

# Update: GFNMS Ocean Climate Program

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Sanctuary Advisory Council  
November 13, 2019

## GREATER FARALLONES NATIONAL MARINE SANCTUARY



## Climate Adaptation Plan

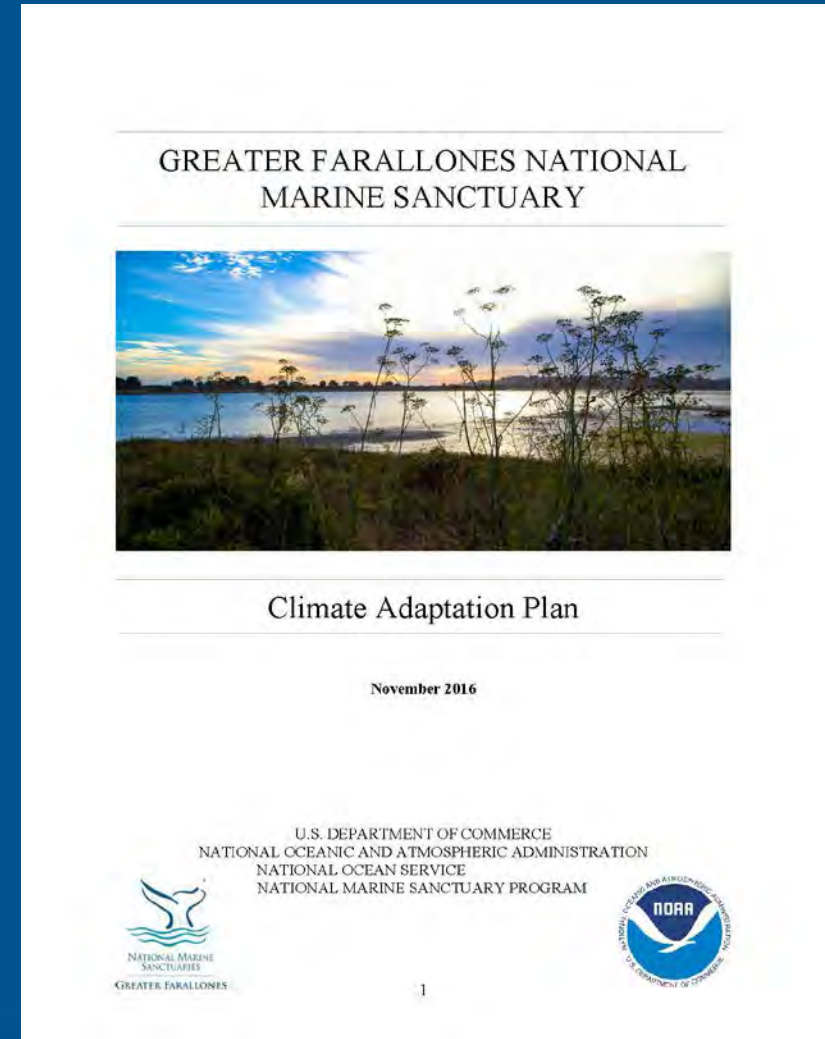
November 2016

U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE  
NATIONAL MARINE SANCTUARY PROGRAM



# Update: GFNMS Climate Adaptation Plan

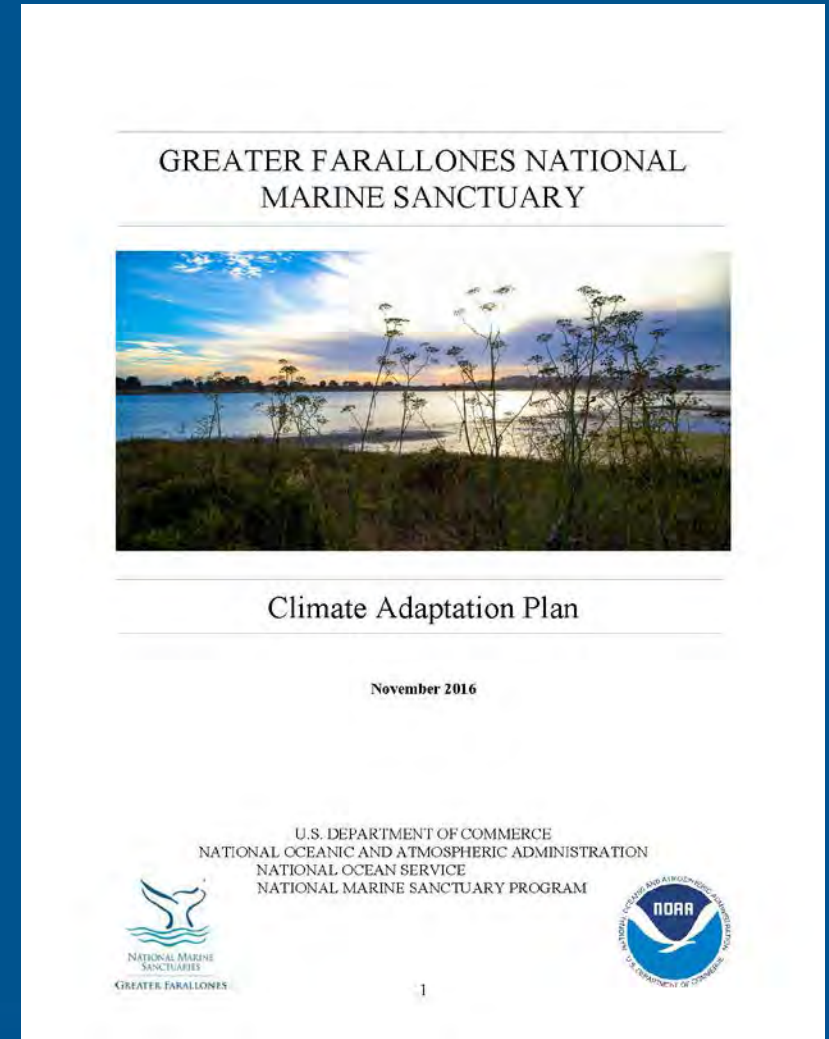
**March 2016**: Council reviewed, discussed, voted to approve 76 of the 84 strategies developed by the Climate-Smart Adaptation Working Group



# Update: GFNMS Climate Adaptation Plan

**March 2016**: Council reviewed, discussed, voted to approve 76 of the 84 strategies developed by the Climate-Smart Adaptation Working Group

**March – November 2016**: Climate Adaptation Plan developed with 24 of those recommended strategies

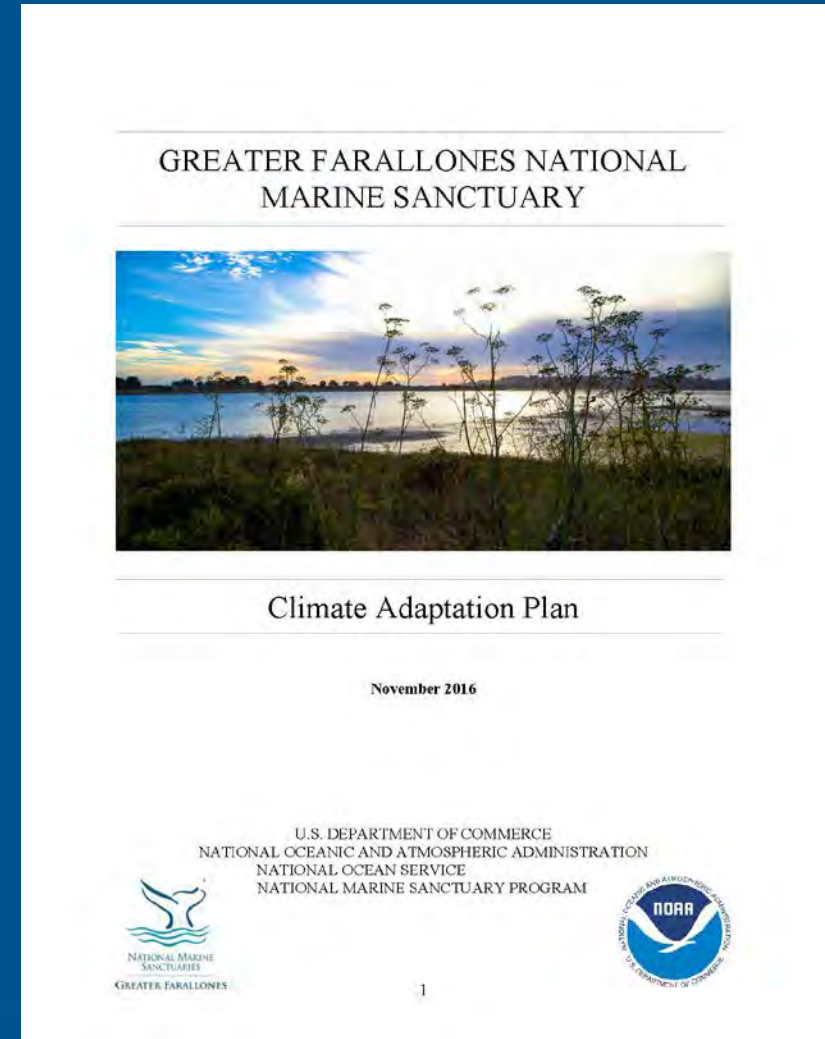


# Update: GFNMS Climate Adaptation Plan

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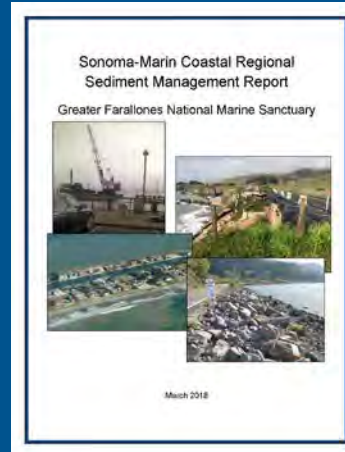
**March – November 2016**: Climate Adaptation Plan developed with 24 of those recommended strategies

**November 2016**: Climate Adaptation Plan and final recommendations presented to Council, along with next steps for implementation



# Progress made – Coastal Resilience

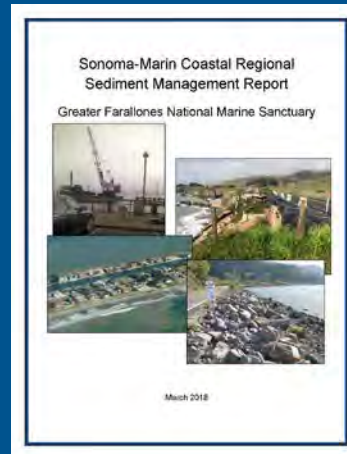
## Sonoma-Marín Coastal Regional Sediment Management Report (2018)



*Climate Plan Strategies: Implement Living Shorelines (LS -1,2,3); Protect and Restore Habitat (H-1, 3); Science Needs (SN-2,3)*

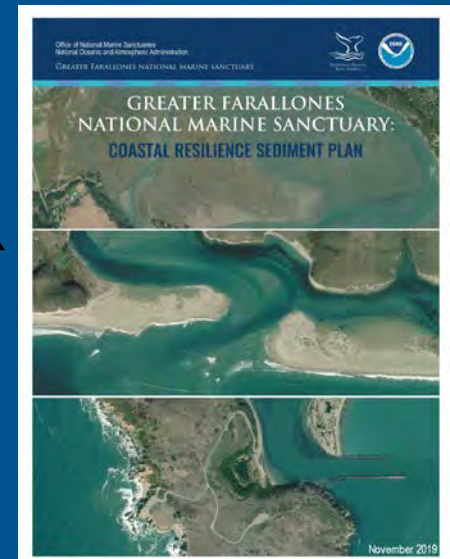
# Progress made – Coastal Resilience

Sonoma-Marín Coastal Regional Sediment Management Report (2018)



North-central California Coastal Sediment Coordination Committee

Coastal Resilience Sediment Plan



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# Progress made – Living Shorelines

## Living Shorelines Workshop



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# Progress made – Living Shorelines

## Living Shorelines Workshop



## Bolinas Lagoon South End Living Shoreline Project



*Climate Plan Strategies: Implement Living Shorelines (LS -1,2,3); Protect and Restore Habitat (H-1, 3); Science Needs (SN-2,3)*



# Progress made – Living Shorelines

## Living Shorelines Workshop



## Bolinas Lagoon South End Living Shoreline Project



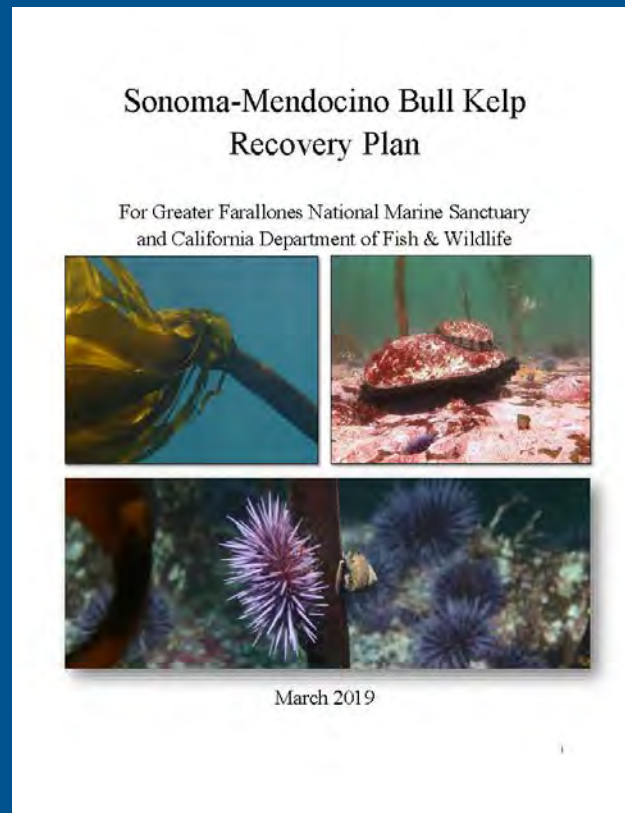
## Native Oyster Resilience in Tomales Bay



*Climate Plan Strategies: Implement Living Shorelines (LS -1,2,3); Protect and Restore Habitat (H-1, 3); Science Needs (SN-2,3)*

# Progress made – Kelp Recovery

## Kelp Recovery Plan (2019)



- Joint NOAA-CDFW ecosystem survey cruises
- KELPRR coordination
- UAV surveys of sites in Plan
- Education programs

# Progress made – Education and Trainings

LiMPETS – new climate curriculum



*Climate Action Plan Strategies: Promote Education (E-1, E-2)*

# Progress made – Education and Trainings

## LiMPETS – new climate curriculum



## 5<sup>th</sup> Biennial Ocean Climate Summit



*Climate Action Plan Strategies: Promote Education (E-1, E-2)*

# Progress made – Education and Trainings

## LiMPETS – new climate curriculum



## 5<sup>th</sup> Biennial Ocean Climate Summit





- Climate Adaptation Toolkit for MPA Managers
- ONMS trainings
- “Planning for a Changing Climate” Course for federal managers

*Climate Action Plan Strategies: Promote Education (E-1, E-2)*

# Climate Program Storymap: outreach tool for partners, public, funders

## Ocean Climate Program

From Learning about the Impacts to Implementing Actions

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About

Action Areas

Milestones

Capacity Building

D.I.Y.

### Action Areas: Impacts to Action

#### Map Details

The data presented in this map is a sampling of information used in determining where to focus climate adaptation efforts. Science-based, multi-year collaborative processes have informed the determination of action areas. In the [List of Action Areas](#), click on each area to zoom the map to the specific location. A pop-up window with project details will display.

#### Coastal Dune Vulnerability Index at 5ft Sea Level Rise



Lower Vulnerability (0 <

Habitat Vulnerability Index developed by The Nature Conservancy (2018).

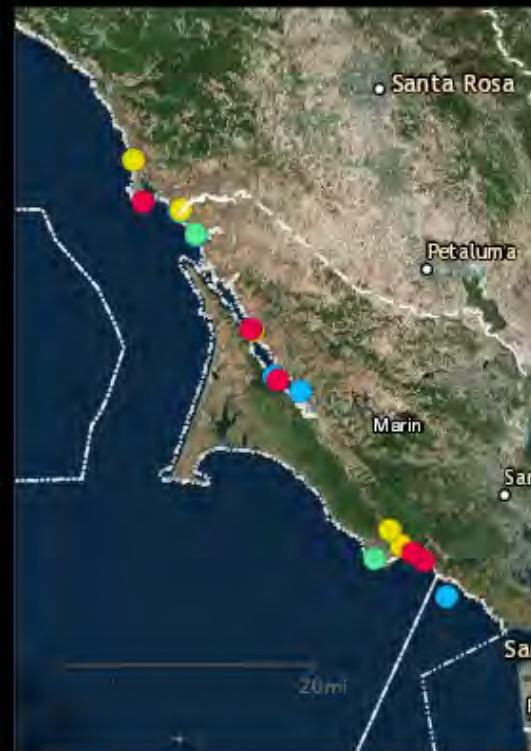
Coastal Dune

#### List of Action Areas

**Community Engagement Estero Americano**  
Project Phase: Concept






**Community Engagement Estero de San Antonio**  
Project Phase: Concept

**Community Engagement Duxbury Reef**  
Project Phase: Concept



#### Legend

Climate Adaptation Action Areas

-  Community Engagement
-  Living Shoreline
-  Research
-  Restoration
-  Sediment Management

National Marine