

# Evaluating Ecological Conservation Gaps Across a Proposed Sentinel Landscape

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## ENVIRONMENTAL PROBLEM

California's Southern Central Coast region is a biodiversity hotspot containing the last stretch of undeveloped coastline in Southern California. However, its ecological integrity faces mounting threats from climate change and diverse needs such as urban development, agriculture, and military operations—highlighting the need for effective conservation. Implementation of conservation plans is often stalled by political, financial, and collaboration barriers, known as the planning-implementation gap. Bridging this gap requires addressing broad management challenges while fostering coordination among diverse stakeholders. A proposed Sentinel Landscape, anchored at Vandenberg Space Force Base through the federal Sentinel Landscapes Partnership program (VSLP), aims to close the planning-implementation gap by fostering collaboration, increasing resource access, and streamlining projects.

## OBJECTIVES



Evaluate conservation priorities of the proposed Vandenberg Sentinel Landscape (VSL) partners.



Conduct spatial modeling of top partner priorities to locate key areas for conservation.



Recommend priority conservation areas to incorporate in the VSL application.

## PARTNER INTERVIEWS

Interviews with 19 VSL partners revealed primary motivations and barriers for regional conservation efforts. Biodiversity preservation was the top motivation, which included wildlife connectivity, habitat restoration, and listed species recovery. However, political, funding, resource, and collaboration barriers hinder progress towards these goals. To overcome these obstacles, diverse partnerships and collective action facilitated by the VSLP are necessary to foster unity, build capacity, and bridge the planning-implementation gap.

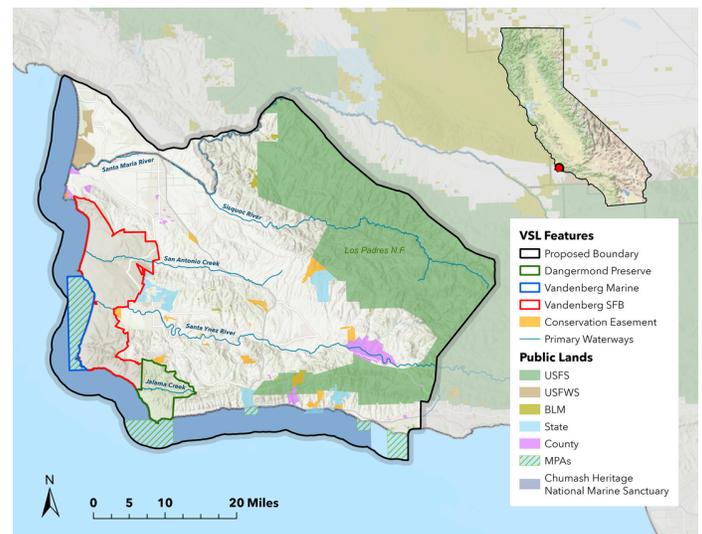


Figure 1. Proposed Vandenberg Sentinel Landscape Boundary

# TOP PRIORITY: SOUTHERN STEELHEAD TROUT RECOVERY

Recovering the endangered Southern Steelhead Trout (*Oncorhynchus mykiss*) is a top conservation priority within the proposed VSL. To identify priority recovery areas, we conducted a habitat suitability analysis using data on fish presence, stream temperature, streamflow, elevation, and slope. However, gaps in streamflow and temperature data limited the assessment of habitat quality. To address these gaps, we recommend expanding environmental monitoring in critical watersheds through improved collaboration and data sharing under the proposed VSLP.

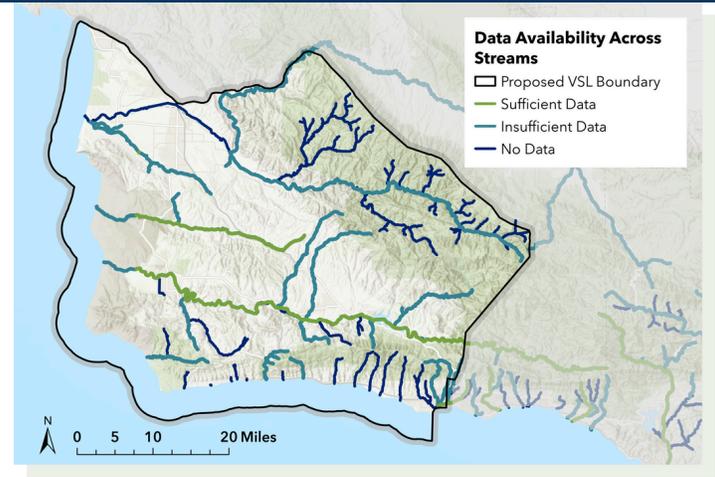


Figure 2. Data Availability Across Streams

# TOP PRIORITY: WILDLIFE CONNECTIVITY

Wildlife connectivity is a key priority for VSL partners. To identify movement pinchpoints, landscape barriers, and high-quality habitats facing multiple threats, we conducted a multi-species connectivity analysis. The resulting areas highlight opportunities for targeted conservation and connectivity improvements. However, the region's patchwork of diverse land ownership and uses complicates efforts to enhance wildlife movement. Effective connectivity solutions will require a mix of strategies—including road modifications, conservation easements, and habitat restoration—supported by coordination among public agencies, private landowners, and conservation groups.

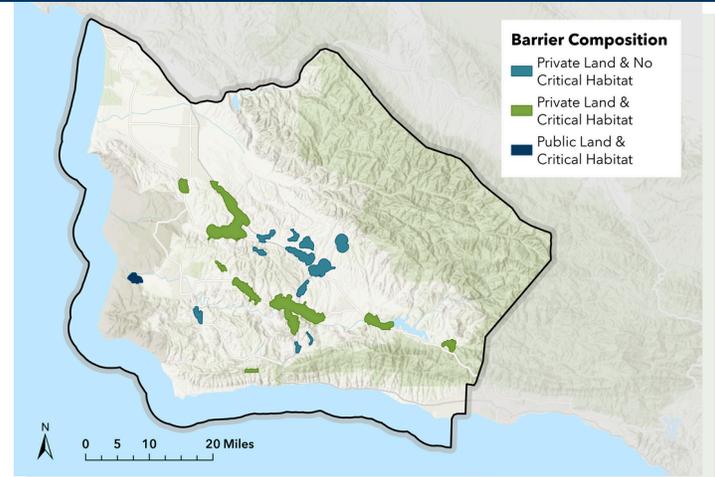


Figure 3. Top-Percentile Barriers Under Multiple Threats

## RECOMMENDATIONS



**Expand and diversify partner network.**



**Enhance data integration, sharing, and monitoring.**



**Engage partners in collaborative landscape-scale conservation planning.**

## PROJECT IMPACT

This project builds the case for a Vandenberg Sentinel Landscape Partnership. Through partner interviews and spatial modeling, we identified key conservation areas, regional priorities, and implementation barriers to support the designation application. During the ongoing application process, this project has strengthened collaboration across the region. Partners joined forces to form the Vandenberg-Gaviota Landscape Partnership—a clear step toward advancing shared goals. While the region has not yet received the designation, this project laid the necessary groundwork by surfacing priorities, recognizing challenges, and leveraging collective strengths to pave the way for more effective funding, resource-sharing, and long-term conservation success.