FACT SHEET

THE BLAKE PLATEAU: A SOUTHERN TREASURE

The Blake Plateau, an extraordinary undersea plateau off the Southeast United States, hosts the largest deep-sea coral province on earth.[1] It is home to an incredible array of ocean life, from a living seafloor of vibrant deep-sea corals, anemones, and sponges to a diverse assemblage of sea turtles, sportfish, seabirds, and whales. A dynamic seascape and a collection of unique habitats support this amazingly productive region. In a rapidly warming world, some of these ancient reefs may be among the most resilient in the U.S. to global change.

Relatively undisturbed for millennia, the Blake Plateau faces a range of potential industrial threats—from oil development to expanding commercial fisheries to deep-sea mining—that have harmed other oceanic regions. It needs long-lasting safeguards to secure its treasures for current and future generations.

The Blake Plateau lies roughly 80 to 200 miles off the coasts of the Carolinas, Georgia, and Florida. This vast underwater feature runs from the Bahama Banks to Cape Hatteras, North Carolina. Fueled by the powerful Gulf Stream, the Blake Plateau displays dynamic ocean ecosystems from the surface to seabed: Its pervasive *Sargassum* seaweed meadows, methane seeps, and deep-sea corals feed and support a wide diversity of marine life. Scores of tuna, billfish, and sea turtles, flocks of seabirds, and pods of whales all depend on a healthy Blake Plateau.

Recent science expeditions have mapped and explored large areas of the plateau, revealing a breathtaking seascape of tens of thousands of ancient deep-sea coral mounds, some towering hundreds of feet above the seafloor.[2] In particular, a 200-mile-long dense coral highway known as the "Million Mounds" stretches from Florida to Georgia and is the world's largest nearly continuous deep-sea coral reef.[3] Much of the Blake Plateau is still unexplored, and more amazing discoveries likely await us.

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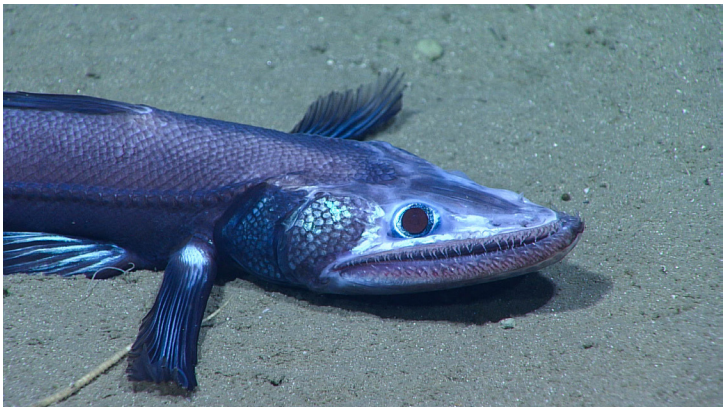
Hawksbill sea turtle in *Sargassum* weed.

Several other key coral areas, like the Stetson/Richardson complex and the Central Blake Knolls, are valuable features of the Blake Plateau.[4] Not only are these biodiversity hot spots, but they lie in deeper and colder water. As ocean temperatures rise in a warming world, these areas will likely provide crucial refuge for deep-sea reef-building corals and associated communities.[5]

Despite its vast array of marine life, the Southeast is among the regions of the United States with the fewest marine protections, with less than 1 percent of its waters safeguarded.[6] Scientists worldwide have called for strong protections for at least 30 percent of the world's ocean to preserve biodiversity.[7] Taking steps now to safeguard special areas of the Blake Plateau from harmful extractive activities so that the most vulnerable plateau communities can persist will help to secure the bounty of the Blake Plateau long into the future.



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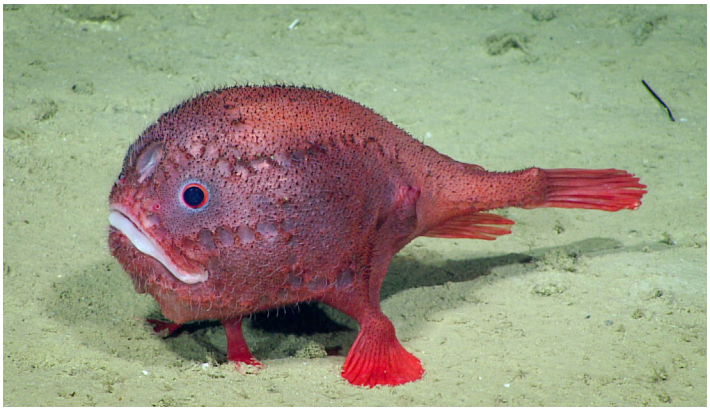

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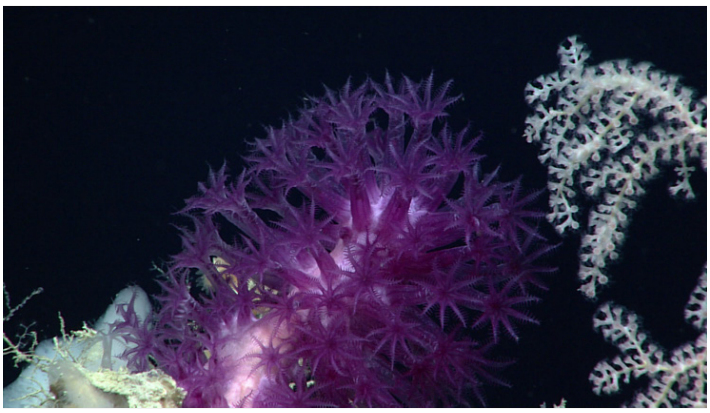

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Blake Plateau supports a remarkable range of marine life, including Bathysaurus, Anglerfish, Sponges and squat lobster, and Purple soft coral. (Listed clockwise from top left).

BLAKE PLATEAU'S VAST BIODIVERSITY

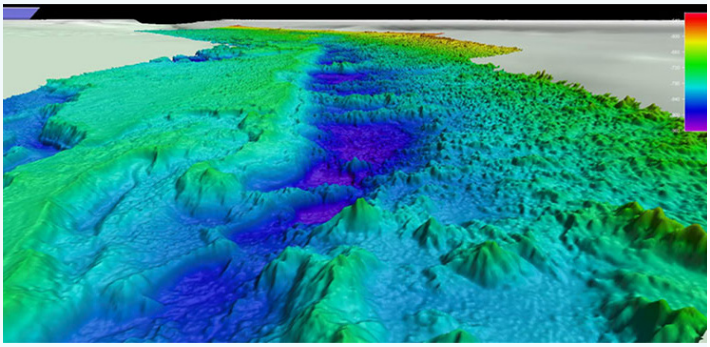
The kaleidoscope of life on the Blake Plateau depends on the Gulf Stream, a swift, powerful ocean current that ferries warm water from the Caribbean and Gulf of Mexico up the eastern coast and across the North Atlantic Ocean. Over millennia, the Gulf Stream's path along the southeastern U.S. coast set the ideal stage for coral growth, exposing rocky areas along sections of the seafloor where deep-sea corals could settle and build dense coral forests as high as 600 feet.

Remarkably, more than 200 coral species have been identified on the Blake Plateau, including hard corals, sea fans, lace corals, and black corals.[12] Like shallow-water coral reefs, deep-sea corals are a hotbed of biodiversity. The forest of corals forms an important foundation of the ocean ecosystem by providing food and shelter from predators for fish and shellfish, such as commercially valuable wreckfish and golden crab.[13] In all, nearly 100 deep-sea fish species have been identified among the Blake Plateau reefs, along with numerous invertebrates.[14]

THE GULF STREAM AND DEEP-SEA CORALS' UNIQUE CONNECTION

The Gulf Stream and the underlying coral province interact to sustain and fuel a global biodiversity hot spot. As the Gulf Stream churns the waters over the Blake Plateau, it funnels plankton from the surface to the deep waters, feeding the corals below.[8] The deep-sea coral reefs, in turn, efficiently process the organic matter from the ocean's surface into essential nutrients for the entire ecosystem.[9]

As the Gulf Stream rolls over the plateau, it pushes these nutrients back up to the surface, sustaining the region's productivity and supporting the ocean's wildlife.[10] During the Gulf Stream's northward trail, eddies from the current serve as a "nutrient pump" for the continental shelf, fueling productivity all across the eastern seaboard.[11]



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Blake Plateau's complex seafloor topography contains thousands of deep-sea coral mound features. Here, high-resolution multibeam bathymetry of the Stetson Mesa north region, collected by the NOAA, shows the "Million Mounds" which run from central Florida to Georgia.

© Jason Arnold

Mahi mahi interacting with *Sargassum* seaweed.

© Tom Benson/Flickr

Black-capped petrel flying above the Gulf Stream.

© Joe Fish Flynn/Shutterstock

Atlantic swordfish swimming in the Gulf Stream.

The Gulf Stream also carries floating *Sargassum* seaweed that can accumulate into dense mats on the water's surface, providing food and shelter for an array of marine species including mahi-mahi, jacks, and tunas.[15] Sea turtles in particular benefit from the floating *Sargassum*: Leatherback, loggerhead, green, Kemp's ridley, hawksbill, and olive ridley sea turtles—all endangered or threatened—can be found in the waters of the Blake Plateau.[16] Post-hatchling and juvenile sea turtles travel the ocean currents and gyres, with some sea turtles spending a decade or more drifting among *Sargassum* rafts seeking refuge and food.[17] For this reason, major portions of the plateau have been designated as critical habitat for loggerhead turtles.[18]

Additionally, the waters of the Blake Plateau draw dozens of seabird species—including shearwaters, terns, skuas, jaegers, and the highly endangered black-capped petrel.[19] Some of our planet's truest seafaring birds, these species spend almost their entire lives offshore and rely on the Blake Plateau for foraging and migratory habitat.[20]

The Blake Plateau serves as important habitat for the nation's deep-diving whales that are rarely seen at the surface. Acoustic recordings provide proof that the plateau is home to colossal sperm whales, at least three different types of beaked whale—Cuvier's beaked whales, Blainville's beaked whales, and Gervais's beaked whales—as well as dwarf and pygmy sperm whales. These species migrate seasonally through the region, descending to depths of 2,600 feet or more to feed on energy-rich squid.[21]

The plateau also hosts several unique methane seeps, areas (such as the Blake Ridge Diapir) where methane gas bubbles up through cracks in the seafloor.[22] In these unique cold methane seep communities, bacteria use chemical energy instead of sunlight to make food; these bacteria feed dense and distinctive communities of mussels, clams, and shrimp.[23] There is growing evidence that these cold seep communities are important to fish, and seeps along the Blake Plateau Diapir have been designated as Habitat Areas of Particular Concern.[24]

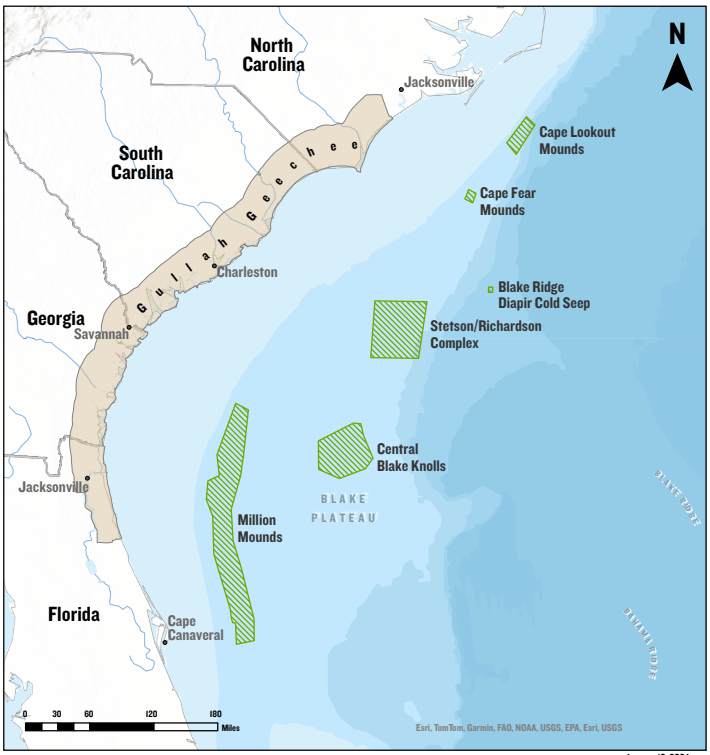
WHAT'S SO SPECIAL ABOUT DEEP-SEA CORAL AND SPONGES?

Scientists believe that as many as 66 percent of all coral species are deep-sea species, occurring at depths greater than 165 feet.[25] Their graceful shapes belie the fact that water pressure 1.5 miles down is more than 3,480 pounds per square inch and temperatures are usually less than 10° C (50° F).[26] Many deep-sea coral species have the same vibrant colors as their tropical reef cousins, but others, like the reef-building *Lophelia*, are stark white when healthy.

Ocean life is increasingly a source of medical discoveries, contributing to new drugs that treat everything from cancer to heart disease to Alzheimer's.[27] One of the medicines used to treat individuals with COVID-19 comes from sea sponges.[28]

Deep-sea corals and sponges have also produced scientific and technological innovations, including models for artificial synthesis of human bone and to offshore areas northward along the Atlantic coast.[29]

IMPORTANT ECOLOGICAL FEATURES OF THE BLAKE PLATEAU



THE CULTURAL LEGACY THAT YOU MUST KNOW IS TIED TO THE BLAKE PLATEAU

By Queen Quet, Chieftess of the Gullah/Geechee Nation

In the Gullah/Geechee Nation, the proverb "De wata bring we and de wata gwine tek we bak" is often heard. Wading back into the water to face the Motherland from which many of the ancestors of native Gullah/Geechees came would require a trip across the Blake Plateau. As explorers seek to find the shipwrecks of enslavement vessels or seek to lay underwater tributes to ancestors who didn't survive the crossing of what is referred to as "the Middle Passage," imagine coming to see creatures that are akin to the Gullah/Geechee Indigenous traditions throughout the Sea Islands. Just off our coast, the tuna and the shark ride the Gulf Stream current, the same vital force that was ridden by vessels for decades. Amidst the *Sargassum* seaweed meadows swim baby fish that are part of Gullah/Geechee cuisine. This space serves as a nursery not only for them but for the turtles that at some point will emerge like ancestral spirits from the waters of the Atlantic and leave their imprints and sometimes their tears in the sands of Sea Island shorelines.

The colorful array of the deep-sea corals harkens to the vibrant, colorful environment in which native Gullah/Geechees thrive. Yes, there is truly a natural kinship with what lies beneath the Atlantic Ocean and what lies in the depths of the souls of Gullah/Geechees. Thus, protecting and saving the Blake Plateau would be saving a critical historic underwater landmark that also serves as a nurturing element to the spirits of Gullah/Geechees since it is likely not only the ecological space of the Richardson Reef, the Central Blake Knolls, and the Million Mounds, it is also the ancestral resting place where the blood and bones of Gullah/Geechee ancestors have contributed to the growth of this tremendous ecological area. This watery refuge has cloaked these spiritual treasures until such a time as this, and they now call out for Blake's story to be told on and throughout the lands.

The water has brought us together to learn from the Blake Plateau, and we must now be the millions that share this story in honor of the cultural heritage communities that reside only miles away from this sacred space. Let's take a deep dive into this story of protection and preservation together.

BLAKE PLATEAU: A CLIMATE REFUGE

Our ocean absorbs 90 percent of the heat trapped by greenhouse gases and 26 percent of the carbon dioxide produced by the burning of fossil fuels.[30] While this has helped to slow the impacts of a changing climate, it has made ocean waters warmer, able to hold less oxygen, and more acidic.[31] These changes stress our ocean ecosystems, including deep-sea corals. Blake Plateau's deeper, cooler areas could serve as climate refuges for corals, both regionally and globally.[32] The scale and diversity of Blake Plateau's corals make this area an important stronghold for deep-sea corals in the future.

OUT AT SEA, BUT NOT OUT OF HARM'S WAY

Recent deep-sea dives have shown us the true extent of this oceanic wonderland. But without durable conservation measures, we could lose the plateau's special places to harmful ocean industrialization.

It took tens of thousands of years for these complex seafloor ecosystems to develop—many times longer than it took for the forest of Congaree National Park or the swamp of Okefenokee National Wildlife Refuge to emerge. Living in cold, dark conditions, marine life grows slowly and is highly vulnerable to disturbance.[33] Some deep-sea coral species are estimated to grow at only 0.5–2.5 millimeters a year.[34] We must preserve these systems and the unique, slow-growing, deep-sea coral ecosystem for future generations.

However, Blake Plateau lacks long-lasting protections and is facing many industrial threats:

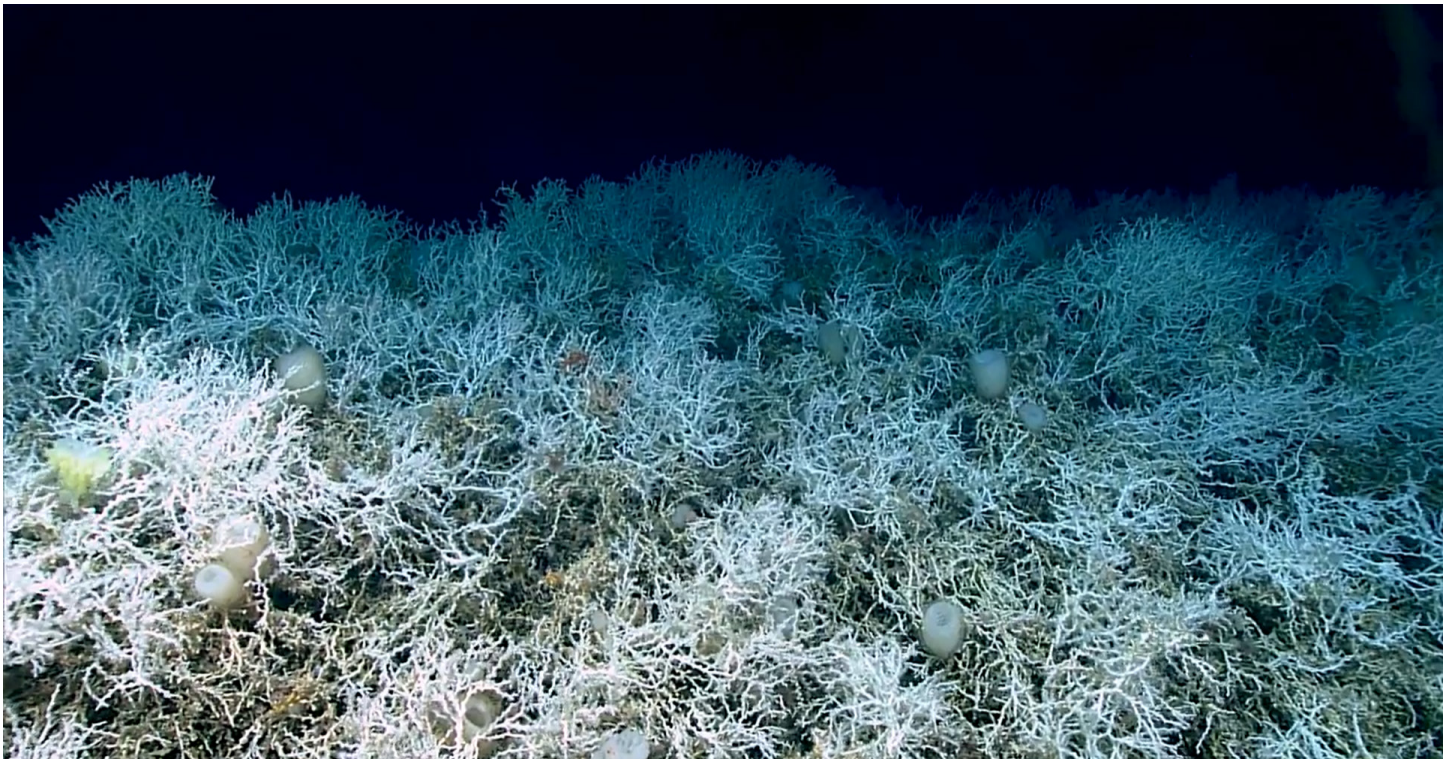
Oil and Gas Development

The Southeast region of the United States is periodically the target of oil and gas drilling interests. Currently there are no active oil and gas leases in the region's Atlantic waters, and in 2020 President Trump issued temporary offshore oil and gas leasing restrictions in the region.[35] But when these expire, in 2032, these areas will again be vulnerable to offshore drilling.

Offshore drilling poses numerous risks. Oil spills can ruin beaches, contaminate coastal and ocean waters, and harm important ecosystems and habitats that are critical to regional economies. For example, the 2010 BP oil spill from the offshore Deepwater Horizon drilling rig in the Gulf of Mexico contaminated more than 1,300 miles of coastline, at least 400 square miles of the deep ocean floor, and 57,500 square miles of surface water.[36] Scientists studying

Learn more!

The four-minute video "Blake Plateau" provides a window into the beauty and bounty of this area through a compilation of deep-sea dive footage. To view, visit https://youtu.be/ImlkHHcUftc.



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Mounds of *Lophelia* coral and glass sponges on the Blake Plateau.

the impacts of the spill in the Gulf of Mexico observed significant damage to corals in the path of oil plumes as much as 13 miles from the wellhead.[37] The spill's impacts were devastating to Gulf of Mexico wildlife, wiping out an estimated 10 to 20 percent of the juvenile Kemp's ridley sea turtle population and up to 51 percent of the bottlenose dolphin population in Barataria Bay.[38]

Additionally, to explore for oil and gas deposits, ships tow extremely loud air-gun arrays that fire intense blasts of compressed air every 10 to 12 seconds, 24 hours a day, for months on end.[39] These seismic blasts disrupt whale echolocation abilities and may impact their hunting or mating activity. They can also impair the health of many fish and shellfish species by causing hearing loss and stress.[40]

Offshore drilling also often requires significant onshore infrastructure, such as pipelines or refineries, which can damage and fragment surrounding salt marshes and wetlands.[41] Georgia and South Carolina each hold hundreds of thousands of acres of these important coastal wetlands, which protect coastal communities against storm surge and sea level rise, support local fisheries and tourism industries, and help regulate water quality.[42] The tourism, recreation, fishing, and seafood industries in these states employ nearly 79,000 people, contributing more than $4.2 billion to the states' economies.[43] Were Georgia and South Carolina to lose critical wetlands and healthy fisheries to offshore oil and gas drilling, the cost would be astronomical.

BP'S PRICE TAG

The BP Deepwater Horizon oil spill is estimated to have caused $17.2 billion worth of damage to the Gulf of Mexico's natural resources.[44] Wetlands and other important habitats struggled to recover from the impact of the 22,000 tons of oil that washed up on the Gulf shore.[45] The Gulf of Mexico commercial fishing industry lost an estimated $247 million due to initial post-spill fisheries closures.[46] An oil spill along the Atlantic could similarly harm ocean health and our coastal economies.[47]

© Paul Souders/Getty Images

Offshore oil and gas exploration and development would harm Blake Plateau's fragile ecosystems.

Deep-sea Mining

Since the 1960s scientists have explored the Blake Plateau for minerals, documenting an exposed manganese oxide pavement that covers close to 2,000 square miles, along with fields of manganese and phosphorus nodules.[48] Manganese and other key minerals may be used in components important to the renewable energy sector, and as the world pursues net-zero carbon emissions goals, the International Energy Agency predicts that demand for these minerals will increase by a factor of 1.5 to 7 by 2030.[49] There was a commercial manganese nodule extraction test in the Blake Plateau by Deepsea Ventures, Inc., in the 1970s and dedicated geologic and resource assessments in the early 1980s.[50]

Mining the ocean floor in vulnerable areas like the Blake Plateau is risky and would bring sediment plumes that could stretch for miles, smothering corals and marine life well outside the immediate development zone.[51]

Carbon Dioxide Removal and Carbon Storage

As countries seek to lower their carbon dioxide emissions, there is skyrocketing interest in various ocean-based carbon dioxide removal (CDR) technologies that manipulate ocean chemistry or biology to capture carbon from the atmosphere. Over the past few years, the U.S. government has invested billions of dollars in CDR research and development.[52] But the ecosystem costs of CDR techniques—which stimulate vast algal blooms, cultivate massive seaweed farms, or use electric currents to generate alkalinity in seawater—remain unknown.[53]

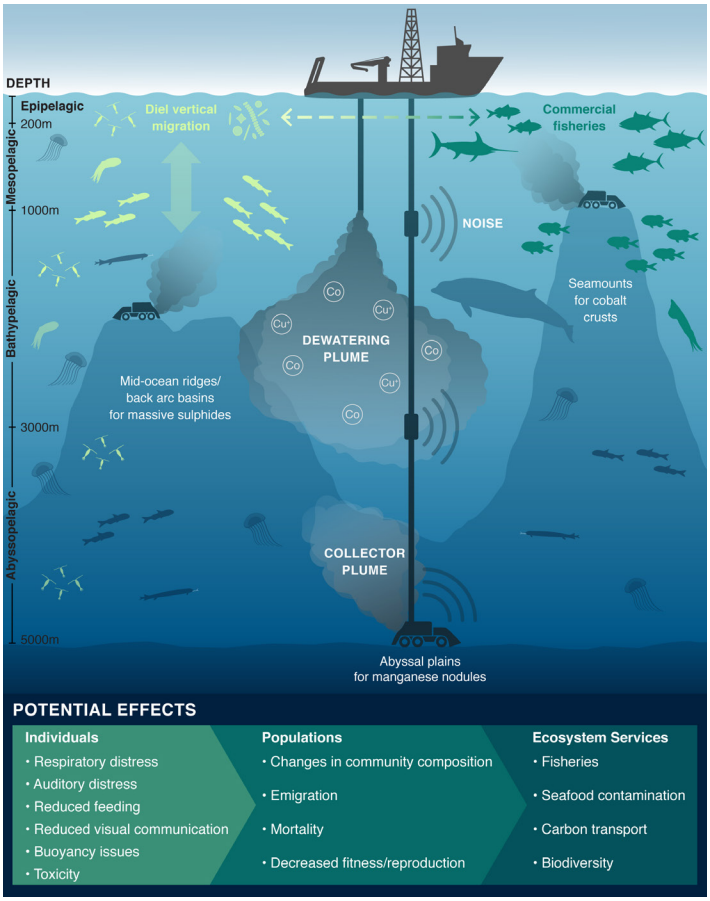
Investors are also interested in burying carbon dioxide deep underneath the ocean floor. The U.S. Department of Energy estimates that the Atlantic coastal region has the capacity to store tens of billions of tons of carbon dioxide.[54] However, any major industrial development will have ecosystem-wide impacts, and a CO_2 spill during transport would generate significant ocean acidification affecting a wide variety of nearby species.[55] Additionally, once CO_2 is injected under the seabed, storage reservoir leaks could disrupt microbial communities and deep-sea organisms and could impact vulnerable communities like deep-sea corals.[56]

Ocean Power

Ocean-based hydrokinetic energy start-ups hope to develop turbine-driven systems able to tap the Gulf Stream's power; for example, Ocean Based Perpetual Energy hopes to operate off the coast of Florida in the future.[57] Substantial renewable energy infrastructure could impact marine ecosystems during their construction and operation, by generating noise and electromagnetic fields, changing current patterns, and attracting animals to the infrastructure and causing collisions.[58]

Commercial Fishing

Currently there is only minimal commercial fishing on the Blake Plateau, with the region's biggest commercial catches occurring closer to shore.[59] Still, that could quickly change, as evolving technologies open up challenging seascapes to fishermen seeking new populations or species to catch. Several abundant species of fish, such as alfonsino and blackbelly rosefish, are not currently fished on the Blake Plateau but are fished heavily in other countries.[60]



Mining-generated sediment plumes and noise have a variety of possible effects on pelagic taxa. (Organisms and plume impacts are not to scale.) *Source: Jeffrey C. Drazen, et al., "Midwater ecosystems must be considered when evaluating environmental risks of deep-sea mining," PNAS (July 2020), 117 (30) 17455-17460, https://doi.org/10.1073/pnas.2011914117.*

The South Atlantic's Fishery Management Council wisely protected a series of deep-sea coral areas in the Blake Plateau from harmful bottom-tending fishing gear.[61] But new coral discoveries like the Central Blake Knolls lack these protections.[62] Further, council fishing restrictions are not permanent and may be reversed at any time.

Vertical hook-and-line ("deep-drop") gear and pelagic long-lining are the dominant commercial fishing methods in the area, and the National Marine Fisheries Service (NMFS) has restricted pelagic long-lining in some regions and seasons to reduce bycatch of marlins, sailfish, sea turtles, and other noncommercial species.[63] However, NMFS recently proposed modifying the timing and boundaries of these closed areas off the Southeast coast, opening areas on the Blake Plateau.[64]

THE BLAKE PLATEAU NEEDS OUR HELP

Scientists worldwide have called for strong protections for at least 30 percent of the world's ocean to preserve biodiversity. The Southeast is underrepresented in the United States in terms of strong ocean conservation measures.[65]

We have a unique opportunity to protect these rich and relatively pristine, yet vulnerable resources of the Blake Plateau from harmful activities now. By safeguarding the still wild and largely intact ecosystems of the Blake Plateau from extractive activities, we can ensure the health of this amazing place for generations to come.

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