

Improving Santa Barbara Mitigation

These recommendations would identify a local and regional network of valuable natural areas, based on Santa Barbara's environmental and social goals. This network would facilitate the effective design and siting of future mitigation projects to incrementally enhance environmental health and quality throughout Santa Barbara. Over time, mitigation efforts would efficiently and strategically ensure that important ecosystem services are not lost and that a balance is maintained between important land-use values.

1 Regional Planning Area

A regional planning area would leverage environmental mitigation projects to fulfill comprehensive and strategic regional goals. An integrated resource management plan would balance expected development and mitigation opportunities. This would help identify high value natural resource areas and incorporate strategic goals and visions from Santa Barbara's existing City and County plans.

2 Broad Stakeholder Involvement

Involving citizen groups, landowners, and developers in the planning process is essential for balancing diverse land-use objectives and values. The cancelled Santa Barbara County HCP demonstrates how lack of stakeholder support can thwart a planning process.

3 Cross-jurisdictional Oversight Committee

An oversight committee that includes local, state, and federal representatives, as well as an adaptive management process is recommended to ensure the success of a regionally focused mitigation program. Representation from multiple jurisdictions would facilitate implementation. This cross-jurisdictional oversight committee could be modeled after the Santa Barbara County Association of Governments.

4 Mitigation Banking

Mitigation banking designates one non-profit or governmental organization to restore or preserve natural resources and to sell credits to developers that pay for the reserve and fulfill mitigation requirements. Income from credits supporting a well-designed and expertly managed bank may be more effective than tasking developers with the placement, management, and monitoring of separate mitigation projects.

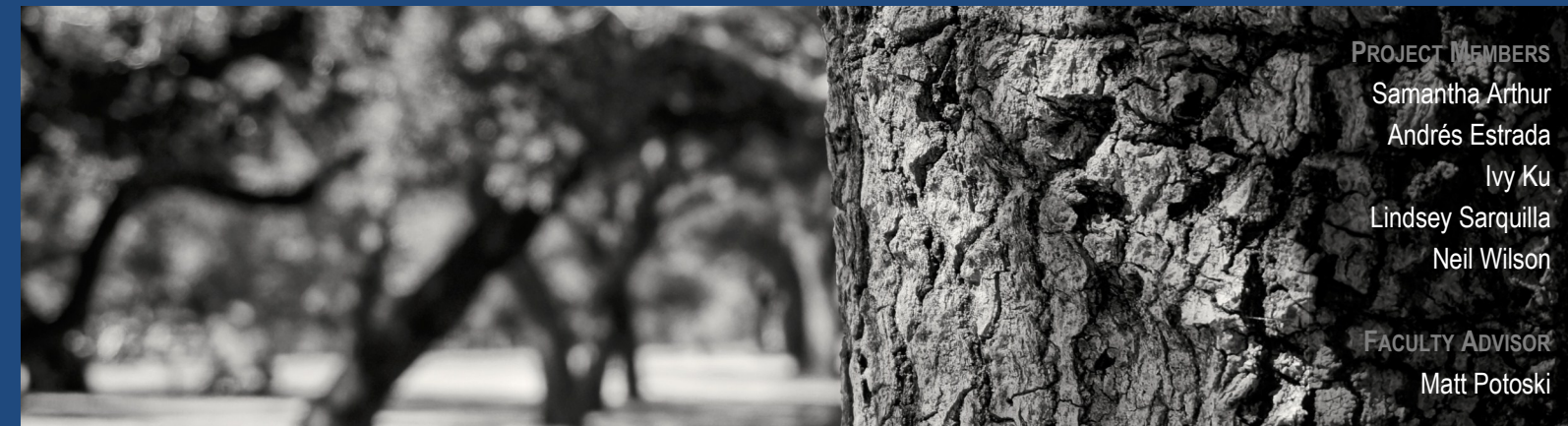
5 Strategic Site Selection

To advance carefully identified regional goals, mitigation must be strategically sited on- or off-site. Areas with high natural resource value should be identified in both the City and the County. Mitigation sites would then be strategically selected in areas that maximize benefits to healthy ecosystem functions and processes.

6 Independent Panel of Scientists

To focus on ecosystem function and process, the team recommends an independent panel of scientists to develop mitigation requirements. An independent panel could lend credibility and expertise in the realm of natural resources, conservation planning, and mapping. Continued coordination with the Santa Barbara Area Coastal Ecosystem Vulnerability Assessment led by researchers at UCSB, UCSD, and USGS will provide an opportunity to connect Santa Barbara's mitigation program to cutting-edge climate change planning.

Comparing Mitigation Strategies: Ecological Outcomes and Policy Implications



PROJECT MEMBERS

Samantha Arthur
Andrés Estrada
Ivy Ku
Lindsey Sarquilla
Neil Wilson

FACULTY ADVISOR

Matt Potoski

Background

California state law requires local permitting agencies to develop and enforce mitigation requirements for environmental impacts from development projects. When project impacts cannot be avoided, they must be replaced or compensated under the California Environmental Quality Act (CEQA). In the City and County of Santa Barbara, removal of native trees is historically mitigated with local tree replacement at a 10 to 1 ratio. Mitigation replaces the tree's social and environmental benefits lost through development.

Mitigation is a major driver for conservation and restoration efforts in California. Sub-par mitigation can threaten critical species and their habitats, cause time delays and high risks for developers, and result in fragmented project-by-project outcomes. Well-designed mitigation programs can result in better outcomes for ecosystems, developers, and communities. This group project characterized mitigation in Santa Barbara and identified mechanisms for improvement to the current program through a review of alternative mitigation frameworks.

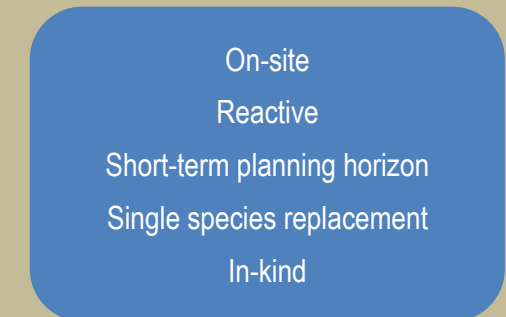
Project Objectives

Case Study: Conduct an independent analysis comparing two mitigation strategies' expected environmental and social outcomes at the Santa Barbara Museum of Natural History.

Policy Analysis: Identify mechanisms that would improve environmental mitigation in Santa Barbara.

Environmental Mitigation in Santa Barbara

The structural elements of environmental mitigation in Santa Barbara determine whether mitigation can create the best outcomes for ecosystems and stakeholders. Mitigation in Santa Barbara is:



Seven important values of mitigation programs were identified through a literature review and stakeholder interviews. Mitigation in Santa Barbara fails to capture all but two of these values, see **Table 1**. It is only implementable and reduces time and costs for permitting agencies.

Mitigation Values	Santa Barbara
Regional and landscape level in scope	
Improves ecosystem function and process	
Based on best available science	
Implementable	√
Reduces time/cost for developers	
Economically efficient	
Reduces time/cost for agencies	√

Table 1: Mitigation Values captured in Santa Barbara

Overview

The Santa Barbara Museum of Natural History proposed a multi-phase redevelopment project to upgrade its Mission Creek campus. Though the project was tabled in favor of a simpler plan, the original project proposal served as a useful case study of environmental mitigation in Santa Barbara.

Throughout the redevelopment project, more than 70 protected coast live oak (*Quercus agrifolia*) and Western sycamore (*Platanus racemosa*) trees would have been significantly impacted, triggering CEQA's mitigation mandate. Santa Barbara's standard 10 to 1 tree replacement mitigation approach would require planting over 700 new trees and require at least 4 additional acres of land. The Museum's campus cannot physically accommodate the high number of replacement trees, suggesting off-site mitigation would be necessary.

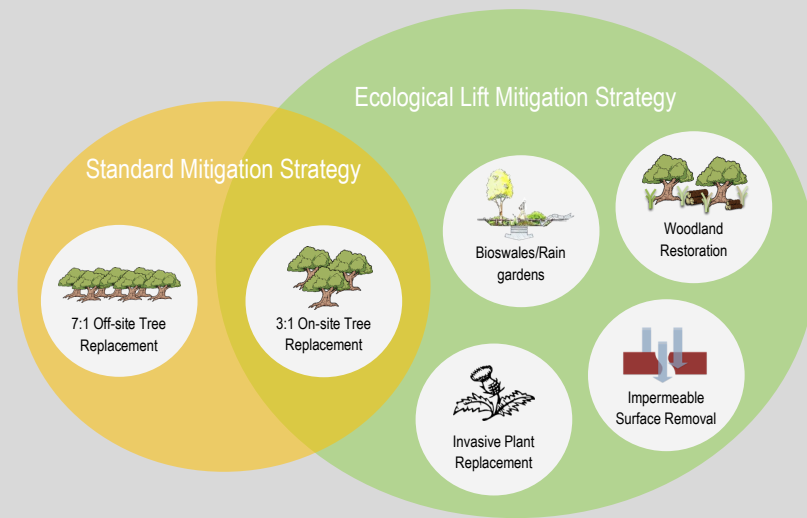


Figure 1: Management Actions within SMS and ELMS

The Museum proposed an alternate mitigation strategy, termed Ecological Lift Mitigation Strategy (ELMS). ELMS is composed of five management actions:

1. On-site tree replacement at a 3 to 1 ratio;
2. Bioswale and rain garden installation to treat storm runoff quantity and quality;
3. Oak woodland restoration of the existing 6 acre oak woodland;
4. Invasive plant replacement;
5. Impermeable surface removal to reduction of total stormwater runoff.

The Standard Mitigation Strategy (SMS), based on current mitigation practices in Santa Barbara, is composed of two management actions:

1. 7 to 1 off-site tree replacement;
2. 3 to 1 on-site tree replacement.

For a comparison of management actions within each mitigation strategy, see Figure 1.

Methods

The team developed an analytic framework, Figure 2, to compare SMS and ELMS across four major environmental and social impact categories, or Parameters. Each Parameter was broken down into quantifiable Metrics and Targets used to evaluate overall Management Action effects.

	Parameters	Metrics	
Framework	Ecology	Biodiversity	Hydrogeomorphic
		Biogeochemical	Cultural
	Policy	General Plan	Standards & Guidelines
		Action & Management	Ordinances
Economic	Short-term Costs	Annual Maintenance	
	Long-term Costs		
Outreach	Educational Utility		
	Community Outreach		

Figure 2: Analytic Framework

Museum plans, city planning documents, interviews, and an extensive literature review informed the analytic process, as illustrated in Figure 3. Management Action effects were then aggregated to create an overall comparison of the anticipated environmental and social outcomes created by each Strategy.

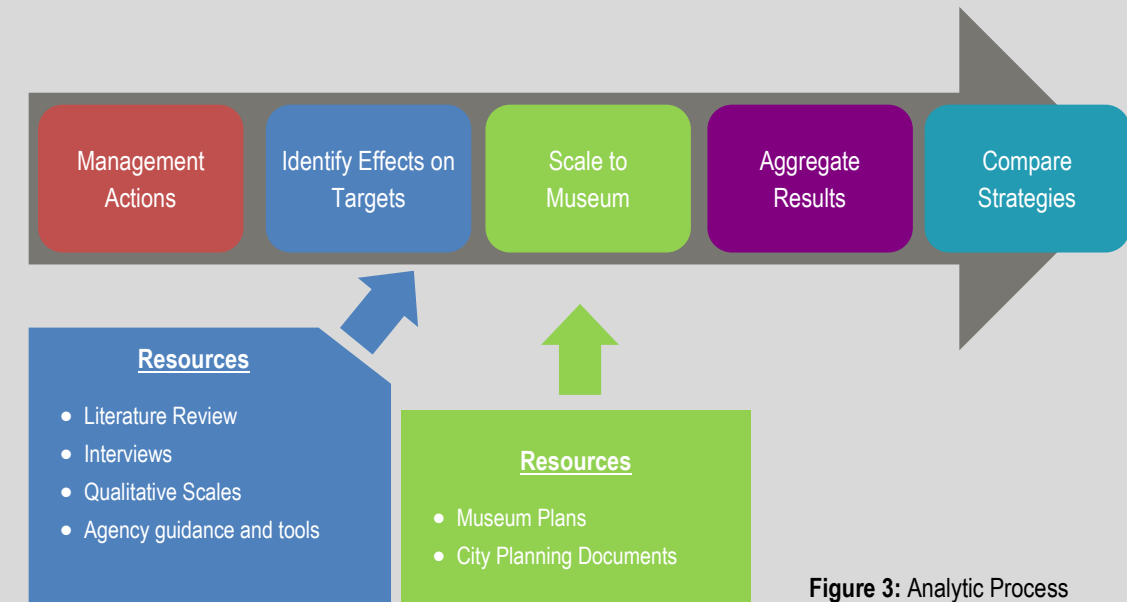


Figure 3: Analytic Process

Highlighted Results

As shown in Figure 4, Santa Barbara's SMS would likely achieve fewer environmental and social outcomes than the Museum's ELMS. ELMS would generally create more environmental benefits to a wider range of ecological targets, such as native plant and animal habitat quality, flood control, and water quality. ELMS better aligns with current Santa Barbara policies and community values, would cost less to implement and would better fulfill important social and institutional goals.

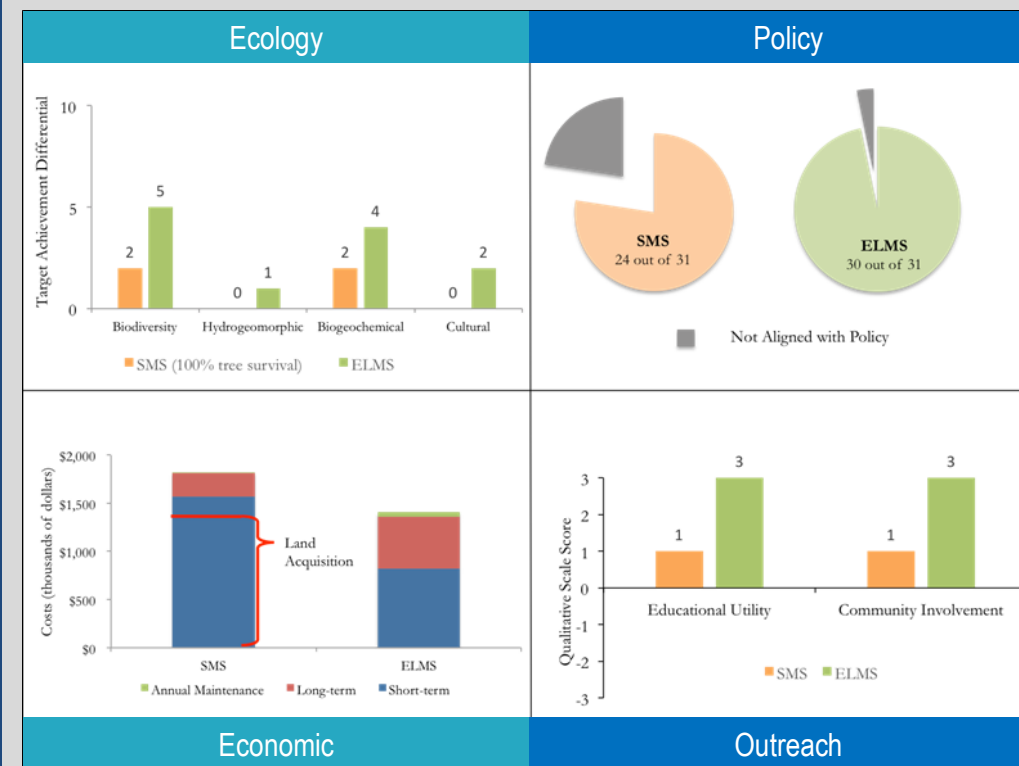


Figure 4:

Top left: ELMS outperforms SMS across all four Ecology Metrics. Performance is in terms of the number of Targets one Strategy achieves better than the other (the Target Achievement Differential).

Top right: ELMS aligns with 30 out of 31 Policy Targets, outperforming SMS, which aligns with only 24.

Bottom left: In terms of short-term, long-term, and annual maintenance costs, ELMS is less expensive than SMS. However, land acquisition costs are the greatest component of SMS and if avoided, SMS would be less expensive.

Bottom right: ELMS outperforms SMS across both Outreach Targets, evaluated using qualitative scales.