

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

## Core Team

1. City of Carlsbad
2. Center for Natural Lands Management
3. Environmental Science Associates (ESA)

## Other Stakeholders

1. California Department of Fish and Wildlife
2. U.S. Geological Society
3. Preserve Calavera/San Diego Tracking Team
4. Batiquitos Lagoon Foundation

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

## MHCP Goals

1. Maintain functional wildlife corridors and habitat linkages within the city and to the region.
2. Maintain corridors between each of the major lagoons/estuary systems with larger blocks of inland habitats to allow movement of wildlife species and allow for demographic and genetic exchange.

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

## Purpose of study

- Assess the use and functionality of linkages and potential barriers to movement so that an adaptive management strategy can be developed to enhance movement within and beyond the MHCP preserve.
- Baseline assessment

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

## Functional Groups

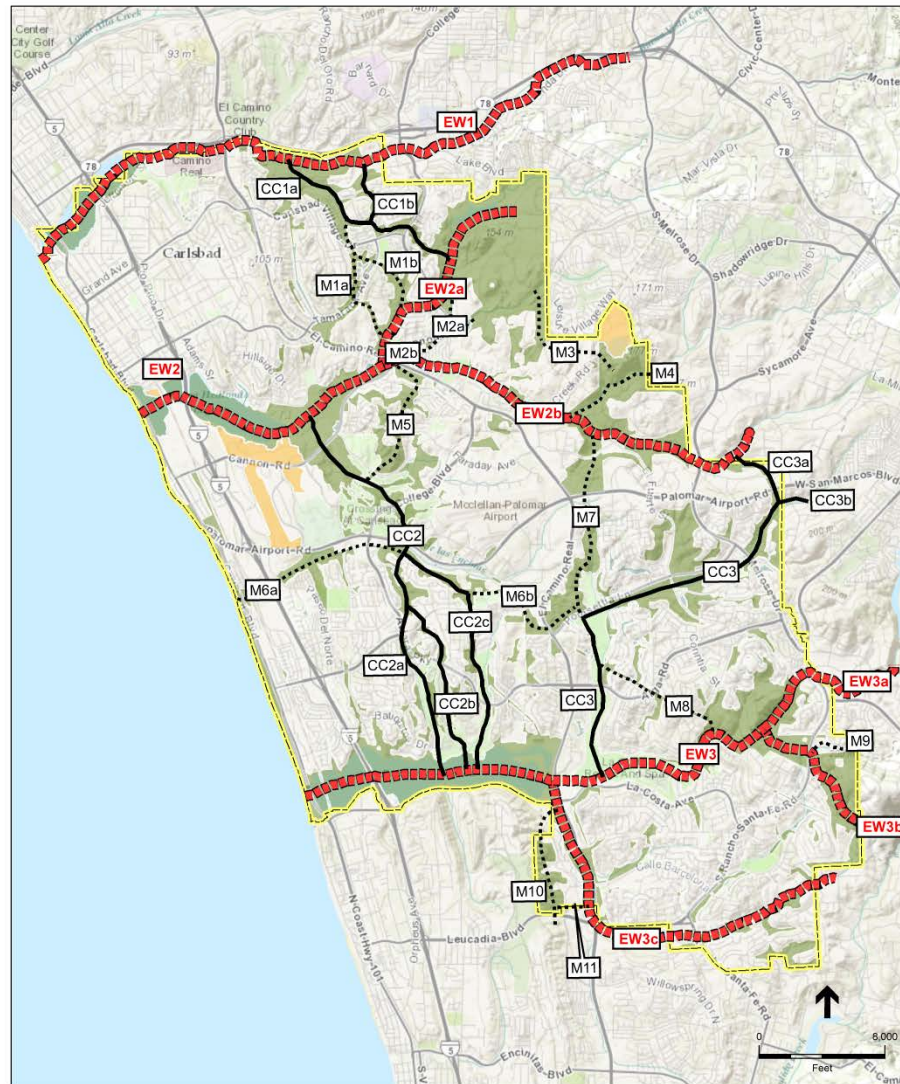
1. Large animals (**bobcat, deer, coyote**) – indicators of functional connectivity (broader movement perspective)
2. Smaller animals (**squirrels, rabbits, skunks, raccoons**) – may provide information about intra-core movement, which is important in a highly fragmented system

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

## Linkage Focus

1. East-west movement between lagoons and core habitat to east
2. Movement between HMP lands and adjacent core areas (core to core)
3. Movement between smaller fragments of open space





#### Legend

- [1] Open Space for Preservation of Natural Resources
- [2] Open Space for Managed Production of Resources
- [3] Open Space for Outdoor Recreation
- [4] Open Space for Aesthetic/Cultural/Education

#### HMP Corridors

- East-West
- Core to Core
- Minor

#### Figure 1 Corridors

#### HMP Wildlife Movement

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

## Strategy

1. Develop a detailed inventory of linkages within the city
2. Identify potential barriers to movements
3. Collect baseline information (presence/absence) at priority pinch point locations using cameras
4. Make recommendations regarding management actions and future study

# Carlsbad Wildlife Linkage Evaluation and Wildlife Movement Study

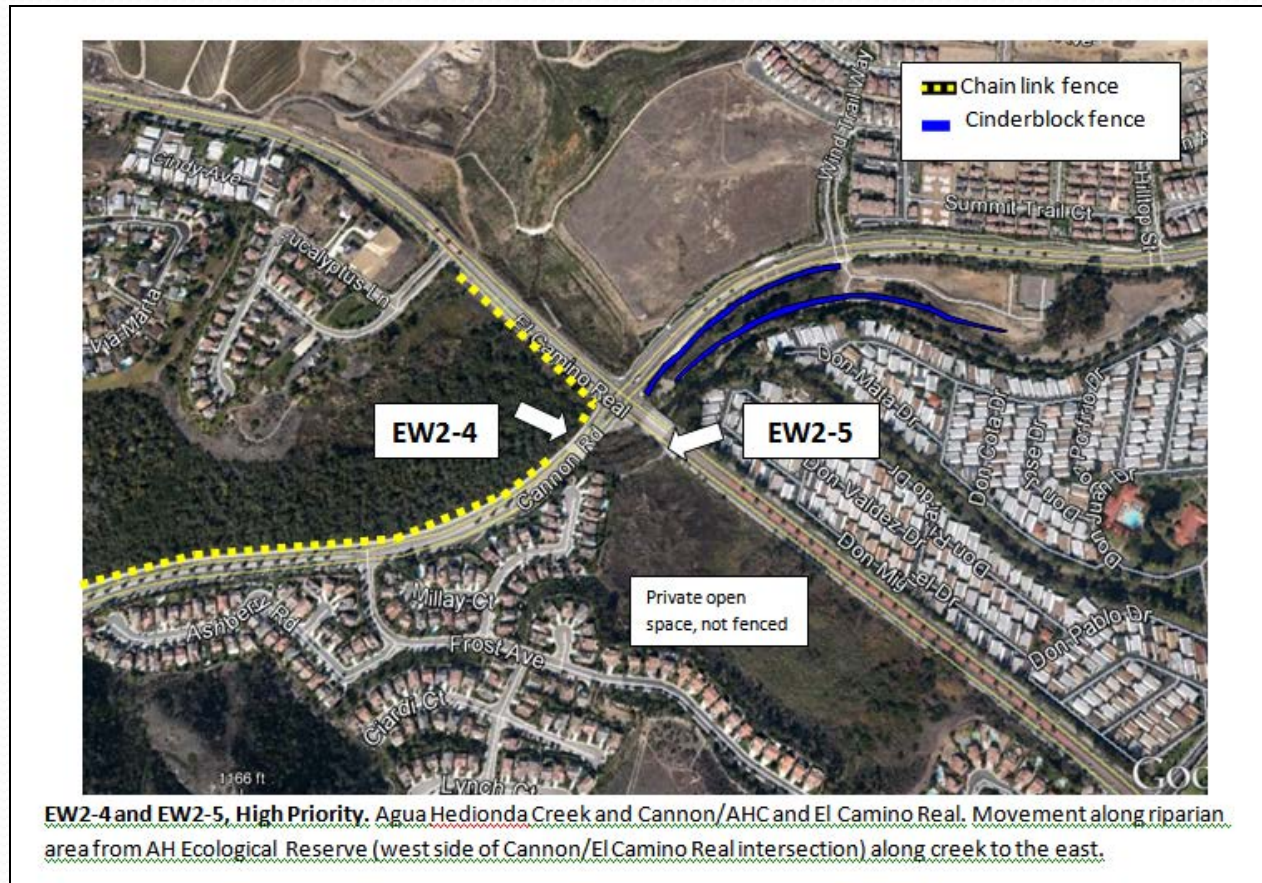
## Status

- Used similar methods as in USGS MSCP wildlife linkage evaluation study (GIS, satellite imagery, and land use data)
- Identified potential barriers to movement (pinchpoints)
- Visited all identified locations, collected data (CBI, USGS, Crooks, University of Washington), took photos.
- Prioritized pinchpoints and chose 13 locations to install wildlife cameras. These will be monitored for 1 year.





Pre-field work evaluation, showing location of culverts and fencing.





# Pinchpoint Inventory



## HMP Wildlife Movement Pinchpoint Description

### LOCATION DESCRIPTION

Corridor	EW2	Point Code:	EW2-4	Assessment Date:	8/13/2013	Surveyors:	R. Humphrey, J. Henry, ESA
Latitude:	33.14888727700			Longitude:	-117.29788174800		
Nearest River:	Agua Hedionda Creek						
Nearest Road	Cannon Road			Road Conditions:	near very busy intersection		
Structure Type:	bridge		Multi Chambers?	2 rows	Structure Material	concrete	
Bottom Type:	sand, dirt, mud, rip-rap, water, debris						
Height(ft):		Width (ft):	38.30	Length (ft):	30.20	Openness Ratio:	0.0
Constraints	potential						
Description of Constraints	may flood during wet season						
Access Logistics	fairly easy access, but lots of human visitation						
Fencing:	W entrance - chainlink, no gaps; E entrance - south side concrete wall; small gap near bridge (11 m); north side n						
Camera Options:	excellent for camera; careful about seasonal flooding and heavy human use						
Tracking Potential	yes						
Species/Sign Observed:	coyote, raccoon, skunk, deer, rodent, lizard						
	woodrat nest nearby						

### DESCRIPTION OF VEGETATION EW2-4

N or E Entrance	Veg. Thickness	blocked	Dominant Vegetation Type	trees
Cover Classes at 20	Shrubs	1 (1-5%)	Grass/Herbs	1 (1-5%)
	Trees	5 (76-100%)		
	Bare/Rock:	1 (1-5%)	Native Species:	5 (76-100%)
			Exotic Species	1 (1-5%)
S or W Entranc	Veg. Thickness	moderately blocked	Dominant Vegetation Typ	trees
Cover Classes at 20	Shrubs	1 (1-5%)	Grass/Herb	3 (26-50%)
	Trees	5 (76-100%)		
	Bare/Rock:	1 (1-5%)	Native Species:	5 (76-100%)
			Exotic Species	2 (6-25%)
Veg. Comments:				

### THREATS AND MANAGEMENT RECOMMENDATIONS EW2-4

Primary Threat:	high human use	Severity	4 (severe/imminent)
Secondary Threat:	busy roadway	Severity	4 (severe/imminent)
Mgmt Recommendations	close gaps in fencing		
Comments:			
	MHCP Monitoring Priority		