

Story	Type	Indicator Attribute	Indicator	Metric	Source	
Creeks and Streams	Status (condition)	Ecological Interaction Networks	Invasive species	Number of streams contaminated with New Zealand Mudsnail	- NZMS surveys	
				Number/linear miles of streams contaminated with Arundo		
				Number/linear miles of streams contaminated with Red swamp crayfish	- Lee Katz study in 2008	
			Endangered, key native species	Number of native frog and newt egg masses observed/population size	- Lee Katz study in 2008	
				Number of steelhead trout observed in streams	- RCD surveys	
		Productivity	Algae assemblages	Biocriteria?	- CEDEN, SCCWRP, SWRCB	
			Invertebrate assemblages	Biocriteria?	- CEDEN, SCCWRP, SWRCB	
		Habitat	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)		
			Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level		
			Physical structure of stream			
	Ecological function / Ecosystem Service	Hydrology				
		Biogenic habitat				
		Drinking water				
	Resilience	Wildlife support				
		Groundwater recharge?				
	Stressor	Human Activity	Water pollution	Recovery from disturbance		
				Barriers to passage		
				Nutrient loads in streams, number/linear miles of streams exceeding limits	- Heal the Bay Stream Team	
				Oil and grease loads in streams, number/linear miles of streams exceeding limits		
				Metal loads in streams, number/linear miles of streams exceeding limits		
				Bacteria loads in streams, number/linear miles of streams exceeding limits	- Heal the Bay Stream Team	
		Changing environmental conditions	Climate change / ENSO cycles	Contaminants of emerging concern loads in streams, number/linear miles of streams exceeding limits	- Heal the Bay Stream Team	
				Channelization	Linear miles of habitat restored	
		Response	Restoration	Unnatural water flow	Volume of imported water used in the watershed	- LADWP 2008 report: Securing LA's Water Supply & West Basin 2008 report: Water Reliability 2020 (strategic planning documents)
					Temperature	
	Rainfall					
	Storm events					
	Public Policy		Protection	Invasive removal	Number of crayfish removed	- SMBRC NEPORT Habitat Reports
				Native replanting	Number/linear miles of streams restored	- SMBRC NEPORT Habitat Reports
				Barrier removal	Number/linear miles of streams restored	- CalTrout 2006: Steelhead habitat assessment
				Channel removal / Daylighting	Number/linear miles of streams restored	- SMBRC NEPORT Habitat Reports
	Public Policy	Water conservation	Water conservation		- Santa Monica Mountains National Recreation Area, Department of Fish and Game, State Water Board - California Natural Diversity Database - Los Angeles County Department of Regional Planning	
Water quality improvement projects						
Invasive species prevention						
Wetlands and Lagoons	Status (condition)	Ecological Interaction Networks	Endangered, key native species	Invasive species		
				Birds (diversity, abundance, important species)		
				Mammals (diversity, abundance)		
				Herpetofauna (diversity, abundance)		
				Fish (diversity, abundance)		
		Productivity	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)		
				Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level	
		Habitat	Physical structure of flood plain and channels	Cross-sections of channels, bank distances, and heights	- Ballona wetlands monitoring reports (SMBRC) - Malibu lagoon survey (Ambrose, SMBRC)	
				Hydrology	Inundation and tidal range (area, level, and frequency)	- CRAM - Ballona wetlands monitoring reports (SMBRC)
			Biogenic habitat	Water circulation and salinity	- Ballona wetlands monitoring reports (SMBRC) - Malibu lagoon survey (Ambrose, SMBRC)	
	Vegetation (cover, diversity, abundance, biomass, seed bank)			- Ballona wetlands monitoring reports (SMBRC) - Malibu lagoon survey (Ambrose, SMBRC)		
	Ecological function / Ecosystem Service	Flood control	CRAM			
		Groundwater recharge	CRAM			
		Pollution control	CRAM			
Wildlife support		CRAM				
Resilience	Recovery from disturbance		- CRAM (www.CRAMwetlands.org), SCCWRP, IWRAP			

Story	Type	Indicator Attribute	Indicator	Metric	Source
Coastal Wetlands	Stressor	Human Activity	Loss of wetlands	Acres of wetlands in the Bay watershed Acres of wetlands historically Acres of wetlands in the State, region, or nation	- California State Wetland Inventory, - Wetland Tracker (www.wetlandtracker.org), - National Wetlands Inventory (USFWS), - CRAM
			Water Pollution	Basic chemistry, bacteria, nutrients, metals and toxins, hydrocarbons, organics, new contaminants, phytoplankton	- Ballona wetlands monitoring reports (SMBRC) - Malibu lagoon survey (Ambrose, SMBRC)
			Sediment Contamination	Metals, salinity, nutrients, grain size, water content, bulk density, organic content	- CRAM - Ballona wetlands monitoring reports (SMBRC) - Malibu lagoon survey (Ambrose, SMBRC)
	Response	Changing environmental conditions	Climate change / ENSO cycles	Temperature	
				Rainfall	
				Storm events	
	Response	Restoration	Restoration	Acres of wetlands restored	- California State Wetland Inventory, - Wetland Tracker (www.wetlandtracker.org), - National Wetlands Inventory (USFWS), - National Hydrography Dataset (USGS)
			Protection	Acres of wetlands protected	
		Public Policy	Land-use planning	Number and enforcement of policies and regulations to prevent wetland degradation	- County, Cities, State
			Trash control	Distribution	
Coastal Dunes and Bluffs	Status (condition)	Ecological Interaction Networks	Invasive species	Acreeage of iceplant	
			Endangered, key native species	Numbers of El Segundo blue butterfly	- PVPLC, Traves Longcore, SEA Lab
		Productivity	Net primary productivity		
			Biomass pyramid		
		Habitat	Physical structure		
	Biogenic habitat				
	Ecological function / Ecosystem Service	Flood/ erosion control	Dune height, size Sand relocation during winter months	- LA County Dept of Beaches and Harbors	
		Wildlife support	Ratio of native vegetation to non-native vegetation	- SEA Lab	
		Resilience	Recovery from disturbance		
	Stressor	Human Activity	Habitat loss	Acres or linear miles of dunes and bluffs in the Bay Acres or linear miles of historic dunes and bluffs in the Bay	- Beach Bluffs Master Plan
Human use			Number of goat trails through dunes and down bluffs		
Changing environmental conditions		Climate change / ENSO cycles	Temperature Rainfall Storm events		
Response	Restoration	Restoration	Acres of restored dunes and bluffs		
		Protection	Acres of protected dunes and bluffs		
	Public Policy	Land-use planning	Number and enforcement of policies and regulations to prevent spread of invasive species, and erosion of coastal dunes and bluffs	- County, Cities, NGOs	
		Human use management	Number of parcels identified in BBMP restored		
Sandy Beaches	Status (condition)	Ecological Interaction Networks	Invasive species		
			Endangered, key native species	Grunion (number, size, frequency of runs Surf-zone fishes (diversity, abundance, biomass) Least tern nesting pairs Western snowy plovers in roosting area Sand crabs (size, density, sex)	- Grunion greeter program (Karen Martin) - DFG beach seine surveys? - Audubon surveys - OASPR surveys - LIMPET's data
		Productivity	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)	
			Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level	
		Habitat	Physical structure		
			Biogenic habitat		
	Ecological function / Ecosystem Service	Flood/ erosion control			
		Wildlife support			
	Resilience	Recovery from disturbance			
	Stressor	Human Activity	Habitat loss / modification	Beach grooming (location and frequency)	- LAC Dept of Beaches and Harbors
Beach replenishment (location and frequency)				- LAC Dept of Beaches and Harbors	
Coastal armoring			Seasonal accretion and erosion of sand	- NOAA? OPC?	
			accretion and erosion trends	- NOAA? OPC?	
Water pollution			Location and size of jetties, groins, rockwalls, etc		
			Number of samples exceeding TMDL standards for bacteria in wet and dry-weather	- CLA-EMD and LAC-DHS	
Human use	Beach grades	- Heal the Bay			
	Location of storm drains	- Heal the Bay Stream Team - Santa Monica Baykeeper			
Human use	Numbers of visitors	- LA County Lifeguards			
	Coastal development	- Coastal use survey			

Story	Type	Indicator Attribute	Indicator	Metric	Source		
Rocky intertidal		Changing environmental conditions	Climate change / ENSO cycles	Trash (volume/ weight collected from beaches)	- LA County Dept of beaches and harbors, coastal cleanup day, Heal the Bay and Surfrider, PIE projects		
				Temperature			
				Rainfall			
	Response	Restoration	Public Policy	Restoration	Acres of habitat restored	- PVPLC	
					Protection	Policies to prevent degradation of beaches and beach wildlife	- Cities, the County, State
					Land-use planning	Acres of habitat protected	
					Human use management	Coastal permits for beachfront development	- Coastal Commission?
	Rocky intertidal	Status (condition)	Ecological Interaction Networks	Invasive species	Key assemblages of common rocky intertidal species	- MARiNe Core Surveys	
					Endangered, key native species	Diversity, abundance, biomass of algal, invertebrate and fish communities	- MARiNe Biodiversity Surveys
						Abundance of key species (sea star, mussels, juvenile lobster)	
			Productivity	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)		
					Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level	
Habitat			Physical structure	Wave action			
		Rock formations					
		Biogenic habitat		Mussel beds			
Ecological function / Ecosystem Service		Wildlife support	Surfgrass beds (location and size)				
			Resilience	Recovery from disturbance			
Stressor		Human Activity	Habitat loss / modification	Historical size and location of surfgrass beds	- SeaGrant historical survey		
				Water pollution	Metals, hydrocarbons and organic levels in mussels	- NOAA Mussel Watch data	
	Storm drain location and flow				- Heal the Bay - Santa Monica Baykeeper		
	Human use			Visitor activity study	- Ambrose and Smith 2004		
	Changing environmental conditions	Climate change / ENSO cycles	Harvest of species (tidepooling, fishing, scientific collection)	Temperature	- DFG?		
				Rainfall			
Response	Restoration	Public Policy	Human use management	Compliance with collection bans or collection permits (number of violations)	- DFG enforcement		
Eelgrass beds	Status (condition)	Ecological Interaction Networks	Invasive species				
				Endangered, key native species			
		Productivity	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)			
				Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level		
		Habitat	Physical structure				
	Biogenic habitat			Location and size of eelgrass beds			
	Ecological function / Ecosystem Service	Wildlife support	Abundance, diversity, biomass				
			Resilience	Recovery from disturbance			
	Stressor	Human Activity	Habitat loss / modification	Historical size and location of eelgrass beds	- SeaGrant historical survey		
				Water pollution	Turbidity		
					Human use		
Changing environmental conditions		Climate change / ENSO cycles	Harvest of species (tidepooling, fishing, scientific collection)	Temperature			
	Rainfall						
Response	Restoration	Public Policy	Human use management	Storm events			
reefs	Status (condition)	Ecological Interaction Networks	Invasive species	Abundance of urchin predators	- Vantuna Research Group, Santa Monica Baykeeper		
				Endangered, key native species	Sea urchin density	- Vantuna Research Group, Santa Monica Baykeeper	
		Productivity	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)			
				Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level		
		Habitat	Physical structure	Area of suitable habitat	- Marine Map, DFG		
	Biogenic habitat			Kelp canopy overflights (area)	- CRKC		
				Kelp density and stipe counts	- Santa Monica Baykeeper, Vantuna Research Group		
	Ecological function / Ecosystem Service	Wildlife support	Fish diversity, biomass, density, trophic levels (CRANE and PISCO)	- Vantuna Research Group, Santa Monica Baykeeper			
			Resilience	Recovery from disturbance			

Story	Type	Indicator Attribute	Indicator	Metric	Source
Rocky R	Stressor	Human Activity	Habitat loss / modification	Area covered with sediment	- Dave Witting, Vantuna Research Group, Santa Monica Baykeeper
			Water pollution	Turbidity	
			Nutrients		
		Human use	Power plant impingement and entrainment rates	- NRG, SCE, LADWP	
			CPUE and landings of fish that prey on sea urchins and other popular fish	- DFG	
	Changing environmental conditions	Climate change / ENSO cycles	Temperature		
			Rainfall		
	Storm events				
Response	Restoration	Restoration			
	Public Policy	Protection			
		Human use management			
Rocky Reefs	Status (condition)	Ecological Interaction Networks	Invasive species		
			Endangered, key native species	Diversity, abundance, biomass of fish	- LACSD, CLA-EMD, Jim Allen (trawl surveys)
		Productivity	Net primary productivity	Vegetative biomass added per unit area per unit time (g/m2/yr)	
			Biomass pyramid	Standing crop biomass (g/m2) for each tier in each trophic level	
		Habitat	Physical structure		
			Biogenic habitat		
	Ecological function / Ecosystem Service	Wildlife support			
	Resilience	Recovery from disturbance			
	Stressor	Human Activity	Habitat loss / modification		
			Water pollution	Trash on seafloor	- LACSD, CLA-EMD, Jim Allen (trawl surveys)
			Sediment contamination	Levels of DDT and other toxins	- EPA superfund monitoring data, LACSD, CLA-EMD
			Area covered by seafood consumption advisory	- OEHHA	
		BRI	- LACSD, CLA-EMD		
		Human use			
	Changing environmental conditions	Climate change / ENSO cycles	Temperature		
			Rainfall		
	Storm events				
	Response	Restoration	Restoration		
		Public Policy	Protection		
			Human use management		
Open Ocean	Status (condition)	Ecological Interaction Networks	Invasive species		
			Endangered, key native species	Abundance, diversity, biomass of pelagic species	
		Productivity	Net primary productivity		
			Biomass pyramid		
		Habitat	Physical structure	Water temp	- SCCOOS
				Salinity	- SCCOOS
	Biogenic habitat	Primary production	- SeaWiFS?		
	Ecological function / Ecosystem Service	Wildlife support	Abundance of forage stocks		
	Resilience	Recovery from disturbance			
	Stressor	Human Activity	Habitat loss / modification		
			Water pollution	Contamination burdens in apex predators	- Bearzi 2005
			Sediment contamination	Seabird populations	- MSRP?
			Power plant impingement and entrainment rates		
		Human use	CPUE and landings of fish that prey on sea urchins and other popular fish	- DFG	
			Shifts in species assemblage trophic levels		
	Changing environmental conditions	Climate change / ENSO cycles	Temperature		
			Rainfall		
			Storm events		
			Ocean acidification (dissolved CO2)		
	HABs (frequency and severity)				
Response	Restoration	Restoration			
	Public Policy	Protection			
		Human use management			