

Draft Amendments to Chapter 4 Policies & Recommendations, Redlined Relative to Existing Chapter 4 Policies and Recommendations

Core Strategy 1: Create More Natural Functional Flows

The volume, timing, and extent of freshwater flows through the Delta directly affect Water flow in the Delta is critically important because flow affects the reliability of water supplies and the health of the Delta ecosystem. **More natural functional flows across a restored landscape can support native species recovery, while providing the flexibility needed for water supply reliability. Freshwater flows should be allocated and adaptively managed to more closely resemble the natural volume, timing, frequency, and duration to achieve the desired ecosystem functions.** The best available science demonstrates that flow management is essential to restoration of the Delta ecosystem. Several important ecosystem stressors, including entrainment, are linked to altered water flows. Greater reverse flows in the south Delta increase the numbers of fish entrained.

Implement and Regularly Update Flow Guidance

Problem Statement

Altered flows in the Sacramento and San Joaquin rivers and their tributaries change flows within and out of the Delta, and affect salinity and sediment in the Delta. Fish and other aquatic species native to the Delta are adapted to natural flow, salinity, and sediment regimes. Current flow, salinity, and sediment regimes harm native aquatic species and encourage nonnative species. The best available science suggests that currently required flow objectives within and out of the Delta are insufficient to protect the Delta ecosystem (SWRCB 2010). **demonstrates that altered or reduced water flows strain the entire Delta ecosystem, as well as the rest of the estuary.** Additionally, uncertainty regarding future flow objectives for the Delta impairs the reliability of water supplies that depend on the Delta or its watershed. The predictability of water exports cannot be improved, and restoration cannot be **effectively** implemented, without timely SWRCB **State Water Resources Control Board** action to update flow objectives. **Updates must consider and balance the agricultural, urban, and ecosystem beneficial uses of a finite water supply and use best available science to guide decision-making.**

Policy

ER P1. Delta Flow Objectives

- (a) *The State Water Resources Control Board's Bay Delta Water Quality Control Plan flow objectives shall be used to determine consistency with the Delta Plan. If and when the flow objectives are revised by the State Water Resources Control Board, the revised flow objectives shall be used to determine consistency with the Delta Plan.*

(b) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, the policy set forth in subsection (a) covers a proposed action that could significantly affect flow in the Delta.

Recommendation

ER R1. Update Delta Flow Objectives

*Development, implementation, and enforcement of the update to the Bay Delta Water Quality Control Plan is key to the achievement of the coequal goals. The State Water Resources Control Board (**SWRCB**) should update the Bay Delta Water Quality Control Plan objectives as follows: **maintain a regular schedule of reviews of the Bay-Delta Plan to reflect changing conditions due to climate change and other factors. The SWRCB should consult with the Delta Science Program on adaptive management and the use of best available science.***

(a) ~~By June 2, 2014, adopt and implement updated flow objectives for the Delta that are necessary to achieve the coequal goals.~~

(b) ~~By June 2, 2018, adopt, and as soon as reasonably possible, implement flow objectives for high-priority tributaries in the Delta watershed that are necessary to achieve the coequal goals.~~¹

Flow objectives could be implemented through several mechanisms including negotiation and settlement, Federal Energy Regulatory Commission relicensing, or adjudicative proceeding.²

Prior to the establishment of revised flow objectives identified above, the existing Bay Delta Water Quality Control Plan objectives shall be used to determine consistency with the Delta Plan. After the flow objectives are revised, the revised objectives shall be used to determine consistency with the Delta Plan.

Core Strategy 2: Restore Habitat Ecosystem Function

~~Loss of habitat is one of the largest stressors to the Delta ecosystem. The Delta Plan adopts the approach of the multiagency ERP Conservation Strategy (DFG 2011), which includes a map and accompanying text identifying appropriate habitat restoration types within the Delta and Suisun Marsh based on land elevation, included in the Delta Plan within Appendix B. Delta Plan Figure 4-6 is based on the ERP Conservation Strategy map. Policy ER P3 requires habitat restoration actions to use this figure and accompanying text (see Appendix B for additional information). For example, restoring tidal marsh habitat would generally not be appropriate outside the areas labeled “intertidal” on Figure 4-6 unless they connect other tidal marshes into large habitat~~

¹ SWRCB staff should work with the Council and DFW to determine priority streams. As an illustrative example, priority streams could include the Merced River, Tuolumne River, Stanislaus River, Lower San Joaquin River, Deer Creek (tributary to Sacramento River), Lower Butte Creek, Mill Creek (tributary to Sacramento River), Cosumnes River, and American River. Implementation through hearings is expected to take longer than the deadline shown here.

² Implementation through adjudicative proceedings or FERC relicensing is expected to take longer than the deadline shown here.

areas or can recover elevation over time by natural processes. An integrated, adaptive approach to restoring habitat must address several issues. Each problem statement below highlights one of these issues, followed by specific policies and recommendations intended to address it. **Achieving the Delta Reform Act vision for the Delta ecosystem requires the reestablishment of tens of thousands of acres of functional, diverse, and interconnected habitat. The magnitude of the need dictates a change in existing approaches to restoration in the Delta. State agencies will require new funding sources in order to implement large-scale restoration projects and support multi-benefit projects that go above and beyond mitigation of impacts. An integrated, adaptive approach to ecosystem restoration requires that restoration projects focus on ecosystem function and be designed and located to continue functioning under changing climate conditions. Restoration projects should also be compatible with adjacent land uses and support the cultural, recreational, agricultural, and natural resource values of the Delta as an evolving place.**

Improve Project Design

Problem Statement

Features of the Delta landscape, particularly the condition of its waterways, the elevation of its land, and other environmental conditions, have changed dramatically over the past 160 years. Damage to the habitats that support native species in the Delta has led to declines in native animal and plant populations, affecting both resident and migratory species. **The loss of over 90 percent of wetlands greatly impacted the Delta ecosystem; further impacts across all ecosystem components (physical, chemical and biological) continue to severely stress the Delta ecosystem. Habitats and migration corridors in the Delta are already shifting with climate-driven impacts such as sea level rise and temperature changes, and these changes are likely to accelerate rapidly in coming decades. Restoration projects must be implemented at scales and in locations with sufficient opportunity to restore land-water connections in order to be resilient to these long-term trends. Currently, many restoration actions in the Delta are limited to single-species conservation, recovery, or mitigation projects. State agencies charged with stewardship and restoration of the Delta ecosystem have limited ability to change these practices due to permitting requirements and restrictions on the amount and use of public funds. Information gaps prevent more systematic planning and adaptive management of these activities and investments.**

Policies

New ER Policy “A”. Disclose Contributions to Restoring Ecosystem Function and Providing Social Benefits

(a) The certification of consistency for a covered action described in Subsection (b) shall include the completed following Sections in Appendix 3A, including all required information and documentation:

- 1. Section 1 (Priority Attributes) of Appendix 3A (Disclosing Contributions to Restoring Ecosystem Function and Providing Social Benefits) to demonstrate that the covered action has one or more of the priority attributes, to disclose its contribution to the restoration of a resilient, functioning Delta ecosystem, and to identify the ecosystem restoration tier associated with that covered action based on the identified priority attributes; and**
 - 2. Section 2 (Social Benefits) of Appendix 3A (Disclosing Contributions to Restoring Ecosystem Function and Providing Social Benefits) to demonstrate and disclose the cultural, recreational, agricultural, and/or natural resource benefits anticipated to result from project implementation.**
- (b) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy applies to a covered action that includes protection, enhancement, or restoration of the ecosystem.**

[ER P2 and ER P3 moved to Core Strategy 3]

ER P2. Restore Habitats at Appropriate Elevations

- ~~(a) Habitat restoration must be carried out consistent with Appendix 3, which is Section II of the Draft Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions (California Department of Fish and Wildlife 2011). The elevation map attached as Appendix 4 should be used as a guide for determining appropriate habitat restoration actions based on an area's elevation. If a proposed habitat restoration action is not consistent with Appendix 4, the proposal shall provide rationale for the deviation based on best available science.~~
- ~~(b) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers a proposed action that includes habitat restoration.~~

ER P3. Protect Opportunities to Restore Habitat

- ~~(a) Within the priority habitat restoration areas depicted in Appendix 5, significant adverse impacts to the opportunity to restore habitat as described in section 5006, must be avoided or mitigated.~~
- ~~(b) Impacts referenced in subsection (a) will be deemed to be avoided or mitigated if the project is designed and implemented so that it will not preclude or otherwise interfere with the ability to restore habitat as described in section 5006.~~
- ~~(c) Impacts referenced in subsection (a) shall be mitigated to a point where the impacts have no significant effect on the opportunity to restore habitat as described in section 5006. Mitigation shall be determined, in consultation with the California Department of Fish and Wildlife,~~

~~considering the size of the area impacted by the covered action and the type and value of habitat that could be restored on that area, taking into account existing and proposed restoration plans, landscape attributes, the elevation map shown in Appendix 4, and other relevant information about habitat restoration opportunities of the area.~~

~~(d) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers proposed actions in the priority habitat restoration areas depicted in Appendix 5. It does not cover proposed actions outside those areas.~~

ER P4. Expand Floodplains and Riparian Habitats in Levee Projects

(a) **Certifications of consistency for** levee projects must **evaluate provide an evaluation of,** and where feasible **the levee project must** incorporate, alternatives, ~~including the use of setback levees,~~ to increase floodplains and riparian habitats. ~~Evaluation of setback levees in the Delta shall be required only in the following areas (shown in Appendix 8):~~

1. Levee projects located in the following areas (as depicted in Appendix 8A): (1) ~~The Sacramento River between Freeport and Walnut Grove~~**the Deepwater Ship Channel and Steamboat Slough,** the San Joaquin River from the Delta boundary to ~~Mossdale~~**Stanislaus River confluence to Rough and Ready Island, the Stanislaus River, the Cosumnes River, Middle River, Old River,** Paradise Cut, ~~Steamboat~~**Elk Slough,** Sutter Slough; and the North and South Forks of the Mokelumne River, and (2) Urban levee improvement projects in the cities of West Sacramento and Sacramento, **shall evaluate alternative which remove all or a portion of the original levee prism in order to physically expand the width of the channel.**

2. All levee projects located in whole or in part in the Delta shall evaluate alternatives to increase levee waterside habitat.

(b) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers a proposed action to construct ~~a new levees~~**flood control work** or ~~substantially rehabilitate or reconstruct~~**make capital improvements to an existing levees****flood control work.**

Recommendations

New ER Recommendation "A". Increase Public Funding for Restoring Ecosystem Function

New funding sources are needed to achieve the scale of ecosystem restoration envisioned by the Delta Reform Act. Future State funding opportunities for implementing restoration projects in the Delta, including grant and loan programs, should be directed to projects that would achieve Ecosystem Restoration Tier 1 or 2, as defined in Appendix 3A.

New ER Recommendation “B”. Use Good Neighbor Checklist to Coordinate Restoration with Adjacent Uses

Restoration project managers should use the Department of Water Resources’ Good Neighbor Checklist when planning and designing restoration projects, in order to demonstrate that the project avoids or reduces conflicts with existing uses.

ER R2. Prioritize and Implement Projects that Restore Delta Habitat

~~Bay Delta Conservation Plan implementors, California Department of Fish and Wildlife, California Department of Water Resources, and the Delta Conservancy should prioritize and implement habitat restoration projects in the areas shown on Figure 4-8. Habitat restoration projects should ensure connections between areas being restored and existing habitat areas and other elements of the landscape needed for the full life cycle of the species that will benefit from the restoration project. Where possible, restoration projects should also emphasize the potential for improving water quality. Restoration project proponents should consult the California Department of Public Health’s Best Management Practices for Mosquito Control in California.~~

- ~~■ **Yolo Bypass.** Enhance the ability of the Yolo Bypass to flood more frequently to provide more opportunities for migrating fish, especially Chinook salmon, to use this system as a migration corridor that is rich in cover and food.~~
- ~~■ **Cache Slough Complex.** Create broad nontidal, freshwater, emergent-plant-dominated wetlands that grade into tidal fresh-water wetlands, and shallow subtidal and deep open-water habitats. Also, return a significant portion of the region to uplands with vernal pools and grasslands.~~
- ~~■ **Cosumnes River–Mokelumne River confluence.** Allow these unregulated and minimally regulated rivers to flood over their banks during winter and spring frequently and regularly to create seasonal floodplains and riparian habitats that grade into tidal marsh and shallow subtidal habitats.~~
- ~~■ **Lower San Joaquin River floodplain.** Reconnect the floodplain and restore more natural flows to stimulate food webs that support native species. Integrate habitat restoration with flood management actions, when feasible.~~
- ~~■ **Suisun Marsh.** Restore significant portions of Suisun Marsh to brackish marsh with land-water interactions to support productive, complex food webs to which native species are adapted and to provide space to adapt to rising sea level action. Use information from adaptive management processes during the Suisun Marsh Habitat Management, Preservation, and Restoration Plan’s implementation to guide future habitat restoration projects and to inform future tidal marsh management.~~
- ~~■ **Western Delta/Eastern Contra Costa County.** Restore tidal marsh and channel margin habitat at Dutch Slough and western islands to support food webs and provide habitat for native species.~~

ER R3. Complete and Implement Delta Conservancy Strategic Plan

As part of its Strategic Plan and subsequent Implementation Plan or annual work plans, the Delta Conservancy should:

- Develop and adopt criteria for prioritization and integration of large-scale ecosystem restoration in the Delta and Suisun Marsh, with sustainability and use of best available science as foundational principles.*
- Develop and adopt processes for ownership and long-term operations and management of land in the Delta and Suisun Marsh acquired for conservation or restoration.*
- Develop and adopt a formal mutual agreement with the California Department of Water Resources, California Department of Fish and Wildlife, federal interests, and other State and local agencies on implementation of ecosystem restoration in the Delta and Suisun Marsh.*
- Develop, in conjunction with the Wildlife Conservation Board, the California Department of Water Resources, California Department of Fish and Wildlife, Bay Delta Conservation Plan implementers, and other State and local agencies, a plan and protocol for acquiring the land necessary to achieve ecosystem restoration consistent with the coequal goals and the Ecosystem Restoration Program Conservation Strategy.*
- Lead an effort, working with State and federal fish agencies, to investigate how to better use habitat credit agreements to provide credit for each of these steps: (1) acquisition for future restoration; (2) preservation, management, and enhancement of existing habitat; (3) restoration of habitat; and (4) monitoring and evaluation of habitat restoration projects.*
- Work with the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service to develop rules for voluntary safe harbor agreements with property owners in the Delta whose actions contribute to the recovery of listed threatened or endangered species.*

Problem Statement

Current USACE policy requires removal of vegetation from Delta levees, which would reduce already sparse riparian and shaded aquatic habitat along the channels.

Recommendation

ER R4. Exempt Delta Levees from the U.S. Army Corps of Engineers' Vegetation Policy

Considering the ecosystem value of remaining riparian and shaded riverine aquatic habitat along Delta levees, the U.S. Army Corps of Engineers should agree with the California Department of Fish and Wildlife and the California Department of Water Resources on a variance that exempts Delta levees from the U.S. Army Corps of Engineers' levee vegetation policy where appropriate.

Problem Statement

The SMPP and the Local Protection Program components of the SMPP do not yet include climate change provisions. Without these amendments, it is unclear if and how Suisun Marsh will be managed to adapt to rising sea level.

Recommendation

[ER R5 moved to Core Strategy 3]

ER R5. Update the Suisun Marsh Protection Plan

The San Francisco Bay Conservation and Development Commission should update the Suisun Marsh Protection Plan and relevant components of the Suisun Marsh Local Protection Program to adapt to sea level rise and ensure consistency with the Suisun Marsh Preservation Act, the Delta Reform Act, and the Delta Plan.

Core Strategy 3: Improve Water Quality to Protect the EcosystemProtect Land for Restoration and Safeguard Against Land Loss

Chapter 6 includes recommendations about salinity and ecosystem water quality. These recommendations support the protection of water quality for all beneficial uses of water and encourage the identification of water quality impacts of proposed actions. The recommendations also address acceleration of certain total maximum daily loads, low dissolved oxygen, implementation of a Delta Regional Monitoring Program, treatment of wastewater effluent and urban runoff, and Regional Water Quality Control Board engagement in Suisun Marsh. **As sea levels rise, opportunities for intertidal and floodplain restoration are shifting inland, toward the upland edges of the Delta. Restoration of tidal wetlands should focus on opportunities to create interconnected habitats, where elevations will support intertidal habitats into the future. Lands at elevations suitable for current and future restoration must be protected from development, and restoration projects must be designed and located with rising sea levels in mind. Consistent with State law, local and regional plans in the Delta must consider sea level rise as well as the loss of lands suitable for ecosystem restoration and the need to accommodate these landscape changes. State agencies must take action to reduce, halt, or reverse subsidence; and incentivize agricultural land management practices that support native wildlife and counter subsidence.**

Protect Opportunities for Restoration

Problem Statement

The Delta ecosystem is impaired by pollutants from municipal, industrial, agricultural, and other discharges and legacy pollutants flowing into the Delta and its tributaries, including pollutants that bioaccumulate and biomagnify in the food web. **The loss of lands suitable for restoration due to sea level rise and development jeopardizes efforts to restore ecosystem functions in the Delta. Levees, roads, and other infrastructure prevent wetland migration, threatening the ability of existing channel margin wetlands to adapt to**

rising sea levels. The expansion of development and infrastructure in the Delta will constrain opportunities to reconfigure and reconnect floodplains to their channels. Over time, these forces will continue to diminish the extent of land suitable for restoration projects at intertidal elevations, reducing future opportunities to create land-water connections and restore ecosystem function.

Policies

[ER P2 and ER P3 moved from Core Strategy 3]

ER P2. Restore Habitats at Appropriate Elevations

(a) The certification of consistency for a covered action described in Subsection (d) must be carried out in a manner consistent with Appendix 4A, which provides guidance on appropriate elevations for particular ecosystem types within the Sacramento-San Joaquin Delta and Suisun Marsh.

1. The certification of consistency must include a completed Appendix 4A and all of the documentation and information required by Appendix 4A.
2. If a covered action is not consistent with the Table 1.1 in Appendix 4A, the certification of consistency shall provide, based on best available science, the rationale for any inconsistency with Table 1.1 and how it is nonetheless consistent with this policy.

(b) The certification of consistency for a covered action that takes place, in whole or in part, in the Intertidal Elevation Band and Sea Level Rise Accommodation Band shall, based on best available science:

1. Explain, how the action is designed to accommodate each of the following:
 - i. future marsh migration;
 - ii. anticipated sea level rise; and
 - iii. tidal inundation; and
2. If the action does not implicate one or more of the elements set forth in subsection (1) of section (b) of this regulation, for each such element, explain why it does not.
3. The information required by this regulation may be included in an adaptive management plan, where required by section 5002 of this Chapter.

(c) The certification of consistency for a covered action that takes place, in whole or in part, in the Shallow Subtidal Elevation Band or the Deep Subtidal Elevation Band shall explain, based on best available science, how the action is designed to safeguard against levee failure over the design life of the project. This information may be included in an adaptive management plan, where required by section 5002 of this Chapter.

(d) For purposes of Water Code Section 85057.5(a)(3) and Section 5001(j)(1)(E) of this Chapter, this policy applies to a covered action that includes protection, restoration, or enhancement of the ecosystem.

- ~~(a) Habitat restoration must be carried out consistent with Appendix 3, which is Section II of the Draft Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions (California Department of Fish and Wildlife 2011). The elevation map attached as Appendix 4 should be used as a guide for determining appropriate habitat restoration actions based on an area's elevation. If a proposed habitat restoration action is not consistent with Appendix 4, the proposal shall provide rationale for the deviation based on best available science.~~
- ~~(b) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers a proposed action that includes habitat restoration.~~

ER P3. Protect Opportunities to Restore Habitat

- (a) Within the priority habitat restoration areas depicted in Appendix 5, significant adverse impacts to the opportunity to restore habitat as described in section 5006 **of this Chapter**, must be avoided or mitigated.
- (b) Impacts referenced in subsection (a) will be deemed to be avoided or mitigated if the project is designed and implemented so that it will not preclude or otherwise interfere with the ability to restore habitat as described in section 5006 **of this Chapter**.
- (c) **If the impacts referenced in subsection (a) shall are mitigated (rather than avoided), they must** be mitigated to a point where the impacts have **extent that the project has** no significant effect **impact** on the opportunity to restore habitat as described in section 5006 **of this Chapter**. ~~Mitigation shall be determined, in consultation with the California Department of Fish and Wildlife, considering the size of the area impacted by the covered action and the type and value of habitat that could be restored on that area, taking into account existing and proposed restoration plans, landscape attributes, the elevation map shown in Appendix 4, and other relevant information about habitat restoration opportunities of the area.~~
- (d) For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers proposed actions in the priority habitat restoration areas depicted in Appendix 5. It does not cover proposed actions outside those areas.

Recommendations

~~Recommendations for improving ecosystem water quality are included in Chapter 6.~~

[ER R5 moved from Core Strategy 3]

ER R5. Update the Suisun Marsh Protection Plan

*The San Francisco Bay Conservation and Development Commission should update the Suisun Marsh Protection Plan ~~and relevant components of the Suisun Marsh Local Protection Program~~ to adapt to sea level rise and ensure consistency with the Suisun Marsh Preservation Act, the Delta Reform Act, and the Delta Plan, **and support local government and districts with jurisdiction in the Suisun Marsh in amending their components of the Suisun Marsh Local Protection Program accordingly.***

Safeguard Against Land Loss

Problem Statement

Agriculture has shaped the rich economy and rural culture of the Delta, although it has come at a cost: the loss of land-water connections. Without regular inundation, peat-rich Delta lands experience soil carbon loss and subsidence. The 2018 Natural and Working Lands Inventory attributed the majority of soil carbon loss in California to oxidation of organic soils in the Delta. The ongoing loss of land due to subsidence threatens the Delta Reform Act’s vision for a restored Delta ecosystem, the livelihoods of those who live and work in the Delta, and statewide water supply reliability. Urgent action is needed to halt the current rapid pace of subsidence and to promote subsidence reversal activities. Reaching a holistic balance between agriculture and a functioning ecosystem will require working landscapes – agricultural lands managed to support biodiversity and provide habitat resources – as an important part of achieving ecosystem goals in the Delta. State agencies own more than 35,000 acres on deeply subsided lands in the Delta and Suisun Marsh and thus have a critical role to play in halting and reversing subsidence.

Recommendations

New ER Recommendation “C”. Fund Targeted Subsidence Reversal Actions

- (a) The Delta Conservancy should develop incentive programs for public and private land owners that encourage land management practices that stop subsidence on deeply subsided lands in the Delta and Suisun Marsh.**
- (b) In order to ensure the long-term durability of state investments in restoration, State agencies that fund ecosystem restoration in subsided areas should direct investments to areas that have opportunities to both reverse subsidence and restore intertidal marsh habitat.**

New ER Recommendation “D”. Funding to Enhance Working Landscapes
State agencies should be provided with funding in order to provide resources and support to Resource Conservation Districts (RCDs), and

other local agencies and districts, in their efforts to restore ecosystem function or improve agricultural land management practices that support native species. State agencies should work with RCDs, and other local agencies and districts, to adaptively manage agricultural land management practices to improve habitat conditions for native species.

New ER Recommendation “E”. Develop and Update Management Plans to Halt or Reverse Subsidence on Public Lands

For all publicly-owned lands in the Delta or Suisun Marsh, State and local agencies should develop or update plans that identify land management goals; identify appropriate public or private uses for that property; and describe the operation and maintenance requirements needed to implement management goals. These plans should address subsidence and consider the feasibility of subsidence reversal.

Core Strategy 4: Protect Native Species and Reduce the Impact Prevent Introduction of and Manage Nonnative Invasive Species Impacts

While large-scale ecosystem restoration is the priority approach to support native species recovery, some stressors require more focused interventions. In particular, management actions continue to be necessary to avoid introductions of, and reduce the spread of, nonnative invasive species. In managing native fish populations, reestablishing riparian habitat and in-stream connectivity along migratory corridors supports the reproductive success and survival of native fish. Hatcheries and harvest regulation should employ adaptive management strategies to predict and evaluate outcomes and minimize risks.

Prevent Introduction of Nonnative Species and Manage Nonnative Species Impacts

Problem Statement

Nonnative **invasive** species are **both a symptom of a highly degraded ecosystem and** a major obstacle to successful restoration of the Delta ecosystem because they **can** affect the survival, health, and distribution of native Delta **plants and** wildlife and plants. There is little chance of eradicating most established nonnative species, but management can reduce the abundance of some. **Native species are impacted by nonnative invasive species through competition, predation, disease and other interactions. The establishment of new nonnative invasive species is likely within the highly altered landscape of the Delta and could result in further ecosystem effects. Native species are also impacted** The resilience of native species is reduced by ongoing introductions of nonnative species and management actions **activities** that enhance **improve habitat** conditions for **existing** nonnative **invasive** species.

Policy

ER P5. Avoid Introductions of and Habitat Improvements for Invasive Nonnative Species

- (a) *The potential for new introductions of or improved habitat conditions for nonnative invasive species, striped bass, or bass must be fully considered and avoided or mitigated in a way that appropriately protects the ecosystem.*
- (b) *For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers a proposed action that has the reasonable probability of introducing or improving habitat conditions for nonnative invasive species.*

Recommendations

~~ER R6. Regulate Angling for Nonnative Sport Fish to Protect Native Fish~~

~~The California Department of Fish and Wildlife should develop, for consideration by the Fish and Game Commission, proposals for new or revised fishing regulations designed to increase populations of listed fish species through reduced predation by introduced sport fish. The proposals should be based on sound science that demonstrates these management actions are likely to achieve their intended outcome and include the development of performance measures and a monitoring plan to support adaptive management.~~

ER R7. Prioritize and Implement Actions to Control Nonnative Invasive Species

The Delta Conservancy, Delta Science Program, California Department of Fish and Wildlife, California Department of Food and Agriculture, California Department of Parks and Recreation, Division of Boating and Waterways, and other appropriate State and federal agencies should prioritize develop and fully implement communication and funding strategies to manage existing nonnative invasive species and for rapid response to new introductions of nonnative invasive species, based on scientific expertise and research the list of “Stage 2 Actions for Nonnative Invasive Species” and accompanying text shown in Appendix J taken from the Conservation Strategy for Restoration of the Sacramento–San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions (DFG 2011). Implementation of the Stage 2 actions should include the development of performance measures and monitoring plans to support adaptive management.

Core Strategy 5: Improve Hatcheries and Harvest Management

Improve Fish Management

Problem Statement

Fish migration is impaired by barriers and unscreened diversions within and upstream of the Delta, and these impacts will be compounded with a rapidly changing climate. Aquatic habitat conditions within the Delta

support nonnative, predatory fish species, further reducing native fish survival. Hatcheries and harvest regulation are important tools in fisheries management, but they also pose genetic and ecological risks to **wild salmon runs, other** native species, and the Delta ecosystem. These practices need to employ adaptive management strategies to predict and evaluate outcomes, and minimize risks.

Recommendations

New ER Recommendation “H.” Prioritize Unscreened Diversions within the Delta

The California Department of Fish and Wildlife should collect field data to inform prioritization of unscreened diversions within the Delta.

New ER Recommendation “I”. Fund Projects to Improve Survival of Juvenile Salmon

Public agencies should fund and implement projects that improve aquatic habitat conditions and reduce predation risk for juvenile salmon along the priority migration corridors identified in Chapter 4, Figure 4-7. Projects that could improve survival of juvenile salmon include levee setbacks and waterside habitat improvements, placement of fish guidance structures, and nonnative aquatic weed management.

ER R8. Manage Hatcheries to Reduce Genetic Risk of Adverse Effects

~~As required by the National Marine Fisheries Service, all~~**All public agencies that manage hatcheries providing potentially affecting listed fish for release into the wild species should develop, or continue to develop, periodically update,** and implement scientifically sound Hatchery and Genetic Management Plans (HGMPs) to reduce risks to ~~these~~**Central Valley natural-origin and listed** species. ~~The California Department of Fish and Wildlife should provide annual updates to the Delta Stewardship Council on the status of HGMPs within its jurisdiction.~~

ER R9. Implement Marking and Tagging Program Coordinate Fish Migration and Survival Research

~~By December 2014, T~~**the California Department of Fish and Wildlife, in cooperation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, should seek coordination among researchers studying fish migration pathways and survival within the Delta waterways to improve synthesis of results across research efforts**~~revise and begin implementing its program for marking and tagging hatchery salmon and steelhead to improve management of hatchery and wild stocks based on recommendations of the California Hatchery Scientific Review Group, which considered mass marking, reducing hatchery programs, and mark selective fisheries in developing its recommendations.~~

Core Strategy 5: Improve Institutional Coordination to Support Implementation of Ecosystem Protection, Restoration, and Enhancement

A large and diverse array of public agencies and private organizations are engaged in ecosystem protection, enhancement, restoration, and mitigation in the Delta, with roles ranging from regulatory oversight to project implementation and long-term monitoring and management. Improving the efficiency and effectiveness of these efforts will require institutional commitment to a single, consolidated restoration forum with agency support and discretion to guide restoration strategies, plan investments, align individual agency plans and actions, and resolve barriers to implementation.

Increase Interagency Coordination and Support for Restoration Projects

Problem Statement

Broad, landscape scale changes are necessary to restore ecosystem functions in the Delta and Suisun Marsh. While coordination between State, federal and local agencies on ecosystem restoration has dramatically improved through forums such as the Delta Plan Interagency Implementation Committee and the Interagency Adaptive Management and Integration Team, slow progress in protecting and restoring the Delta ecosystem reveals an ongoing need to better coordinate plans and actions that contribute to ecosystem restoration.

Recommendations

New ER Recommendation “F”. Support Implementation of Ecosystem Restoration

Local, State and federal agencies should coordinate to support implementation of ecosystem restoration, and the Delta Plan Interagency Implementation Committee (DPIIC) should:

- (a) Consider establishing an ecosystem restoration subcommittee.**
- (b) Develop strategies for acquisition and long-term ownership and management of lands necessary to achieve ecosystem restoration consistent with the guidance in Appendix Q2.**
- (c) Develop a funding strategy that identifies a portfolio of approaches to remove institutional barriers and fund Ecosystem Restoration Tier 1 or 2 actions within the Delta.**
- (d) Establish program-level endangered species permitting mechanisms that increase efficiency for Ecosystem Restoration Tier 1 or 2 actions within the Delta and compatible ecosystem restoration projects within the Delta watershed.**
- (e) Coordinate with the Delta Science Program to align State, federal, and local resources for scientific support of restoration efforts, including adaptive management, data tools, monitoring, synthesis, and communication.**

(f) Develop a landscape-scale strategy for recreational access to existing and future restoration sites, where appropriate and while maintaining ecological value.

New ER Recommendation “G”. Align State Restoration Plans and Conservation Strategies with the Delta Plan
Agencies should coordinate, and the Delta Plan Interagency Implementation Committee (DPIIC) should consider establishing a subcommittee, to align State, local, or regional restoration strategies, plans or programs in the Delta to be consistent with the priority attributes described in Appendix Q2. These include:

(a) The Delta Conservation Framework;

(b) The CVFPP Conservation Strategy;

(c) The Public Lands Strategy;

(d) Regional Conservation Investment Strategies;

(e) Regional Conservation Strategies or Partnerships; and.

(f) San Francisco Bay and Suisun Marsh Conservation Strategies, Investments and Partnerships, as appropriate.