Evaluating Regional Conservation Opportunities for the Jack and Laura Dangermond Preserve

---

Client: The Nature Conservancy, Jack and Laura Dangermond Preserve

Proposers:
Mark Reynolds - Director, Point Conception Institute, mreynolds@tnc.org, 415.314.8061

Student Proposers:
Alissa Patterson - alissapatterson@bren.ucsb.edu, 925.519.7300
Alessandra Puig-Santana - a_puig-santana@bren.ucsb.edu, 305.606.4709

Objectives:
The Gaviota Coast region of California represents an area rich in biological and cultural diversity and intact southern California coastal ecosystems. Within this region, the Jack and Laura Dangermond Preserve (JLDP) represents some of the last undeveloped coastline and is an important stronghold for biodiversity in the region and the state. While there is a network of protected lands across the Gaviota coast (e.g., the Santa Barbara County Land Trust, Los Padres National Forest, and the White Buffalo Land Trust), large areas within the region remain unprotected, jeopardizing the investment in existing protect, including the Dangermond Preserve, and creating challenges for the persistence of biodiversity in the face of changing climate (Figure 1). Although TNC has led the development of conservation plans and decision support tools, TNC's plans for this region are outdated and TNC currently lacks down-scaled decision support tools for evaluating conservation opportunities to both lead and support partners in conservation of this important region. This project will help develop tools to identify and understand the areas most important for conservation and provide insights to the different strategies that can be leveraged to protect them. The team will identify conservation metrics that take into account the agricultural, human, and biodiversity dimensions of the region.

General Objectives:
- Assemble existing conservation metrics, identify important gaps in existing metrics and develop any needed new metrics to describe areas of conservation importance
- Use conservation metrics to identify areas within the Gaviota Coast that are of conservation importance
- Identify and evaluate the different types of opportunities to protect areas of conservation importance within the Gaviota coast region (e.g., conservation easements, fee acquisition, restoration, policy)
- Evaluate tradeoffs (e.g., between biodiversity, agriculture, equity metrics) for different protection and conservation strategies across the region

Significance:
Protection of JLDP is the most significant investment in conservation in the region in a generation and the Preserve is a biodiversity hotspot, home to approximately two hundred wildlife species and six hundred plant species. Fourteen of these species are endangered. The preserve includes coastal grasslands and woodlands, wetlands, and many areas of cultural significance. Large protected areas are an indispensable resource to mitigate the effects of

climate change, providing connected habitat and refuge areas for biodiversity. The Dangermond Preserve acts as an important linkage between a network of protected areas covering more than 125,000 acres of land and sea at a critical juncture between Northern and Southern California.

The Gaviota Coast is a biodiversity hotspot and area of ecological convergence between northern and southern California ecoregions on land and sea. Much of the region remains ecologically intact, in mid- to large ownerships and unprotected. In addition to TNC, there are many other conservation entities active in the region. By creating a decision support tool framework, TNC can identify areas to optimize conservation values and evaluate opportunities and tradeoffs.

Background:
The Nature Conservancy is one of the largest environmental nonprofit organizations in the world. Their mission is to "protect the lands and water upon which all life depends" by using science-based approaches, driving policy change, collaborating with companies and local communities, and investing in education and technology to protect biodiversity and mitigate the impacts of climate change. TNC has expertise creating and implementing conservation planning tools, like greenprints, to better understand conservation trade offs.

The Gaviota coast and area surrounding the JLDP is a mosaic of different land ownership types, from the Vandenberg Space Force Base to the private ranches along the coast, requiring coordinated approaches to conservation. In addition to TNC's broader greenprint and conservation planning tools, the 2006 Santa Barbara County Regional Conservation Plan, Santa Barbara Conservation Blueprint, and other planning documents can serve as helpful regional planning documents to aid in the development of a decision support framework. TNC does not expect students to implement a new conservation plan for the region, but instead to create a decision support tool to aid in identifying different strategies for TNC to engage in to better support the conservation goals of stakeholders in the region.

Equity:
The Nature Conservancy is committed to incorporating equitable conservation principles and practices into the work they do. An equity lens should be built into the conservation accounting metrics and care will be taken to identify when and how disadvantaged communities or communities of concern will be impacted by conservation practices. TNC recognizes that conservation planning activities have often excluded marginalized communities or not taken those concerns into account, this project will review existing conservation metrics taking this history into account. The team will also fill gaps in conservation metrics that do not account for the human landscape in the project area.

Available data:
TNC has assembled a great deal of data relevant to conservation planning in the Gaviota coast:
- 75+ GIS layers from both public and private sources in the following categories with example data types (not exhaustive)
- Wildlife – including surveys for mammals, bats, birds, herptiles, camera traps, mist nets, traplines, acoustic sensor arrays, etc.
- Vegetation – fine scale (1:12,000) vegetation maps, rare plant locations

- Infrastructure – ranch buildings, roads, gates, fences, oil and gas features
- Archeological sites from the Central Coast Information Center (CCIC)
- Aquatic – streams, wetlands, springs, monitoring locations
- Geology – soils, country rock, landslides
- Imagery – Archival ground photos, air photos, and satellite imagery
- County-wide data on land ownership and land use
- Regional vegetation data
- Data from the Santa Barbara County Conservation Blueprint
- Historic Wildfire Data
- Information can also be harvested from open-source tools like CalEnviroScreen, Santa Barbara Air Quality Management District, and other agencies

Possible approaches:
Our overall approach is to collect and analyze relevant spatial information to areas of conservation importance for the Gaviota coast region. We will create a framework that will guide practitioners in determining solutions to landscape-scale conservation around the Dangermond Preserve - detailing where efforts should be made, which features to target, and how best to protect them.
- Review extensive existing data to understand the connectivity of species and habitat diversity around the Dangermond Preserve.
- Use spatially explicit approaches (e.g. MARXAN, C-plan, SITES, MAXENT, Omniscape, greenprinting) to visualize connectivity around the Dangermond Preserve.
- Create targeted conservation goals based on biodiversity, cultural significance, regional importance, and equity.

Conservation plan research questions:
- What neighboring property protection or management is needed to protect the conservation values and buffer the Dangermond Preserve?
- What protection and management opportunities are available to ensure regional conservation outcomes? (e.g. acquisition, conservation easements, etc.)
- What are protection or management priorities that would best ensure regional climate resilience and connectivity?
- How can the landscape of tradeoffs be optimized to ensure protection of biodiversity?

Deliverables:
- A comprehensive conservation plan highlighting goals, resource prioritization, climate resilience, equity and environmental justice based on the analysis of TNC's available data and resources from the Land Trust, Santa Barbara County's Conservation Blueprint, previous Bren Group Projects, and additional research.
- Spatially-explicit mapped products and framework for evaluating regional conservation opportunities.

Internship:
The Nature Conservancy is committed to providing $15,000 for summer internships working with TNC staff at the Dangermond Preserve, professional development, and networking opportunities as per previous TNC-Bren MESM group projects. TNC would be open to remote options if needed.
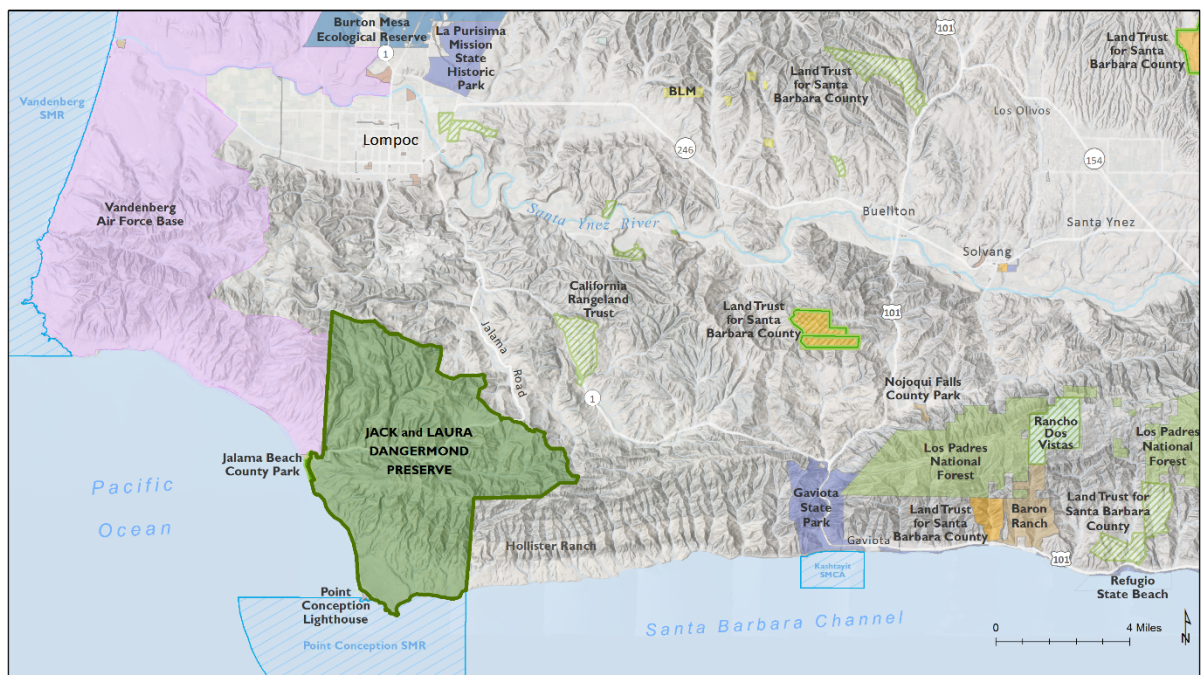
Resources:

- Butterfield, H.S., M. Reynolds, M.G. Gleason, M. Merrifield, B.S. Cohen, W.N. Heady, D. Cameron, T. Rick, E. Inlander, M. Katkowski, L. Riege, J. Knapp, S. Gennet, G. Gorga, K. Lin, K. Easterday, B. Leahy and M. Bell. 2019. Jack and Laura Dangermond Preserve Integrated Resources Management Plan. The Nature Conservancy. 112 pages. https://www.scienceforconservation.org/assets/downloads/tnc_Dangermond_Preserve_IRMP.pdf
- Margules, C., Pressey, R. Systematic conservation planning. Nature 405, 243–253 (2000). https://doi.org/10.1038/35012251
- http://sbcblueprint.net/
- http://storymaps.esri.com/stories/2018/dangermond-preserve/index.html
- http://www.conservationgateway.org/ConservationPractices/PeopleConservation/greenprints/Pages/default.aspx

JACK and LAURA DANGERMOND PRESERVE

The Nature Conservancy

Figure 1. Preserve Location and Regional Context, Including Proximity to Protected Areas

January 20, 2022

To:
Group Project Committee
Bren School of Environmental Science and Management
Bren Hall, 2400 University of California, Santa Barbara, CA 93117

From:
Mark Reynolds, Ph.D.
Director, Point Conception Institute
The Nature Conservancy
mreynolds@tnc.org

On behalf of The Nature Conservancy (TNC), I am pleased to endorse the proposed master's project proposal 'Evaluating Regional Conservation Opportunities for the Jack and Laura Dangermond Preserve'. The Conservancy is excited to engage the interdisciplinary skills of Bren School students and faculty to explore and plan for regional conservation opportunities that will protect outstanding conservation values of the Point Conception region and create resilient buffering for Dangermond Preserve in the face of unprecedented environmental change. Bren students will be using and developing skills to integrate the best available information into new conservation planning approaches for use by TNC and other stakeholders.

This letter serves to highlight The Nature Conservancy's support for the Bren Group Project and for funding support for internships to facilitate Bren students to continue working closely on this project over the summer.

We look forward to your favorable consideration of our proposal.

Sincerely,

Mark D. Reynolds, Ph.D.
Director, Point Conception Institute
The Nature Conservancy of California