Comparing Mitigation Strategies: Ecological Outcomes and Policy Implications

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Background

California state law requires local permitting agencies to develop and enforce mitigation requirements for environmental impacts from development projects. Mitigation regulations are intended to be applied in a uniform manner to achieve the State’s Environmental Quality Act. In the City and County of Santa Barbara, a number of in-lieu mitigation programs (including a Sycamore Mitigation Program, a Wetlands Mitigation Program, and a Forest Mitigation Program) have been established to provide a range of mitigation options. These programs are designed to achieve a variety of federal, state, and local goals, including the preservation of threatened and endangered species, the protection of critical habitat, and the enhancement of ecosystem functions and processes.

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:
- On-site Restorative
- Short-term planting horizon
- Single species replacement
- In-lieu

Seven important values of mitigation programs include:
- Short-term access
- On-site opportunities
- Efficient cost
- Strategic site selection
- Sustainable outcomes
- Mitigation flexibility
- Community engagement

Case Study Overview

The Santa Barbara Museum of Natural History proposed a multi-phase remediation project to redevelop the Mission Creek campus. This project was selected for a case study of environmental mitigation in Santa Barbara. The project team developed an analytic framework to evaluate the performance of two mitigation strategies: the Museum's Standard Mitigation Strategy (SMS) and Enhanced Local Mitigation Strategy (ELMS). The framework allows for a comparison of the ecological outcomes and policy implications of the two mitigation strategies.

Mitigation Strategies

Santa Barbara’s Standard Mitigation Strategy (SMS) acknowledges the 10:1 replacement ratio, as described above. The Museum proposed an alternate mitigation strategy, termed the Enhanced Local Mitigation Strategy (ELMS). The components, or “Management Actions,” of each strategy are summarized in the diagrams below. These Actions are at the regional stage that meets ecological, legal, and outreach goals.

Mitigation Strategies

Right: Management Actions grouped by Strategic Argument. SMS emphasizes replacement in-lieu mitigation actions due to on-site space constraints. ELMS includes on-site tree replacement actions and additional actions.

Mitigation Values Santa Barbara

Regional and Landscape level scope
Improves ecosystem function and process
Based on best available science
Implementable
Reduces time/day for developers
Economically efficient
Reduces time/day for agencies

Case Study

Conduct an independent analysis comparing two mitigation strategies: the Santa Barbara’s Standard Mitigation Strategy (SMS) and Enhanced Local Mitigation Strategy (ELMS).

Highlighted Results

As shown below, Santa Barbara’s SMS would likely achieve fewer environmental and social outcomes than the Museum’s ELMS. ELMS would generally create more environmental benefits in a wider range of ecological targets, such as native plant and animal habitats. 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.

Policy Analysis

Characterizes current environmental mitigation in Santa Barbara and identify mechanisms for improvement.

Case Study Methodology

The team developed an analytic framework, shown right, to compare SMS and ELMS across four major environmental and social impact categories: Ecological, Policy, Economic, and Outreach.

Highlighted Results

Top left: ELMS surpasses SMS across all ecological metrics for both short-term and long-term outcomes. In particular, target species and habitat restoration are greater than the SMS.

Top right: ELMS aligns with 31 of 49 Policy Targets, somewhat higher than SMS, which align with only 24.

Bottom left: In terms of short-term, long-term, and annual costs, ELMS surpasses SMS by a significant margin. These impacts are influenced by on-site species and habitat restoration.

Bottom right: ELMS surpasses SMS across all Outreach Targets, motivated using qualitative scales.

Recommmendations

Independent Panel of Scientists

To focus on ecosystem function and process, the team recommends an independent panel of scientists be used to develop mitigation requirements. An independent panel could lend credibility and would contribute ecosystem services, conservation planning, and mapping expertise.

Broad Stakeholder Involvement

Involving citizens groups, landowners, and developers in the planning process is essential for balancing diverse land-use objectives and values.

Improving Santa Barbara Mitigation

Mitigation Banking

Income from reusing a well-designed and expertly managed mitigation bank may be more effective than finding developers with the placement, management, and monitoring of separate mitigation projects.

Strategic Site Selection

To advise on carefully identified regional goals, mitigation must be strategically planned on or off-site. Areas with high natural resource values should be planned for both on-site and off-site mitigation opportunities.

Conclusions

These recommendations would identify a local and regional network of natural areas based on Santa Barbara’s environmental and social goals. The 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.

- Environmental mitigation in Santa Barbara typically is on-site, reactive, and includes short-term planting practices, single species replacement, and in-kind transfers.
- Compliance: environmental mitigation should maintain seven important values to ensure the best outcomes for ecosystems, developers, planners, and communities. Santa Barbara mitigation fails to capture all three of these values.
- The Museum Case Study confirms that existing mitigation practices produce substantial results and that mitigation projects could be leveraged to create better environmental and social outcomes.
- We identified on-screen policy mechanisms that Santa Barbara should adopt to improve its environmental mitigation practices.