



Dangermond Preserve coast © Mark Reynolds/TNC

Point Conception Institute Newsletter Winter 2023

new approaches for understanding environmental change

PCI in the news

The establishment of the Dangermond Preserve as a stronghold for biodiversity continues to create new opportunities for conservation science and restoration. The Jalama Creek watershed body of work is an excellent example. TNC owns nearly the entire 24 square-mile watershed. Steelhead, also called steelhead trout, is the common name of a form of the coastal rainbow trout (*Oncorhynchus mykiss irideus*) that hatch in freshwater, migrate to the ocean to forage and mature and return to freshwater streams to spawn, a life history shared with salmon, lamprey, and sturgeon that is called anadromy. Jalama Creek was once an important steelhead stream system. Southern California populations of steelhead have declined precipitously with steelhead last

observed in Jalama Creek in the 1990s and the southern California population of steelhead was declared federally endangered in 1997. TNC's ownership and management of Jalama Creek makes it an ideal setting for conservation efforts and it has enabled PCI's research and restoration partners to deploy a network of surveys and freshwater sensors while working on an ambitious plan to bring steelhead back. Recently, Laura Riege, Dangermond Preserve Restoration Manager and Keith Miller led a NOAA-funded barrier removal project. They used explosives to remove the JA-1, an old non-functional dam which completely blocked upstream passage for freshwater species. Blowing up a dam for steelhead attracted the attention of the Los Angeles Times and led to [an in-depth feature story](#) on our science and conservation work.

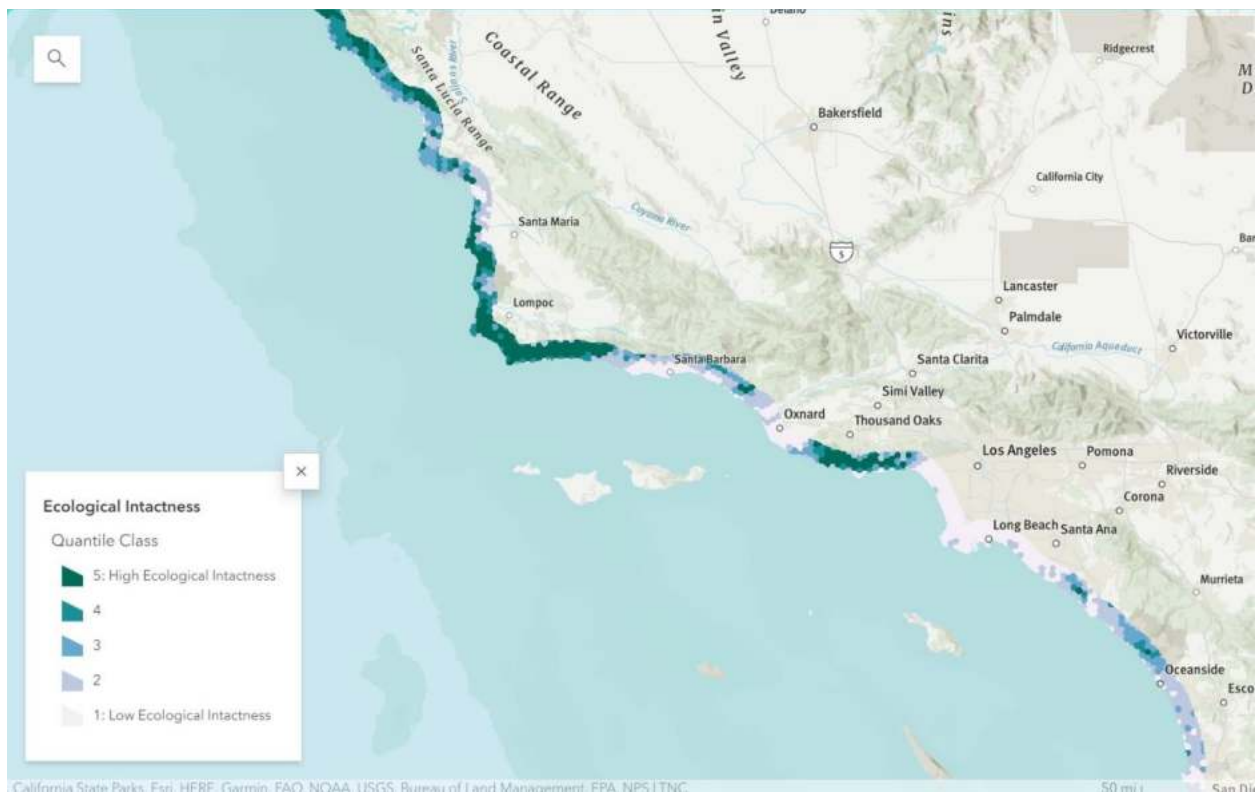
Research Highlights

The Point Conception Institute (PCI) has now facilitated more than 95 [research projects](#), establishing relationships with principal investigators and research partners from more than 40 institutions. The interest of leading research institutions continues to be a testament to the scientific opportunities at the Dangermond Preserve and to the potency of PCI as a collaboration catalyst. In particular, the University of California, Santa Barbara (UCSB) research projects funded by the Zegar Family Foundation have created valuable learning opportunities for PCI in developing an innovative approach to high-impact scientific collaborations.

New Projects

- Wildlife community resilience to wildfire. Dr. Ruth Oliver, UCSB Bren School
- Mapping and dating marine terraces from Point Conception to Point Sal to evaluate rates and patterns of coastal uplift and fault hazards, Nate Onderdonk, CSULB
- Ecosystem assessments based on Earth observations to inform management of invasive ice plant for biodiversity conservation, Dr. Ben Halpern, NCEAS, Drs Mark Reynolds, Elizabeth Hiroyasu, TNC, Laura Riege, TNC.

Spotlight: Coastal Science



High ecological intactness of Gaviota Coast region from 'California's Wild Coast Story Map' © Sophia Leiker/TNC

With a thousand miles of coastline and a favorable climate, California is known for its breathtaking coastal areas and beaches. Coastal areas around the world are threatened by incompatible development and habitat destruction, sea level rise, and changing ocean conditions. Remaining areas of wild coastline are strongholds for biodiversity and resilience in a changing world. California has long been a leader in coastal protection but how well is our coast protected against growing threats? A [recent study](#) published in the journal *Frontiers in Conservation Science* fully led by PCI and Nature Conservancy scientists investigated protection of remaining wild coastal areas in California using a simple methodology that can be applied in other settings.

The authors of the study established simple and easily assessed criteria for mapping wild coastal areas defined by physical and ecological intactness and connectivity, native species and habitat diversity, and limited human disturbance. Coastal wildness is threatened by high demand for access to and development of coastal margins; sea level

rise exacerbates this threat. As a case study, California (USA), a biodiversity hotspot, has a network of marine and terrestrial protected areas along the coast and strong coastal policy. While 35% of California's coast has wildness attributes, only 9% of California's coast is characterized as wild and also protected on both land and in the adjacent waters. A multi-tiered approach is needed to incorporate wild coast attributes into conservation planning and protection of coastal areas. A coastal wildness designation may be needed, as well as policies that manage for wildness attributes in existing protected areas.

We have also developed external-facing products that go hand-in-hand with our peer-reviewed scientific literature, including a [Wild Coast Modeler Tool](#) and accompanying [StoryMap](#). We are continually looking for opportunities to integrate our data into large networks. An example is the data from the marine monitoring trailer deployed on preserve that provides surveillance data of boat traffic in the Point Conception State Marine Reserve, which we are sharing with the National Oceanic and Atmospheric Administration, California Department of Fish and Wildlife, and other regulatory agencies that oversee Marine Protected Areas. These agencies use the data in monthly meetings to evaluate staffing and risks to Marine Protected Areas across California.

New website

We are excited to announce that Dangermond Preserve and PCI launched a new website this summer, visit us at <https://www.dangermondpreserve.org/>.

Please note that Point Conception Institute is featured on this tab <https://www.dangermondpreserve.org/science/point-conception-institute/>.

Coming in 2024

We have been hard at work on renovations and construction of the PCI Field Station at Dangermond Preserve. Thanks to our visionary supporters at the Zegar Family Foundation, the Zarcades Family Foundation and the Jack and Laura Dangermond Conservation Foundation, PCI will have much-needed research facilities and overnight accommodations in 2024.



The Point Conception Institute Field Station. © Mark Reynolds/TNC

Update: PCI Science Symposium 2024

PCI is partnering with UCSB's Bren School of the Environment to host our next Point Conception Institute Science Symposium on the UCSB campus on March 15, 2024. Stay tuned for updates on the program closer to the date. To learn more about the event, please review the [2023 PCI Symposium Report](#).

PCI Fellows Program



Dangermond Preserve coast © Bill Marr/TNC & Erica Nielsen conducting field work on Santa Cruz Island © Camille Rumberger

The Nature Conservancy (TNC) is pleased to announce that the inaugural Point Conception Institute Anthony LaFetra Research Fellow is Dr. Erica Nielsen, a coastal marine scientist who shares the deep passion for California and its native wildlife that Anthony LaFetra personified throughout his life. To learn more about Erica and her work, [click here](#).

Collaborations

In late October, PCI co-hosted a workshop on ‘Coastal Ecosystem Subsidies’ at the National Center for Ecological Analysis and Synthesis (NCEAS) with researchers from NCEAS, TNC, UCSB, National Geographic, Cal Poly SLO, and UCSC. This was the first ever workshop and synthesis on the role of coastal carnivore in ecosystem subsidies and the importance of coastal connectivity.



Coastal Ecosystem Subsidies Workshop – TNC-NCEAS 2023 © Ginger Gillquist/NCEAS

In December, PCI hosted researchers from TNC, NASA-JPL, UCSB Sedgwick La Kretz Center, Vandenberg Space Force Base, NCEAS, and the Carnegie Institution for Science for a 2-day workshop on future directions for Project SHIFT, the NASA-UCSB-TNC research partnership on hyperspectral imagery technology and biodiversity and climate change monitoring. (SHIFT stands for **S**urface Biology and Geology **H**igh Frequency **T**ime Series)



Project SHIFT team at PCI December 2023 © Mark Reynolds/TNC

In summer 2023, PCI offered internships and capstone projects to a select group of graduate student researchers from the UCSB Bren School working on the Gaviota Coast Conservation Plan project.

Conservation Technology

This year, we continued to expand our preserve monitoring network by deploying several new technologies.

Freshwater Digital Twin Guidebook and Other Tools

As part of our work to expand the adoption and use of data outside of our initial partner network, we have developed a Freshwater Digital Twin Guidebook, which will be key to documenting lessons learned in the instrumentation of the Jalama Watershed and in analyzing data from its sensors. This guidebook distills the tools and techniques we have used in the implementation of a Freshwater Digital Twin of the Jalama Watershed over the past two years into a step-by-step user guide to installing technical instrumentation, building operational data streams, and developing inputs to water-balance and water-budget equations for watershed monitoring and management.

To learn more about this work, check out our [staff stories](#) featuring PCI's Conservation Tech Associate, Jinsu Elhance's work.



Field work measurements © Jinsu Elhance/TNC

If you are ready to submit your research data or want to see published research data from nearby, check out our [Dangermond Preserve Research Repository for Data Discovery \(R2D2\)](#).

Thank you for your support

We are grateful for your support of PCI's mission to harness the power of science and technology for conservation. As we begin a new year, we can reflect on the progress we've made and the dynamic research community we are building together. While these biannual newsletters are a great way to provide updates, we can't wait to be together again. PCI is partnering with UCSB's Bren School to host our next Point Conception Institute Science Symposium on the UCSB campus on March 15, 2024. We look forward to gathering our research community and continuing to learn from each other.

Happy Holidays!

Mark

PCI Publications and Media September 2023

Publications

Gleason, M.G., Reynolds, M.D., Heady, W., Easterday, K. and Morrison, S.A., The Importance of Identifying and Protecting Coastal Wildness. *Frontiers in Conservation Science*, 4, p.1224618.

Rohde, M.M., M. Reynolds, K. Easterday. 2023. Falling through the cracks: Pathways for conserving California's coastal ecosystems. The Nature Conservancy. San Francisco, California.

Zilz, Z.L., Copeland, S. and Young, H.S., 2023. Consistent foraging on marine resources by coyotes (*Canis latrans*) on the Southern California coast. *Food Webs*, 37, p.e00311.

Genua, L., Anderson, B.C., Bowen, M., Ives, G., Liu, O., Paschos, T., Butterfield, H.S., Easterday, K., Reynolds, M., Thorne, J.H., Spatial patterns of vegetation change in a fire-suppressed coastal California Landscape. In press at *Madrono*.

Presentations

Ade, C., K., Chadwick, K.D., Brodrick, P.G. Easterday, K., Reynolds, M.D., Davis, F.W., Seeing more than green: the value of VSWIR data for conservation and phenology. *American Geophysical Union meeting*, 2023.

Manuscripts

Robinette, D., J. Howar, M.L. Elliott, Jahncke, J., and M.D. Reynolds. Assessing physical, biological, and human use attributes affecting shorebird abundance and richness on sandy beaches in southern and central California, USA. Submitted to *Estuarine, Coastal and Shelf Science*.

Easterday, K., Reynolds, M.D., Davis, F.W., Dana Chadwick, K.D., et al. authors and order TBD. Impact and Applications of Hyperspectral Data for Conservation and Land Management: a case study of AVIRIS-NG SHIFT. In prep for *Ecosphere*

Chadwick, K. D., Davis, F., Miner, K., Pavlick, R., Reynolds, M. et al. Unlocking Ecological Insights from Subseasonal Visible-to-Shortwave Infrared Imaging Spectroscopy: The SBG High Frequency Time Series (SHIFT) Campaign. In prep for *Ecosphere*

Media

New Dangermond Preserve and PCI website: <https://www.dangermondpreserve.org/>

Dangermond Preserve & PCI

[LA Times: Environmentalists turning rugged stretch of California Coast into a lab for conservation](#)

<https://www.kclu.org/2023-08-29/the-tri-counties-hidden-gem-a-nearly-25-000-acre-nature-preserve-in-santa-barbara-county>

[Coastal Carnivore Research](#)

<https://www.kclu.org/local-news/2023-08-12/its-poop-to-us-but-to-santa-barbara-county-researchers-say-its-a-feast-for-info-about-carnivores>

<https://www.tiktok.com/@natgeo/video/7271305702860229931>

<https://phys.org/news/2023-08-motion-sensing-cameras-california-shoreline-impact.html>

<https://hakaimagazine.com/news/californias-undisturbed-gaviota-coast-draws-a-shocking-range-of-wildlife/>

[Black Abalone Reintroduction](#)

<https://www.kclu.org/local-news/2023-11-02/unique-project-off-ventura-santa-barbara-county-coastlines-trying-to-save-endangered-abalone>

[Department of Defense REPI \(Readiness and Environmental Protection Integration\) Conservation Easement on Dangermond Preserve](#)

<https://www.independent.com/2023/12/01/historic-15-million-deal-safeguards-dangermond-preserve-from-development/>

<https://www.santamariasun.com/news/dangermond-preserve-now-permanently-protected-15287762>

<https://www.edhat.com/news/vandenberg-partners-with-nonprofits-to-ensure-conservation-of-southern-californias-last-wild-coast/>

<https://www.kclu.org/local-news/2023-11-21/deal-insures-a-24-000-acre-central-coast-nature-preserve-is-permanently-protected-from-development>