CCMP Revision
Living Resources Subcommittee: Suggested Actions
January 28, 2015

Questions:

Does the action need to be completed within 5 years? Some actions may be ongoing for decades. (David W.)

Does the outcome need to be measured in terms of progress toward some future goal or does the goal need to be reached within 5 years? (David W.)

Objective: Improve physical conditions and processes supporting self-sustaining natural communities

Action	**Track and improve tidal marsh ecosystem restoration. (Julian W)** Develop an assessment framework for SF Bay tidal wetland restoration projects using multiple bird species as indicators that will be used to assess, prioritize and refine restoration and management strategies. *Possible separate action? Tie to mgmt. actions* By 2018, publish a San Francisco Bay Restoration Guide that recommends the most effective strategies for restoring and enhancing tidal marsh ecosystems. *(Barbara notes status of PWA guide should be reviewed)*
Output/Outcome	All new restoration projects implement the best practices recommended in the Guide *(Barbara notes that this may already be happening - isn't this what agencies oversee?)*
Owner/Administrator	All restoration entities involved in restoration including USFWS, EBRPD, SCC's Invasive Spartina Project, Save the Bay, Point Blue, and many others, Joint Venture, SFEI
Why	As the tidal marsh ecosystem is threatened by sea-level rise, invasive species, and other stressors, practitioners are responding by implementing innovative, and often costly, approaches to enhancing and restoring the system. These emerging techniques need to be assessed for their effectiveness in achieving stated goals and refined as needed to ensure restoration success.

Action	**Restore wetlands, including the Delta (David W.)**
Output/Outcome	
Owner/Administrator	
Why	

Action	**Implement the Tidal Marsh Ecosystem Recovery Plan (Arthur F)** ***– help support initiation of implemention***
Output/Outcome	Use joint venture project tracking to track progress stakeholder process convened by FWS
Owner/Administrator	BCDC, CA DFW, US FWS, State Lands Commission, ABAG, Joint Policy Committee
Why	

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Action	**Perform study to ascertain % of lands included as proposed restoration sites as well as important existing functioning sites in the Tidal Marsh Ecosystem Recovery Plan that are currently being considered for development (Arthur F)** ***– tie to action above***
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Why	

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Action	**Protect high priority upland sites for marsh migration. (Julian W)** *- habitats will look at as well* Identify, prioritize, and prepare upland sites in SF Estuary that can accommodate wetland migration upslope and sustain tidal marshes over the next 100 years using the using projections of ecosystem health under multiple climate change scenarios and accounting for marsh accretion and uncertainty in sea-level rise projections (Future San Francisco Bay Marshes Climate-smart Planning Tool). Preparing upland sites may involve removing potential barriers to tidal action.

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	By March 2016, key decision-makers and planners have identified the highest priority upland sites for marsh migration and integrated these sites into their strategic plans *(Barbara – shouldn't prioritize upland sites – all sites are important, priorities will change based on availability and opportunities)*
Output/Outcome	Over 75% of upland areas identified as high priority for marsh migration are protected or planned for protection
Owner/Administrator	San Francisco Bay Restoration Authority, SF Bay Joint Venture, BCDC, State Coastal Conservancy, USFWS, land trusts and other local and regional planners, NRCS
Why	As sea levels rise and pressures for urban growth intensify, the open spaces available for landward marsh migration will become increasingly costly to protect or worse, unsuitable for marsh formation due to new development. Identifying and protecting these critical areas for marsh migration based on multiple sea-level rise scenarios will help sustain tidal wetland ecosystems given an uncertain future. Help get funds for protection

Action	**Implement green infrastructure flood protection projects**. **(Julian W)** *Habitats and water will likely look at this as well* Identify and communicate the ~~5 – 10~~ best opportunities in the San Francisco Estuary for using tidal marsh and other green infrastructure projects (e.g., horizontal levee) to protect human infrastructure and wildlife populations from sea-level rise and increasing storm frequency and intensity – using tools to identify where vulnerable tidal marshes can be used as adaptive strategy (way to get restoration projects done under adaptation strategy)
Output/Outcome	3-5 green infrastructure projects are implemented and 5-10 are planned to reduce flood risk to the built environment and provide new, high quality habitat supporting target densities of birds and other wildlife by 2018
Owner/Administrator	Local and regional governments, USFWS, BCDC, Coastal Commission, Point Blue…many others
Why	As catastrophic storm events intensify with sea-level rise, the pressure to invest in non-resilient forms of flood protection (hardscape) will make it more difficult to plan, implement and assess green infrastructure solutions that may provide longer-term solutions to flooding and provide much needed habitat for wildlife. Can use OCOF and Point Blue Future Marshes tool to accomplish

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Action	**Develop or adopt flow recommendations for the Delta and San Francisco Bay (Gordon B)** Agencies and NGOs interested in freshwater inflow to the Delta and Bay will work together to develop or adopt flow recommendations. These recommendations will constitute the Bay Area's position on the amount and timing of flows for various water-year types (dry, wet, etc.) necessary to keep the estuary functioning ecologically into the future

Output/Outcome	Within five years, the community of stakeholders will establish these flow guidelines that can be used to characterize the amount of freshwater inflow into the estuary and identify policies and projects needed to make actual inflow reach the recommended levels
Owner/Administrator	Participants should include, but not be limited to, the Regional Water Quality Control Board, the U.S. EPA, the Bay Institute, Save the Bay, the San Francisco Estuary Institute, the San Francisco Estuary Project, the California Coastal Conservancy, the California Department of Fish and Wildlife, the National Marine Fisheries Service, the US Fish and Wildlife Service, and the Natural Resources Defense Council.
Why	The health of the SF Estuary will continue to decline without sufficient freshwater inflow.

Action	**Develop and implement dry season impairment standards for streams tributary to the SF Estuary (Gordon B)** ***– water to work on as well*** Agencies and NGOs interested in dry season streamflow will work together to develop or adopt flow recommendations. These recommendations will be the basis for conserving minimum instream flows in Bay Area streams for various water-year types (dry, wet, etc.) necessary to keep them functioning ecologically into the future.
Output/Outcome	Within five years, the community of stakeholders will establish these flow guidelines that can be used to characterize the amount of dry season streamflow in Bay Area streams and identify policies and projects needed to make actual flows reach the recommended levels.
Owner/Administrator	Participants should include, but not be limited to, the Regional Water Quality Control Board, the U.S. EPA, Trout Unlimited, CEMAR, the San Francisco Estuary Institute, the San Francisco Estuary Project, the California Coastal Conservancy, the California Department of Fish and Wildlife, the National Marine Fisheries Service, and the US Fish and Wildlife Service. Several resource conservation districts and local water agencies also may be interested in participating.
Why	The health of SF Estuary streams will continue to decline without sufficient dry season streamflow.

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Action	**Restore natural hydrograph (David W.)**
Output/Outcome	
Owner/Administrator	
Why	

Action	**Develop and implement riparian corridor standards for streams tributary to the SF Estuary (Gordon B)** Agencies and NGOs interested in riparian corridor health will work together to develop or adopt recommendations. These recommendations will be the basis for conserving or expanding riparian corridors of Bay Area streams for various stream sizes necessary to keep them functioning ecologically into the future. Protect cold water refugia
Output/Outcome	Within five years, the community of stakeholders will establish these riparian corridor guidelines that can be used to characterize the condition of Bay Area stream corridors and identify policies and projects needed to make actual widths reach the recommended levels.
Owner/Administrator	Participants should include, but not be limited to, the Regional Water Quality Control Board, the U.S. EPA, the San Francisco Estuary Institute, the San Francisco Estuary Project, the California Coastal Conservancy, the California Department of Fish and Wildlife, the National Marine Fisheries Service, and the US Fish and Wildlife Service. Several resource conservation districts and local water agencies also be interested in participating.
Why	The health of SF Estuary streams will continue to decline without sufficient protection of riparian corridors.

Action	**Establish guidelines that incentivize brownfield development for purposes of conserving existing open space. (Gordon B)** Agencies and NGOs interested in open space protection will work together to develop or adopt recommendations. These recommendations will be the basis for ensuring that future Bay Area development occurs in previously developed areas.
Output/Outcome	Within five years, the community of stakeholders will establish development guidelines that can be used to assess the success of directing future building into previously disturbed areas and identify policies and projects needed to protect open space.
Owner/Administrator	Participants should include, but not be limited to, the Regional Water Quality Control Board, the U.S. EPA, the San Francisco Estuary Institute, the San Francisco Estuary Project, the California Coastal Conservancy, the California Department of Fish and Wildlife, the National Marine Fisheries Service, the US Fish and Wildlife Service, and the Bay Area Open Space Council.
Why	The health of SF Estuary watersheds will continue to decline without sufficient protection of open space.

Action	**Protect and Improve Overwintering Habitat for Shorebirds and Waterfowl (Barbara S)** Identify and map areas where migratory waterfowl and shorebirds forage and rest. Eliminate or minimize intrusion to reduce existing and prevent future intrusion into these habitats during the period these species are in or moving through the Bay. Protect and encourage enhancement of foraging areas including eelgrass areas and

	mudflats Encourage public-private partnerships to help in this effort *Tidal marsh versus managed ponds…*
Output/Outcome	
Owner/Administrator	.
Why	

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Action	**Identify and protect necessary habitat for diving ducks to offset South Bay habitat loss due to the SBSP project. (Arthur F)**
Output/Outcome	
Owner/Administrator	.
Why	

Action	**Identify and protect important shorebird sites that will become important shorebird roosting sites as sea level rise changes the shoreline and potentially eliminates existing roosts (Arthur F)**
Output/Outcome	
Owner/Administrator	.
Why	

Action	**Identify and propose mechanisms for maintaining tidal flats essential to shorebird populations (Arthur F)**
Output/Outcome	
Owner/Administrator	.

Why	

Action	**Acquire lands to complete the Don Edwards San Francisco Bay National Wildlife Refuge expansion boundary (Arthur F)** ***– expansive regarding entire SF Bay complex***
Output/Outcome	
Owner/Administrator	.
Why	

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Action	**Salmon Fishery Rebuilding Program (Barry N.)** ***– delete – out of our planning area beyond focusing on flows*** Establish a comprehensive state program in the Bay-Delta to restore and maintain a thriving commercial and recreational salmon fishery
Output/Outcome	CDWF actions including: - Resolving temperature problems in key Fall run spawning rivers. - Dam reoperation to reduce "stranding" of salmon redds. - Dam reoperation to provide pulse flows to help young salmon survive their migration down rivers and through the Delta. - Implementation of the San Joaqauin River restoration agreement. - Accelerated spawning and rearing habitat restoration efforts, particularly in the Yolo Bypass and the Sacramento River.
Owner/Administrator	CDFW
Why	The Bay-Delta is the most important source of salmon for the commercial and recreational fisheries in California and Southern Oregon. The state currently has a salmon doubling policy, but has no comprehensive program to achieve this goal. In practice, management focused on protecting only listed species has led to many actions that, unintentionally, harm the fall run. It is likely that we have two choices regarding fall run salmon - launch a comprehensive salmon restoration program or wait until the fall run is listed, leading to more restrictions for the fishing industry and water users.

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Question (David W):

From State of the Estuary: For Invertebrates and Fish, the benchmark is "the average for comparable data from 1980–89; for species composition, the benchmark is 85 percent native species." How was the

abundance, diversity, species composition, and distribution of the Bay's fish community from 1980-1989? Is 85% native species realistic/achievable? Birds have much more defined benchmarks. Why?

Objective: Eliminate or reduce threats to natural communities

Action	**Improve nesting success for tidal marsh birds. (Nadav N.)** Improve habitat quality and nesting success to achieve or increase the benchmark tidal marsh abundance index (0.93 birds per hectare, summing across three tidal marsh bird species- Black rail, tidal marsh song sparrow, and saltmarsh common yellowthroat). By 2017, define the region's top 10 priority nesting sites and institute predator controls such as feral cat trapping and neutering programs, rat eradication and control and other control measures determined to be needed. *(Barbara notes – actions should apply to all tidal marshes with emphasis on certain sites. Not sure prioritizing is appropriate. Actions should include control of recreational uses as discussed in Tidal Marsh Recovery Plan. Encourage public-private partnerships to facilitate actions)*
Output/Outcome	Increase in tidal marsh birds in the Bay Delta region
Owner/Administrator	State and US Fish and Wildlife agencies.
Why	The number one threat for tidal marsh birds, leading to low reproductive success is predation on nests. Reducing predator populations or reducing access of predators to tidal marsh nests are two actions that can be taken. Such predators include native predators that are human-associated such as American crow and common raven, as well as non-native predators, which includes domestic cats (house cats as well as feral cats), but also rats. Successful implementation of this action will increase the number of tidal marsh birds tracked by the State of the Estuary Report indicators in tidal marsh bird populations.

Action	**Increase Ridgway's Rail populations. (Julian W)** Implement restoration and management actions that reduce known threats and stressors to Ridgway's Rails including restoring high tide refugia within or adjacent to marshes, reducing risk of predation through predator control and predator perch removal. Identify sites where threat reduction actions are most likely to result in increased rail populations. *(Barbara notes – actions should take place on all sites that support Rails. Mgmt actions should include control of recreational use including off-leash dogs)*
Output/Outcome	By 2020, Ridgway's Rail population will increase by 10%
Owner/Administrator	Natural resource managers (USFWS, CDFW, EBRPD) and restoration practitioners (Point Blue, Save the Bay, SCC's Invasive Spartina Project)

Why	Ridgway's Rail populations are precariously low and in danger of extinction. They are in need of conservation actions that directly address threats to individual survival and reproductive success and can increase their population size more quickly than the longer-term benefits of tidal marsh restoration

Action	**Reduce contamination (e.g., first flush, pesticides, herbicides, industrial discharge). (David W.)**
Output/Outcome	
Owner/Administrator	
Why	

Action	**Minimize new invasions of non-native species (implement controls on ballast water discharges, hull fouling, etc) (David W.)**
Output/Outcome	
Owner/Administrator	
Why	

Action	**Develop and implement policies to discourage development on resource-rich shorelines threatened by sea-level rise (Arthur F.)**
Output/Outcome	
Owner/Administrator	BCDC, CA DFW, US FWS, State Lands Commission, ABAG, Joint Policy Committee
Why	

Objective: Conduct scientific research and monitoring to measure status of natural communities, develop and refine management actions, and track progress towards management targets

Action	**Establish monitoring parameters and sampling programs that allow tracking key ecological processes for successful adaptive management. (Gordon B)*habitats, but consider riparian corridor health and stream flow,*** Agencies and NGOs interested in ecological processes will work together to develop or adopt recommendations. These recommendations will be the basis for ensuring that future Bay Area monitoring provides adequate information to adaptively manage natural resources.
Output/Outcome	Within five years, the community of stakeholders will establish monitoring programs that can be used to assess the status of key ecological factors and processes. Monitoring results will be used to develop new policies and programs to advance natural resource conservation and restoration.
Owner/Administrator	Participants should include, but not be limited to, the Regional Water Quality Control Board, the U.S. EPA, the San Francisco Estuary Institute, the San Francisco Estuary Project, the California Coastal Conservancy, the California Department of Fish and Wildlife, the National Marine Fisheries Service, the US Fish and Wildlife Service, and CEMAR.
Why	The health of SF Estuary watersheds cannot be assessed and progress toward restoration goals measured without robust monitoring.

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Action	**Updated and Integrated Data Management and Analysis (Campbell I.)** Incorporation of 21 century technology (big data analytics, data visualization and decision support tools), coupled with a workflow that allows for the simultaneous examination of multiple data sets and real-time vetting of alternatives with subject matter experts, agency staff and locally affected communities. This combination of technology and workflow process helps ensure best available science, adaptive management and local input are cornerstones of water and resource management, and greatly enhances decision making power and transparency.
Output/Outcome	Development of the pilot Delta Restoration Hub, and a Hub for the Bay system within 2 years.
Owner/Administrator	Delta Conservancy and Delta Science Program for the Delta, SFEI and others (?) for the Bay system
Why	Better tools needed for resource management are highlighted in the Delta Plan and the Delta Science Plan and the Delta Conservancy Strategic Plan.

NEW ACTIONS – FROM MEETING

Action	Incorporate fish needs in restoration projects Identify opportunities for restoring creek mouths Tidal/fluvial interface
Output/Outcome	
Owner/Administrator	
Why	

Action	Delta-specific bird action??
Output/Outcome	
Owner/Administrator	
Why	