Beyond NCCP: Developing Strategies to Enhance Regional Landscape Connectivity

2017 International Urban Wildlife Conference
June 5, 2017

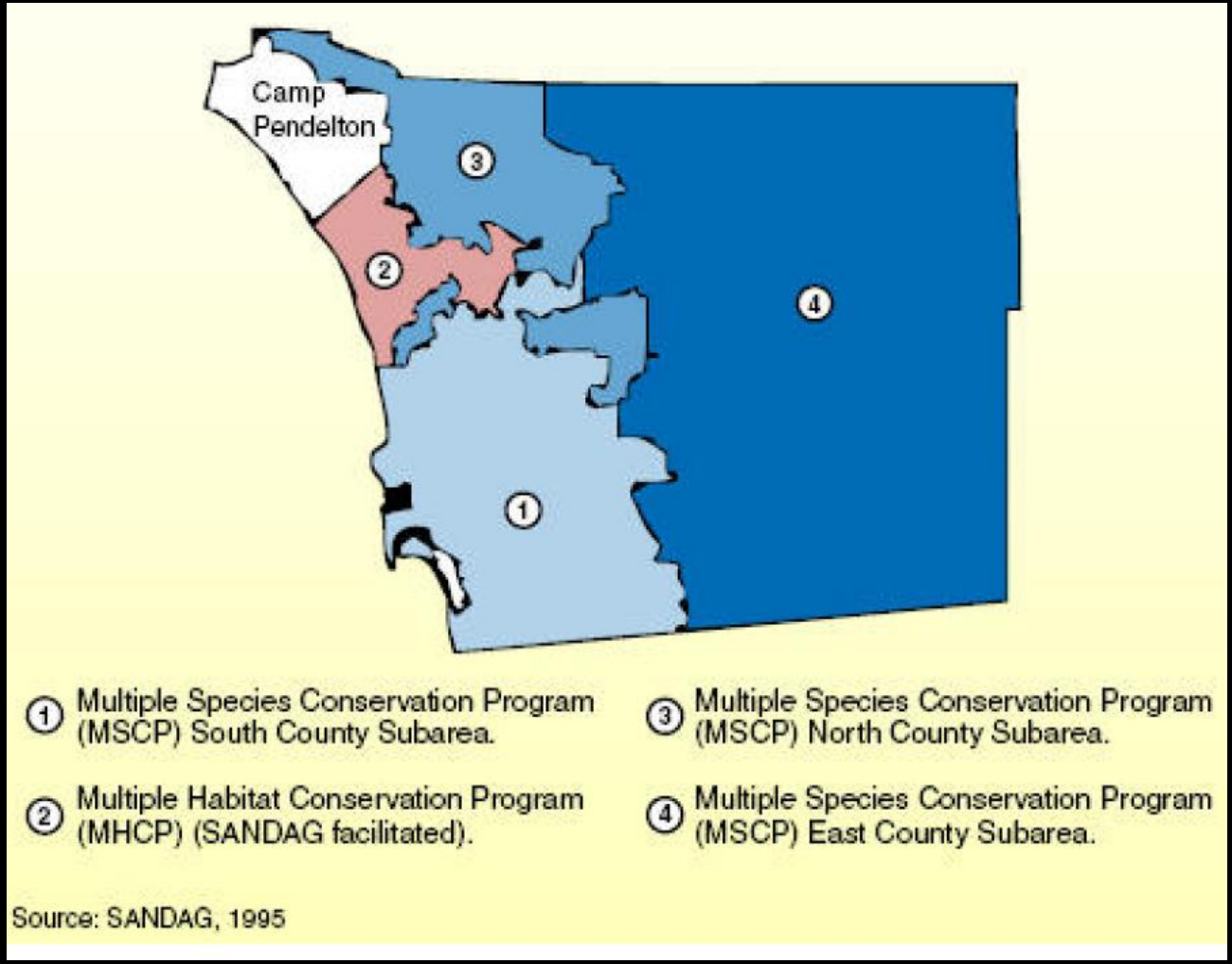
Trish Smith and Cara Lacey

The Nature Conservancy

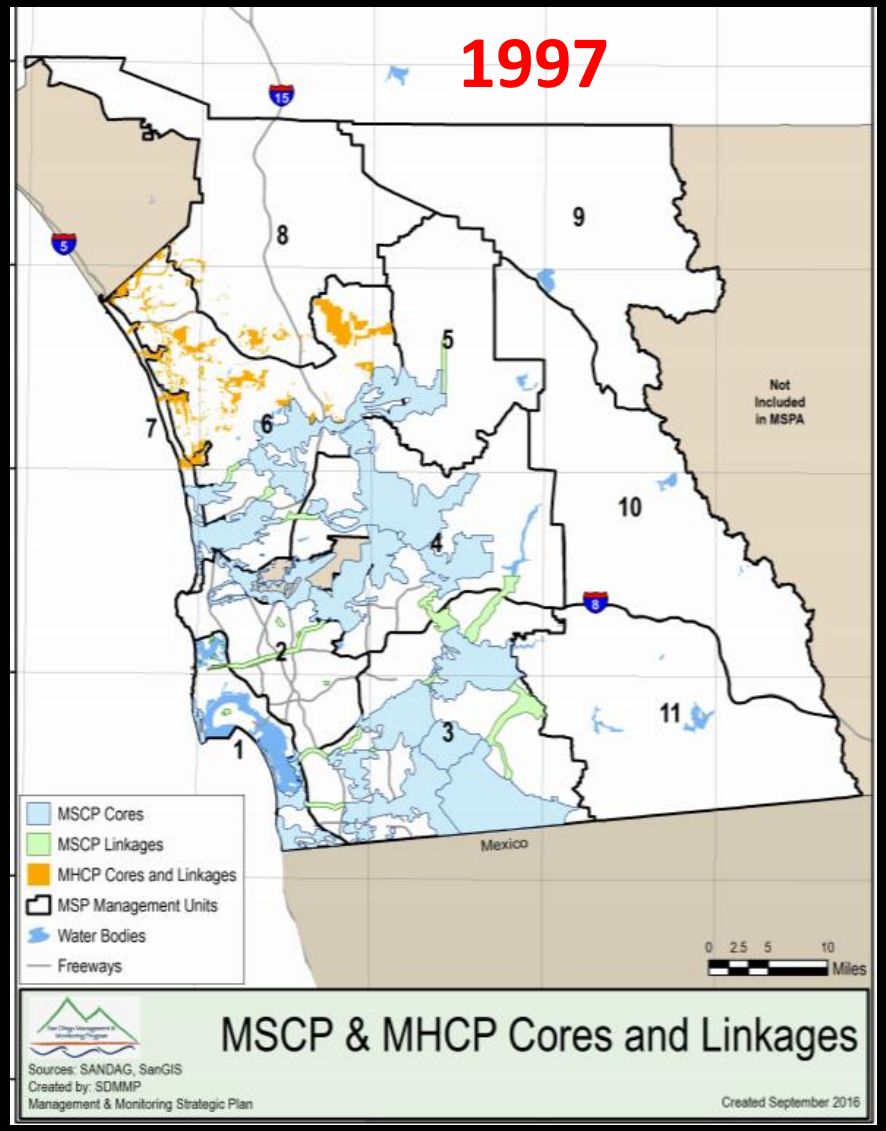
Outline

1. NCCP and Connectivity In San Diego
2. Accomplishments
3. Challenges
4. Opportunities
5. Potential Future Strategies

San Diego Region Natural Community Conservation Plans



NCCP and Connectivity



Connectivity Accomplishments

Land protection

Linkage Evaluations

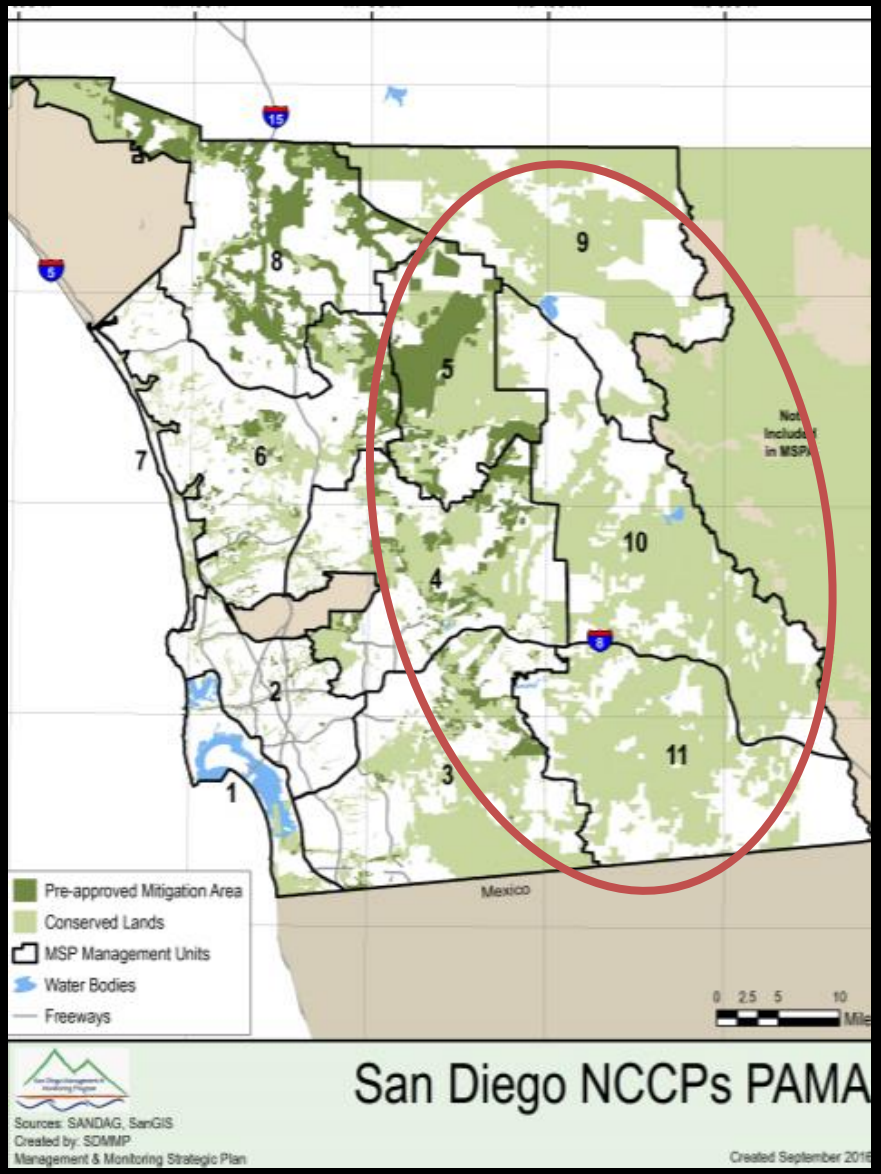
Wildlife movement studies

Genetic Studies

Connectivity – The Challenge

Challenges

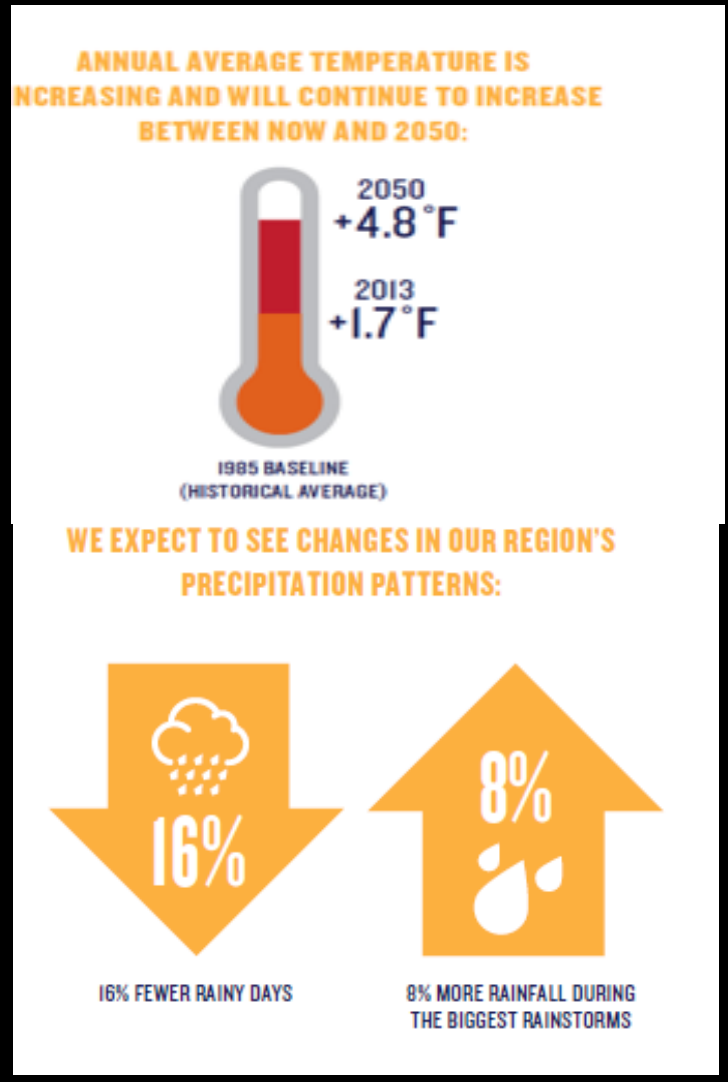
- **Remaining NCCP Plans Lagging**
- Climate Change
- Wildfires
- Barriers: Roads, Existing Development, Border wall
- Genetic isolation
- Growing human population
- Development Interests
- Funding



Source: SDMMP

Challenges

- Remaining NCCP Plans Lagging
- **Climate Change**
- Wildfires
- Barriers: Roads, Existing Development, Border wall
- Genetic isolation
- Growing human population
- Development Interests
- Funding



Source: San Diego Foundation

Challenges

- Remaining NCCP Plans Lagging
- Climate Change
- **Wildfires**
- Barriers: Roads, Existing Development, Border wall
- Genetic isolation
- Growing human population
- Development Interests
- Funding

Source: San Diego Fire Rescue Dept.

Challenges

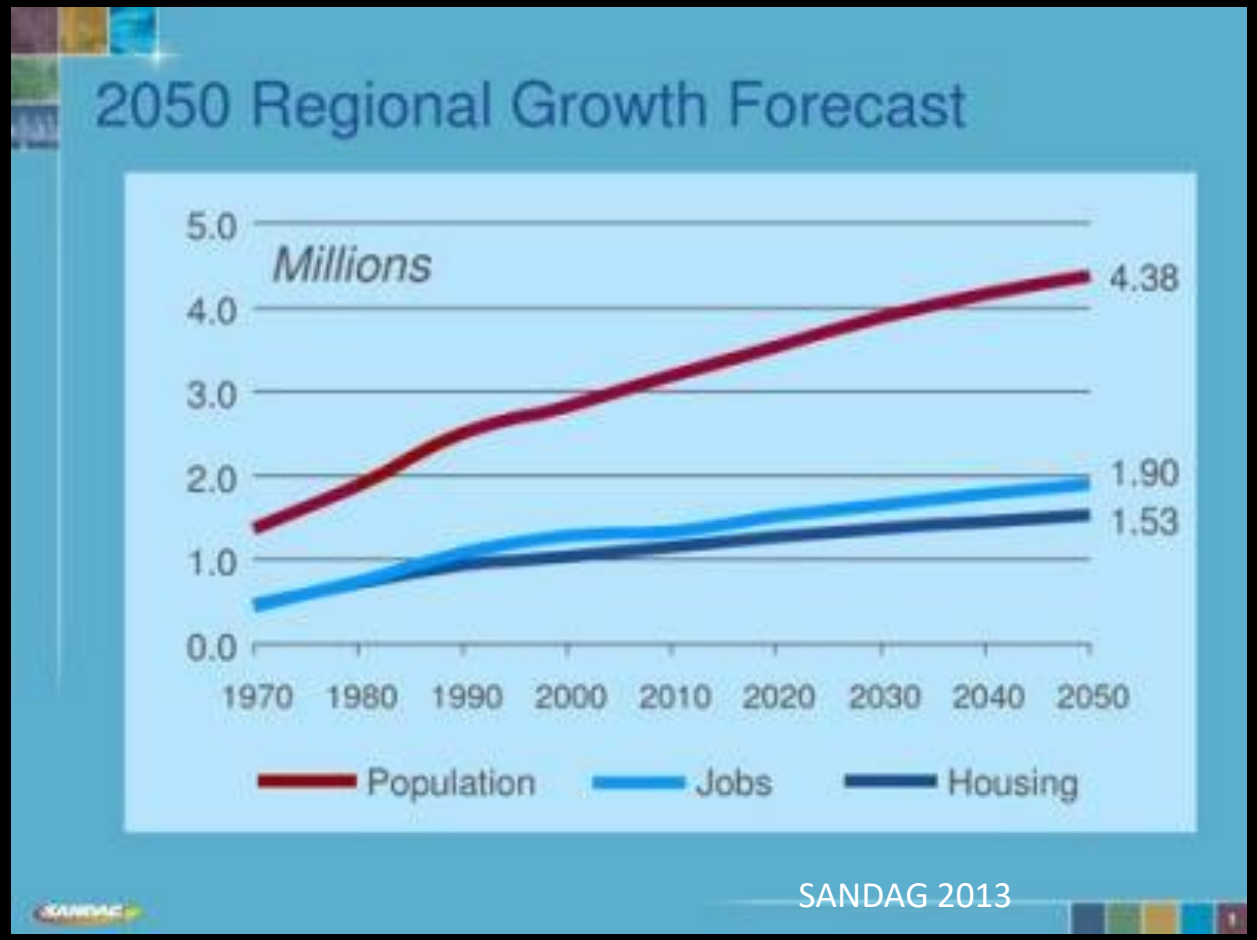
- Remaining NCCP Plans Lagging
- Climate Change
- Wildfires
- **Barriers: Roads, Existing Development, Border wall**
- Genetic isolation
- Growing Human Population
- Development Interests
- Funding

Challenges

- Remaining NCCP Plans Lagging
- Climate Change
- Wildfires
- Barriers: Roads, Existing Development, Border wall
- **Genetic isolation**
- Growing human population
- Development Interests
- Funding

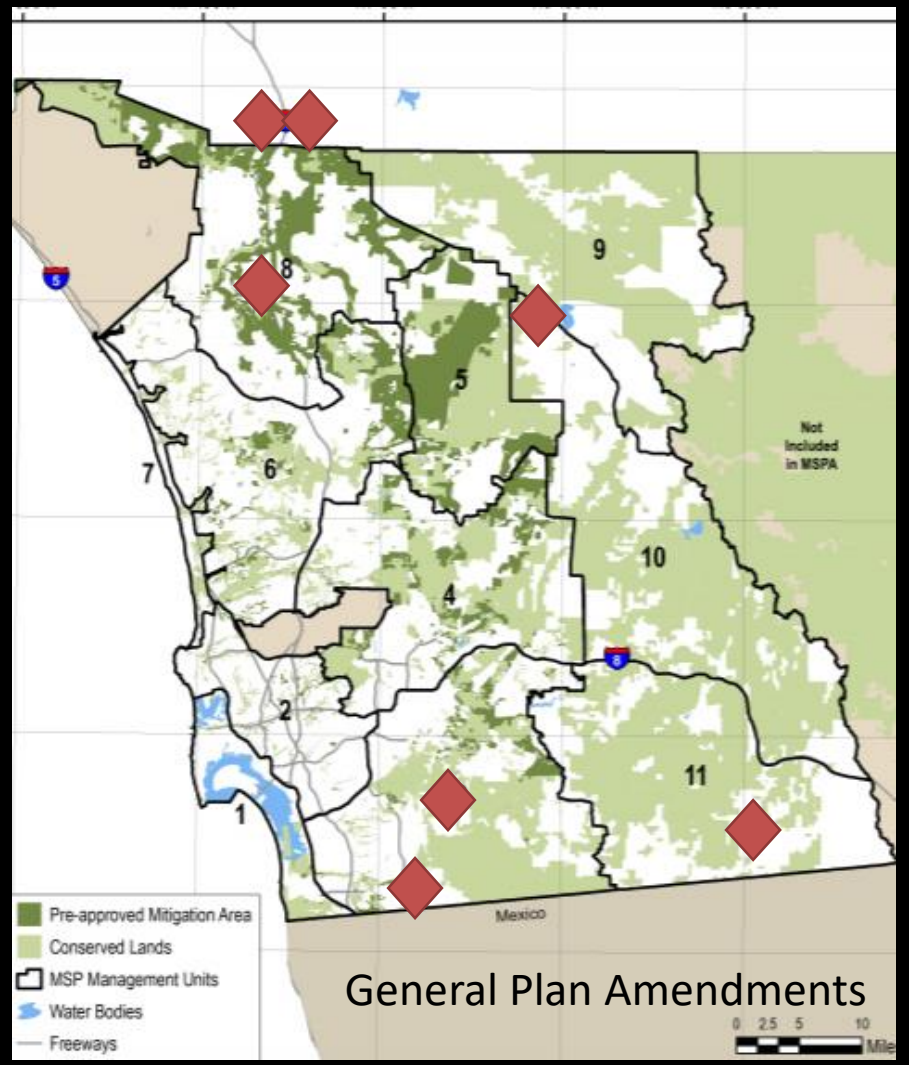
Challenges

- Remaining NCCP Plans Lagging
- Climate Change
- Wildfires
- Barriers: Roads, Existing Development, Border wallGenetic isolation
- Genetic Isolation
- **Growing Human Population**
- Development Interests
- Funding



Challenges

- Remaining NCCP Plans Lagging
- Climate Change
- Wildfires
- Barriers: Roads, Existing Development, Border wall
- Genetic isolation
- Growing human population
- **Development Interests**
- Funding



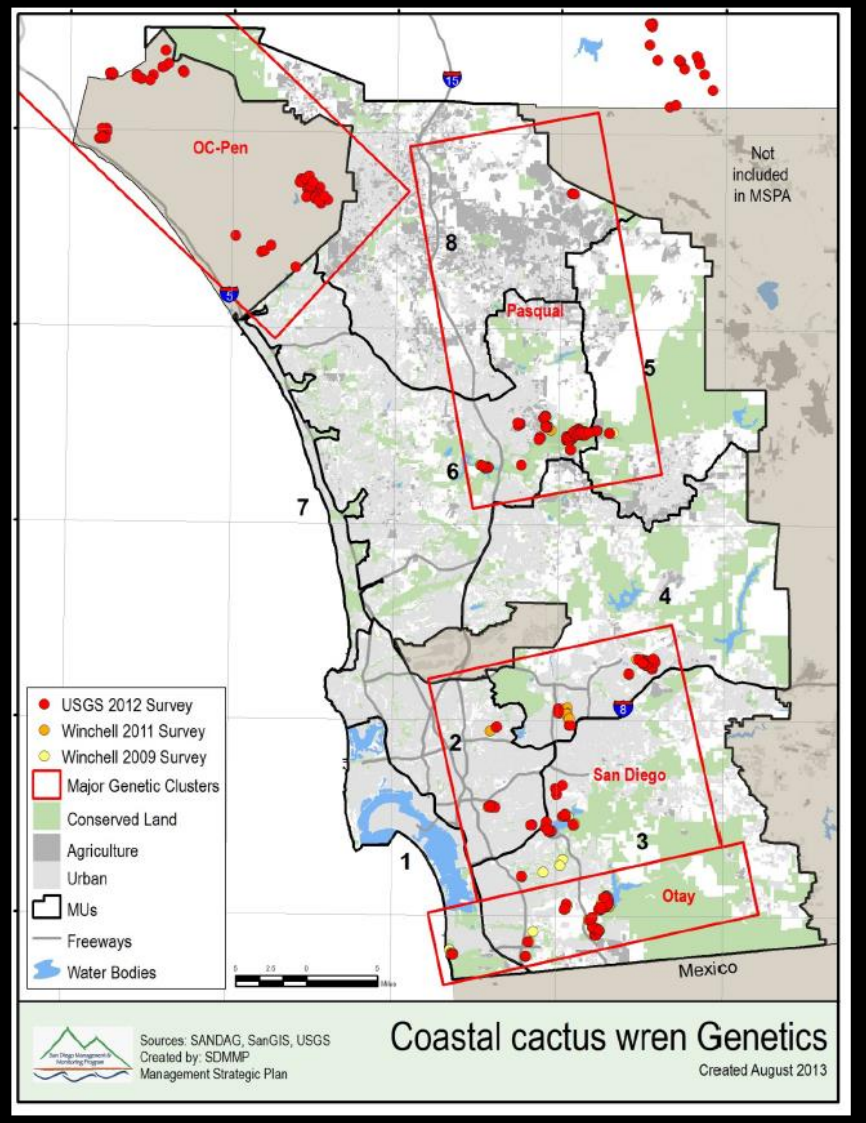
Source: SDMMP

Challenges

- Remaining NCCP Plans Lagging
- Climate Change
- Wildfires
- Barriers: Roads, Existing Development, Border wall
- Genetic isolation
- Growing Population
- Development Interests
- **Funding**

Opportunities

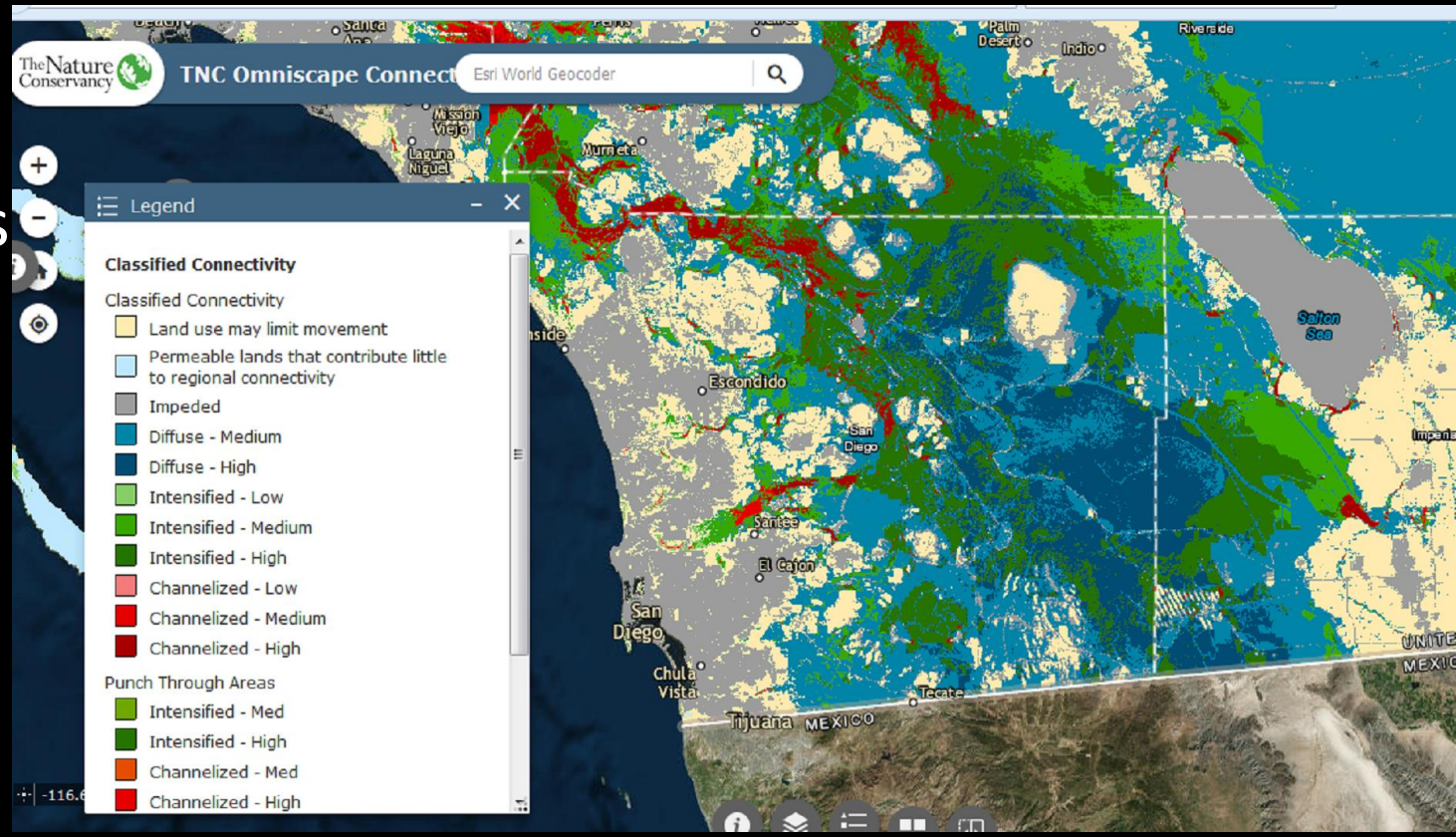
- Genetic Research
- Innovations: species/habitat modelling
- Connectivity Infrastructure Plans:
  - SR 67: SDSU
  - SR 94: CBI/CDFW
- Intact landscapes
- General Plan Update 2011
- New Legislation:
  - Climate Leg: SB 32, SB 375
  - RCIS



Source: SDMMP

Opportunities

- Genetic Research
- **Innovations: species/habitat modelling**
- Connectivity Infrastructure Plans
  - SR 67: SDSU
  - SR 94: CBI/CDFW
- Intact landscapes
- General Plan Update 2011
- New Legislation:
  - Climate Leg: SB 32, SB 375
  - Regional Conservation Investment Strategy



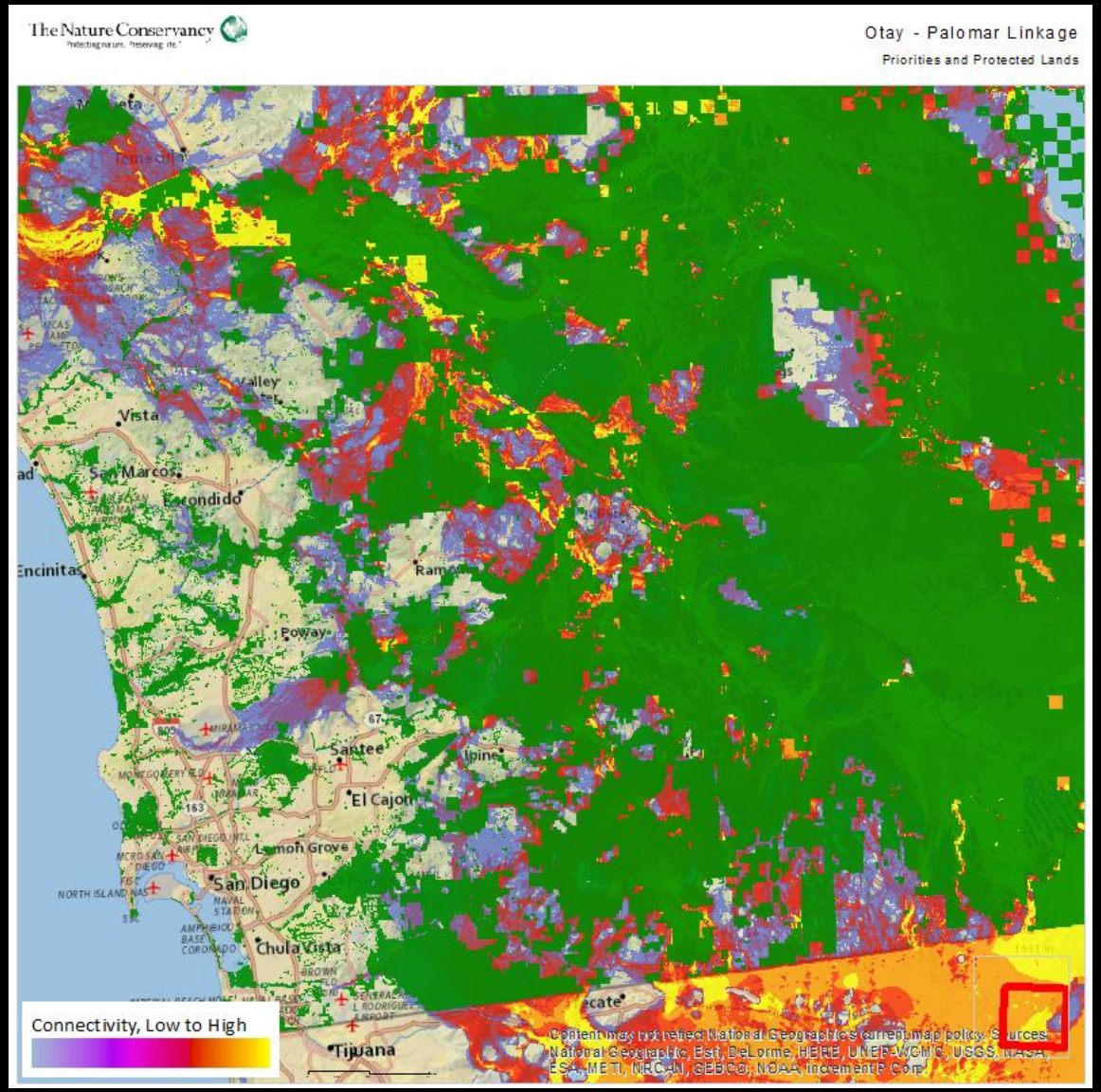
Opportunities

- Genetic Research
- Innovations: species/habitat modelling
- **Connectivity Infrastructure Improvement Plans:**
  - **SR 67: SDSU**
  - **SR 94: CBI/CDFW**
- Intact landscapes
- General Plan Update 2011
- New Legislation:
  - Climate Leg: SB 32, SB 375
  - RCIS


Source: TCA

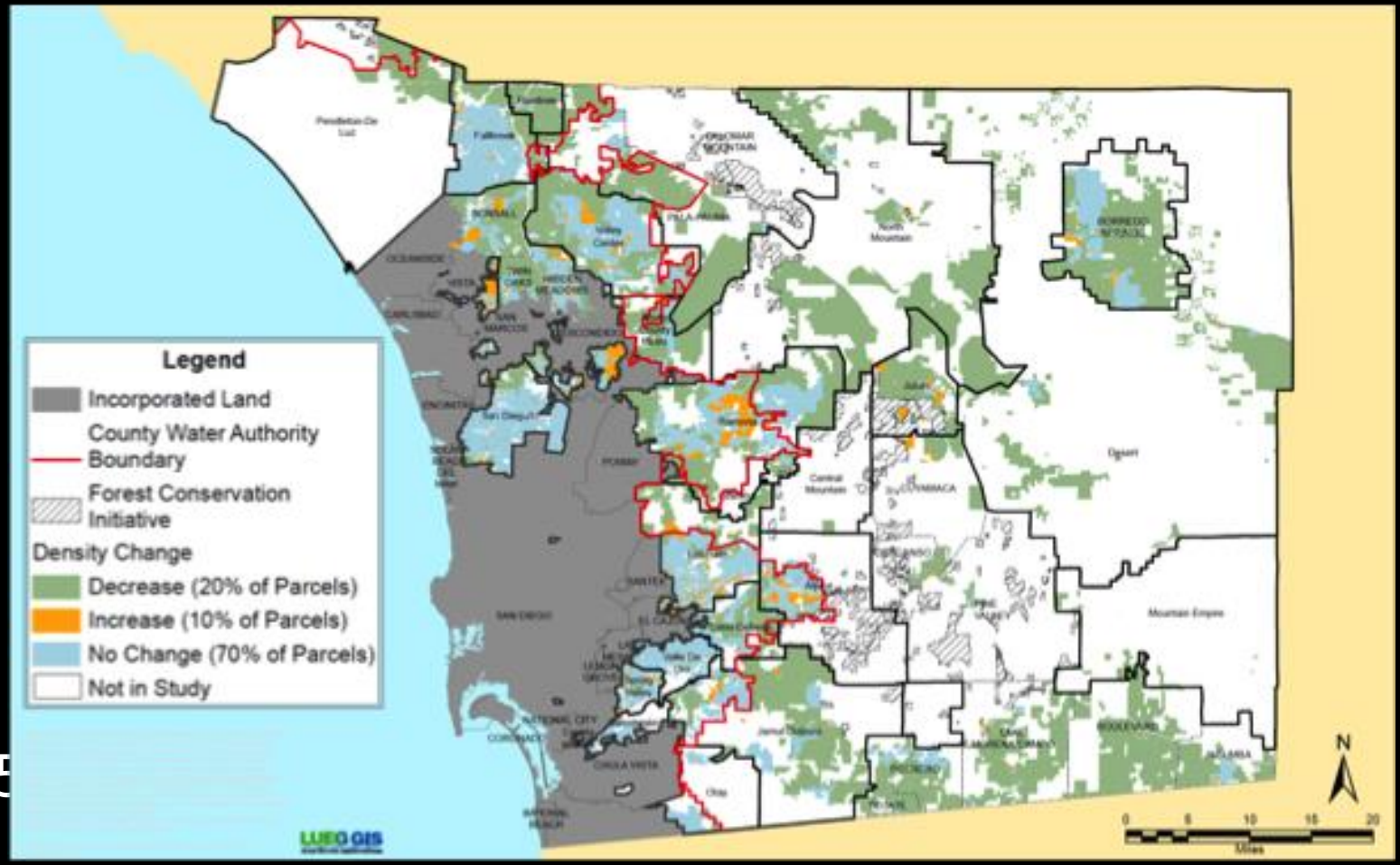
Opportunities

- Genetic Research
- Innovations: species/habitat modelling
- Connectivity Infrastructure Plans:
  - SR 67: SDSU
  - SR 94: CBI/CDFW
- **Intact landscapes**
- General Plan Update 2011
- New Legislation:
  - Climate Leg: SB 32, SB 375
  - RCIS



Opportunities

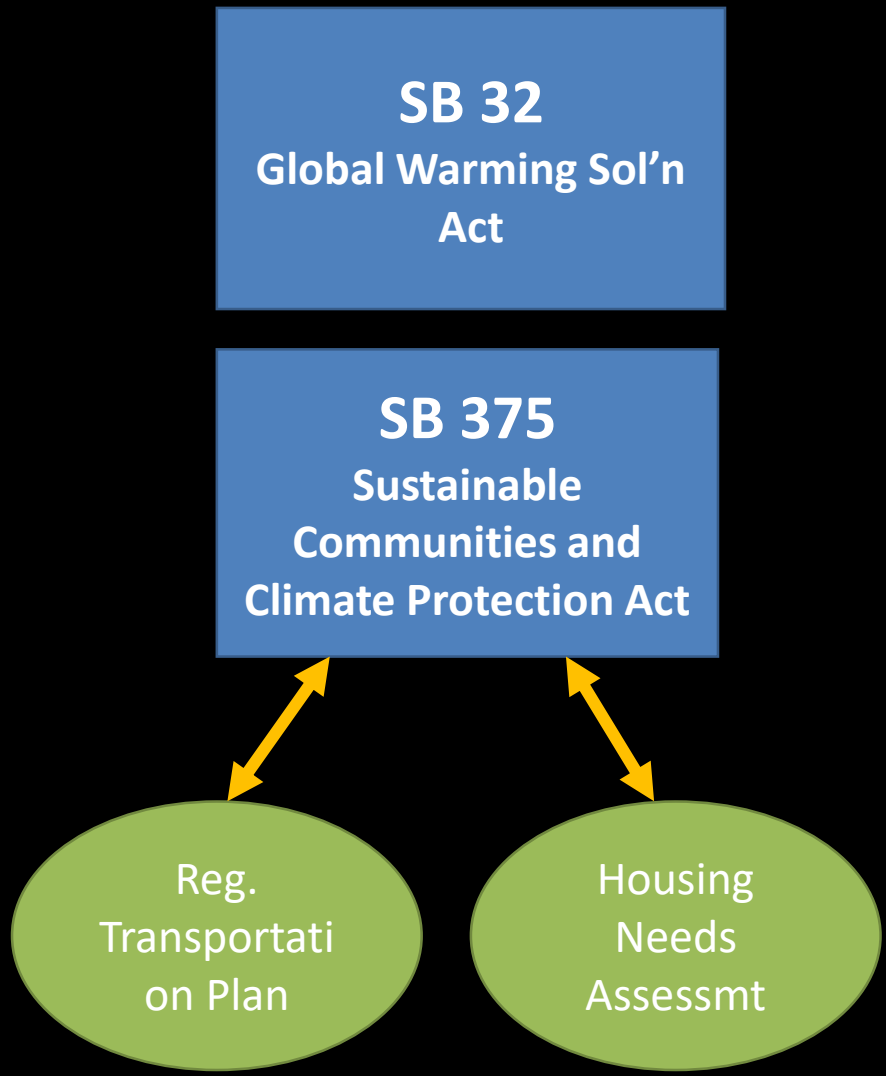
- Genetic Research
- Innovations: species/habitat modelling
- Infrastructure Imp Plans:
  - SR 67: SDSU
  - SR 94: CBI/CDFW
- Intact landscapes
- **General Plan Update 2011**
- New Legislation:
  - Climate Leg: SB 32, SB 375
  - RCIS



Source: SANDAG

Opportunities

- Genetic Research
- Innovations: species/habitat modelling
- Infrastructure Imp Plans:
  - SR 67: SDSU
  - SR 94: CBI/CDFW
- Intact landscapes
- General Plan Update 2011
- **Legislation:**
  - **Climate Leg: SB 32, SB 375**
  - **Regional Conservation Investment Strategy**



Connectivity Opportunities

- Genetic Research
- Innovations: species/habitat modelling
- Infrastructure Imp Plans:
  - SR 67: SDSU
  - SR 94: CBI/CDFW
- Intact landscapes

WHERE

- General Plan Update 2011
- Legislation:
  - Climate Leg: SB 32, SB 375
  - Climate Action Plans
  - RCIS
  - SGMA

HOW

Climate Change Impacts

Natural Environment

- Altered fire regimes
- Soil moisture/temp^
- Habitat loss/fragmentation
- Diseases/pests
- Phenological mismatch
- Sea level rise,
- Negative human/wildlife interactions

Human/Built Environment

- Wildfires: public safety; fire fighting resource costs.
- Water shortages /groundwater depletion
- Increased costs for retrofitting and maintaining infrastructure
- Human health risks: heat, air quality
- Increased flooding; sea level rise

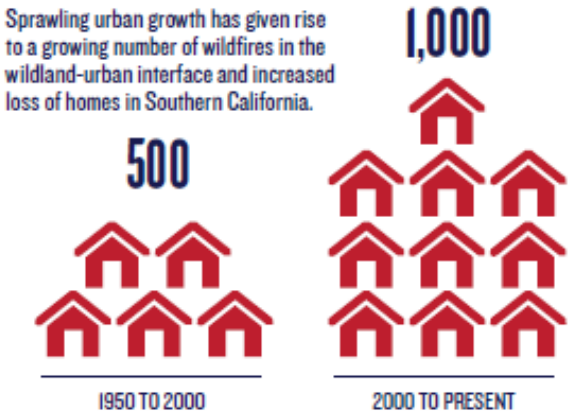
THREE OF CALIFORNIA'S 10 LARGEST WILDFIRES WERE IN SAN DIEGO COUNTY AND BURNED 646,661 ACRES

1970	2003	2007
LAGUNA FIRE	CEDAR FIRE	WITCH CREEK FIRE

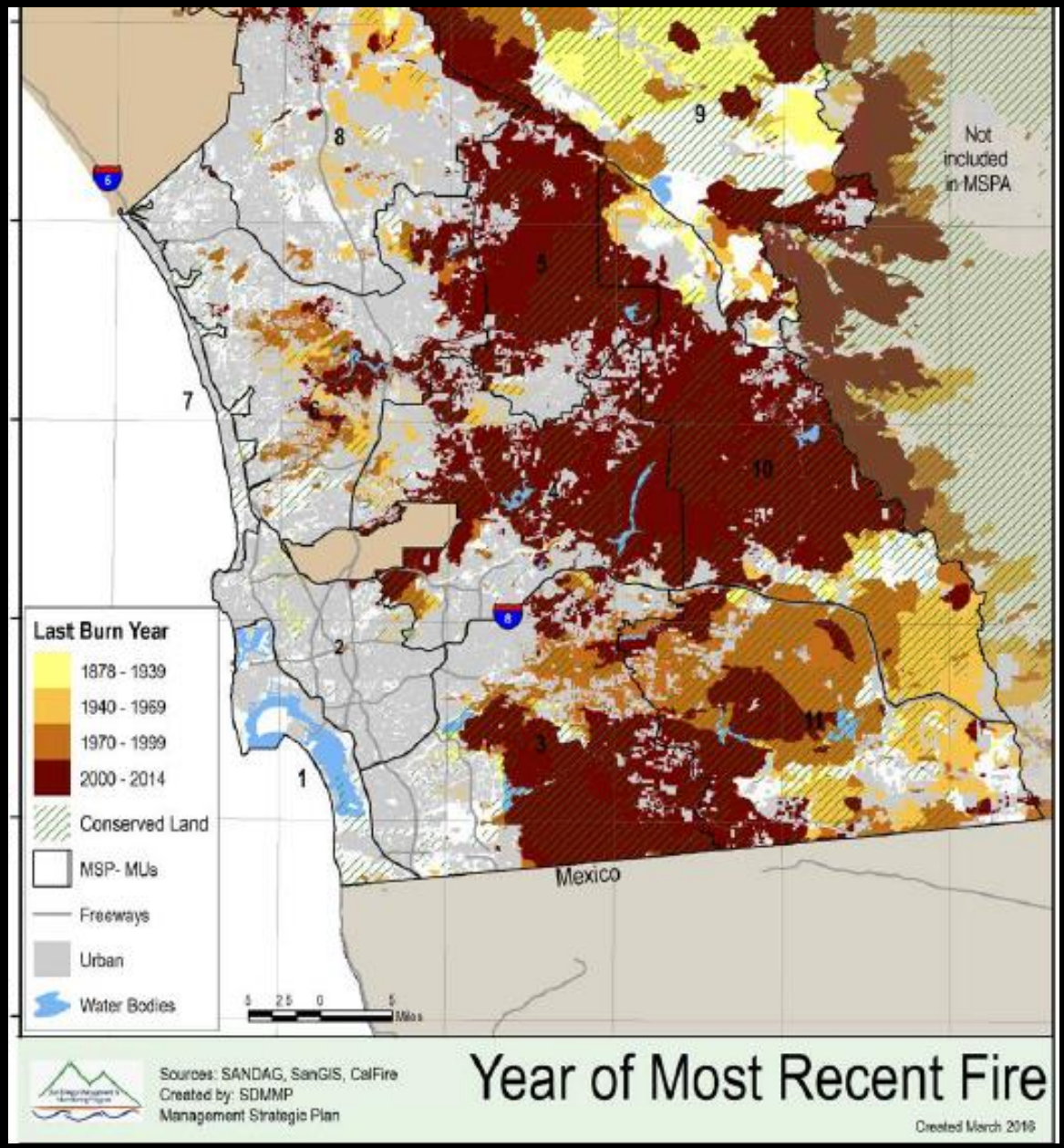
The wildfires of 2003 and 2007 together cost more than **$4.5 BILLION** in damages and incalculable indirect costs in lost workdays, business shutdowns and decreased tourism.

HOMES LOST ANNUALLY TO WILDFIRES IN SOUTHERN CALIFORNIA

Sprawling urban growth has given rise to a growing number of wildfires in the wildland-urban interface and increased loss of homes in Southern California.



Source: San Diego Foundation



Source: SDMMP

Syphard, A. D., V. Butsic, A. Bar-Massada, J. E. Keeley, J. A. Tracey, and R. N. Fisher. 2016. Setting priorities for private land conservation in fire-prone landscapes: Are fire risk reduction and biodiversity conservation competing or compatible objectives?. *Ecology and Society* 21(3):2. http://dx.doi.org/10.5751/ES-08410-210302

Research, part of a Special Feature on Private Land Conservation – Landowner Motives, Policies, and Outcomes of Conservation Measures in Unprotected Landscapes

Setting priorities for private land conservation in fire-prone landscapes: Are fire risk reduction and biodiversity conservation competing or compatible objectives?

Alexandra D. Syphard[1], *Van Butsic*[2], *Avi Bar-Massada*[3], *Jon E. Keeley*[4], *Jeff A. Tracey*[5] *and* *Robert N. Fisher*[5]

ABSTRACT. Although wildfire plays an important role in maintaining biodiversity in many ecosystems, fire management to protect human assets is often carried out by different agencies than those tasked for conserving biodiversity. In fact, fire risk reduction and biodiversity conservation are often viewed as competing objectives. Here we explored the role of management through private land conservation and asked whether we could identify private land acquisition strategies that fulfill the mutual objectives of biodiversity conservation and fire risk reduction, or whether the maximization of one objective comes at a detriment to the other. Using a fixed budget and number of homes slated for development, we simulated 20 years of housing growth under alternative conservation selection strategies, and then projected the mean risk of fires destroying structures and the area and configuration of important habitat types in San Diego County, California, USA. We found clear differences in both fire risk projections and biodiversity impacts based on the way conservation lands are prioritized for selection, but these differences were split between two distinct groupings. If no conservation lands were purchased, or if purchases were prioritized based on cost or likelihood of development, both the projected fire risk and biodiversity impacts were much higher than if conservation lands were purchased in areas with high fire hazard or high species richness. Thus, conserving land focused on either of the two objectives resulted in nearly equivalent mutual benefits for both. These benefits not only resulted from preventing development in sensitive areas, but they were also due to the different housing patterns and arrangements that occurred as development was displaced from those areas. Although biodiversity conflicts may still arise using other fire management strategies, this study shows that mutual objectives can be attained through land-use planning in this region. These results likely generalize to any place where high species richness overlaps with hazardous wildland vegetation.

Key Words: *housing arrangement; reserve design; site selection; southern California; species richness; wildfire*

INTRODUCTION

In many ecosystems around the world, wildfire is an important hazardous fuels, either through mechanical removal or by prescription burning (Agee and Skinner 2005). Depending on the

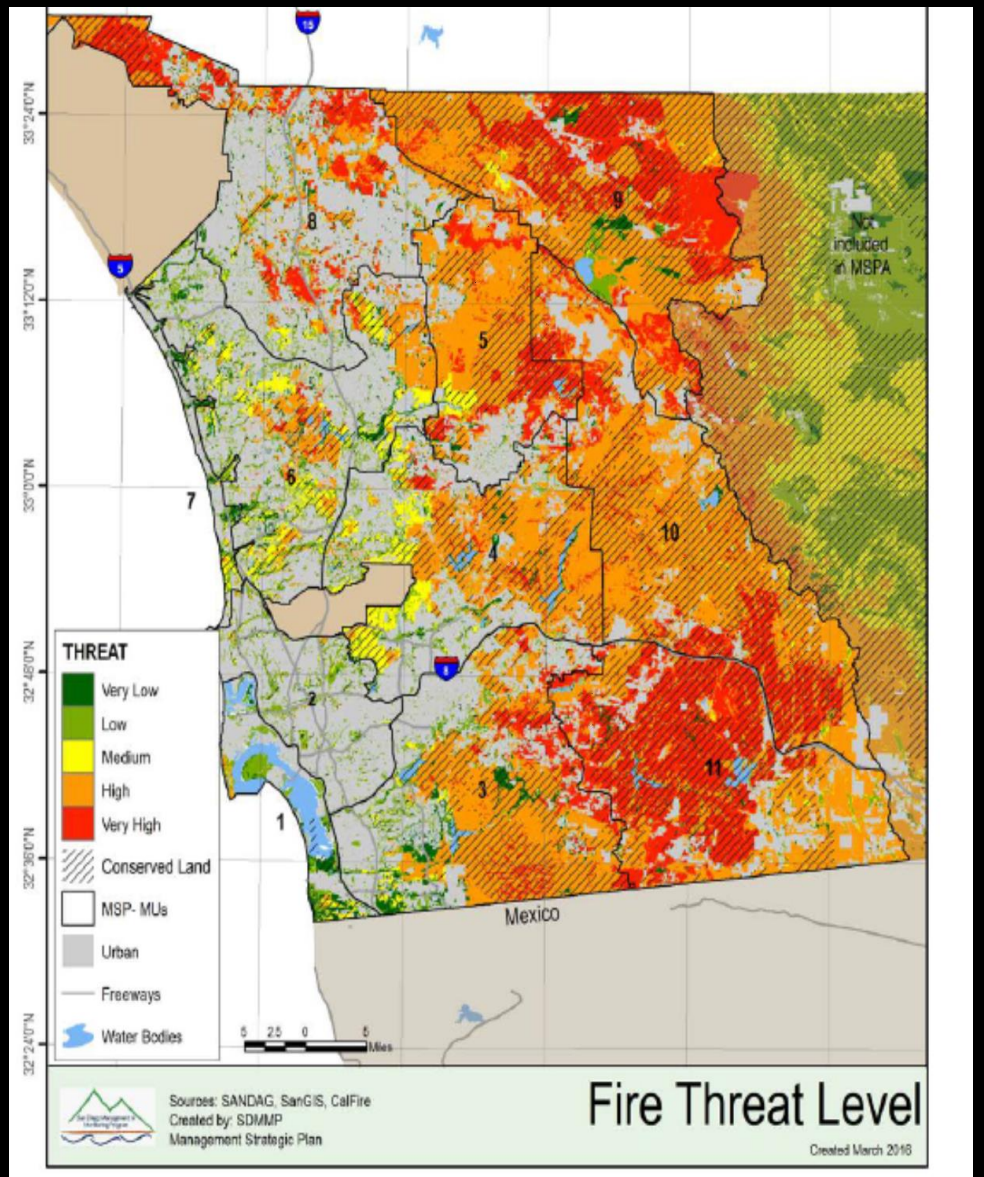
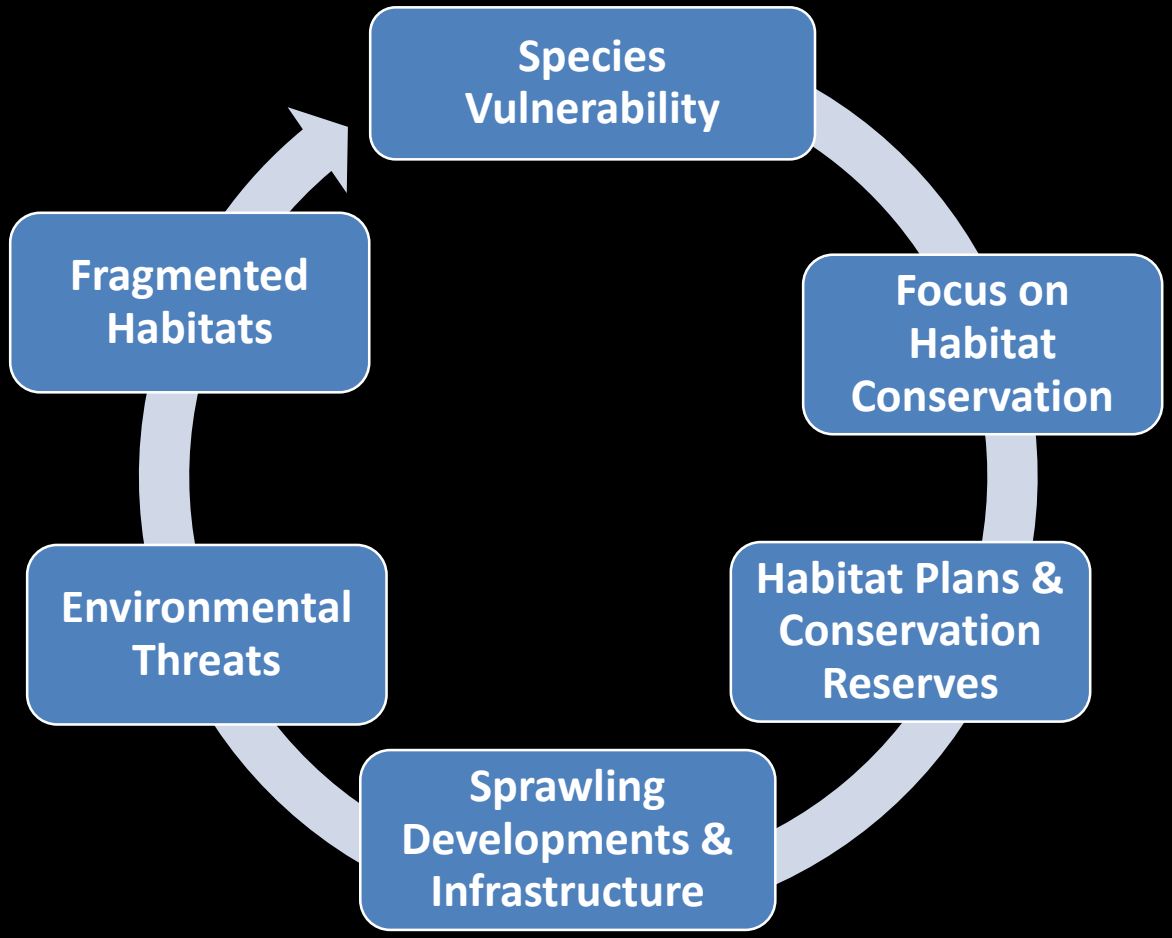


Figure V2B.1-9. Fire threat on Conserved Lands in the MSPA (Cal Fire 2012).

Source: SDMMP

Habitat Fragmentation and Climate Change

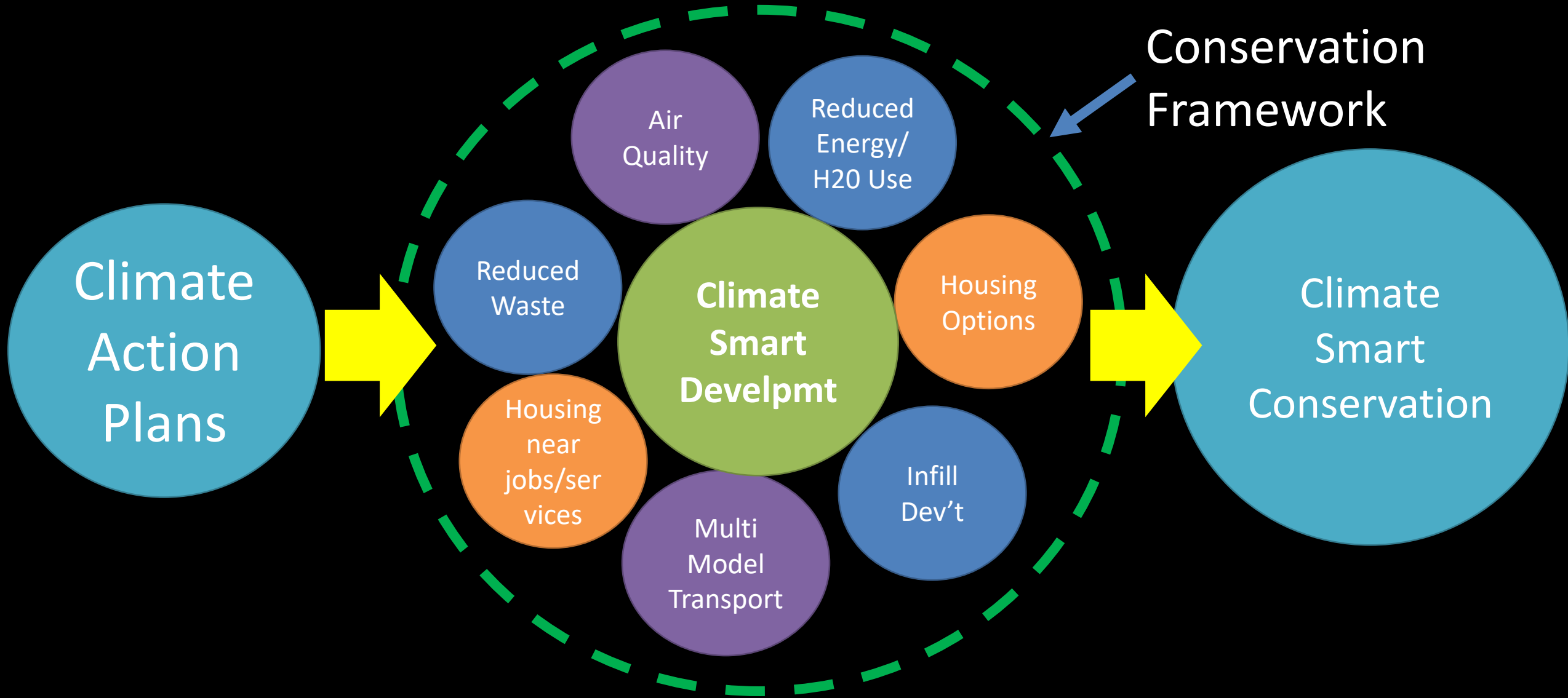
Impacts to Nature



Impacts to People

Climate Legislation and Land Use

Creating a Win-Win for Nature and People

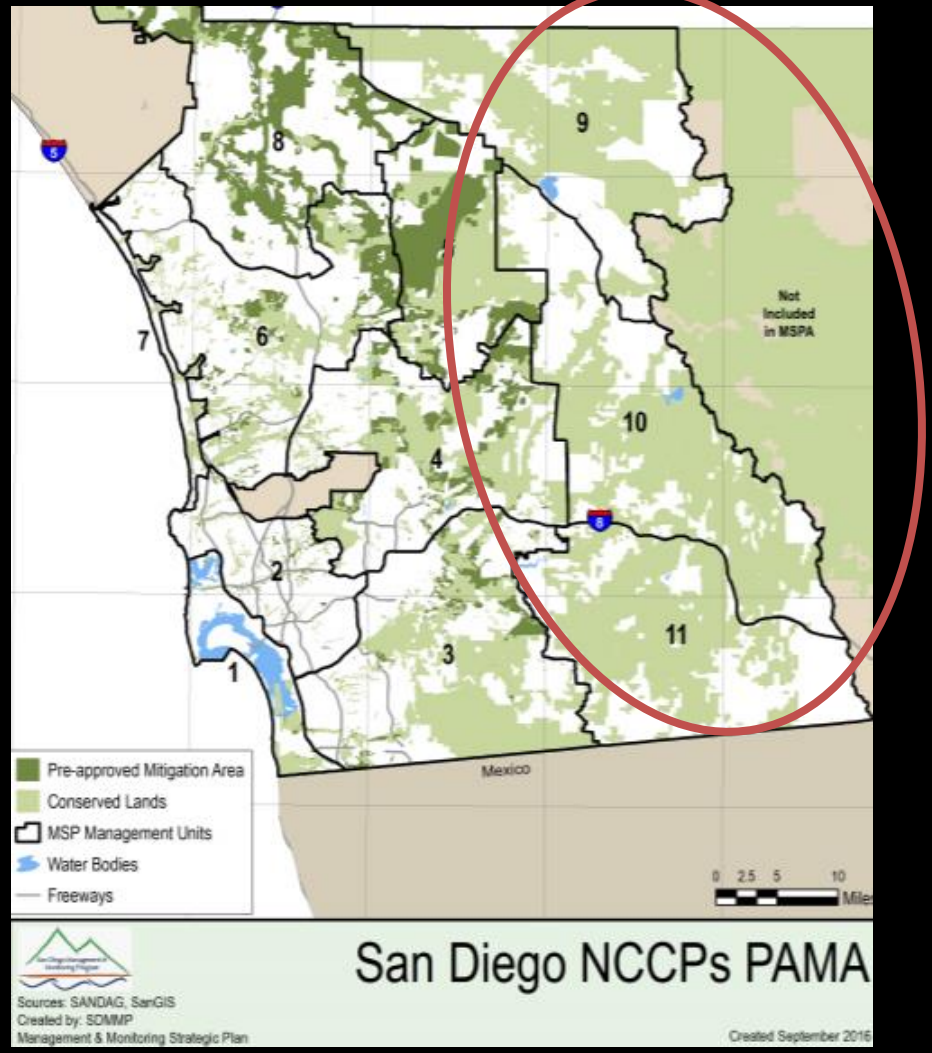


Conservation Framework:
Regional Conservation Investment Strategy

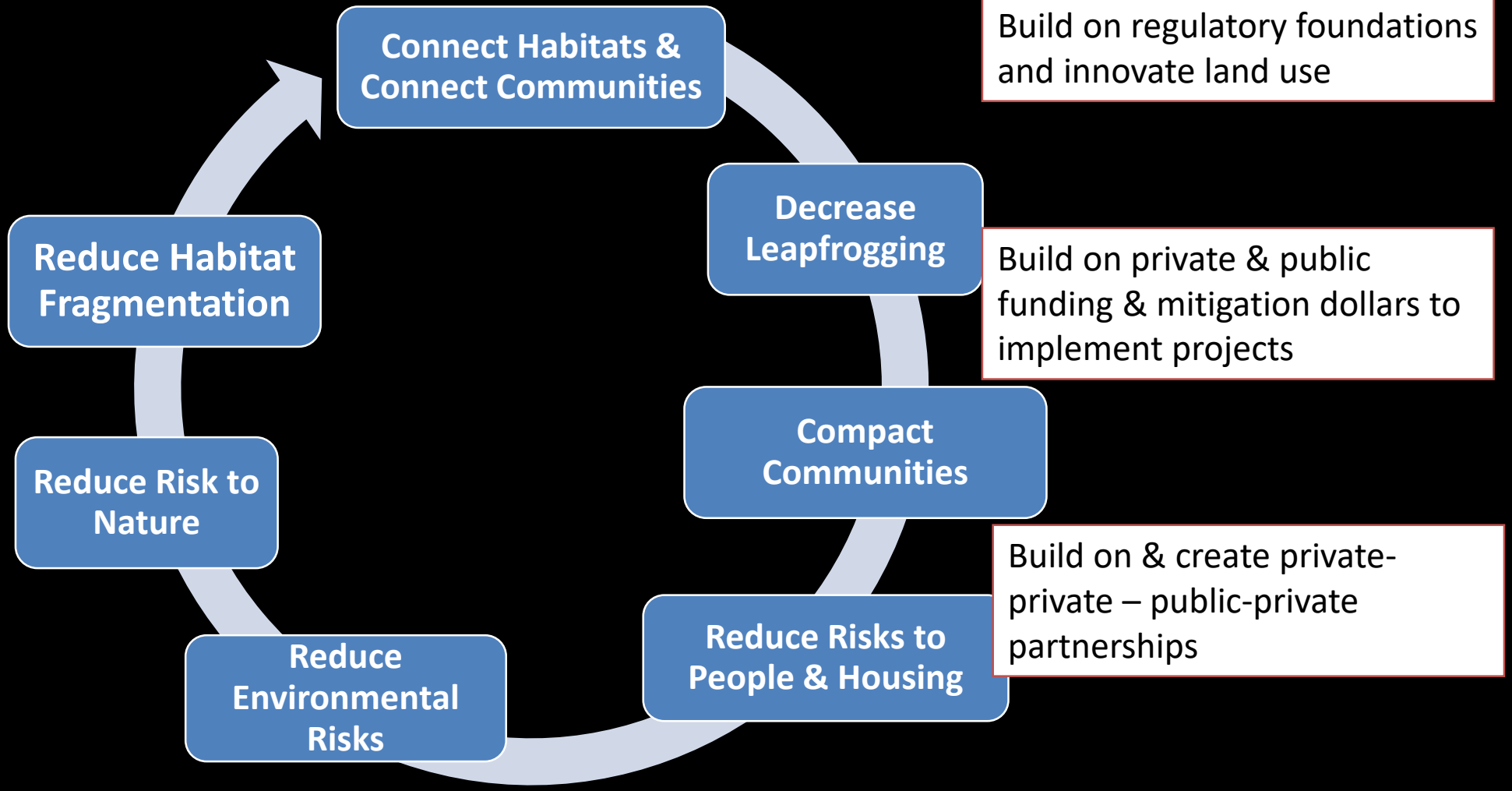
- Voluntary, landscape approach
- Science-based
- Conservation-Development blueprint
- Advanced Mitigation
- Funding for restoration, acquisition
- Provides means to implement goals of General Plan and Climate Action Plans

Conservation Framework:
Regional Conservation Investment Strategy

- Voluntary, regional approach
- Science Based
- Conservation-Development blueprint
- Advanced Mitigation
- Funding for restoration, acquisition
- Provides means to implement goals of General Plan and Climate Legislation



Transform the Status Quo



A Connected Lands Vision for San Diego County