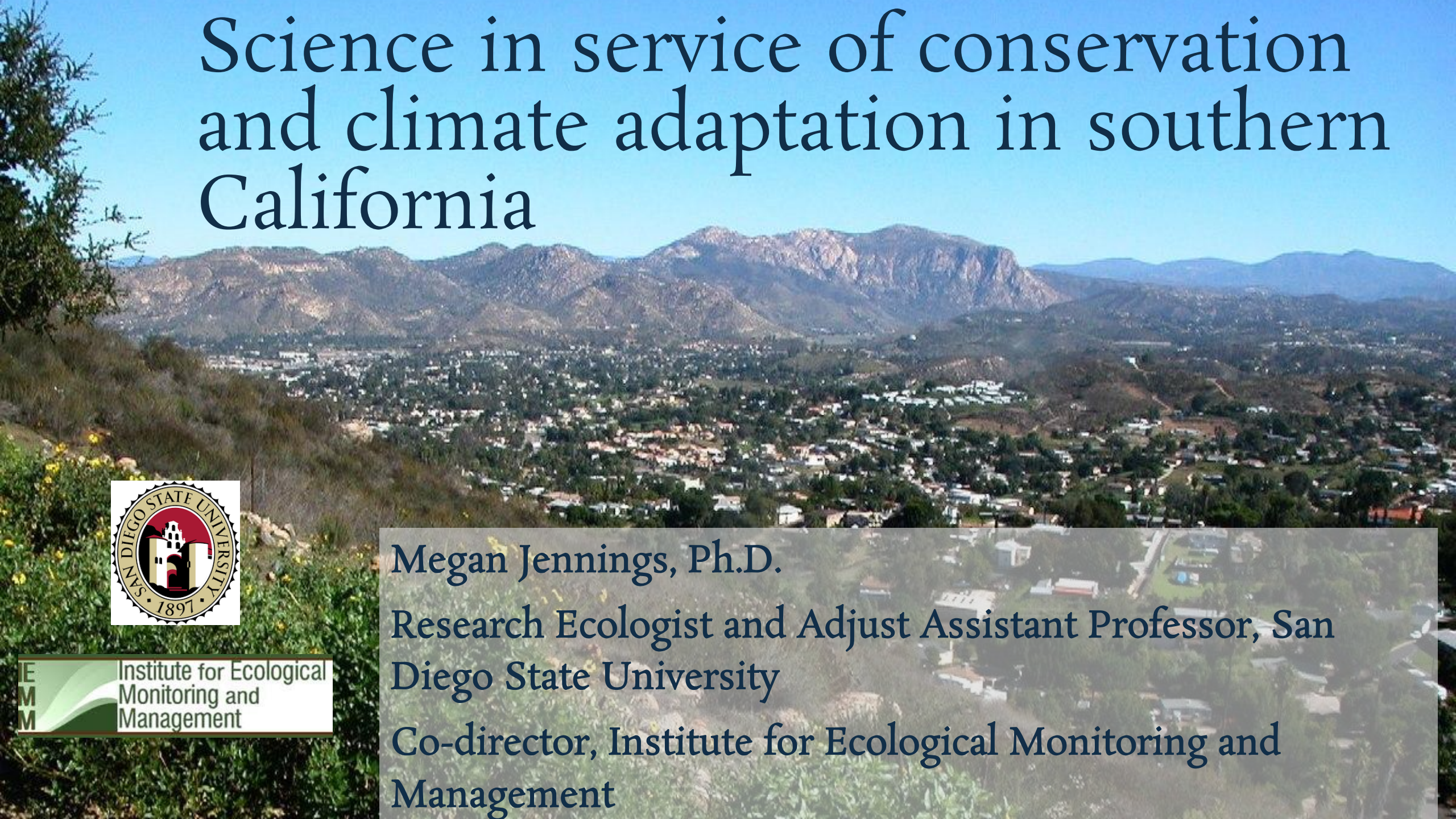
Science in service of conservation and climate adaptation in southern California



Megan Jennings, Ph.D.

Research Ecologist and Adjust Assistant Professor, San Diego State University

Co-director, Institute for Ecological Monitoring and Management

CLIMATE SCIENCE ALLIANCE

San Diego County Ecosystems: *The Ecological Impacts of Climate Change on a Biodiversity Hotspot*

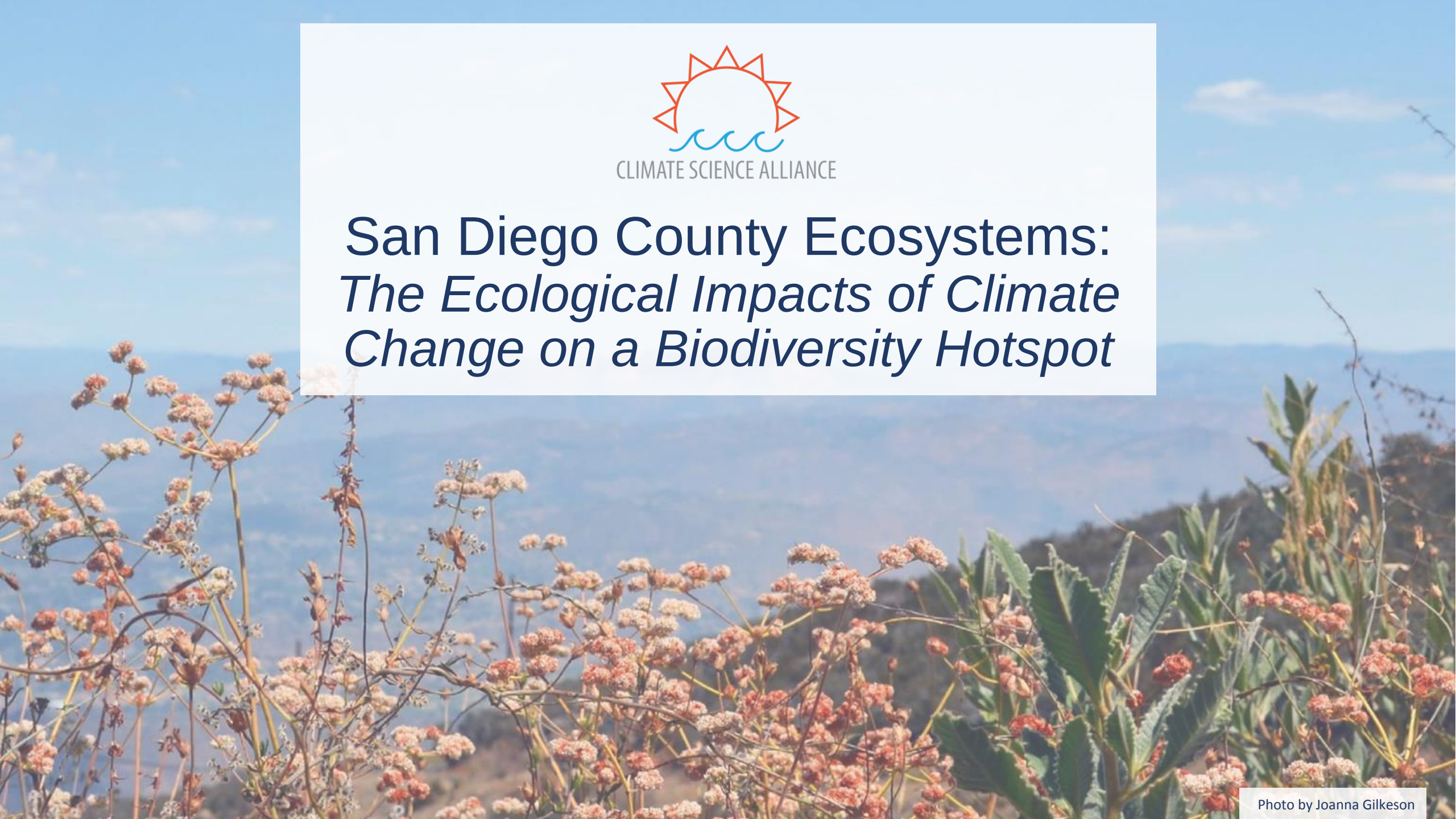


Photo by Joanna Gilkeson

About the San Diego Ecosystem Assessment

A collaboration of local ecologists and climatologists

CLIMATE SCIENCE ALLIANCE · SCRIPPS INSTITUTION OF OCEANOGRAPHY · SAN DIEGO STATE UNIVERSITY · CALIFORNIA DEPARTMENT OF FISH & WILDLIFE · SCCWRP · The Nature Conservancy · SPAWAR · Conservation Biology Institute · PALA BAND OF MISSION INDIANS · LA JOLLA BAND OF LUISEÑO INDIANS · CICESE

Factors for ecological impacts

- Increased stress
- More extreme events and increased variability
- Interacting stressors (climate and non-climate)

San Diego Ecosystems Report: *Key Findings*

- Range shifts
- Species thresholds for intense warming and drought
- Coastal low clouds and fog
- Landscape-scale planning
- Fire seasons, winds, and fire fuels

Photo by Lisa Cox / USFWS

ANTHROPOGENIC OR CLIMATE DRIVERS OF CHANGE	*Projected shift*	*Confidence in shift**	*Associated ecological impacts*
Mean annual temperature	General increase	Very high confidence	Species range shifts, novel assemblages
Heat waves	Increase in frequency and severity	Very high confidence	Increased mortality, decreased reproductive success
Spring drying	General increase	High confidence	Potential to affect biomass
Precipitation regime variability	General increase	High confidence	Impacts to ephemeral and riparian environments - less stabilizing vegetation and increased erosion can increase inputs
Droughts	General increase	High confidence	Potential structural shifts in ecosystems

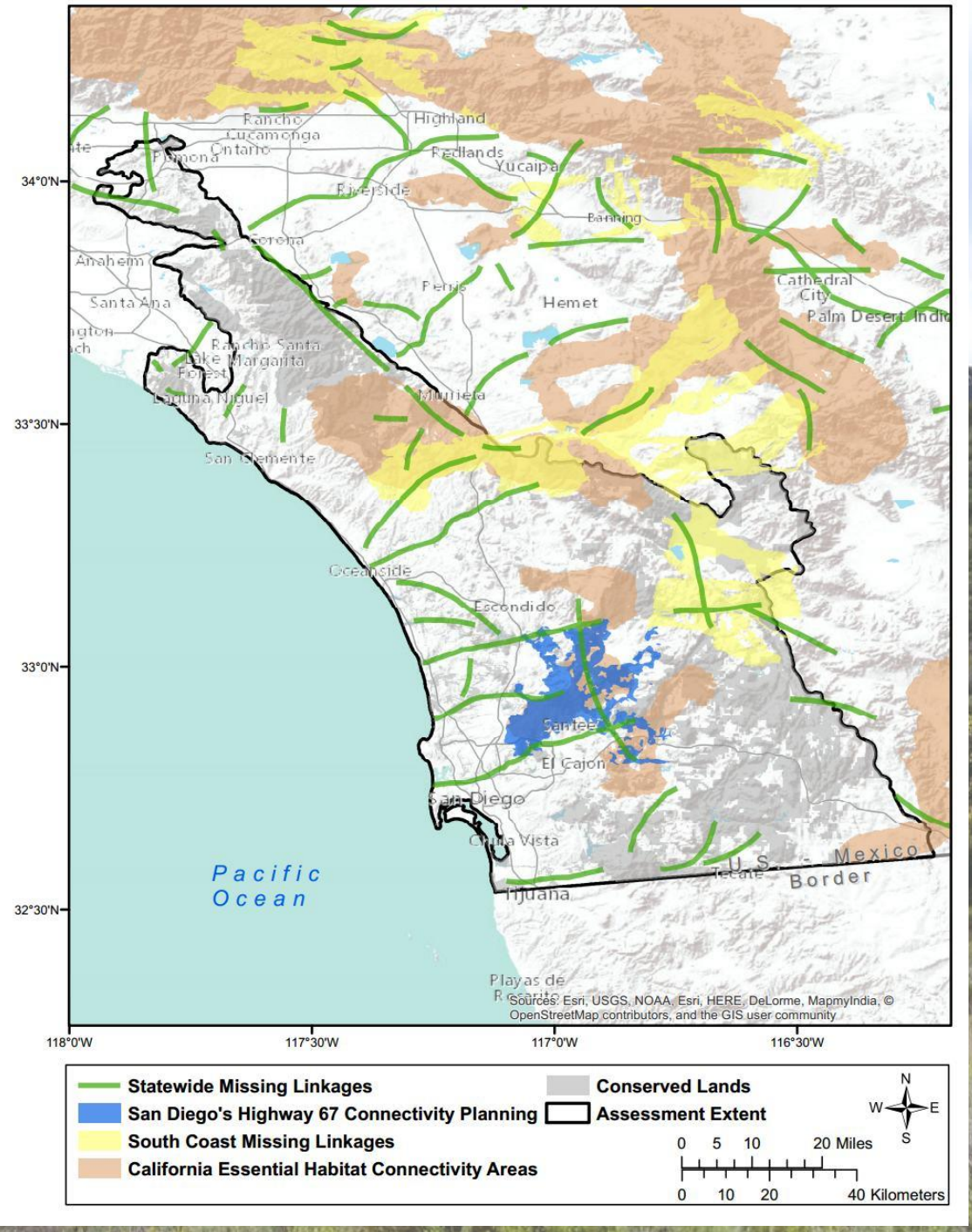
View full table at: climatesciencealliance.org/sdc-ecosystems-assessment

ANTHROPOGENIC OR CLIMATE DRIVERS OF CHANGE	*Projected shift*	*Confidence in shift**	*Associated ecological impacts*
Pests, pathogens	Increase for some pests and vectors	Medium confidence	Increased lethal and sub-lethal effects
Land use change + habitat fragmentation	General increase	Very high confidence	Habitat degradation and loss of landscape connectivity
Fire frequency	General increase	High	Type conversion to non-native grasses
Santa Ana Winds	Unknown	More research needed	Plays a role in fire cycle
Coastal Low Level Clouds and Fog	Unknown	More research needed	Further decreases in marine layer may result in shrub cover decrease and exotic grass cover increase degrading CSS

View full table at: climatesciencealliance.org/sdc-ecosystems-assessment

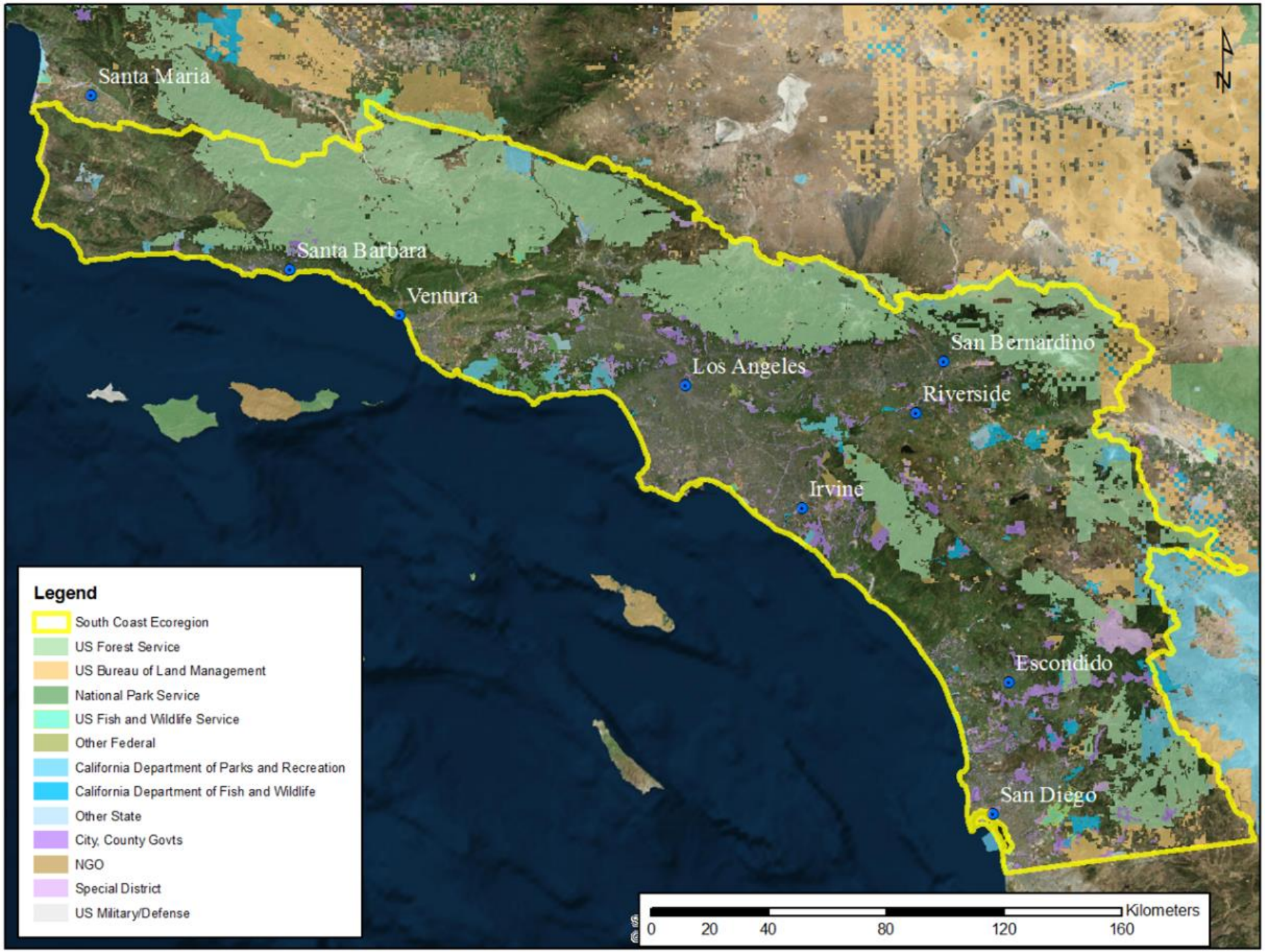
Focus management and preservation on broader spatial and temporal scales

- Landscape scale
- Watershed scale

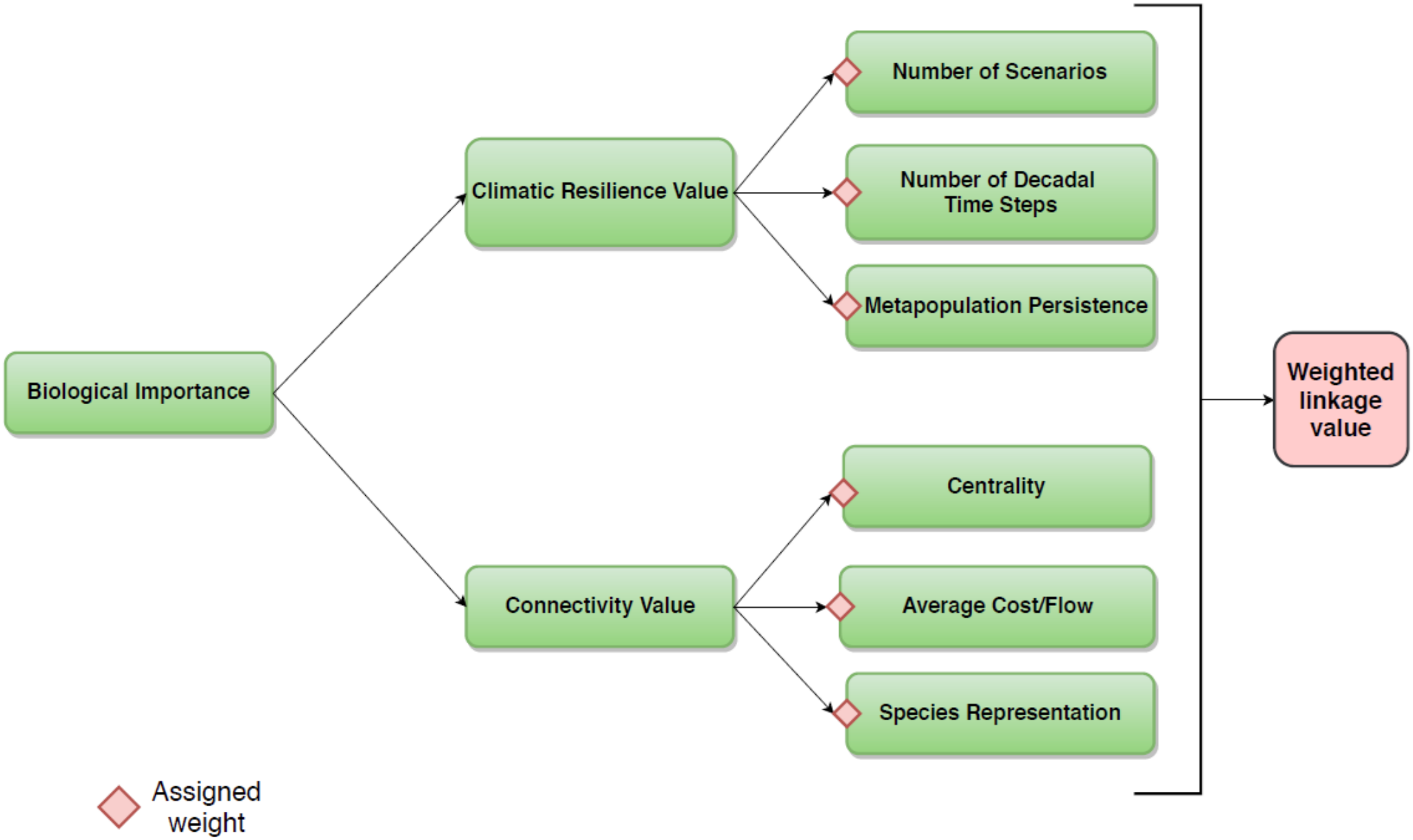


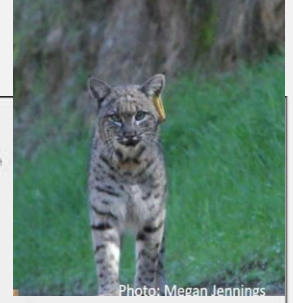
Climate Resilient Connectivity for the South Coast Ecoregion

http://iemm.sdsu.edu/


Santa Maria
Santa Barbara
Ventura
Los Angeles
San Bernardino
Riverside
Irvine
Escondido
San Diego
N
Legend
South Coast Ecoregion
US Forest Service
US Bureau of Land Management
National Park Service
US Fish and Wildlife Service
Other Federal
California Department of Parks and Recreation
California Department of Fish and Wildlife
Other State
City, County Govts
NGO
Special District
US Military/Defense
0
20
40
80
120
160
Kilometers

Linkage Prioritization

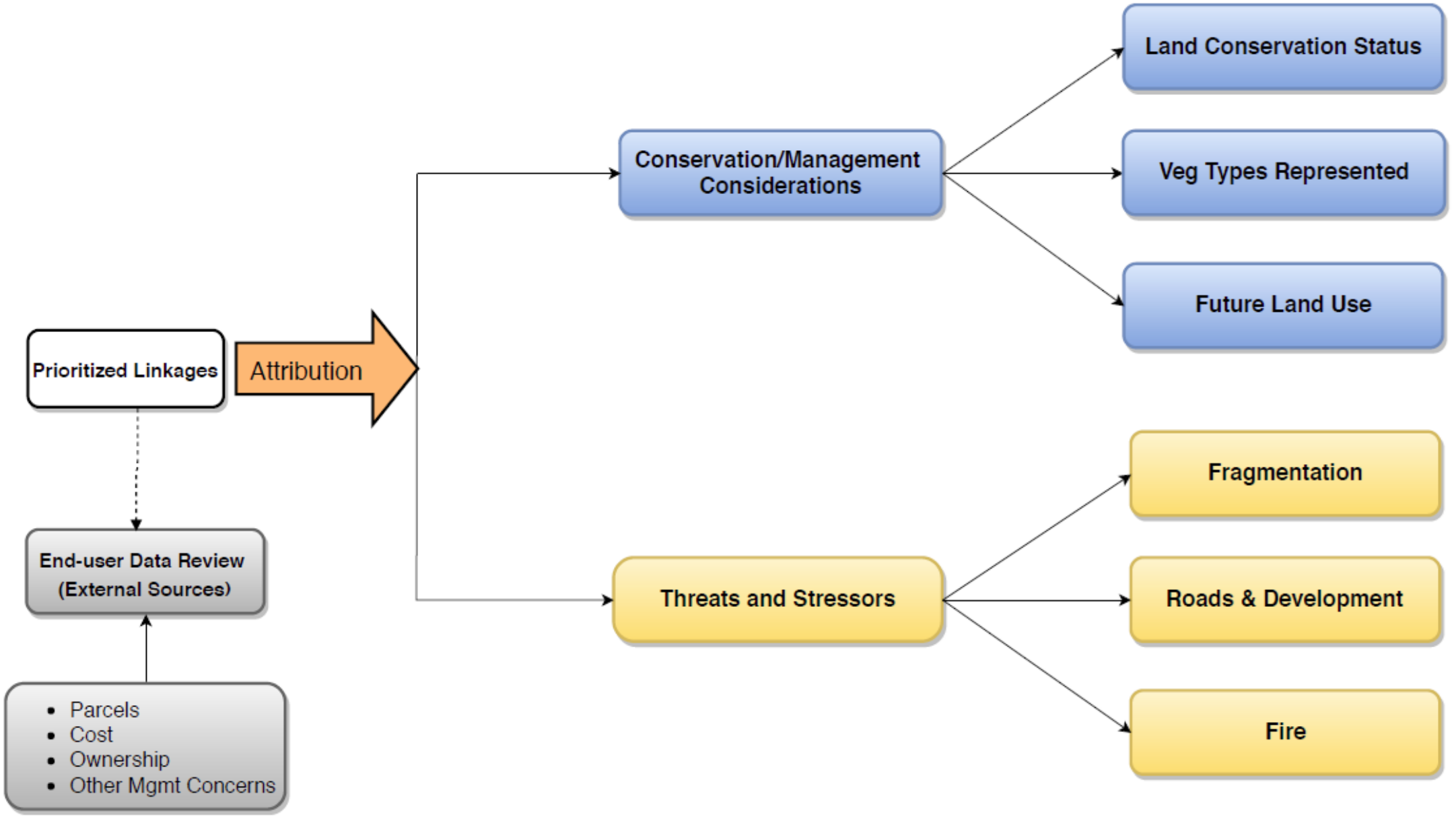




Priority value

High

Low


Land Conservation Status
Conservation/Management Considerations
Veg Types Represented
Future Land Use
Prioritized Linkages
Attribution
End-user Data Review (External Sources)
Fragmentation
Threats and Stressors
Roads & Development
Fire
Parcels
Cost
Ownership
Other Mgmt Concerns

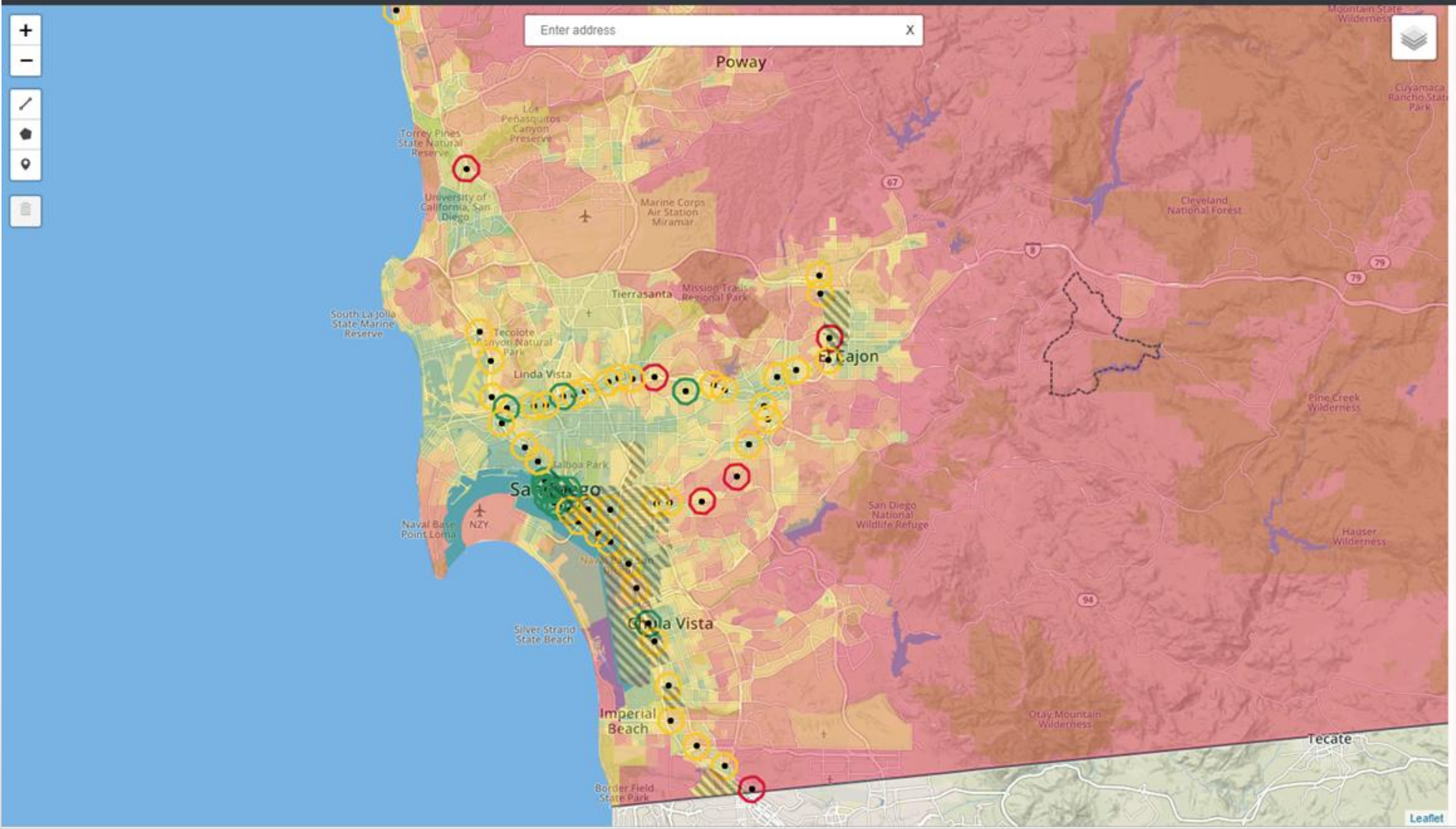
A multi-benefit approach to climate adaptation and conservation

https://www.climatesciencealliance.org/cwc

SMART GROWTH EQUITY CALCULATOR

A HOUSING, TRANSPORTATION, & CLIMATE ACTION COORDINATION TOOL

Project Description | Directions | Press | About Us | Feedback



SELECTED URBAN QUALITY METRIC

VEHICLE MILES TRAVELED

PERFORMANCE LEGEND

GOOD | MEDIUM | POOR | DISADVANTAGED COMMUNITIES

SELECTED BLOCK GROUPS (1)

Sustainability, Livability, Equity Performance (Low is Good)

Vehicle Miles Traveled (Per Household)	**33,278 (+%32)**
Housing Affordability	49.7 (+%33)
Transportation Affordability	26.4 (+%25)
Housing + Transportation Affordability	58.7 (+%16)
Carbon Emissions (Lbs Per Household)	29,950 (+%32)
Pedestrian Collisions (Per 100k Walkers)	N/A
Obesity (Percentage Obese)	0 (-%200)
Cardiovascular Disease (Percentile)	21 (-%30)