

Consider Coral Reefs

Coral reefs are **one of the most biodiverse ecosystems on the Earth**. Coral reefs occupy less than 1% of the ocean floor but are home to more than 25% of all marine life (NOAA, 2019)



“Coral reefs are one of the most sensitive ecosystems globally to the ravages of human activities” - Gabriel Grimsditch, United Nations Environment Programme (UNEP) marine ecosystems expert.

“Since 2009, the United Nations-supported Global Coral Reef Monitoring Network found that 14% of the corals have disappeared, and things are speeding up” -Dr. Ove Hoegh-Guldberg, professor of marine studies at the University of Queensland in Australia.

Coral reefs are found throughout the oceans, from deep, cold waters to shallow, tropical waters. However, despite their importance, **it is extremely difficult for scientists to monitor the state of every coral reef each year**. Divers provide detailed information about the health of individual corals, but it requires extensive time and resources (Colbert, 2023).

Scientific Background

Coral, the foundational or keystone species of a reef, are colonial organisms composed of hundreds to hundreds of thousands of individual animals called polyps. Microalgae live inside the coral polyp's tissue. This symbiotic relationship provides mutual benefits to both organisms. However, under stress, the algae leave the coral, and without the algae, coral cannot survive for an extended period of time (NOAA, 2023).

Due in part to its reliance on microalgae, **coral is vulnerable** to climate change, declining water quality, overfishing, pollution, and unsustainable coastal development (EPA, 2023).

The loss of foundational species, like corals, is having devastating **consequences on biodiversity**, affecting thousands of species that call coral reefs their home (Jones et al., 2004).

Human Connection

In low-lying coastal areas, **reefs provide a source of protection** against storm damage. Reefs help to dissipate wave energy, reducing coastal erosion (Pacific Coastal Marine Science Center, 2022).

Coral reefs contain a variety of unique chemical compounds **important for pharmaceuticals**, including certain cancer treatments (Stone, 2022).

Indigenous Hawaiians have a deep spiritual connection to coral. They “consider coral to be an *Akua* that provides birth and death to both the people and the islands, possessing much *mana*, the essence of spirituality” (Gregg et al., 2015, p. 103). Corals are considered the beginning of life and the ancient ancestors of all living things in Hawai'i.

Conserving Coral Reefs

Because of their biological significance, environmental vulnerability, and human benefits, efforts are being made to restore and conserve coral reefs in US waters and around the globe.

Examples of Conservation Efforts

- Coral Conservation Act of 2000 (US)
- Coral Reef Task Force (US)
- Great Barrier Reef Marine Park Act (Aus)
- International Reef Initiative (Int)
- UNEP Regional Seas Program (Int)

However, marine scientists say more protection is needed



“For fisheries to be sustainable, there must be refuge zones where vulnerable fish populations can rebound. We need to take action now to formally, legally protect and conserve coral reef ecosystems for the benefit of the fish and people that rely on them”

Tim McClanahan, Ph.D.,
Senior Coral Reef Scientist
Wildlife Conservation Society

Where are coral reefs located?

Coral reefs are mostly found in the tropics. There are more than 100 countries with coral reefs within their borders, but most are found in six countries: Australia, Indonesia, Philippines, Papua New Guinea, Fiji, and the Maldives (Coral Reef Alliance, 2024).



Where are coral reefs protected?

To gain insight into reef protection efforts, explore the Half-Earth Project map to determine how the US and countries with the highest percentage of coral reefs protect marine ecosystems.

For help navigating the map, see the instructions on the following page.

Country	Marine Species Protection Index	Total Marine Vertebrates	Endemic Vertebrates	% of Marine Area Protected	% of Marine Area that Needs Protection
Australia					
Indonesia					
Philippines					
Papua New Guinea					
Fiji					
Maldives					
United States					

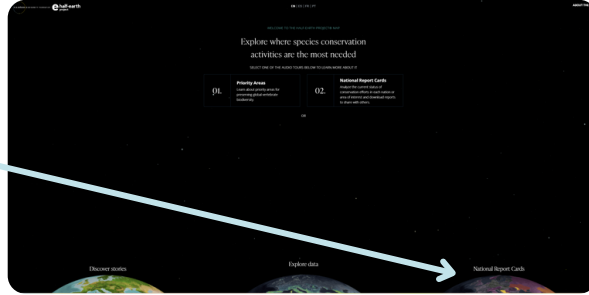
Half-Earth Project Map

<https://map.half-earthproject.org>

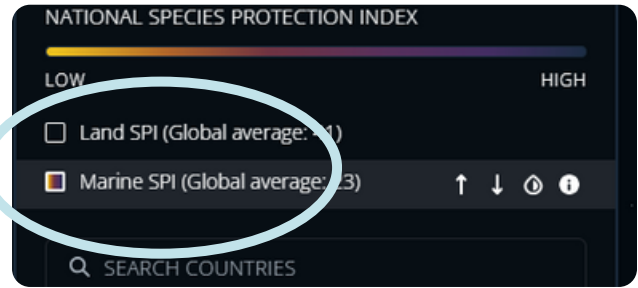


Student Guide to Accessing International Marine Protection & Biodiversity Data Using National Report Cards

On the landing page click on “National Report Cards” in the lower right corner.

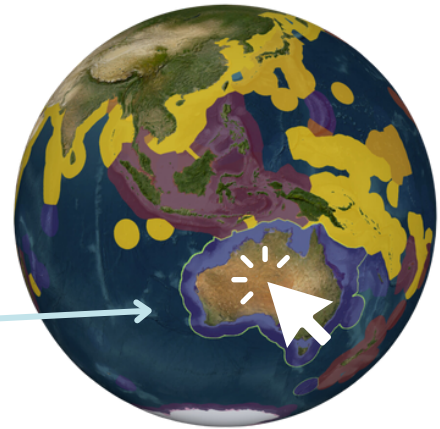
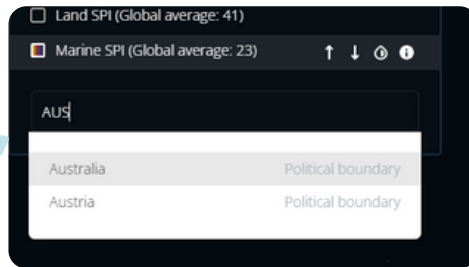


Inside the National Report Card frame on the right side of the screen, deselect “Land SPI” and select “Marine SPI”

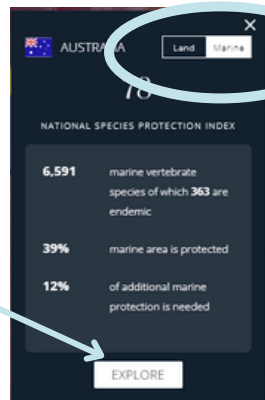


You may access the data in two ways:

- Enter the country name into the search bar.
- Locate the country on the map and click on the highlighted area.

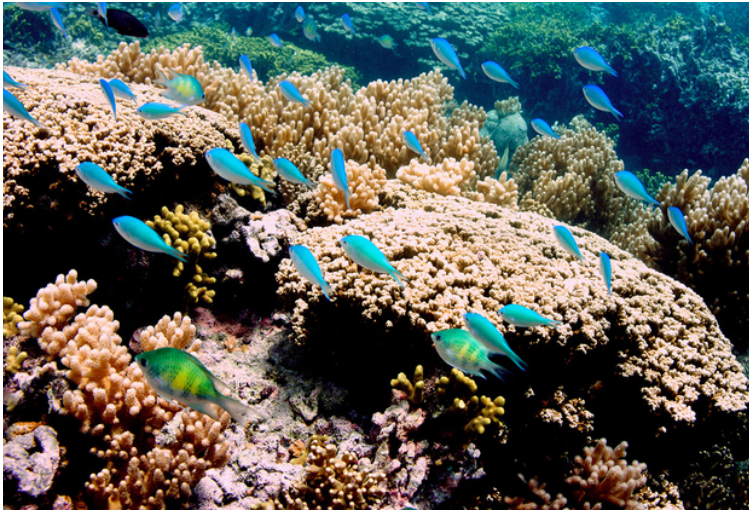


The countries report card will be displayed. If you need access to additional data, select EXPLORE



Make sure the Marine Tab is highlighted

Meet the U.S. CORAL REEF TASK FORCE



What we do

The United States Coral Reef Task Force was originally established in 1998 by Presidential Executive Order to lead U.S. efforts to preserve and protect coral reef ecosystems. The Task Force includes members from federal agencies, seven U.S. states, territories, and commonwealths, and three Freely Associated States. We help build partnerships, strategies, and support for on-the-ground action to conserve and restore coral reefs.

Understanding coral reef ecosystems

A better understanding of coral reef ecosystems will improve management and conservation of these valuable resources. To achieve this, we aim to conduct long-term monitoring and assessments of ecosystem conditions, support research and develop strategic management solutions to address the major threats to reefs, create comprehensive maps of coral reef habitat, and increase understanding of the social and economic factors affecting corals.



Reducing threats and adverse effects

Reducing threats from impacts of human activities is essential to conserving coral reef ecosystems. Threats include unsustainable fishing, climate change and associated coral bleaching, pollution, and disease. We aim to preserve and conserve healthy reefs, improve coral reef health, restore damaged reefs, enhance education and outreach, and improve coordination and accountability.



https://www.coralreef.gov/assets/about/uscrtf_2pager_apr2023_508.pdf

HOW YOU CAN HELP



Diverse perspectives and active engagement strengthen the Task Force and enhance the quality of our work. You can join a working group if you are a Task Force member (federal agencies, U.S. coral reef jurisdictions, or freely associated states). The active working groups are coral disease, watershed, climate change, restoration, enforcement, fisheries, and communications. Email coralreefweb@noaa.gov for more information.



Fisheries and Ecosystem Working Group:

The Coral Reef Fisheries and Ecosystem Working Group focuses on coral reef fisheries management while balancing traditional and community use. The group conducts standardized surveys of fishery status and drafts action plans describing how federal agencies can support jurisdictional management of coral reef fisheries.



Coral Disease Working Group: The objectives of the Working Group are to facilitate effective collaboration and communication on coral disease status and response efforts among federal agencies and jurisdictions; build capacity for coral disease prevention, preparedness, and response; and prevent the transmission of stony coral tissue loss disease.



Watershed Partnership Initiative: The intent of the Watershed Partnership Initiative is to facilitate and enhance coordination, partnerships, and contributions of agency resources and expertise to implement geographically specific and integrated activities to reduce land-based sources of pollution impacting coral reef ecosystems.



Climate Change Working Group: The purpose of the Climate Change Working Group is to assist Task Force state, territory, commonwealth, federal, and local agencies, working groups, and partners in assessing vulnerabilities and developing adaptations to address the direct and interactive effects of climate change on coral reef ecosystems.

Task Force members

Co-chairs

U.S. Department of Commerce,
NOAA

U.S. Department of the Interior

Federal agency members

Federal Emergency Management
Agency

Agency for International
Development

Department of Agriculture

Department of Defense—Army

Department of Defense—Navy

Coast Guard

Department of Justice

Department of State

Department of Transportation

Environmental Protection Agency

National Aeronautics and Space

Administration

National Science Foundation

State and territory members

Commonwealth of the Northern

Mariana Islands

Commonwealth of Puerto Rico

State of Florida

State of Hawai'i

Territory of Guam

Territory of American Samoa

Territory of the U.S. Virgin Islands

Freely Associated States

Federated States of Micronesia

Republic of Marshall Islands

Republic of Palau

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https://www.coralreef.gov/assets/about/uscrtf_2pager_apr2023_508.pdf

Conserving Coral Reefs



Is more protection is needed?

Using information you learned about the efforts of the US Coral Reef Task Force and data you obtained from the Half-Earth Project Map. Answer the questions below.

Does the data you collected from the Half-Earth Project Map support the need for greater coral reef protection? Why or why not?

The species data available on the National Report cards is limited to marine vertebrates. Do you think this can serve as an indicator of coral reef ecosystem health? Why or why not?

If you were to focus marine conservation efforts within the borders of a single country, which country would you choose and why?

What monitoring methods would you use to assess whether conservation efforts were successful? Why would you choose those methods?