Conservation Assessment of Orange County for Renewed Measure M Environmental Mitigation Program

Prepared for
Orange County Transportation Authority

Prepared by
Conservation Biology Institute

Conservation Assessment

Objectives

- Map distribution of conservation values.
- Identify areas where biological resources can be maintained over the long term.
- Provide unbiased science-based tools for decision-making on conservation priorities.

Approach

- County-wide assessment of key conservation values using consistent information.
- Build on existing conservation investments.
- Identify gaps in conservation.
- Identify high value, unprotected lands that fill gaps and/or enhance existing conservation investments.

CONSERVATION
BIOLOGY
INSTITUTE

Filtering Process

- **Orange County**
  - Developed lands/natural lands

- **Natural Lands**
  - Identify 'gaps' in regional protection
  - Identify core and linkage areas
  - Characterize core and linkage areas

- **Core and Linkage Areas**
  - Protected/unprotected lands
  - Unprotected lands = 'Opportunity' Areas

- **Opportunity Areas**
  - Evaluate position/proximity to open space
  - Establish conservation objectives
  - Identify Priority Conservation Areas
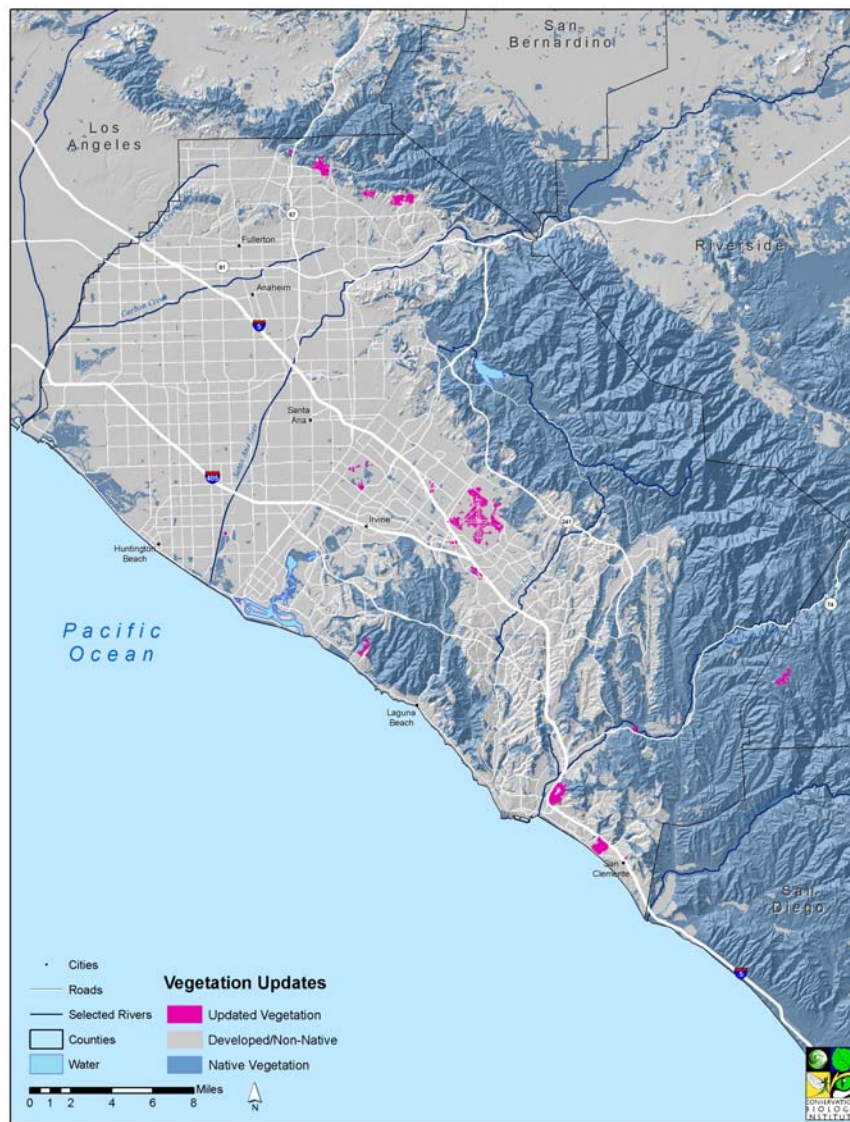
- **Priority Conservation Areas**
  - Parcels/Properties

3

Data Layer Updates – Protected Areas Database

- Digital data/APNs
- Additional habitat protection
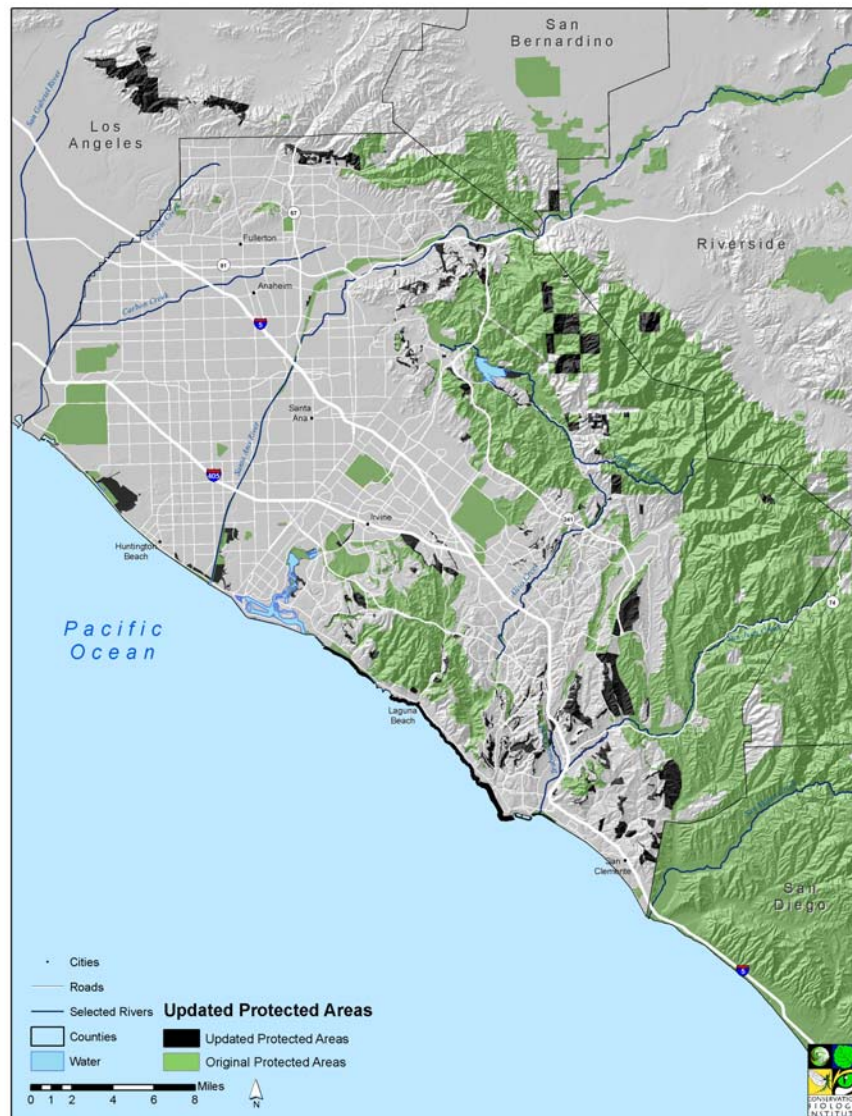
Data Layer Updates - Vegetation

- Habitat loss from development
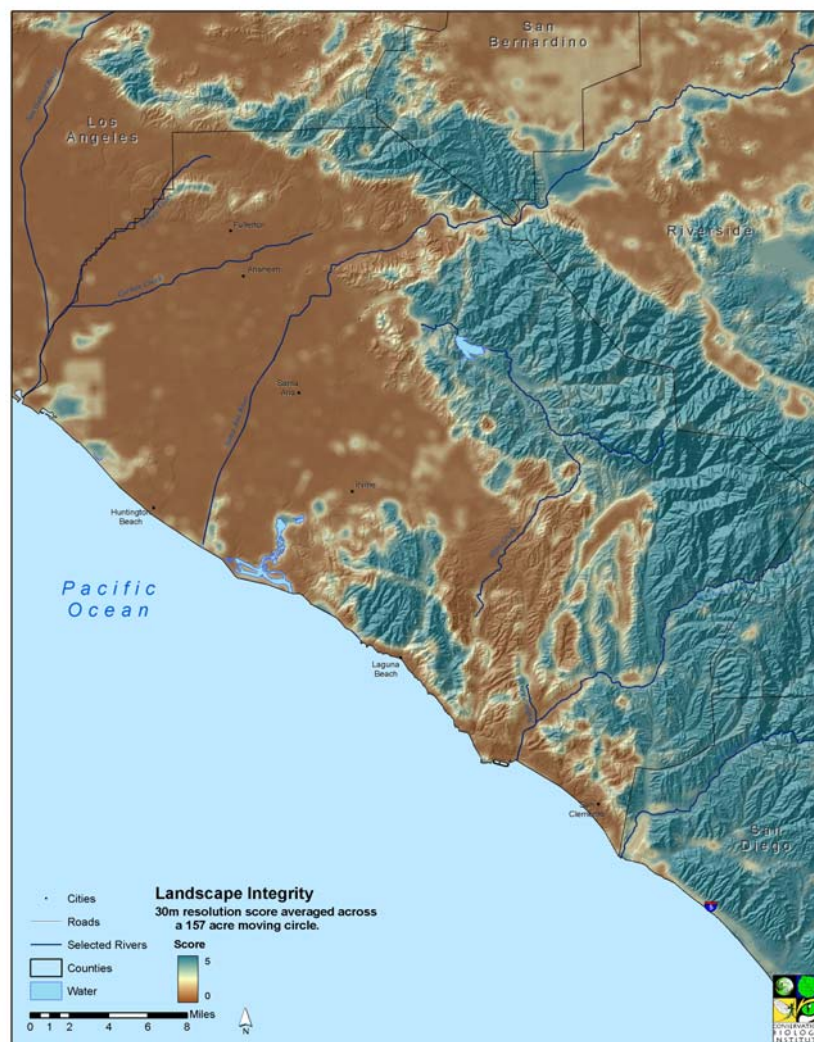- Decrease in vegetation acreage

Conservation Values

- Landscape Integrity

- Vegetation Representation

- Sensitive Species

- Core Patch Size

- Connectivity

- Buffers

Landscape Integrity

- Measures 'intactness'
  - Intact lands maintain biodiversity, ecosystem processes better than fragmented lands
  - Cost value assigned to all land cover categories and road classes

Vegetation Representation

- Measure of biodiversity
    - Objective is to capture a sufficient proportion of all vegetation types across region

Vegetation Representation

- Gap Analysis
  - Vegetation + Protected Areas Layers
  - Determine 'gaps' in regional vegetation protection
  - Gaps are important conservation targets

Regionally Under-Protected Vegetation
Woodland   - California walnut woodland (36%)   - Coastal mixed hardwood (42%)
Riparian   - Fremont cottonwood (53%)   - Riparian mixed hardwood (65%)   - Riparian mixed shrub (64%)   - Willow (62%)
Grassland   - Annual grasses and forbs (62%)
Scrub   - Coastal bluff scrub (64%)

CONSERVATION BIOLOGY INSTITUTE

Sensitive Species

- Measure of biodiversity
  - Objective is to protect 'filtered' species across their native range
  - CNDDB/USFWS data; i.d. core populations
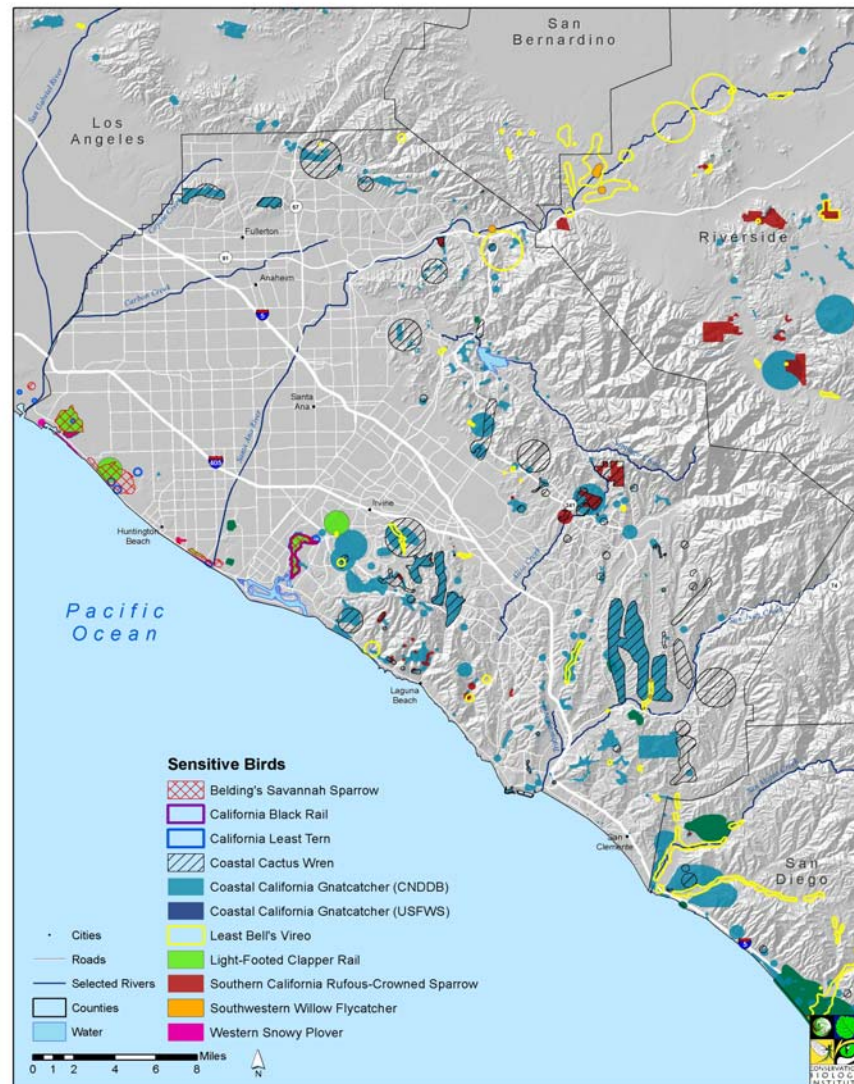
Core Patch Size

- Large blocks of habitat
  - Support natural ecosystem processes and large area-dependent species, minimize extinction probabilities, and serve as source areas for re-colonization
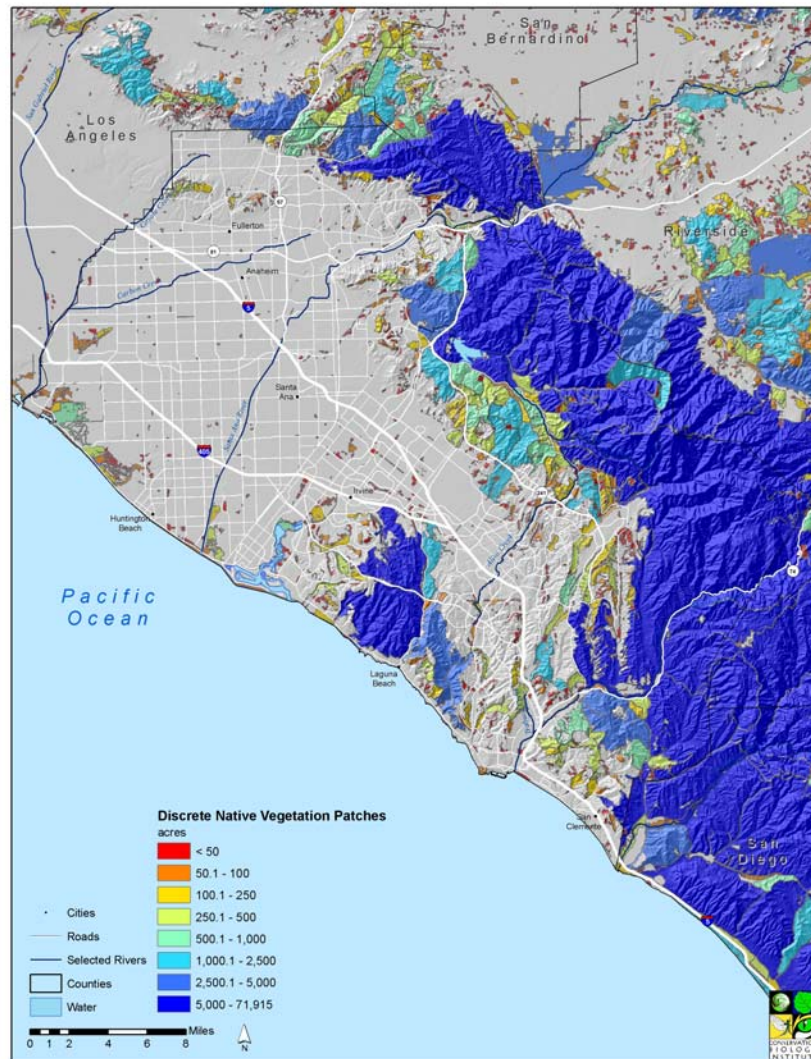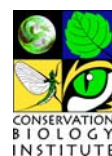
Core and Linkage Areas

- ## Core Habitat Areas
  - *Generally* support high or very high landscape integrity and biodiversity in a configuration that promotes the long-term persistence of these values.

- ## Landscape Linkages
  - Connections between core habitat areas that allow for species movement.

* Core and linkage areas include both protected and unprotected natural lands
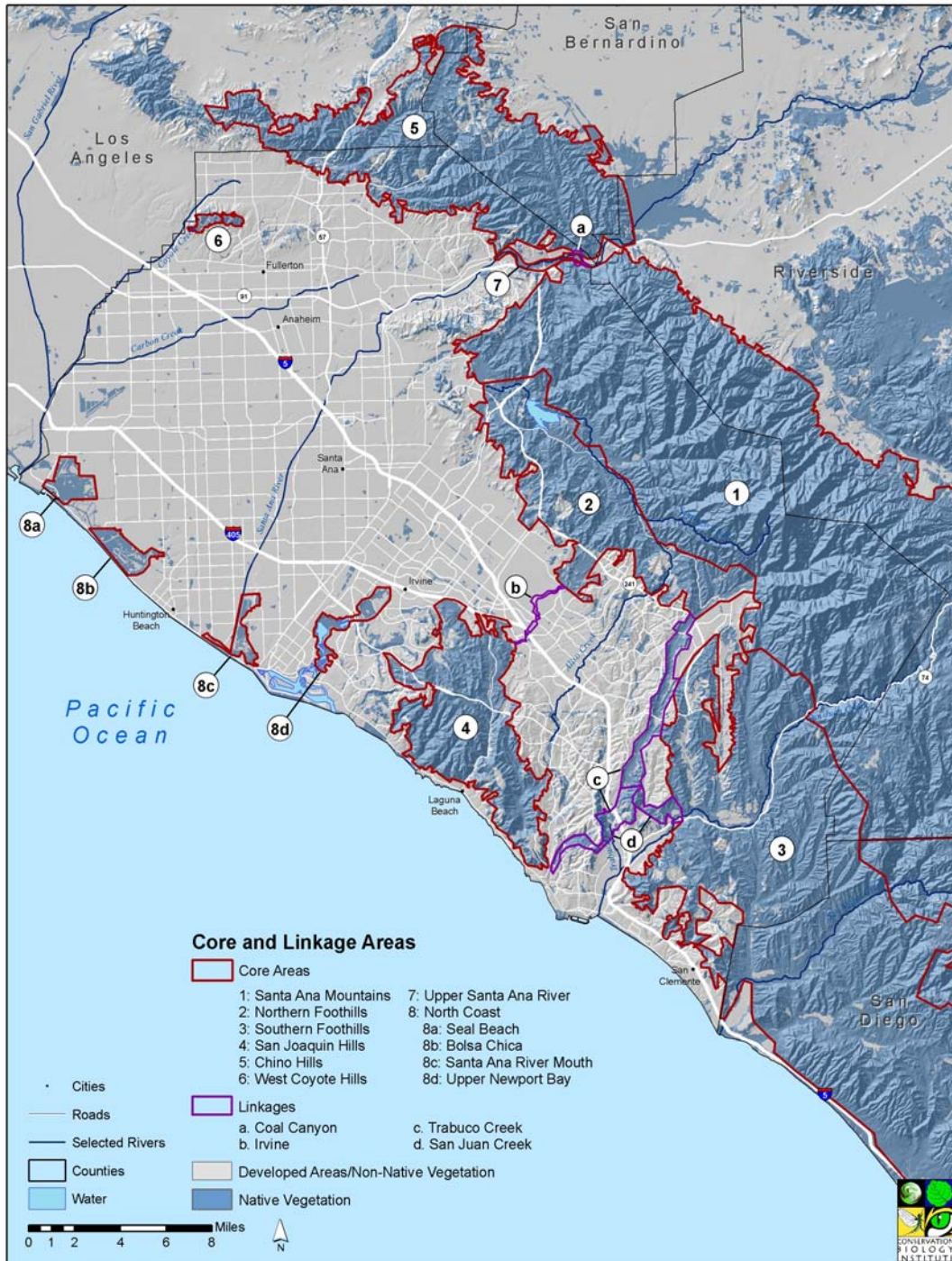
Core Habitat Area Attributes

Core Area	Size (ac)	Integrity (%)[1]	Vegetation Types	Filtered Species	T & E/M2 Species
Santa Ana Mountains	84,480	98	28	25	6/15
Northern Foothills	23,639	84	21	19	4/16
Southern Foothills	42,561	86	19	26	9/18
San Joaquin Hills	20,674	82	18	15	5/11
Chino Hills	12,602	82	13	13	2/13
W. Coyote Hills	539	68	5	5	1/4
Upper SA River	504	22	6	8	2/7
Seal Beach	1,145	57	3	13	7/3
Bolsa Chica	1,165	31	5	13	8/2
SA River Mouth	710	29	7	9	6/3
Upper Newport Bay	1,136	48	10	18	9/5

[1] Percentage of lands with High or Very High landscape integrity.

Core and Linkage Areas

Core and Linkage Areas

Core Areas

1: Santa Ana Mountains
2: Northern Foothills
3: Southern Foothills
4: San Joaquin Hills
5: Chino Hills
6: West Coyote Hills
7: Upper Santa Ana River
8: North Coast
  8a: Seal Beach
  8b: Bolsa Chica
  8c: Santa Ana River Mouth
  8d: Upper Newport Bay

· Cities
  Roads
  Selected Rivers
  Counties
  Water

Linkages
a. Coal Canyon
b. Irvine
c. Trabuco Creek
d. San Juan Creek

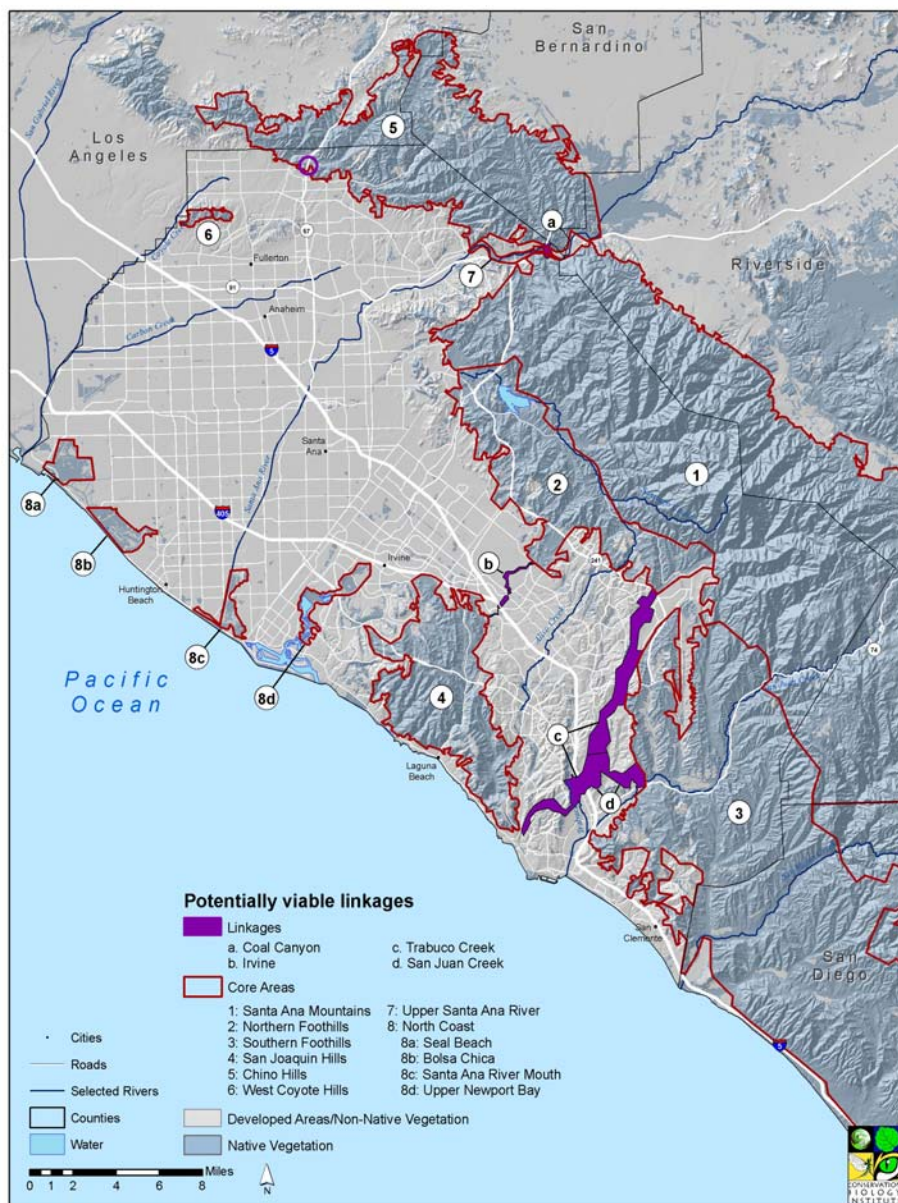Developed Areas/Non-Native Vegetation
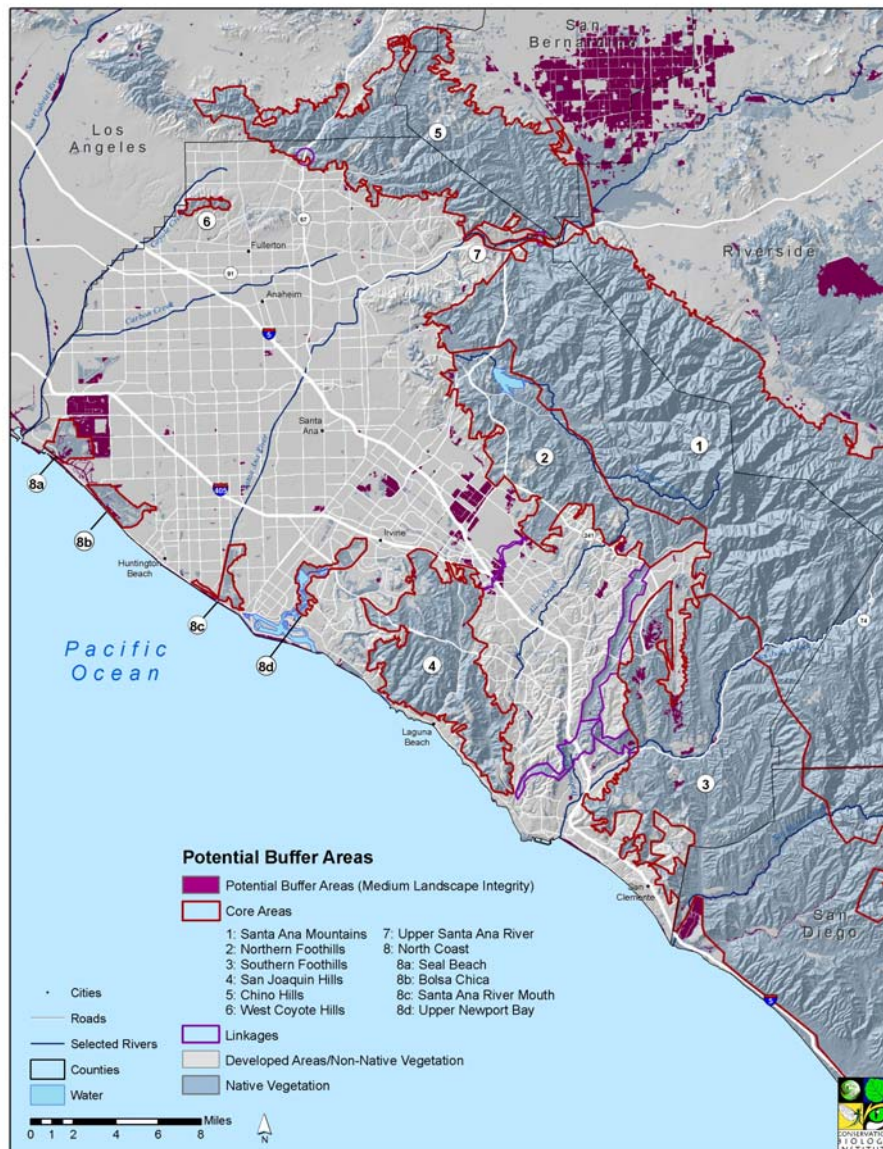Native Vegetation

Miles
0 1 2 4 6 8
N

Connectivity

- Linkages *between* cores
  - Natural vegetation/potential for restoration

Buffers

- Lands that moderate human impacts
  - Lower value habitat/low intensity development (e.g., agriculture)

Potential Buffer Areas

- Potential Buffer Areas (Medium Landscape Integrity)
- Core Areas
  - 1: Santa Ana Mountains
  - 2: Northern Foothills
  - 3: Southern Foothills
  - 4: San Joaquin Hills
  - 5: Chino Hills
  - 6: West Coyote Hills
  - 7: Upper Santa Ana River
  - 8: North Coast
    - 8a: Seal Beach
    - 8b: Bolsa Chica
    - 8c: Santa Ana River Mouth
    - 8d: Upper Newport Bay
- Linkages
- Developed Areas/Non-Native Vegetation
- Native Vegetation
- Cities
- Roads
- Selected Rivers
- Counties
- Water

Opportunity Areas

- Unprotected lands in core habitat areas/linkages

Opportunity Area Evaluation

- Prioritize lands within Opportunity Areas
  - Local Scale
    - Evaluate lands based on position within reserve element
    - Additional 'tool' for assessment
  - Regional Scale
    - Establish conservation objectives
    - Identify key areas for conservation ('no regrets'/priority conservation areas)

Local Scale

- **Objective**
  - Evaluate lands within Opportunity Areas according to position (interior/edge) and proximity to protected areas

- **Process**
  - Stratify cores/linkages into units for analysis
  - Establish *Positional Priority Levels*
  - Determine edge/adjacency
  - Develop Positional Priority map

Edge Effects

- Edge = urban-wildland interface
- Edge effects = habitat degradation concentrated near this interface
- Potential edge effects
  - Habitat loss
  - Invasive species
  - Increased predation
  - Increased runoff
  - Increased fire frequency
  - Soil nitrification
  - Pesticide drift

Positional Priority Levels

Large/Medium Cores

High Priority	Interior, adjacent
Medium Priority	Interior, not adjacent or edge, adjacent
Low Priority	Edge, not adjacent

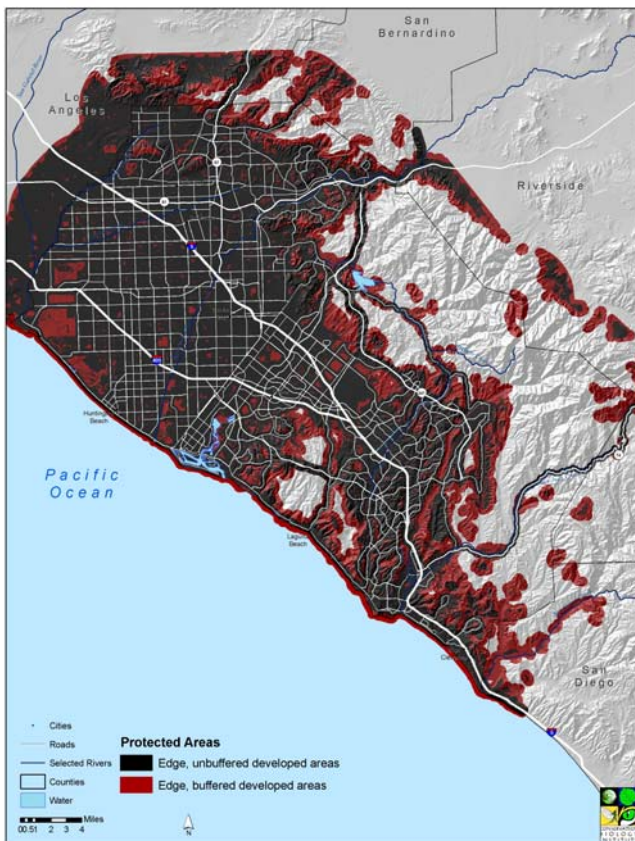## Small Cores/Linkages

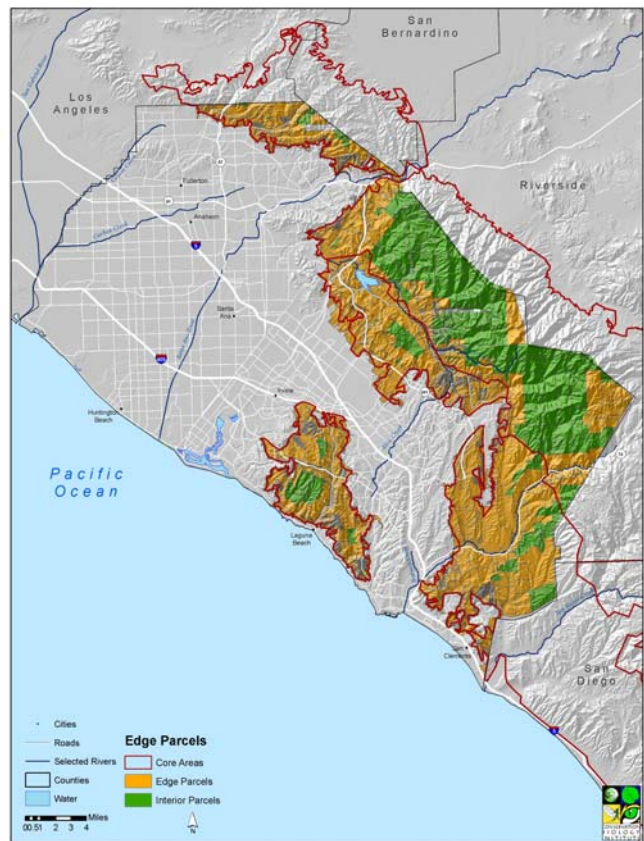|	
Medium Priority	Adjacent
Low Priority	Not adjacent

Edge Analysis

- Objective
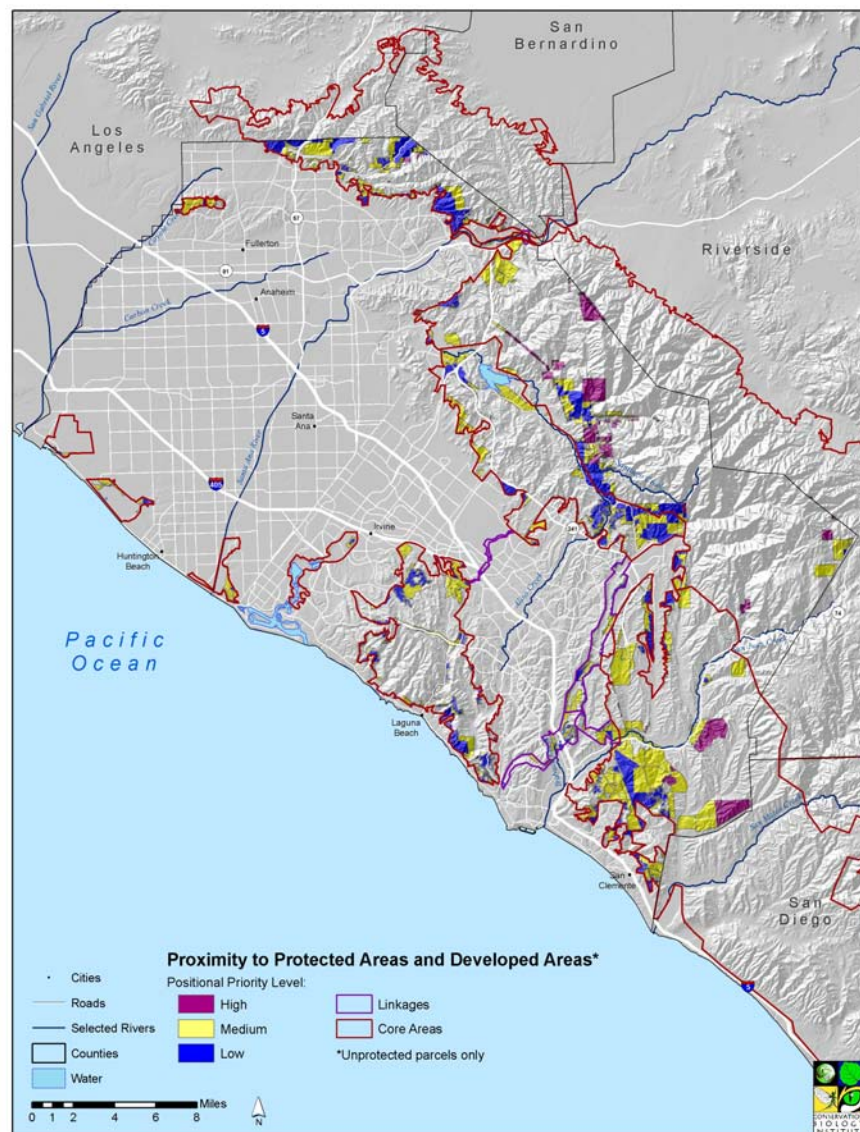 - Identify lands subject to edge effects
  - Unit = parcel

Edge

Edge/Interior Map

Positional Priority Level Map

- Positional Priority Levels established only within Opportunity Areas
- Combines edge analysis with adjacency

Parcel Distribution within Positional Priority Levels

- Positional Priority Levels assigned to *all* parcels within Opportunity Areas
- Additional attribute for decision-making

Unit	High Priority	Medium Priority	Low Priority	Total
Santa Ana Mts.[1]	112	939	2,087	3,138
Northern Foothills[1]	1	744	4,123	4,868
Southern Foothills	11	1,236	7,023	8,270
San Joaquin Hills	0	1,533	8,240	9,773
Chino Hills	4	504	3,184	3,692
W. Coyote Hills	---	99	319	418
U. Santa Ana River	---	56	175	231
North Coast	---	418	2,426	2,844
Linkages	---	910	3,103	4,013
Total	128	6,439	30,680	37,247

[1] Parcels that straddle the Santa Ana Mountains/Northern Foothills core boundaries are included in the counts for both areas.

Regional Scale

- **Objective**
  - Prioritize lands within Opportunity Areas for acquisition
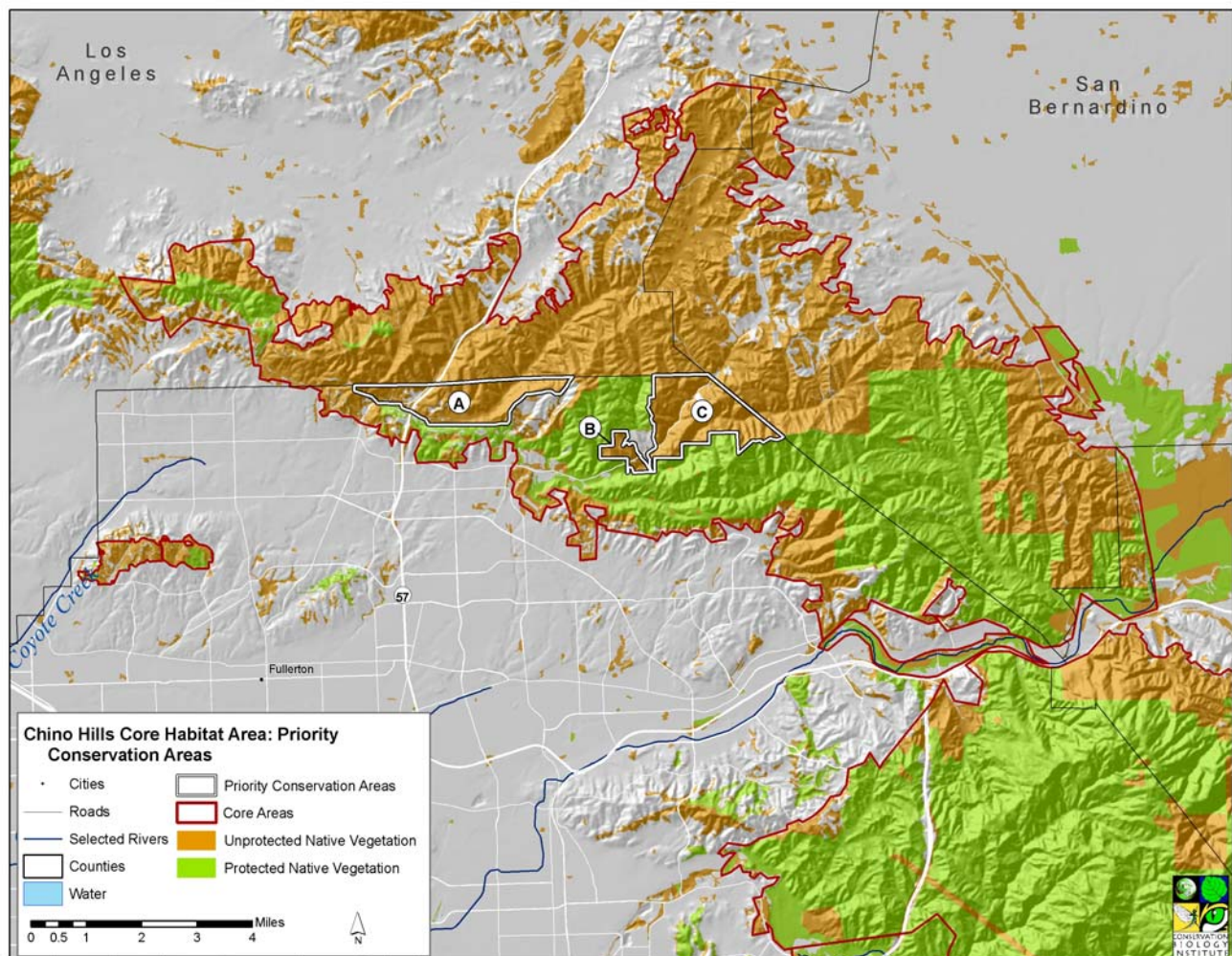
- **Process**
  - Identify Conservation Objectives
  - Identify *Priority Conservation Areas*
    - Unprotected lands that meet conservation objectives
    - Conservation values
  - Identify specific parcels/properties within *Priority Conservation Areas*
    - Positional Priority Levels

Conservation Assessment as a Tool – Chino Hills

- **Conservation Objectives**
  - Conserve large blocks of habitat; minimize internal fragmentation; build on existing conservation investments
  - Conserve regionally under-protected vegetation
    - California walnut woodland (36%)
    - Coastal mixed hardwood (42%)
    - Willow (62%)
    - Annual grasses and forbs (62%)
    - Riparian mixed hardwood (65%)
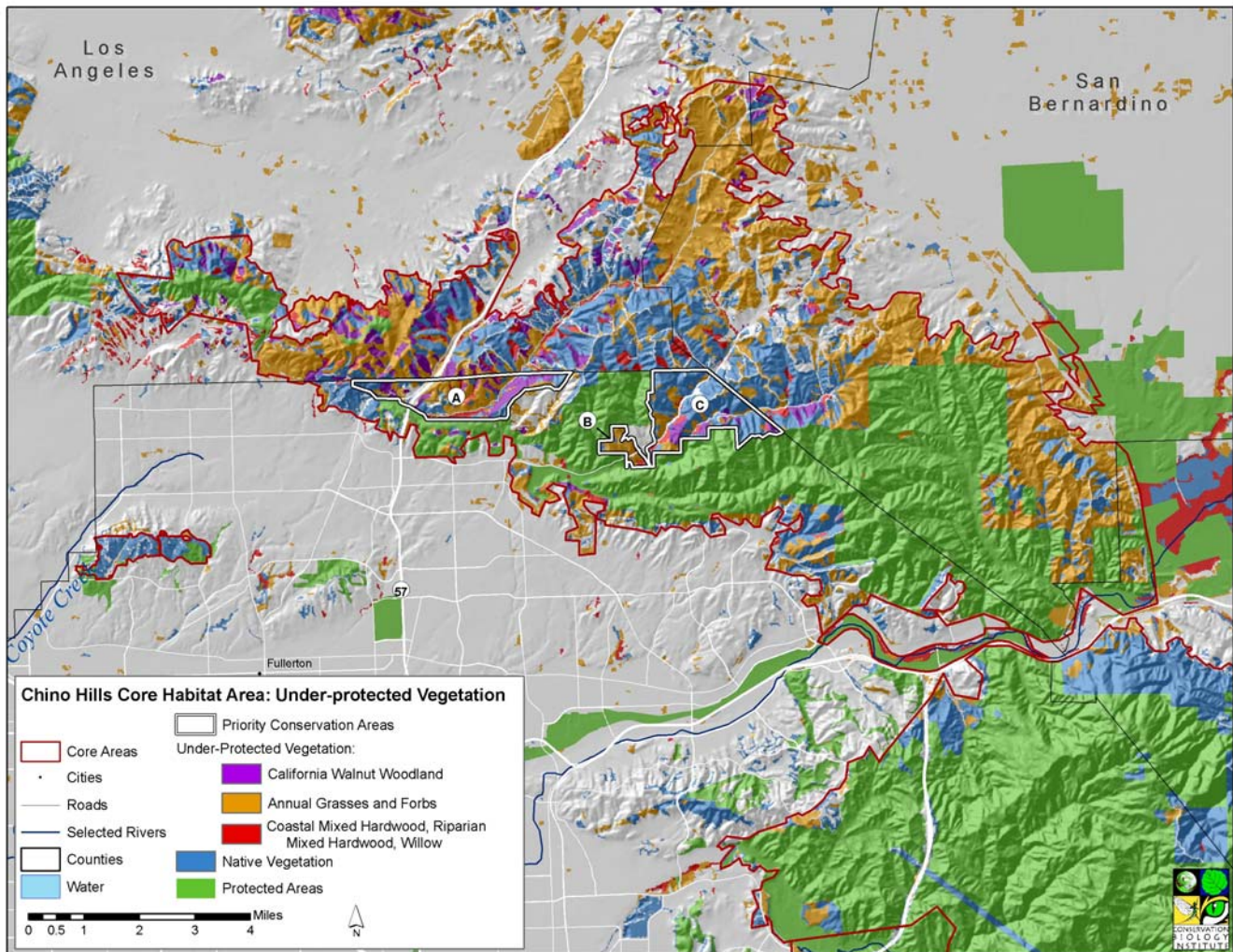 - Conserve core populations of filtered species

Priority Conservation Areas – Chino Hills

- Conserve large blocks of habitat
- Minimize internal fragmentation
- Build on existing conservation investments

Chino Hills Core Habitat Area: Priority Conservation Areas

Legend:
- Cities
- Roads
- Selected Rivers
- Counties
- Water
- Priority Conservation Areas
- Core Areas
- Unprotected Native Vegetation
- Protected Native Vegetation

Priority Conservation Areas – Chino Hills

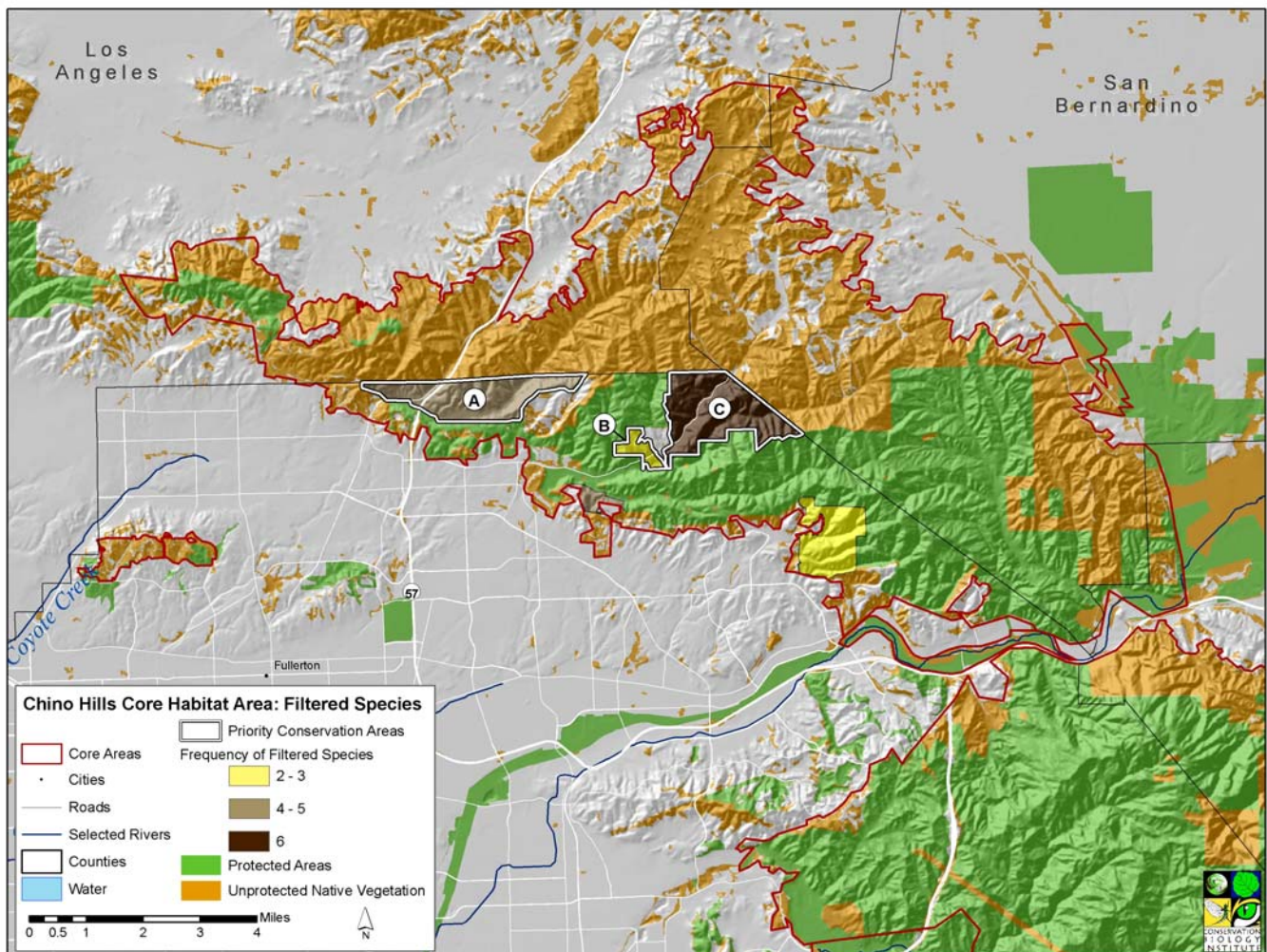- Conserve regionally under-protected vegetation

Walnut woodland (36%):
A = 75%; C = 53%; A + C = 92%

Priority Conservation Areas – Chino Hills

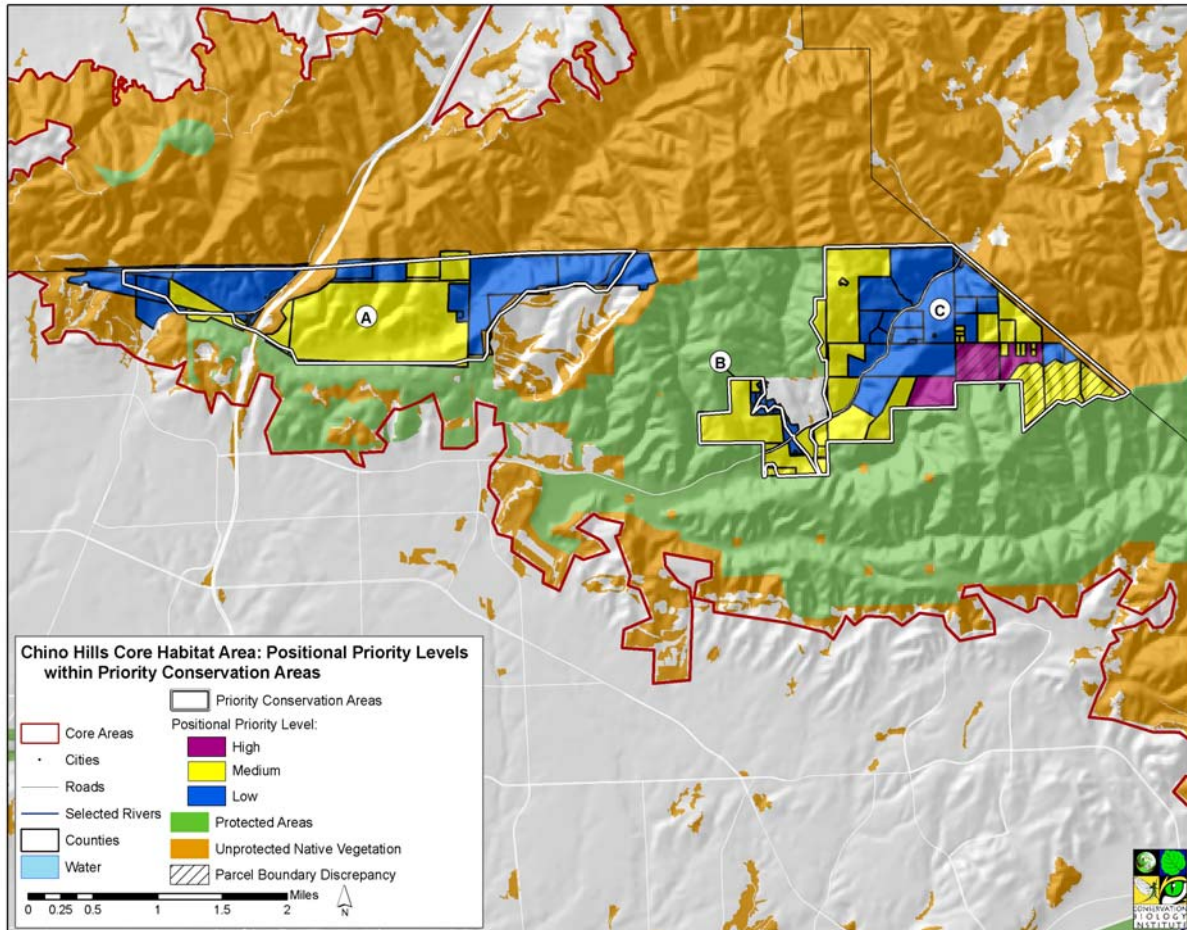- Conserve core populations of filtered species

Priority Conservation Areas – Chino Hills

Values	Area A	Area B	Area C
Vegetation communities (#)	8	4	7
Under-protected vegetation (#)	4[1]	2	3[1]
Filtered species (#)	5	2	6
T & E species (#)	2	0	2
M2 species (#)	5	2	6
Size (acres)	1,224	197	1,407

[1]Includes California walnut woodland

Positional Priority Levels

Positional Priority Levels	Area A	Area B	Area C
High	0	0	2
Medium	9	4	23
Low	19	25	28

3,700 parcels (Opportunity Areas)
110 parcels (Priority Conservation Areas)

Summary

- Regional Database

- Assessed Conservation Values across the County

- Cores/Linkages

- Opportunity Areas

- Priority Conservation Areas

- Individual Parcels/Properties