Wildlife Bridges on State Route 71
A Caltrans Solution to Maintain Connectivity

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Caltrans
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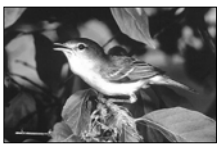
Chino Hills,
Coal Canyon

Prado Basin

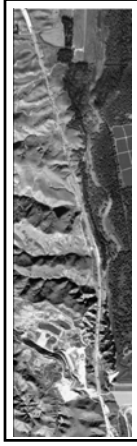
Cleveland National Forest

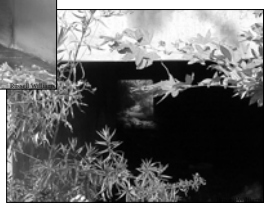
Original Project

- 1995: Army Corps to increase Prado Basin
- State Route 71
  - Raise road profile about 29.5 feet
  - Widen shoulders
  - Install paved median and median barrier



Culverts

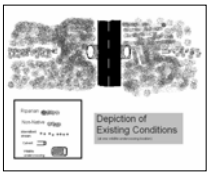




Wildlife Underpasses

- 1 corrugated steel pipe
- 6 feet in diameter
- Not at grade

- Fencing only in certain locations for studying



Wildlife Underpasses

- 2 arched steel culverts
- 15 feet wide
- 19 feet high
- Triangle shape
- Not at grade

- Fencing only in certain locations for studying

Two-Year Wildlife Corridor Study

Background

- Study 1997-1999
- Post-mile 0.0-2.7
- CalPoly students Lisa Lyren and Chris Haas
- 21 culverts in total (5 ft diameter to 3x3 ft box culverts)

Goals

- Utilization of crossings
- Effect of fencing
- Identify predator routes between Chino Hills and Prado Basin

Two-Year Wildlife Corridor Study

Methods

Observations

- Tracks
- Scat
- Road kill
- Animal pathways

Cameras

- Scent lures

Radio Telemetry

- Samples of hair, dimensions, paw print

Two-Year Wildlife Corridor Study

- Captures
  - **4 bobcats and 29 coyotes collared, 24 coyotes ear tagged**
- Cameras
  - **Bobcat**
  - **Coyote**
  - **Mule deer**
  - **Opossum**
  - **Raccoon**
  - **Skunk**
  - **Weasel**
  - **Dog**
  - **Cat**

Two-Year Wildlife Corridor Study

Track Transects
- Bobcat
- Coyote
- Mule deer
- Fox
- Opossum
- Raccoon
- Skunk
- Dog

Culvert Track Stations
- Bobcat
- Coyote
- Opossum
- Raccoon
- Skunk
- Dog
- Cat

Two-Year Wildlife Corridor Study

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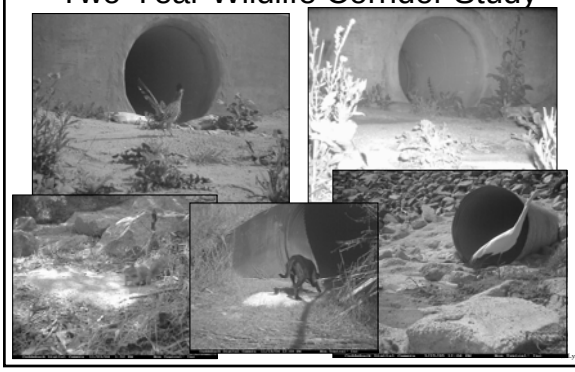


Two-Year Wildlife Corridor Study

Two-Year Wildlife Corridor Study

Conclusions

Coyotes
- Openness
- Height and width

Bobcats
- Natural cover
- Width

Two-Year Wildlife Corridor Study

Conclusions

- Animals used a lower concrete culvert more often than the large one built for them
- Smaller animals used the very small culverts
- Low openness for larger species
- Mule deer restriction
- Not enough fencing
- Fencing not secure at bottom
- Trash attracting wildlife to the freeway

Two-Year Wildlife Corridor Study

Conclusions

- Crossings need to be at grade (level with the ground below)
- Small animals use crossings despite low to no openness
- Large animals need openness
- Fencing needs to be structurally sound and stretch farther
- Human trash encourages animals on roadway

State Route 71 Widening

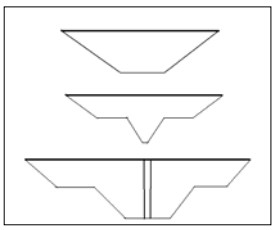
Changes to the 21 Culverts

- 4 culverts changed to 2 wildlife bridges
- 8 culverts extended
  - 2 box culverts (and widened)
  - 6 culverts
- 1 culvert cleaned
- 9 culverts not impacted
- Native vegetation planted

State Route 71 Widening

Bridge Design Options

1) Standard Open Span Bridge
2) Open Span With Terraced Slopes
3) Single Column With Terraced Slopes



Minimization Measures

Visual

- "EMERGENCY PARKING ONLY" and "NO PARKING" signs placed in turnouts and shoulders close to the bridges
- Fencing placed around all culverts and drainages
- Barbed wire fencing outside of Caltrans right-of-way

Minimization Measures

Noise

- Temporary sound wall
- Pile-driving during breeding season
- Wall for pile driver

Bridge Dimensions

- 130 ft long at the roadway
- 17 ft wide base
- 36 ft minimum height
- Soft-bottom drainage
- Natural slopes
- 8 ft high wire mesh fencing around them
- Small retaining wall

Vegetation

- Mulefat (*Baccharis salicifolia*)
- Toyon (*Heteromeles arbutifolia*)
- Holly-leaf redberry (*Rhamnus ilicifolia*)
- Sugarbush (*Rhus ovata*)
- Mexican elderberry (*Sambucas mexicana*)

Follow-up Study

Background

- 2007-2010
- SR-71 and SR-91
- USGS, led by Lisa Lyren

Methods

- Cameras
  - Remotely triggered
  - Wireless
- GPS Telemetry collars
- Road kill surveys
- Tissue sampling

Caltrans Data Needs

- Effects of mesopredators on other bird communities and other animal species
- Studies of movement by smaller animals
- Cost-effective structures to meet goals of wildlife movement
- Noise thresholds

Acknowledgements

California Department of Transportation
- Russell Williams

United States Geological Survey
- Erin Boydston, PhD
- Lisa Lyren, MS
- Chris Haas, MS

Colorado State University
- Kevin Crooks, PhD