



ARTICLE

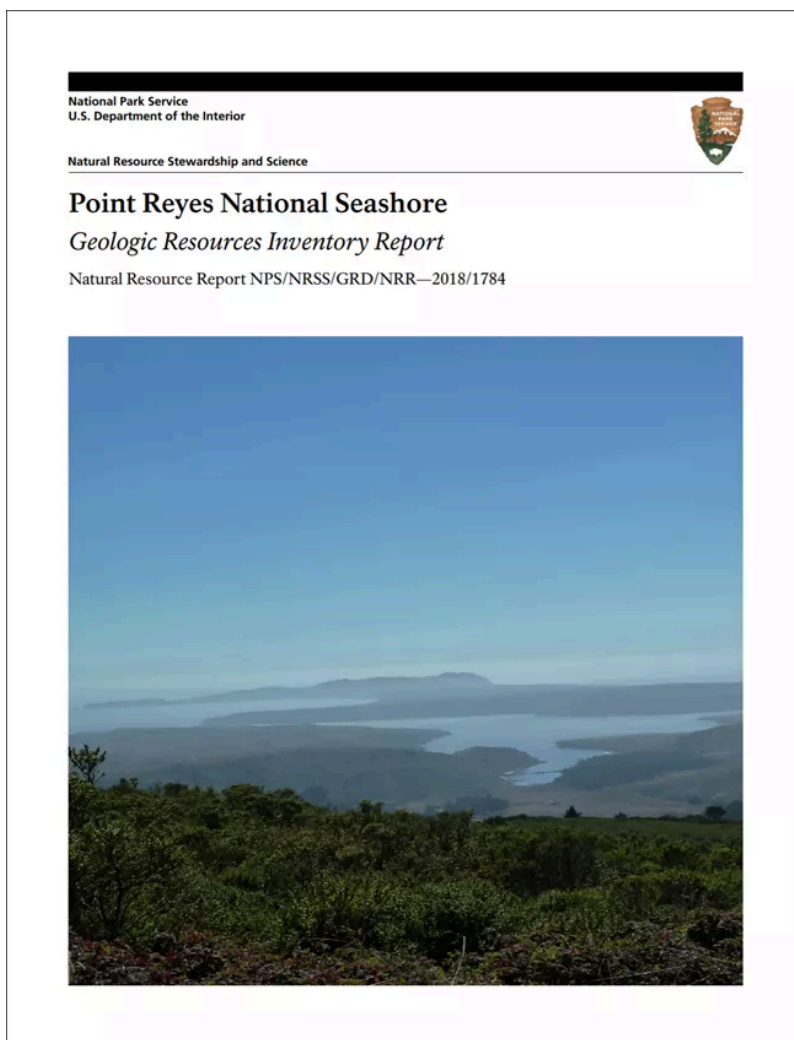
NPS Geodiversity Atlas—Point Reyes National Seashore, California

Point Reyes National Seashore (<https://www.nps.gov/pore/>)

Geodiversity refers to the full variety of natural geologic (rocks, minerals, sediments, fossils, landforms, and physical processes) and soil resources and processes that occur in the park. A product of the [Geologic Resources Inventory](https://www.nps.gov/subjects/geology/gri.htm) (<https://www.nps.gov/subjects/geology/gri.htm>), the NPS Geodiversity Atlas delivers information in support of education, [Geoconservation](https://www.nps.gov/subjects/geology/park-geology.htm) (<https://www.nps.gov/subjects/geology/park-geology.htm>), and integrated management of living (biotic) and non-living (abiotic) components of the ecosystem.

Introduction

Point Reyes National Seashore is located on Point Reyes Peninsula near the San Francisco Bay metropolitan area in Marin County, California. Authorized on September 13, 1962, Point Reyes preserves approximately 28,755 hectares (71,055 acres) of geologically unique peninsular terrane that includes beaches, lagoons, coastal cliffs and headlands, marine terraces, coastal uplands, open grasslands, brushy hillsides, forested ridges, and all tidal and submerged lands up to 0.4 km (0.25 mi) offshore. Point Reyes contains more than 129 km (80 mi) of undeveloped coastline, 237 km (147 mi) of hiking trails, backcountry campgrounds, and many scenic beaches. Point Reyes supports a diverse assemblage of biota, including more than 900 plant species, more than 490 avian species, and at least 28 threatened and endangered species. More than 120 archeological sites in Point Reyes document an extensive 5,000-year human occupation and provide insight into the long history of the Coast Miwok people in the Bay Area. Point Reyes contains about 400 historic structures including the historic Point Reyes Lighthouse built in 1870 and two national historic landmarks: the Point Reyes Lifeboat Station and the Drakes Bay Historic and Archaeological District.



<https://irma.nps.gov/DataStore/Reference/Profile/2256968>
In-depth geologic information is contained in the baseline inventory products of the Geologic Resources Inventory, see table below.

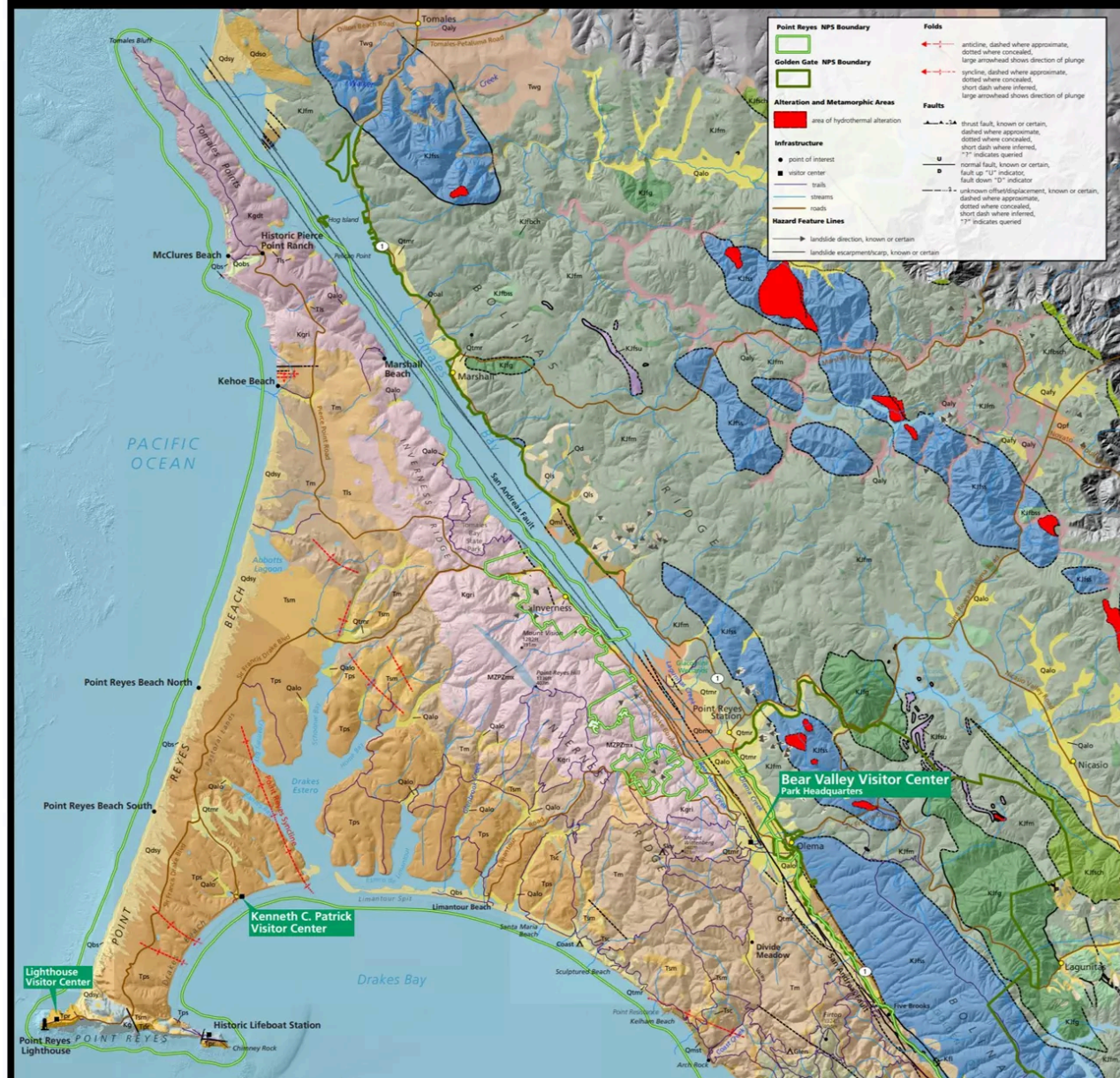
Geologic Setting

The geology of Point Reyes National Seashore provides an exceptional opportunity to study plate tectonics, allowing geologists to reconstruct portions of Earth history along strike of the San Andreas Fault. Geologic units in Point Reyes can be broken down into three main groups of rock: (1) Paleozoic and/or Mesozoic metamorphic rocks that occur along Inverness Ridge; (2) Cretaceous-age intrusive rocks; and (3) Cenozoic sedimentary deposits. Plutonic igneous rocks form the Point Reyes Headlands and portions of Inverness Ridge, and include several informal units including the granodiorite of Inverness Ridge, granodiorite of Point Reyes, and tonalite of Tomales Point. These intrusive rocks originated from a massive batholith in southern California and were subsequently displaced by lateral fault motion to their current location. Cenozoic-age units are widely mapped across Point Reyes and include marine sedimentary rocks of the Eocene Point Reyes Conglomerate; Miocene Laird Sandstone, Monterey Formation, Santa Cruz Mudstone, and Santa Margarita Formation; Miocene–Pliocene Purisima Formation; and Pliocene–Pleistocene Merced Formation. Young surficial deposits mapped within Point Reyes include Quaternary-age landslide deposits, alluvium, marine terrace deposits, dune sand, beach sand, and bay mud. The landscape of Point Reyes contains valleys, ridges, rolling grasslands, sandy beaches, and rocky promontories whose physiography is largely controlled by the underlying Point Reyes syncline.

Regional Geology

Point Reyes National Seashore is a part of the [Pacific Border Physiographic Province](https://www.nps.gov/articles/pacificborderprovince.htm) (<https://www.nps.gov/articles/pacificborderprovince.htm>) and shares its geologic history and some characteristic geologic formations with a region that extends well beyond park boundaries.

Maps and Reports



(<https://irma.nps.gov/DataStore/Reference/Profile/2257911>)

Geologic Resources Inventory

The [Geologic Resources Inventory](https://www.nps.gov/subjects/geology/gri.htm)

(<https://www.nps.gov/subjects/geology/gri.htm>) produces digital geologic maps and reports for more than 270 [natural resource parks](https://www.nps.gov/orgs/1386/index.htm) (<https://www.nps.gov/orgs/1386/index.htm>). The products listed below are currently available for this park, check back often for updates as many maps, reports, and posters are still in progress.

Scoping summaries are records of scoping meetings where NPS staff and local geologists determined the park's geologic mapping plan and what content should be included in the report.

Digital geologic maps include files for viewing in GIS software, a guide to using the data, and a document with ancillary map information. Newer products also include data viewable in Google

Earth and online map services.

Reports use the maps to discuss the park's setting and significance, notable geologic features and processes, geologic resource management issues, and geologic history.

Posters are a static view of the GIS data in PDF format. Newer posters include aerial imagery or shaded relief and other park information. They are also included with the reports.

Projects list basic information about the program and all products available for a park.

2018 [Geologic Resources Inventory Poster for Point Reyes National Seashore](https://irma.nps.gov/DataStore/Reference/Profile/2257911)
(<https://irma.nps.gov/DataStore/Reference/Profile/2257911>).

2018 [Point Reyes National Seashore: Geologic resources inventory report](https://irma.nps.gov/DataStore/Reference/Profile/2256968)
(<https://irma.nps.gov/DataStore/Reference/Profile/2256968>).

2009 [Digital Geologic Map of Golden Gate National Recreation Area and Vicinity, California](https://irma.nps.gov/DataStore/Reference/Profile/1048292) (NPS, GRD, GRI, GOGA, PORE, MUWO, FOPO, RORI, SAFR, GOGA digital map) (<https://irma.nps.gov/DataStore/Reference/Profile/1048292>).

2009 [Digital Geologic Map of the Marin Headlands and Point Reyes Areas, California](https://irma.nps.gov/DataStore/Reference/Profile/1048293) (NPS, GRD, GRI, GOGA, PORE, MUWO, MHPR digital map) (<https://irma.nps.gov/DataStore/Reference/Profile/1048293>).

2008 [Geologic Resource Evaluation Scoping Summary: Point Reyes National Seashore, California](https://irma.nps.gov/DataStore/Reference/Profile/2251484)
(<https://irma.nps.gov/DataStore/Reference/Profile/2251484>).

2008 [Geologic Resources Inventory Project for Golden Gate National Recreation](#)

Source: [NPS DataStore Saved Search 3149](https://irma.nps.gov/DataStore/SavedSearch/Profile/3149) (<https://irma.nps.gov/DataStore/SavedSearch/Profile/3149>).

To search for additional information, visit the [NPS DataStore](https://irma.nps.gov/DataStore/) (<https://irma.nps.gov/DataStore/>).

Soil Resources inventory

A [NPS Soil Resources Inventory](https://www.nps.gov/subjects/geology/sri.htm) (<https://www.nps.gov/subjects/geology/sri.htm>) project has been completed for Point Reyes National Seashore and can be found on the NPS Data Store.

2006 [National Park Service - SRI - Soil Survey Geographic \(SSURGO\) for Point Reyes National Seashore, California](#)

(<https://irma.nps.gov/DataStore/Reference/Profile/1048959>).

Source: [NPS DataStore Saved Search 3100 \(https://irma.nps.gov/DataStore/SavedSearch/Profile/3100\)](https://irma.nps.gov/DataStore/SavedSearch/Profile/3100).

To search for additional information, visit the [NPS DataStore \(https://irma.nps.gov/DataStore/\)](https://irma.nps.gov/DataStore/).

GRI Geology Image Gallery



PHOTO GALLERY

Point Reyes Geological Resource...

56 IMAGES

Images from Point Reyes National Seashore Geological Resources Inventory report. Natural Resource Report NPS/NRSS/GRD/NRR—2018/1784

Related Links

- [Point Reyes—Natural Features and Ecosystems \(https://www.nps.gov/pore/learn/nature/naturalfeaturesandecosystems.htm\)](https://www.nps.gov/pore/learn/nature/naturalfeaturesandecosystems.htm)
- [Point Reyes—Fossils \(https://www.nps.gov/pore/learn/nature/fossils.htm\)](https://www.nps.gov/pore/learn/nature/fossils.htm)
- [Point Reyes—Geologic Activity \(https://www.nps.gov/pore/learn/nature/geologicactivity.htm\)](https://www.nps.gov/pore/learn/nature/geologicactivity.htm)
- [Point Reyes—Faults \(https://www.nps.gov/pore/learn/nature/faults.htm\)](https://www.nps.gov/pore/learn/nature/faults.htm)
- [Point Reyes—Park Home \(https://www.nps.gov/pore/index.htm\)](https://www.nps.gov/pore/index.htm)
- [NPS—Beaches and Coastal Landforms \(https://www.nps.gov/subjects/geology/coastal-landforms.htm\)](https://www.nps.gov/subjects/geology/coastal-landforms.htm)
- [NPS—Geologic Time \(https://www.nps.gov/subjects/geology/geotime.htm\)](https://www.nps.gov/subjects/geology/geotime.htm)
- [NPS—Explore Regional Geology \(https://www.nps.gov/subjects/geology/physiographic-provinces.htm\)](https://www.nps.gov/subjects/geology/physiographic-provinces.htm)
- [NPS—Geology \(https://www.nps.gov/subjects/geology/index.htm\)](https://www.nps.gov/subjects/geology/index.htm)



Drakes Harbor.

- [NPS—Plate Tectonics & Our National Parks—Transform Plate Boundaries](https://www.nps.gov/subjects/geology/plate-tectonics-transform-plate-boundaries.htm) (<https://www.nps.gov/subjects/geology/plate-tectonics-transform-plate-boundaries.htm>)
- [NPS—Fossils and Paleontology](https://www.nps.gov/subjects/fossils/index.htm) (<https://www.nps.gov/subjects/fossils/index.htm>)
- [California Geological Survey](http://www.conservation.ca.gov/cgs/) (<http://www.conservation.ca.gov/cgs/>)

Related Articles

Point Reyes National Seashore

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Series: Park Paleontology News—Vol. 17, No. 2, Fall 2025

(<https://www.nps.gov/articles/series.htm?id=420DFDBF-D7D0-592B-0B9B71219DF27C34>)



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All across the park system, scientists, rangers, and interpreters are engaged in the important work of studying, protecting, and sharing our rich

fossil heritage. Park Paleontology news provides a close up look at the important work of caring for these irreplaceable resources.

Type: Series

Locations: Dinosaur National Monument, John Day Fossil Beds National Monument, Mammoth Cave National Park, Petrified Forest National Park, Point Reyes National Seashore

Series: Park Paleontology News - Vol. 17, No. 2, Fall 2025

(<https://www.nps.gov/articles/series.htm?id=19FD316B-C571-A4AC-7B20E939807C7F44>)



[.https://www.nps.gov/articles/series.htm?id=19FD316B-C571-A4AC-7B20E939807C7F44](https://www.nps.gov/articles/series.htm?id=19FD316B-C571-A4AC-7B20E939807C7F44)

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Locations: Dinosaur National Monument, John Day Fossil Beds National Monument, Mammoth Cave National Park, Petrified Forest National Park, Point Reyes National Seashore

Preparation of Marine Mammal Fossils from Point Reyes National Seashore: A Collaboration with John Day Fossil Beds National Monument

(<https://www.nps.gov/articles/preparation-of-marine-mammal-fossils-from-point-reyes-national-seashore-a-collaboration-with-john-day-fossil-beds-national-monument.htm>)



(<https://www.nps.gov/articles/preparation-of-marine-mammal-fossils-from-point-reyes-national-seashore-a-collaboration-with-john-day-fossil-beds-national-monument.htm>)

The discovery of new

specimens of marine mammals from Point Reyes National Seashore (PORE) led to a collaboration between Pacific West Region (PWR) parks to facilitate future studies.

Locations: John Day Fossil Beds National Monument, Point Reyes National Seashore

Offices: Geologic Features and Systems Branch, Geologic Resources Division

POINT REYES NATIONAL SEASHORE

Outside Science (inside parks): Ancient Marine Mammals at Point Reyes National Seashore

(<https://www.nps.gov/articles/osip10.htm>)



(<https://www.nps.gov/articles/osip10.htm>)

Hear about an ancient porpoise skull that was found at Point Reyes National Seashore.

Locations: Point Reyes National Seashore

Coastal Biophysical Inventory of the San Francisco Bay Area Network

(<https://www.nps.gov/articles/coastal-biophysical-inventory-sfan.htm>)



(<https://www.nps.gov/articles/coastal-biophysical-inventory-sfan.htm>)

The rocky intertidal zone has a tremendous diversity of plants and animals that are sensitive indicators of environmental change. The National Park

Locations: Golden Gate National Recreation Area, Point Reyes National Seashore

Offices: Inventory and Monitoring Division

Service contributes to collaborative long-term intertidal monitoring programs along the Pacific coast. The Coastal Biophysical Inventory's rapid assessments yield quantitative snapshots of the geology and biology of an expansive shoreline.

Series: Pacific Ocean Education Team (POET) Newsletters

(<https://www.nps.gov/articles/series.htm?id=30898339-C8DF-0667-A55B0D903C145780>)

(<https://www.nps.gov/articles/series.htm?id=30898339-C8DF-0667-A55B0D903C145780>)

From 2009 to 2015, the Pacific Ocean Education Team published a series of short newsletters about the health of the ocean at various National Park Service sites in and around the Pacific

Type: Series

Locations: Alcatraz Island, Aniakchak National Monument & Preserve, Bering Land Bridge National Preserve, Cabrillo



Ocean. Topics covered included the 2010 tsunami, marine debris, sea star wasting disease, ocean acidification, and more.

National Monument, Cape Krusenstern National Monument, **more »**

Geoscientists-in-the-Parks: Paleontology Intern

(<https://www.nps.gov/articles/geoscientists-in-the-parks-paleontology-intern.htm>)



(<https://www.nps.gov/articles/geoscientists-in-the-parks-paleontology-intern.htm>)

Read about the work Lilian Peterson did as a Paleontology Intern, Point Reyes National Seashore, California in 2015.

Locations: Point Reyes National Seashore

Offices: Geologic Resources Division

Pacific Border Province

(<https://www.nps.gov/articles/pacificborderprovince.htm>)



(<https://www.nps.gov/articles/pacificborderprovince.htm>)

The Pacific Border straddles the boundaries between several of Earth's moving plates on the western margin of North America. This region is one of the most geologically

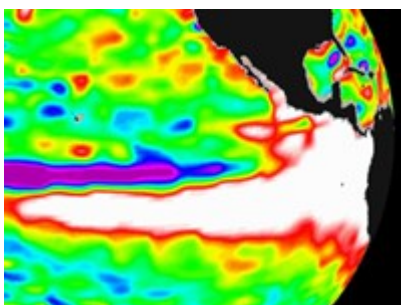
young and tectonically active in North America. The generally rugged, mountainous landscape of this province provides evidence of ongoing mountain-building.

Locations: Channel Islands National Park, Ebey's Landing National Historical Reserve, Eugene O'Neill National Historic Site, Fort Point National Historic Site, Fort Vancouver National Historic Site, **more »**

Offices: Geologic Resources Division

1997–1998 El Niño / 1998–1999 La Niña

(<https://www.nps.gov/articles/1997-1998-el-nino-1998-1999-la-nina.htm>)



(<https://www.nps.gov/articles/1997-1998-el-nino-1998-1999-la-nina.htm>)

Wind-driven waves and abnormally high sea levels contributed to hundreds of millions of dollars in flood and storm damage in the San

Francisco Bay region, including Point Reyes National Seashore, Golden Gate National Recreation Area, and Pinnacles National Monument. In addition to California, the 1997–1998 El Niño and the following 1998–1999 La Niña severely impacted the Pacific Northwest, including many National Park System units.

Locations: Ebey's Landing National Historical Reserve, Fort Vancouver National Historic Site, Golden Gate National Recreation Area, Lewis and Clark National Historical Park, Mount Rainier National Park, **more »**

Offices: Geologic Resources Division

1982–1983 El Niño

(<https://www.nps.gov/articles/1982-1983-el-nino.htm>)



(<https://www.nps.gov/articles/1982-1983-el-nino.htm>)

As a result of this El Niño, heavy surf and rains severely eroded beaches and fragile sea cliffs in coastal California. National Park System units in California affected by the 1982–

Locations: Golden Gate National Recreation Area, Muir Woods National Monument, Pinnacles National Park, Point Reyes National Seashore

Offices: Geologic Resources Division

1983 El Niño event were Point Reyes National Seashore, Golden Gate National Recreation Area, and Pinnacles National Monument.

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National Park Service Geodiversity Atlas

The servicewide [Geodiversity Atlas \(https://www.nps.gov/articles/geodiversity-atlas-map.htm\)](https://www.nps.gov/articles/geodiversity-atlas-map.htm) provides information on [geoheritage \(https://www.nps.gov/subjects/geology/geoheritage-conservation.htm\)](https://www.nps.gov/subjects/geology/geoheritage-conservation.htm) and [geodiversity \(https://www.nps.gov/subjects/geology/geodiversity.htm\)](https://www.nps.gov/subjects/geology/geodiversity.htm) resources and values within the National Park System. This information supports science-based [geoconservation \(https://www.nps.gov/subjects/geology/park-geology.htm\)](https://www.nps.gov/subjects/geology/park-geology.htm) and interpretation in the NPS, as well as STEM education in schools, museums, and field camps. The [NPS Geologic Resources Division \(https://www.nps.gov/orgs/1088/index.htm\)](https://www.nps.gov/orgs/1088/index.htm) and many parks work with National and International geoconservation communities to ensure that NPS abiotic resources are managed using the highest standards and best practices available.

point reyes national seashore

geology

geodiversity atlas

science

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california

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sfan

inventory

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california-great basin

grd

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