire, and police services are not overburdened.

Opportunities for Conservation

East Contra Costa County HCP/NCCP

The ECCC HCP/NCCP provides regional conservation and development guidelines to protect natural resources while improving and streamlining the permit process for endangered species and wetland regulations. Over 150 rare species occur in the East County area, including the California tiger salamander, San Joaquin kit fox (*Vulpes macrotis mutica*), California red-legged frog (*Rana draytonii*), Alameda whipsnake (*Masticophis lateralis euryxanthus*), western burrowing owl (*Athene cunicularia hypugea*), Swainson's hawk (*Buteo swainsoni*), vernal pool fairy shrimp (*Branchinecta lynchi*), and Mt. Diablo helianthella (*Helianthella castanea*).[2] Within the 174,018-acre inventory area, the ECCC HCP/NCCP will provide permits for between 8,670 and 11,853 acres of development and will authorize an additional 1,126 acres for rural infrastructure projects.[2] The ECCC HCP/NCCP Preserve System will encompass 23,800 to 30,300 acres of land that will be managed for the benefit of 28 species as well as the habitats they and other species depend upon. The ECCC HCP/NCCP supports local control over land use and offers more flexibility in meeting other needs such as housing, transportation, and economic growth in the area by proactively addressing the long-term conservation needs. [2]

California EcoRestore

The *California EcoRestore* initiative[3] implements a comprehensive suite of habitat restoration actions to support the long-term health of the Delta and its native fish and wildlife species. It includes projects situated in the West Delta focused on tidal marsh, shoreline, and riparian restoration, including the Dutch Slough and Winter Island Tidal Marsh Restoration projects.

The Dutch Slough Tidal Marsh Restoration Project is focused on the conservation of tidal/subtidal ecosystems, riparian forest restoration, and managed marsh habitats.[3] The project's location in Oakley was formerly slated for urban development. It offers the opportunity, soil types, and elevations to create 1,187 acres of tidal marsh and complex intertidal channels favored by native Delta species. The project site consists of three leveed parcels to be restored to a mosaic of tidal marsh, riparian woodland, open water, managed marsh, and upland habitats. Tidal habitat conservation is a critical action to increase the number of native species and improve the general ecological health of the Delta.[4] Native grasslands and riparian forests will also be restored in the upland portions of the site. The Dutch Slough project is adjacent to Big Break Regional Shoreline and Marsh Creek and so provides landscape-scale connectivity benefits.

Figure 2: Dutch Slough (Photo: C. Sloop)

The 589 acre Winter Island Tidal Habitat Restoration project will restore tidal connectivity to the interior of Winter Island. The goal of the project is to breach the perimeter levee to create aquatic habitat at intertidal and shallow subtidal elevations, associated high marsh and riparian habitats to benefit native fish species.

The Knightsen Wetland Restoration and Flood Protection Project involves wetlands restoration and flood protection on a 645-acre parcel acquired by the EBRPD in partnership with the ECCC Habitat Conservancy. This project will restore a mosaic of habitats on a 645-acre property near the community of Knightsen. The project will convert agriculture and fallow fields to a landscape that provides habitat that supports special status species (including giant garter snake (*Thamnophis gigas*), western burrowing owl, and others), provides flood protection for the community of Knightsen, improves Delta water quality, and allows for recreational opportunities. This is a partnership with the ECCC Habitat Conservancy, EBRPD, and the Knightsen Community Services District.

Potential Solutions to Recognized Challenges

The primary conservation challenges in the West Delta relate to habitat loss due to housing development, impacts from agricultural operations, negative effects from noxious invasive species, and projected impacts on ecosystems and infrastructure from climate change.

Wildlife-friendly Agriculture

Like elsewhere in the Delta, agriculture has been the main way of life, industry, and cultural linkage to the land in the West Delta for several generations of residents. According to the 2015 Economic Contributions of Contra Costa County Agriculture Report, agriculture in the county provides 2,277 jobs and contributes approximately $225 million to the local economy.[5] Because of the strong cultural ties to the land, local landowners are concerned about the potential to lose their livelihood and lifestyle if habitat restoration displaces agriculture. Wildlife-friendly farming could provide a link between wildlife conservation and agriculture by integrating conservation and food production to benefit wildlife and conserve biodiversity on farmland. Wildlife-friendly agricultural practices include farming crops that also benefit wildlife—for example rice or irrigated pasture--and provide drainage ditches, hedgerows, and trees for habitat value.[6] The Central Valley Farm Land Trust (CVFLT), formerly Brentwood Agricultural Land Trust, is a land trust that works with West Delta farmers and the agricultural community to protect fertile orchards and farms permanently through an active farmland conservation program. Using agricultural easements and by partnering with local agencies, CVFLT has helped to secure properties such as the 520-acre Cecchini property by Discovery Bay to preserve farmland at risk of development, and to provide important habitat for the Swainson's hawk, burrowing owl, and the Western long-eared bat (*Myotis evotis*).[7]

Recreational Opportunities

The EBRPD's recent acquisitions in the West Delta COR include properties that make up future potential parklands with the intent to conduct restoration projects, provide habitat for special status species, and provide recreational opportunities by providing key trail links. On the Ironhouse Sanitary District's 3,520-acre Jersey Island, recycled water is used to irrigate fields of hay. The EBRPD is collaborating with the Ironhouse Sanitary District to evaluate other sites on the island for recreation and education opportunities, including a focus on how reclaimed water is used for farming. The Flood and Water District is actively seeking opportunities across the West Delta COR to have their facilities function as a combination of flood control and habitat, including along Marsh Creek, Walnut Creek, Pinole Creek, and other areas.

Integrated Flood Management

Reclamation Districts maintain the levees that provide flood protection for agricultural operations in the region. The Flood and Water District covers all of the West Delta COR, and owns property throughout Contra Costa County for the purpose of constructing and maintaining regional flood control basins, channels, and creeks. Formed in 1951, and funded primarily through property taxes and developer fees, the Flood and Water District protects Contra Costa County communities, offering regional flood protection and environmental resources stewardship in the District-owned creeks, and providing technical information and education to cities and residents.

The Upper Sand Creek Basin (SCB) is a $10 million flood protection and habitat restoration project in Antioch. It will expand the basin to store 8 times more storm water than before and build an 1800-foot-long dam, ranging in height from one to 40-feet, and will restore 3,500 linear feet of Sand Creek. It will also include planting over 2,500 willow trees, creating 10 acres of wetlands inside the basin, and installing an innovative trash capture device to help clean up the creek. The SCB is an important part of the District's Marsh Creek regional flood protection master plan. The basin works in conjunction with other facilities in the watershed to temporarily hold floodwater waters from an extreme rainstorm and release them more slowly downstream. This significantly reduces the flood risk for Antioch, Brentwood, and Oakley residents living downstream along Sand Creek and Marsh Creek.

Climate Change and Adaptation Opportunities for Long-term Sustainability

It is critical to develop actions and identify the resources needed to integrate climate change adaptation into natural resources management practices. Therefore, Delta conservation planning needs to incorporate projected changes into a scenario planning approach. This critical tool can help anticipate effects of climate change on Delta ecosystems, species, infrastructure, agricultural practices, recreation, and other land uses, and integrate these into the long-term conservation-planning picture. As a result, regional scale adaptation to global climate change will require novel approaches to regionally integrated management of water, energy, food, and ecosystem processes over the long term, supported by monitoring and scientific studies.[8]

In general, the Delta region is expected to experience more intense winter flooding and storm effects, causing greater erosion of riparian areas and increased sedimentation in wetlands.[9,10,11,12] In the West Delta, as in other Delta regions, more intense winter storms with increased winter river flows will likely significantly increase the hydraulic pressure on levees which could lead to catastrophic flooding.[13] In the summer, lower river flows are expected to increase the likelihood of saltwater intrusion farther upstream in the Delta, disrupting ecosystem processes, food webs, agriculture, and local water supplies along the Contra Costa shoreline.[11,14] Winters will likely become wetter and warmer, with more extreme weather events earlier or later in the season, reduced snow packs in the Sierra Nevada, earlier snowmelt with most precipitation falling as winter rain, and increases in run-off quantity and velocity during storm events.[11,14,15] Annual mean temperatures and precipitation are expected to increase in the West Delta by 2100.[12]

Climate change is also expected to affect the range and habitat needs of special status species. The West Delta conservation opportunity region is located at the transition zone between the Delta, San Joaquin Valley, and Mount Diablo ecosystems. The area supports the northern and western-most extent of some species. As summers become dryer, it will be important to create and restore habitats and protect movement corridors for species migrating to cooler, wetter areas. For example, as vernal pools in the area remain dry with reduced precipitation, there will be a need to create seasonal wetlands and vernal pools for species to populate in areas that will provide the needed hydro-period to support their lifecycles. Protected areas will need to provide safe movement corridors for animals to move across the landscape to find new appropriate ranges.

As a pilot study in the Central Delta, for example, scientists and resource managers created permanently flooded wetlands on a 307-acre parcel on Sherman Island as part of the Mayberry Farms Subsidence Reversal and Carbon Sequestration Project. By restoring 192 acres of emergent wetlands and enhancing approximately 115 acres of seasonally flooded wetlands, the project anticipates climate benefits by sequestering atmospheric carbon and reversing subsidence and develop knowledge to inform operators of private wetlands.

Planners and land managers can use available tools and models to look ahead and determine the best way to prioritize conservation actions based on the likelihood of long-term action efficacy, the potential for outcomes to evolve over time, and cost effectiveness. A scenario planning approach, for example, that is incorporated within a Structured Decision Making (SDM) process could include a decision model that incorporates projections for long-term management and funding needs to anticipate the effects of near-term conservation actions into the future. Regular reevaluation of scenarios over time will allow land managers and planners to reexamine how earlier projections played out and adjust conservation land management over time.

Link to Delta Conservation Framework

The Delta Conservation Framework is a high-level conservation-planning framework through 2050 with a landscape-scale focus across the entire Delta, Suisun Marsh, and Yolo Bypass. The Framework recommends using multi-stakeholder partnerships to develop *Regional Conservation Strategies* (RCSs) to establish finer scale regional objectives and implementation actions**.** A regional partnership could develop a RCS that considers all conservation opportunities in the West Delta region, including flood management and wildlife-friendly agricultural efforts that links the ECCC HCP/NCCP Preserve Area to surrounding areas. As mentioned above, the Delta Conservation Framework's landscape-scale goals and strategies focus on developing multi-benefit conservation solutions through integrative data analysis and scenario planning (Goals C to F). Implementation of more specific strategies and objectives should serve to reestablish ecological function, assist species recovery, and integrate conservation benefits with flood protection, wildlife-friendly farming operations, and recreation at the local and landscape scales.

Entities/Partnerships Important for Implementation (Current and Ongoing)

The cornerstones of successful conservation planning and implementation in the Delta are: 1) establishing and maintaining trust among stakeholders through continuous communication and evaluation of goal-based progress, 2) an agreed-upon structure for roles and responsibilities to manage an implementation partnership, and 3) science-based decision support. Signatories to the Implementing Agreement of the ECCC HCP/NCCP include ECCC Habitat Conservancy, County of Contra Costa, City of Brentwood, City of Clayton, City of Oakley, the Flood and Water District, EBRPD, United States Fish and Wildlife Service, and California Department of Fish and Wildlife.

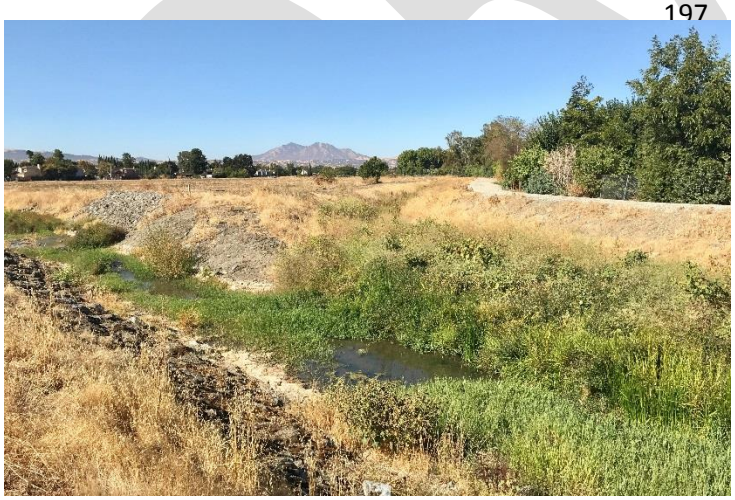

Figure 3: Three Creeks Parkway Restoration area - Marsh and Sand creek confluence (Photo: C. Sloop)

The Department of Water Resources and Department of Fish and Game are chief partners for the Dutch Slough and Winter Island tidal restoration projects. American Rivers, the Flood and Water District, Friends of Marsh Creek Watershed, and City of Brentwood are important partners in the Three Creeks Parkway Restoration Project.

213 # Endnotes

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