

Conservation Measure Hypotheses, Outcomes, Monitoring Metrics, and Biological Objectives Served

Matrix #1 - Narrative & Hypothesis. DRAFT 29 September					Potential Monitoring Metric																
Hypotheses Supporting the Conservation Measure	Covered Spp.	DREIP Outcomes	Potential Monitoring Metric Summary	Biological Objectives Served	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
<b>HRCM4: Restore between 5,000 and 11,000 acres to tidal action and vegetated tidal marsh and shallow subtidal habitat in the Yolo Bypass/Cache Slough Complex ROA (in addition to Liberty Island and Little Holland Tract).</b>																					
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing delta smelt.	delta smelt	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. DESM1.1: Increase the abundance of delta smelt within the Delta and Suisun Bay to levels that will support a self-sustaining delta smelt population. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. ECSY2.1: Over the term of the BDCP, increase the abundance of aquatic invertebrate species that provide food and support food production for covered fish species in Delta waterways.																	
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Longfin smelt.	Longfin smelt	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. LOSM1.2: Increase longfin smelt population growth rates in the Delta and Suisun Bay to levels that will contribute to the long-term sustainability of the longfin smelt population in the Delta and Suisun Bay.																	
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Winter-run Chinook Salmon	Winter-run Chinook Salmon	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.																	
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Spring-run Chinook Salmon.	Spring-run Chinook Salmon	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.																	
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Fall-run Chinook salmon, Sac.	Fall-run Chinook salmon, Sac.	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.																	
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Late Fall-run Chinook Salmon, Sac.	Late Fall-run Chinook Salmon, Sac.	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.																	

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Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Steelhead.	steelhead	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. STEE3.1: Increase the survivals of juvenile and adult steelhead populations using the Delta across the temporal distributions for each run.			1													1			
Restoring tidal marsh in Cache Slough will increase the local production of food for rearing Splittail.	splittail	Increase rearing habitat and local food production	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. SASP 1.1: Contribute towards increasing the abundance of Sacramento splittail within the Delta and Suisun Bay.			1														1		
Restoring tidal marsh in Cache Slough will increase the local production of food for Green and White Sturgeon	Green & White Sturgeon	Increase food production for local consumption by green and white sturgeon (added by evaluation team).	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.			1															1	
Restoring tidal marsh in Cache Slough will increase the export of food in the Delta downstream of Rio Vista available to juvenile salmonids, splittail, delta smelt, white sturgeon, and green sturgeon by exporting organic material from the marsh plain and phytoplankton, zooplankton, and other organisms produced in intertidal channels into the Delta and Suisun Marsh (Siegel 2007).	All	Food resources produced on the restored marsh will be exported and contribute to food availability downstream of Rio Vista	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat	Objective ECSY2.1: Over the term of the BDCP, increase the abundance of aquatic invertebrate species that provide food and support food production for covered fish species in Delta waterways. DESM1.1: Increase the abundance of delta smelt within the Delta and Suisun Bay to levels that will support a self-sustaining delta smelt population. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.			1															1	
Restoring tidal marsh in Cache Slough will expand areas of cool water refugia for delta smelt.	delta smelt	Provide local cool water refugia for delta smelt and rearing salmonids	4. Water temperature	DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay.				1															1
Restoring tidal marsh in Cache Slough will expand areas of cool water refugia for chinook salmon.	chinook salmon	Provide local cool water refugia for delta smelt and rearing salmonids	4. Water temperature	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area					1														
<b>HRCM5: Restore at least 1,500 acres of freshwater tidal marsh within the Cosumnes/Mokelumne ROA.</b>																							
Restoring tidal marsh in the Cosumnes/Mokelumne ROA will increase rearing habitat area for delta smelt.	Delta smelt	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	DESM1.1: Increase the abundance of delta smelt within the Delta and Suisun Bay to levels that will support a self-sustaining delta smelt population. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.			1																1



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Restoring tidal marsh in the Cosumnes/Mokelumne ROA will provide local areas of cool water refugia for chinook salmon	Chinook Salmon	Locally provide areas of cool water refugia (Feb-Jun) for Delta smelt and salmon.	4. Water temperature	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area				1												
<b>HRCM6: Restore at least 2,100 acres of tidal marsh within the West Delta ROA.</b>																				
Restoring tidal marsh in West Delta ROA will increase the local production of food for rearing spring-run chinook salmon.	Spring-run Chinook Salmon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.																
Restoring tidal marsh in West Delta ROA will increase the local production of food for rearing fall-run chinook salmon.	Fall-run Chinook Salmon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ) 2. Density of macroinvertebrates 3. Extent of restored/created subtidal habitat. 12. Abundance of covered fish species (number of covered fish species/10,000 m3).	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island.		1	1	1												
Restoring tidal marsh in West Delta ROA will increase the availability and production of food in the western Delta and Suisun Bay by exporting organic material via tidal flow from the marsh plain and organic carbon, phytoplankton, zooplankton, and other organisms produced in intertidal channels into adjacent open water areas (Siegel 2007); • provide an important linkage between current and future upstream restored habitat with downstream habitat in Suisun Marsh and Bay. This area's location at the confluence of the Sacramento and San Joaquin Rivers make it uniquely important to improving connectivity among the communities and species of the Delta;	Splittail	Provide a continuous corridor of habitat & food productivity linking current & future restored habitat in the Cache Slough Complex with habitat in Suisun Marsh & Bay	3. Extent of restored/created tidal and subtidal habitat.	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. SASP 1.1: Contribute towards increasing the abundance of Sacramento splittail within the Delta and Suisun Bay.																
Restoring tidal marsh in West Delta ROA will increase the availability and production of food in the western Delta and Suisun Bay by exporting organic material via tidal flow from the marsh plain and organic carbon, phytoplankton, zooplankton, and other organisms produced in intertidal channels into adjacent open water areas (Siegel 2007); • provide an important linkage between current and future upstream restored habitat with downstream habitat in Suisun Marsh and Bay. This area's location at the confluence of the Sacramento and San Joaquin Rivers make it uniquely important to improving connectivity among the communities and species of the Delta;	Green Sturgeon	Provide a continuous corridor of habitat & food productivity linking current & future restored habitat in the Cache Slough Complex with habitat in Suisun Marsh & Bay	3. Extent of restored/created tidal and subtidal habitat.	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area				1												

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Restoring tidal marsh in West Delta ROA will increase the availability and production of food in the western Delta and Suisun Bay by exporting organic material via tidal flow from the marsh plain and organic carbon, phytoplankton, zooplankton, and other organisms produced in intertidal channels into adjacent open water areas (Siegel 2007); provide an important linkage between current and future upstream restored habitat with downstream habitat in Suisun Marsh and Bay. This area's location at the confluence of the Sacramento and San Joaquin Rivers make it uniquely important to improving connectivity among the communities and species of the Delta;	White Sturgeon	Provide a continuous corridor of habitat & food productivity linking current & future restored habitat in the Cache Slough Complex with habitat in Suisun Marsh & Bay	3. Extent of restored/created tidal and subtidal habitat.	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.																
Restoring tidal marsh in the West Delta ROA will increase the availability and production of food in the western Delta and Suisun Bay by exporting organic material via tidal flow from the marsh plain and organic carbon, phytoplankton, zooplankton, and other organisms produced in intertidal channels into adjacent open water areas.	All	Increase the availability and production of food in the western Delta and Suisun Bay by exporting, via tidal flow, organic material from the marsh plain and organic carbon, phytoplankton, zooplankton, and other organisms from intertidal channels into the adjacent open waters.	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ). 2. Density of macroinvertebrates	Objective ECSY2.1: Over the term of the BDCP, increase the abundance of aquatic invertebrate species that provide food and support food production for covered fish species in Delta waterways. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. LOSM1.2: Increase longfin smelt population growth rates in the Delta and Suisun Bay. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.				1												
Restoring tidal marsh in the West Delta ROA will provide local areas of cool water refugia for delta smelt.	Delta smelt	Locally provide areas of cool water refugia for delta smelt and salmonids.	4. Water temperature	DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay.	1	1														
Restoring tidal marsh in the West Delta ROA will provide local areas of cool water refugia for chinook salmon.	Chinook Salmon	Locally provide areas of cool water refugia for delta smelt and salmonids.	4. Water temperature	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area				1												
HRCM7: Restore at least 5,000 acres of tidal marsh within the South Delta ROA.																				
Restoring tidal marsh in the South Delta ROA will increase rearing habitat for delta smelt.	Delta smelt	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m <sup>3</sup> )	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.				1										1		
Restoring tidal marsh in the South Delta ROA will increase rearing habitat for San Joaquin Fall run Chinook .	Fall-run Chinook Salmon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m <sup>3</sup> )	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN1.2: Increase the survival of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island to levels that will contribute to the long-term viability of the population. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island. CHIN3.1: Increase the survivals of juvenile and adult Chinook salmon populations using the Delta across the temporal distributions for each run.				1										1		

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Restoring tidal marsh in the South Delta ROA will increase rearing habitat for Sacramento splittail .	Splittail	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. SASP 1.1: Contribute towards increasing the abundance of Sacramento splittail within the Delta and Suisun Bay.				1									1			
Restoring tidal marsh in the South Delta ROA will increase rearing habitat for green sturgeon .	Green sturgeon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.				1									1			
Restoring tidal marsh in the South Delta ROA will increase rearing habitat for white sturgeon.	White sturgeon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.				1									1			
Restoring tidal marsh in South Delta ROA will increase the regional production of food for all covered aquatic species.	All	Increase the availability and production of food in the delta and suisun bay by export from the south Delta of organic material via tidal flow from the new marsh plain and organic carbon, phytoplankton, zooplankton, and other organisms produced in new intertidal channels	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ). 2. Density of macroinvertebrates	Objective ECSY2.1: Over the term of the BDCP, increase the abundance of aquatic invertebrate species that provide food and support food production for covered fish species in Delta waterways. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. LOSM1.2: Increase longfin smelt population growth rates in the Delta and Suisun Bay to levels that will contribute to the long-term sustainability of the longfin smelt population in the Delta and Suisun Bay. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island.		1	1													
Restoring tidal marsh in the South Delta ROA will provide local areas of cool water refugia for delta smelt.	Delta smelt	Locally provide areas of cool water refugia for Delta smelt and Salmonids	4. Water temperature	DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay.					1											
Restoring tidal marsh in the South Delta ROA will provide local areas of cool water refugia for Chinook salmon.	Chinook Salmon	Locally provide areas of cool water refugia (feb-jun) for delta smelt and salmon	4. Water temperature	CHIN3.1: Increase the survivals of juvenile and adult Chinook salmon populations using the Delta across the temporal distributions for each run.					1											
Restoring tidal marsh and hydrodynamics can increase the habitat available for delta smelt	delta smelt	In conjunction with dual conveyance operations, marsh restoration in the south delta could expand the current distribution of delta smelt into formerly occupied habitat areas	#12: Abundance of covered fish species (number of covered fish species/10,000 m <sup>3</sup> )	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.														1		
<b>HRCM8: Restore at least 1,400 acres tidal marsh within the East Delta ROA.</b>																				
Restoring tidal marsh habitat in the East Delta ROA will increase habitat available for rearing of San Joaquin fall run Chinook	Fall-run Chinook salmon- San Joaquin River or eastside	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island. CHIN3.1: Increase the survivals of juvenile and adult Chinook salmon populations using the Delta across the temporal distributions for each run.					1									1		
Restoring tidal marsh habitat in the East Delta ROA will increase habitat available for rearing of Sacramento splittail	Splittail	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. SASP1.2: Maintain the distribution of Sacramento splittail within the Delta and Suisun Bay to achieve target distribution values.				1										1		

Conservation Measure Hypotheses, Outcomes, Monitoring Metrics, and Biological Objectives Served

Hypotheses Supporting the Conservation Measure	Covered Spp.	DREIP Outcomes	Potential Monitoring Metric Summary	Biological Objectives Served	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Restoring tidal marsh habitat in the East Delta ROA will increase habitat available for rearing of green sturgeon	Green Sturgeon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. GRST2: Increase the spatial distribution of juvenile green sturgeon within the Delta				1												1	
Restoring tidal marsh habitat in the East Delta ROA will increase habitat available for rearing of white sturgeon	White Sturgeon	Increase rearing habitat area (including physical and biotic attributes) for covered fish species	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. WHST2: Increase the spatial distribution of white sturgeon within the Delta				1													1
Restoring tidal marsh in the East Delta ROA will increase the availability and production of food in the east and central Delta by exporting organic material from the marsh plain and phytoplankton, zooplankton, and other organisms produced in intertidal channels into the Delta.	All	Increase the availability and production of food in the east and central Delta by exporting organic material from the marsh plain and phytoplankton, zooplankton, and other organisms produced in intertidal channels into the Delta.	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ). 2. Density of macroinvertebrates	Objective ECSY2.1: Over the term of the BDCP, increase the abundance of aquatic invertebrate species that provide food and support food production for covered fish species in Delta waterways. DESM1.1: Increase the abundance of delta smelt within the Delta and Suisun Bay to levels that will support a self-sustaining delta smelt population. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. LOSM1.2: Increase longfin smelt population growth rates in the Delta and Suisun Bay to levels that will contribute to the long-term sustainability of the longfin smelt population in the Delta and Suisun Bay. CHIN1.2: Increase the survival of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island to levels that will contribute to the long-term viability of the population. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook		1	1														
Restoring tidal marsh in the East Delta ROA provide local areas of cool water refugia for delta smelt	Delta Smelt	Locally provide areas of cool water refugia for delta smelt	4. Water temperature	DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay.					1												
Restoring tidal marsh in the East Delta ROA provide local areas of cool water refugia for Chinook salmon	Chinook Salmon	Locally provide areas of cool water refugia for Chinook salmon	4. Water temperature	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area					1												
<b>HRCM9: Restore at least 7,000 acres of brackish tidal marsh within the Suisun Marsh Restoration Opportunity Area.</b>																					
Restoration of brackish tidal marsh and shallow subtidal slough habitats in Suisun Marsh and Bay will improve rearing habitat conditions for delta smelt by increasing the quantity of functional tidal habitat.	Delta Smelt	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.					1												1
Restoration of brackish tidal marsh and shallow subtidal slough habitats in Suisun Marsh will improve rearing habitat conditions for longfin smelt by increasing the quantity of functional tidal habitat.	Longfin smelt	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. LOSM1.2: Increase longfin smelt population growth rates in the Delta and Suisun Bay to levels that will contribute to the long-term sustainability of the longfin smelt population in the Delta and Suisun Bay.					1												1
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for winter run Chinook salmon by increasing the quantity of functional intertidal and floodplain habitats.	Winter-run Chinook Salmon	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island. CHIN3.1: Increase the survivals of juvenile and adult Chinook salmon populations using the Delta across the temporal distributions for each run.					1												1

Conservation Measure Hypotheses, Outcomes, Monitoring Metrics, and Biological Objectives Served

Hypotheses Supporting the Conservation Measure	Covered Spp.	DREIP Outcomes	Potential Monitoring Metric Summary	Biological Objectives Served	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for Spring run Chinook salmon by increasing the quantity of functional inter-tidal and floodplain habitats.	Spring-run Chinook Salmon	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.				1									1			
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for Fall run Chinook salmon by increasing the quantity of functional inter-tidal and floodplain habitats.	Fall-run Chinook Salmon	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island. CHIN2.1: Increase the mean weight and length of juvenile Sacramento Basin spring-run Chinook salmon, fall/late fall-run Chinook salmon, and winter-run Chinook salmon rearing in and migrating through the Delta to Chipps Island.				1									1			
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for Late-fall run Chinook salmon by increasing the quantity of functional inter-tidal and floodplain habitats.	Late Fall-run Chinook Salmon	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area				1									1			
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for Sacramento splittail by increasing the quantity of functional inter-tidal and floodplain habitats.	Splittail	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species. SASP 1.1: Contribute towards increasing the abundance of Sacramento splittail within the Delta and Suisun Bay.				1									1			
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for green sturgeon by increasing the quantity of functional inter-tidal and floodplain habitats.	Green Sturgeon	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.				1									1			
Restoration of brackish tidal marsh and shallow subtidal aquatic habitats in Suisun Marsh will improve rearing habitat conditions for white sturgeon by increasing the quantity of functional inter-tidal and floodplain habitat.	White Sturgeon	Increase rearing habitat area for covered fish species.	#3. Extent of restored/created subtidal habitat; Metric #12: Abundance of covered fish species (number of covered fish species/10,000 m3)	ECSY5.1: Protect and expand the availability of spatially well-distributed aquatic and terrestrial natural communities to support increased distribution of covered species, aquatic productivity, and improved connectivity among natural communities within and adjacent to the BDCP planning area. NACO1.2: Increase the extent and spatial distribution of tidal marsh within the Planning Area and Suisun Marsh to support habitat and food production for associated native species.				1									1			
Restoring tidal marsh in the Suisun Marsh ROA will increase the availability and production of food in Suisun Bay for all species by exporting organic material via tidal flow from the marsh plain and phytoplankton, zooplankton, and other organisms produced in intertidal channels into the Bay.	All	Increase the availability & production of food in Suisun Bay by exporting organic material via tidal flow from the marsh plain & phytoplankton, zooplankton, & other organisms produced in intertidal channels into the Bay.	1. Total organic carbon (mg/L), phytoplankton (mg/L chlorophyll a), and zooplankton (number/1,000 m <sup>3</sup> ). 2. Density of macroinvertebrates	Objective ECSY2.1: Over the term of the BDCP, increase the abundance of aquatic invertebrate species that provide food and support food production for covered fish species in Delta waterways. DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay. LOSM1.2: Increase longfin smelt population growth rates in the Delta and Suisun Bay to levels that will contribute to the long-term sustainability of the longfin smelt population in the Delta and Suisun Bay. CHIN2.2: Increase the mean weight and length of juvenile San Joaquin Basin fall-run Chinook salmon, including the Mokelumne and Cosumnes River salmon, rearing in and migrating through the Delta to Chipps Island.	1	1	1													
Restoring tidal marsh in the Suisun Marsh ROA will provide local areas of cool water refugia for delta smelt by increasing nocturnal tidal thermal exchange on marsh plain surfaces. (C. Enright pers. comm.)	Delta Smelt	Locally provide areas of cool water refugia for Delta smelt and Salmonids	4. Water temperature	DESM1.2: Increase delta smelt population growth rates in future years from growth rates observed during years of comparable hydrology under existing conditions to levels that will contribute to the long-term sustainability of the smelt population in the Delta and Suisun Bay.				1												

Conservation Measure Hypotheses, Outcomes, Monitoring Metrics, and Biological Objectives Served

Hypotheses Supporting the Conservation Measure	Covered Spp.	DREIRP Outcomes	Potential Monitoring Metric Summary	Biological Objectives Served
Restoring tidal marsh in the Suisun Marsh ROA will provide local areas of cool water refugia for spring run Chinook by increasing nocturnal tidal thermal exchange on marsh plain surfaces. (C. Enright pers. comm.)	Spring-run Chinook salmon	Locally provide areas of cool water refugia for Delta smelt and Salmonids	4. Water temperature	CHIN3.1: Increase the survivals of juvenile and adult Chinook salmon populations using the Delta across the temporal distributions for each run.
Restoring tidal marsh in the Suisun Marsh ROA will provide local areas of cool water refugia for fall run Chinook by increasing nocturnal tidal thermal exchange on marsh plain surfaces. (C. Enright pers. comm.)	Fall-run Chinook Salmon	Locally provide areas of cool water refugia for Delta smelt and Salmonids	4. Water temperature	CHIN3.1: Increase the survivals of juvenile and adult Chinook salmon populations using the Delta across the temporal distributions for each run.
Restoring tidal marsh in the Suisun Marsh ROA will provide local areas of cool water refugia for steelhead by increasing nocturnal tidal thermal exchange on marsh plain surfaces. (C. Enright pers. comm.)	Steelhead	Locally provide areas of cool water refugia for Delta smelt and Salmonids	4. Water temperature	STEE3.1: Increase the survivals of juvenile and adult steelhead populations using the Delta across the temporal distributions for each run.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Fall-run Chinook Salmon	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Spring-run Chinook salmon	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Winter-run Chinook salmon	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Late Fall-run Chinook Salmon	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Steelhead	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	<b>ECSY4.1:</b> Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta. <b>STEE3.1:</b> Increase the survivals of juvenile and adult steelhead populations using the Delta across the temporal distributions for each run.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Longfin smelt	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Delta Smelt	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Splittail	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	<b>ECSY4.1:</b> Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta. <b>SASP 1.1:</b> Contribute towards increasing the abundance of Sacramento splittail within the Delta and Suisun Bay.

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Conservation Measure Hypotheses, Outcomes, Monitoring Metrics, and Biological Objectives Served

Hypotheses Supporting the Conservation Measure	Covered Spp.	DRE RIP Outcomes	Potential Monitoring Metric Summary	Biological Objectives Served	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	Green Sturgeon	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.						1									
Restoring tidal marsh in the Suisun Marsh ROA will reduce periodic low dissolved oxygen events associated with the discharge of waters from lands managed as seasonal freshwater wetlands by restoring them as brackish intertidal marsh. (Siegel 2007, C. Enright pers. comm.)	White Sturgeon	Reduce periodic low dissolved oxygen events and associated Mercury Methylation events associated with the discharge of waters from lands managed as seasonal freshwater wetlands that would be restored as brackish intertidal marsh.	6. Dissolved oxygen	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.						1									
Restoring tidal marsh in the Suisun Marsh ROA will reduce methyl mercury by reducing the chemical transformation of contaminants to less toxic/non-toxic substances.	All	Reduce Methyl Mercury by changing land use from diked wetlands to tidal marsh	TBA	ECSY4.1: Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.															
NEGATIVE OUTCOMES SUMMARY FOR HRCS 4 THRU HRCS19																			
	All	Establishment of undesirable species (such as Egeria) that will prey or compete or alter habitat conditions for covered fish.	8. Distribution and abundance of targeted non-native species.	ECSY3.1: Manage the distribution and abundance of established non-native invasive species in the Delta to reduce non-native species predation on and competition with native fishes and to rehabilitate aquatic ecosystem processes.								1							
	All	Establishment of undesirable species (such as Centrarchids) that will prey or compete or alter habitat conditions for covered fish.	8. Distribution and abundance of targeted non-native species. 9. Juvenile salmonid predation loss rates within the Delta.	ECSY3.1: Manage the distribution and abundance of established non-native invasive species in the Delta to reduce non-native species predation on and competition with native fishes and to rehabilitate aquatic ecosystem processes.								1	1						
	All	Establishment of undesirable species (such as Corbicula) that will prey or compete or alter habitat conditions for covered fish.	8. Distribution and abundance of targeted non-native species.	ECSY3.1: Manage the distribution and abundance of established non-native invasive species in the Delta to reduce non-native species predation on and competition with native fishes and to rehabilitate aquatic ecosystem processes.								1							
	Delta smelt	Establishment of undesirable species (such as Inland Silversides) that will prey or compete or alter habitat conditions for covered fish.	8. Distribution and abundance of targeted non-native species. 9. Juvenile salmonid predation loss rates within the Delta.	ECSY3.1: Manage the distribution and abundance of established non-native invasive species in the Delta to reduce non-native species predation on and competition with native fishes and to rehabilitate aquatic ecosystem processes.								1	1						
The level of inorganic mercury in channel sediment is an important factor in determining methylmercury production, and methylmercury concentrations in the water column (attached to phytoplankton) affect biomagnification of methylmercury up the food chain (Bloom et al. 2003, Heim et al. 2007)	All	Potential for mercury methylation and local bioaccumulation: N2-A-Covered species, N2-B, Non-covered wildlife species, N2-C, human health.	TBD	<b>ECSY4.1:</b> Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.															
The level of inorganic mercury in channel sediment is an important factor in determining methylmercury production, and methylmercury concentrations in the water column (attached to phytoplankton) affect biomagnification of methylmercury up the food chain (Bloom et al. 2003, Heim et al. 2007)	Wildlife	Potential for mercury methylation and local bioaccumulation to affect wildlife: N2-A - Target species, N2-B, Non-target wildlife species, N2-C, Human health.	TBD	<b>ECSY4.1:</b> Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.															
The level of inorganic mercury in channel sediment is an important factor in determining methylmercury production, and methylmercury concentrations in the water column (attached to phytoplankton) affect biomagnification of methylmercury up the food chain (Bloom et al. 2003, Heim et al. 2007)	Human health	Potential for mercury methylation and local bioaccumulation: N2-A-Covered species, N2-B, Non-covered wildlife species, N2-C, human health.	TBD	<b>ECSY4.1:</b> Contribute to specific actions which have a demonstrated positive effect in improving the aquatic ecosystem by reducing the load of contaminants of concern entering the Delta.															