THE SACRAMENTO BEE

Protection of deep sea habitat off California's coast needed now

By Brian Tissot

Imagine an area nearly as large as the state of California, a frontier of largely unexplored terrain known to harbor forms of life hundreds or even thousands of years old. A place where the number of species is so high it rivals the diversity of coral reefs but remains an ecological enigma.

Welcome to the deep sea, a huge area off the California coast more than 11,000-feet deep that is extremely valuable ecologically and currently unprotected.

On Tuesday, the Pacific Fishery Management Council is scheduled to consider establishing precautionary protection of this deep-water habitat along the West Coast. Because of this area's uniqueness, vulnerability and lack of protection I've joined more than 100 marine scientists encouraging the council to do just that. Here's why:

These deep sea habitats are huge and mostly unexplored. These untouched, unprotected areas of seafloor comprise a surprisingly large area of American territory off our coast – roughly 40 percent of all U.S. territory out to 200 miles from the California shore. Even though we know very little about this area as exploring it is extremely costly and difficult, we do know this: The more we look, the more we discover.

Using remotely operated submersibles, scientists have documented ecologically important habitat that sustains marine life and indirectly human life. Ancient deep sea corals and sponges are extremely long-lived and serve as "ecosystem engineers" because they create habitat that myriad species of fish and invertebrates need to survive. The deep seafloor also includes areas of soft-bottom habitat that, at a glance, appear to be inert mud. Scientists who have probed more closely are discovering a rich array of life – including sea stars, urchins and worms – that capture a vast amount of greenhouse gases like carbon dioxide and methane, and help regulate climate. Many of these species are long-lived, slow-growing and fragile.

Scientists have documented long-lasting damage to deep sea environments from bottom trawling, a type of fishing that involves the use of large nets dragging along the seafloor. My research off the Oregon coast documented that bottom trawls reduce the abundance of sea pens by 99 percent and decreased the overall abundance of bottom-dwelling invertebrates by more than half. In even

deeper areas of seafloor, we know that a single trawl can damage sensitive coral and sponges that may have grown over centuries or even millennia.

Now is the time to put protections in place because we know technological advancements will, sooner or later, enable bottom-trawling and mining to expand into these pristine areas of deep water seafloor off the California shore. It's important to act now, well before fishing expands into deep-water areas so that no one is taken by surprise.

The deep seafloor off our coast is a tremendous natural asset worthy of protection by the stewards of our ocean resources. By acting now, the Pacific Fishery Management Council has an opportunity to pass it on to future generations.

Brian Tissot is director of the Marine Laboratory and Humboldt Marine and Coastal Science Institute at Humboldt State University in Arcata.

San Francisco Chronicle

The ocean's effects on the mind

By Ashley Blacow and Wallace J. Nichols

May 29, 2016 Updated: May 30, 2016 6:32pm

Medical studies are measuring increases in serotonin, oxytocin and dopamine in people as they spend time in, on, around or under the ocean.

How did you feel the first time you saw, smelled, heard or felt the ocean?

In all likelihood, you felt a sense of calm, rejuvenation and peace. As it turns out, there's a physiological and chemical basis to these feelings. Medical studies are measuring reduced cortisol — the stress hormone — and increases in serotonin, oxytocin and dopamine — the feel-good hormones — in people as they spend time in, on, around or under the ocean. Ocean access programs are resulting in clear benefits to veterans suffering from post-traumatic stress disorder, young women experiencing reduced self-esteem and at-risk youth. More time around natural water bodies also helps reduce distraction and anxiety. For many families, the ocean also provides good, lifelong memories of quality time together. Changes in our brain chemistry as a direct result of the ocean's influence can help us live with a healthier Blue Mind.

Just looking at the ocean's surface helps garner these aqueous benefits. But that blue veneer alone isn't enough. We need clean, healthy and biodiverse seas to get the full value of enjoyment, exploration, excitement, relaxation and calm. And we must go deeper.

If you've watched, played in or surfed on the waves, did you wonder what lay below? Many areas of the ocean floor are not a barren bottom, but thriving ecosystems emitting colorful hues of hot pink, purple, green and gold. The seafloor off California is teeming with colonies of slow-growing, delicate animals, like corals and sponges, that cover rocky reefs, underwater canyons and sea mounts. These landscapes provide shelter and areas for feeding and breeding for recreationally and commercially important fish. Sea stars and octopus also find shelter here. This deep, dark, nutrient-rich seafloor is inextricably linked to the rest of the ocean food web and species we're more familiar with such as whales, dolphins and seabirds. It also offers some intriguing clues of little-seen ocean species.

So, what do corals and sponges have to do with the sense of calm the ocean imparts? One of the many reasons we enjoy the coastal environment is the scenery and the opportunity to experience wildlife. Shore visitors seek the chance to spy acrobatic humpback whales, see pods of dolphins riding the surf, scuba dive in underwater forests, bird watch and catch fish.

These opportunities provide a pathway to a blue state of mind not possible without protecting and preserving the ocean's special places. The Pacific Fishery Management Council — a federal 14-member voting body —will decide this fall if it will designate and protect important deep-sea places as habitat conservation areas. At risk are diverse areas of the seafloor that are subject to being bulldozed by bottom trawl fishing gear if the council does not protect them. A despoiled and empty ocean won't make us happy, induce calm or boost creativity. Rather it makes us feel sad, mad and even guilty.

Dive into the ocean's health benefits and protect the resources it provides us. It's never too late to blue your mind.

Ashley Blacow is communications manager for Oceana, an ocean conservation nonprofit. Wallace J. Nichols, a research associate at the California Academy of Sciences, is author of "Blue Mind."

http://bit.ly/2811NrE

The San Diego Union-Tribune

Stand up for California's seafloor

Available at: http://www.sandiegouniontribune.com/opinion/commentary/sd-utbg-cousteau-california-seafloor-20161116-story.html

A starfish, coral and a green spotted rockfish. (Photo Courtesy of Oceana)

ALEXANDRA COUSTEAU & TED DANSON

The Pacific Ocean off California is unlike any other place in the world. Its fluorescent sunsets and powerful waves have been the inspiration for pop culture, art, education and conservation. Visitors and locals alike flock to California's 840 miles of breathtaking coastline. However, just beyond the limits of the naked eye lies an important part of the ocean that many people don't know about, the seafloor. Remarkably, we know more about the moon orbiting the Earth about 230,000 miles away than we do about the seafloor.

While ocean exploration has come a long way in the last several decades, less than 0.5 percent of the world's ocean has been explored, photographed or filmed. This summer a team of researchers and explorers with Oceana, MARE (Marine Applied Research & Exploration) and the National Oceanic and Atmospheric Administration embarked on a scientific expedition to document deep sea life in the Southern California Bight offshore of Los Angeles. The resulting footage and data unveiled a remarkable underwater world unlike any other.

Imagine a colorful underwater forest of gold, purple and pink coral colonies comprised of thousands of individual animals. These structures, like sponges, rocky reefs and underwater canyons, are habitat for dozens of fish species — many are sought after in commercial and sport fisheries — and are frequented by octopus, sea stars and crabs. The expedition's images show shark egg cases hanging on coral branches like decorations, rockfish nestling into cylindrical sponges, eels peering out of rocky reefs and basket stars precariously balancing on sponges shaped like vases. These diverse seafloor structures provide shelter, feeding grounds and breeding areas for countless species of marine life.

Without healthy productive seafloor habitats, the oceans wouldn't be the same. In order to balance a vibrant fishing economy and ocean biodiversity, we must protect the oceans from the seafloor up.

The greatest known threat to seafloor habitat is destructive bottom trawl fishing gear. In this industrial fishing practice, heavy equipment that drags along the ocean floor holds open large nets, scooping up not only the targeted commercial fish species, but also nearly everything else in the path of the trawl. Corals, sponges and other living seafloor structures are toppled, crushed or ripped from the seafloor. Growing only millimeters a year, corals and sponges could take hundreds to thousands of years to recover, if ever. Currently, bottom trawling off Southern California only occurs in shallow,

nearshore waters, leaving the vast majority of seafloor wilderness pristine. This provides a unique opportunity to protect this exquisite habitat now.

The California coast is an aquatic treasure trove supporting one of the busiest marine highways in the world. Fed by cold nutrient-rich waters, the California Current has been nicknamed the “Blue Serengeti” as it is home to whales, dolphins, fish and sea turtles that migrate up and down the coast, provides nurseries for sharks, hosts rookeries for sea lions and so much more. The brilliance of ocean wildlife that converges here makes it globally significant. A healthy seafloor, in turn, helps this ocean wilderness flourish.

Federal fishery managers have an opportunity at their meeting in Southern California this month to safeguard these deep sea ecosystems from a future of destruction by bottom trawl gear. The Pacific Fishery Management Council has taken action before to prevent the expansion of destructive bottom trawling. We are asking this management body to extend this precautionary approach to seafloor areas off Southern California, a truly unique gem right off our coast, while maintaining the nearshore fishing grounds where trawling already takes place.

While most of the Southern California seafloor has yet to be explored, the places that scientists have visited are vibrant, unspoiled and unlike any other across our water planet. We want new discoveries to be made through a camera lens, not seen for the first time broken and dead in a trawl net.

Some of the most known fragile seafloor structures from California to northern Washington were protected in 2006. Research expeditions over the last decade demonstrate the many undersea treasures still being discovered that are risk if we expand bottom trawling over the California seafloor.

The Pacific Fishery Management Council is scheduled to discuss the fate of Southern California’s seafloor and accept public comments at its meeting in Garden Grove on Friday.

We invite Southern Californians to stand up for the deep sea and help save the seafloor.

Cousteau is a senior advisor to Oceana, is a part of the National Geographic Emerging Explorers Program, and a filmmaker and globally recognized advocate on water issues who continues the work of her renowned grandfather Jacques-Yves Cousteau and her father Philippe Cousteau Sr. Danson is an award-winning actor, longtime ocean advocate and Oceana board member.