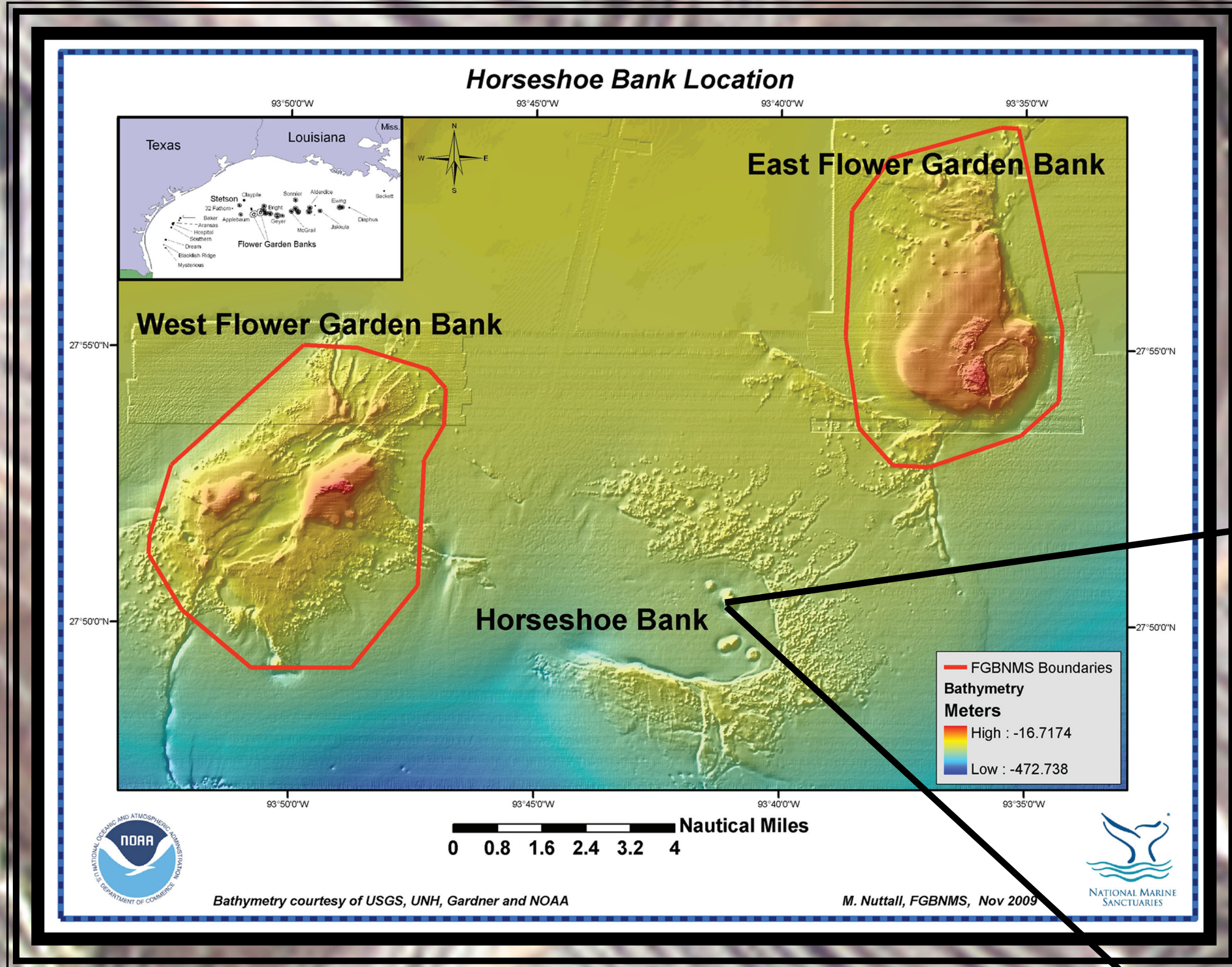
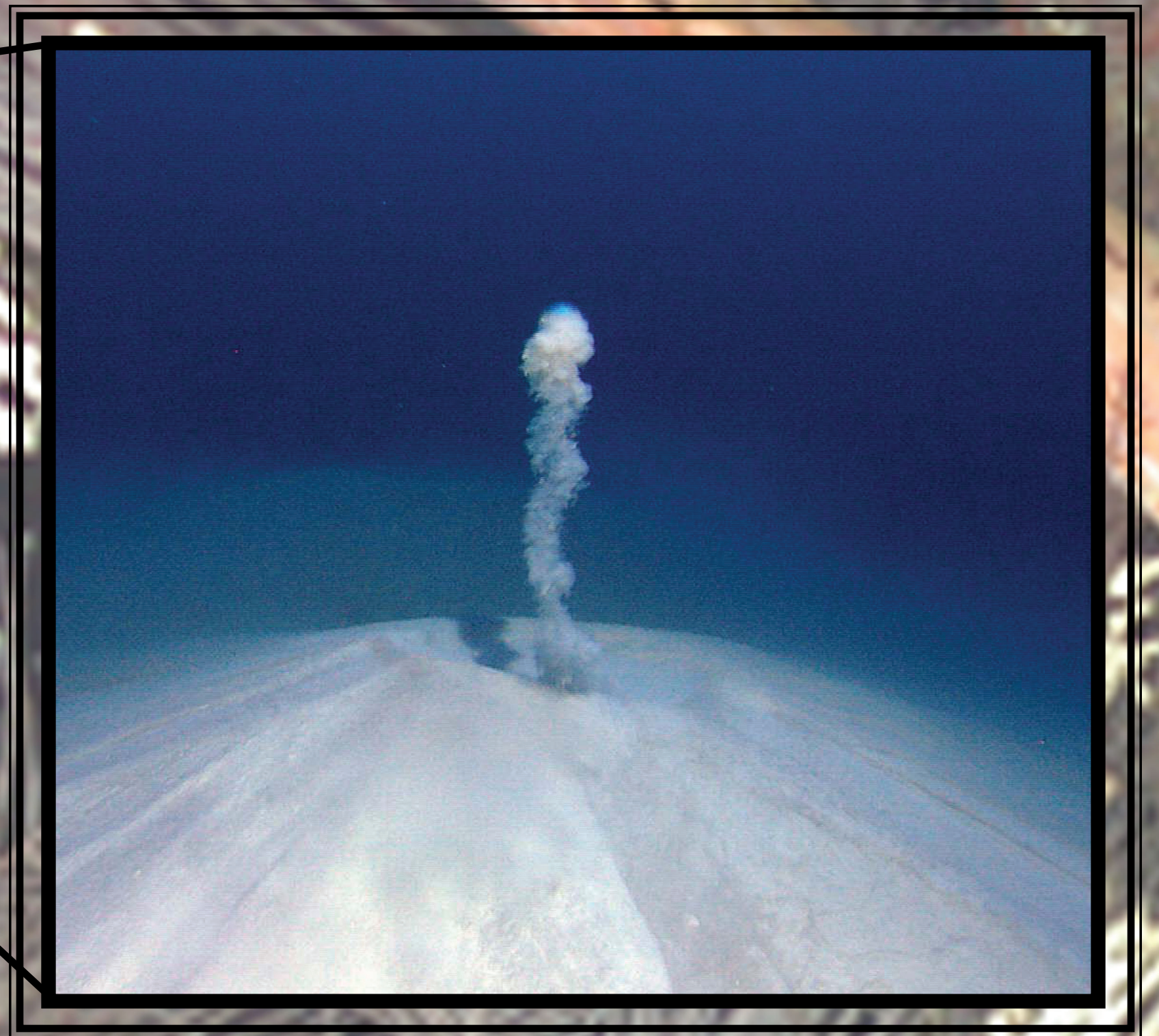


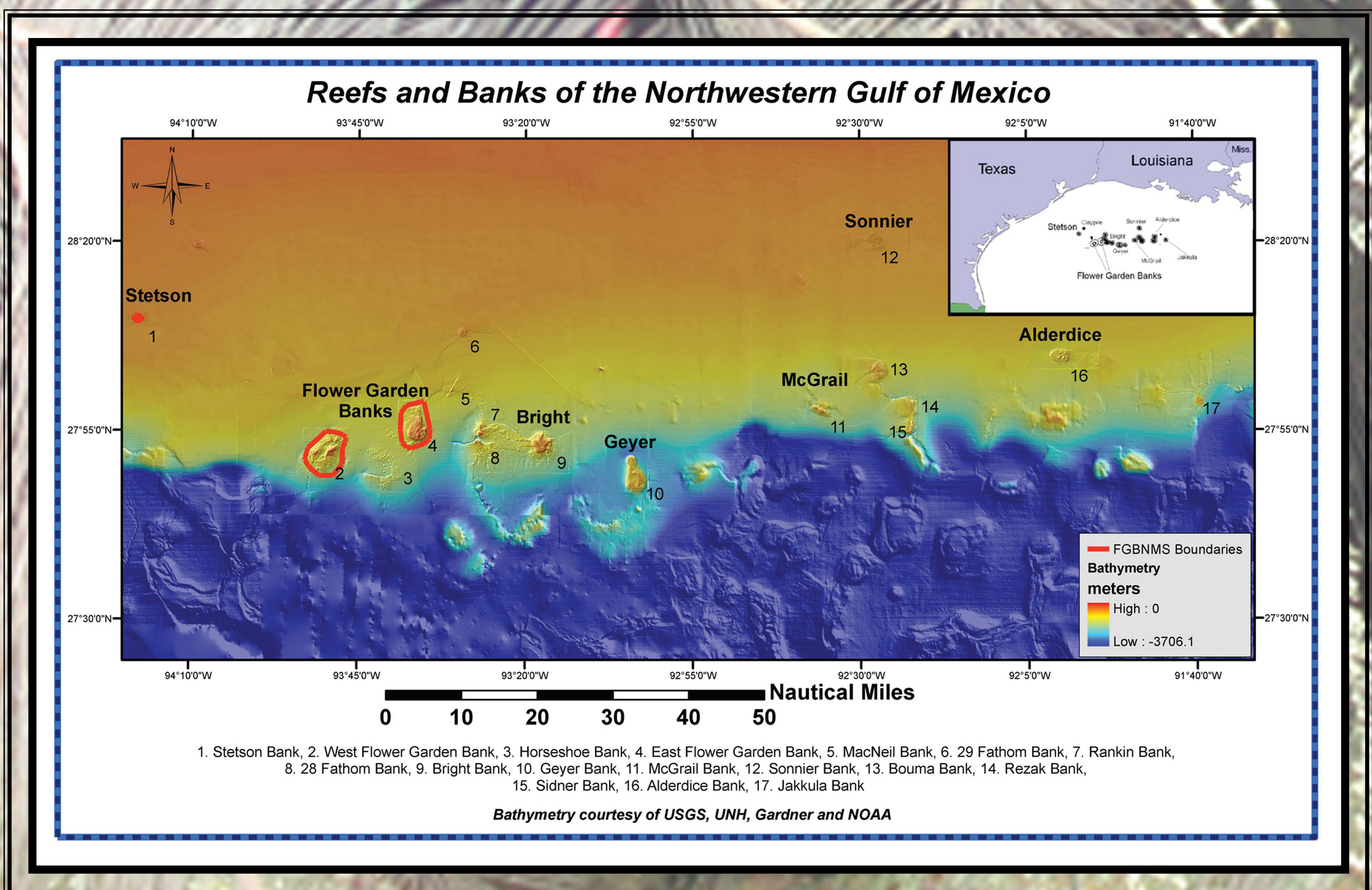
20 Things We've Learned About FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY



The area between East and West Flower Garden Banks is not a featureless plain. A horseshoe-shaped reef occupies much of that area and provides habitat to a number of mesophotic organisms.



Mud volcanoes exist in some of the deep areas around the banks. These are the result of gas, probably methane, bubbling up through soft bottom sediments. Some of these volcanoes are as much as 100 feet (34 meters) tall.

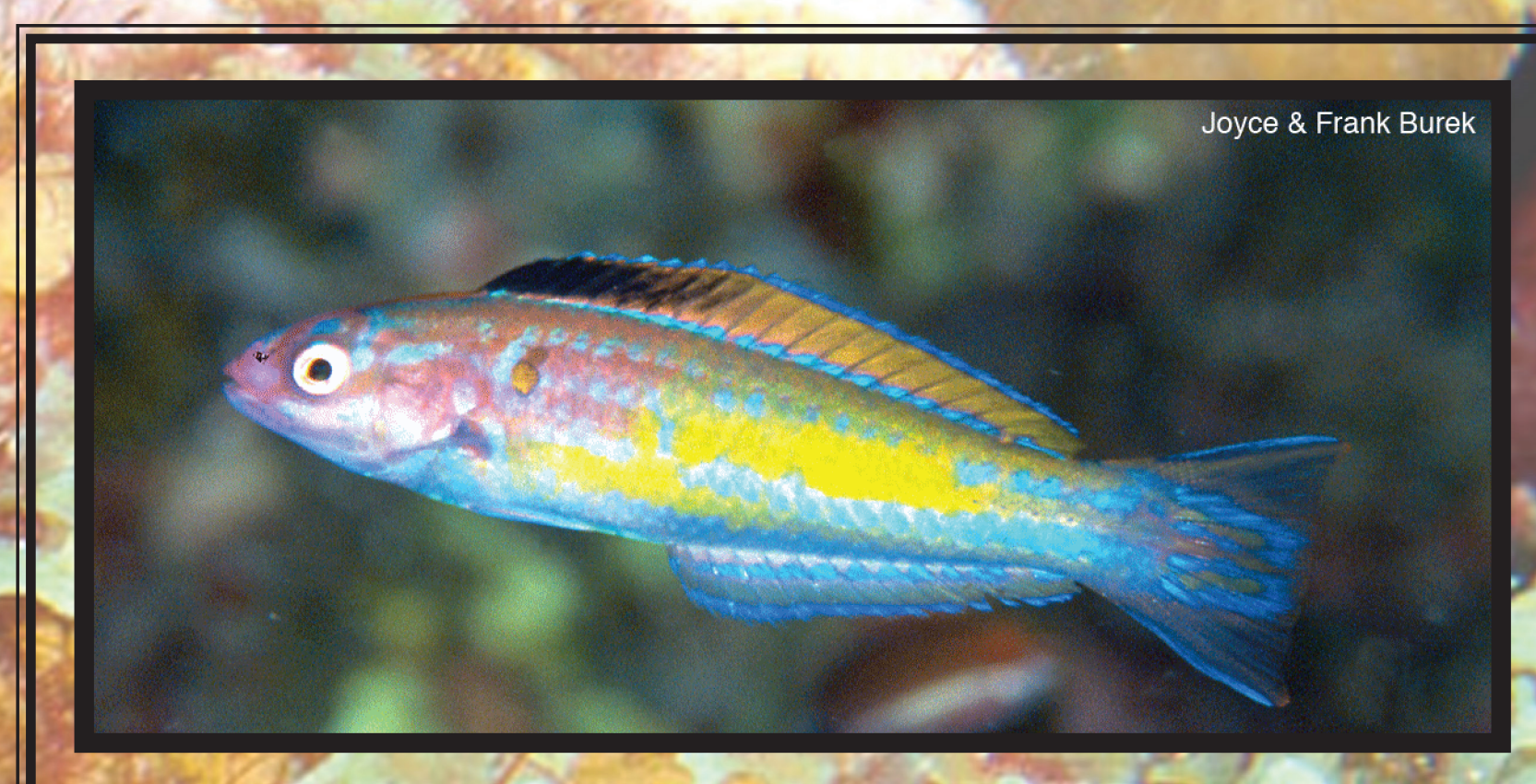


East and West Flower Garden Banks are connected both geologically and biologically with other banks that stretch eastward along the outer continental shelf.

20 Things We've Learned About FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY



Marbled Grouper is considered a rare species throughout its range, but the northwestern Gulf of Mexico seems to be a hotspot for this species. It is occasionally seen by divers on the coral cap, but generally prefers deeper waters.



The Mardi Gras Wrasse (*Halichoeres bureki*) is a new species to science. The official paper was published in January 2008, naming the fish after Joyce & Frank Burek, the photographers who provided the first images.

Sergeant Majors are newer arrivals in the sanctuary. Although they are quite common throughout the Caribbean, they have only appeared in the sanctuary within the last 10 -15 years. Oil and gas platforms across the Gulf of Mexico may have provided the pathway.



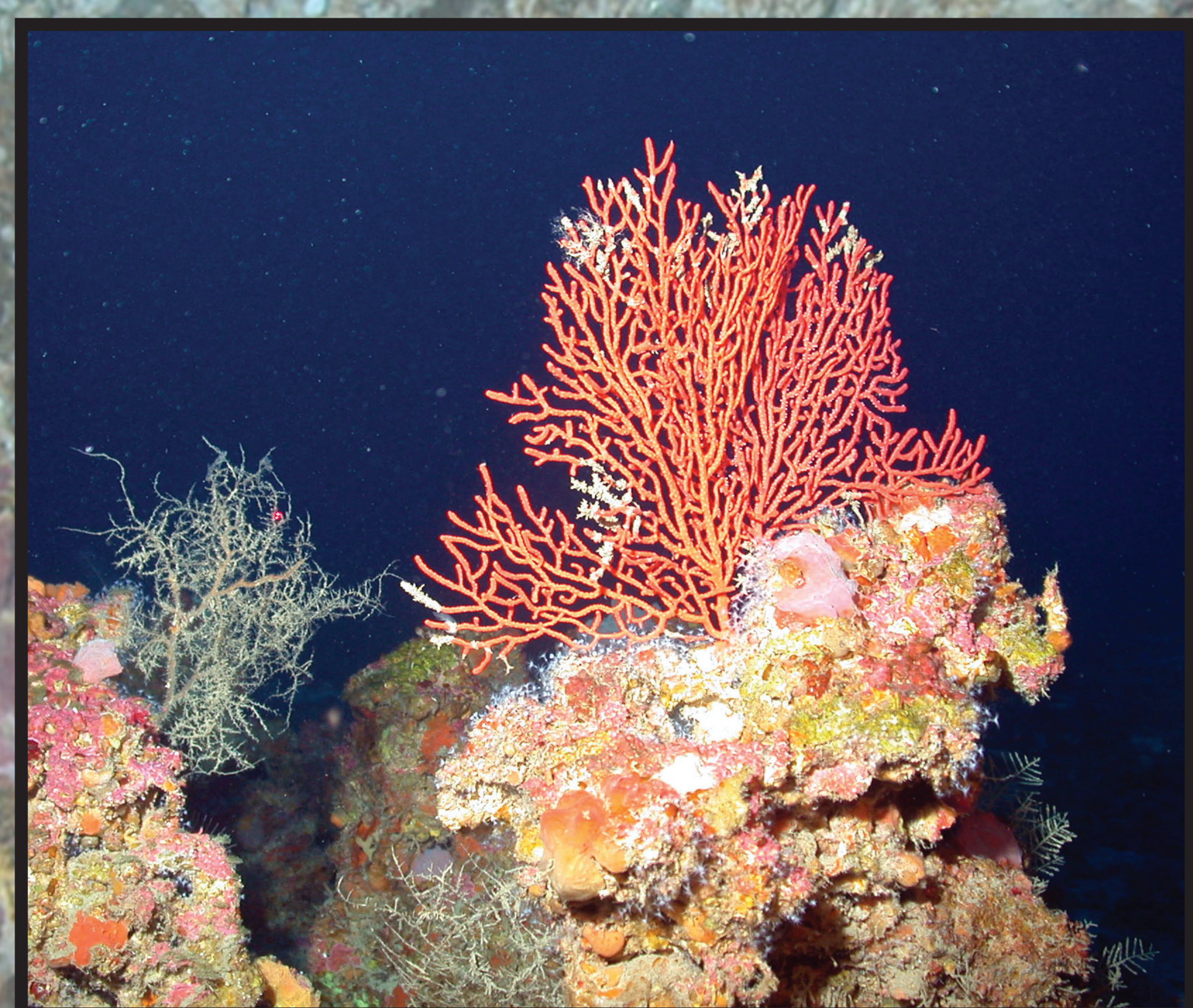
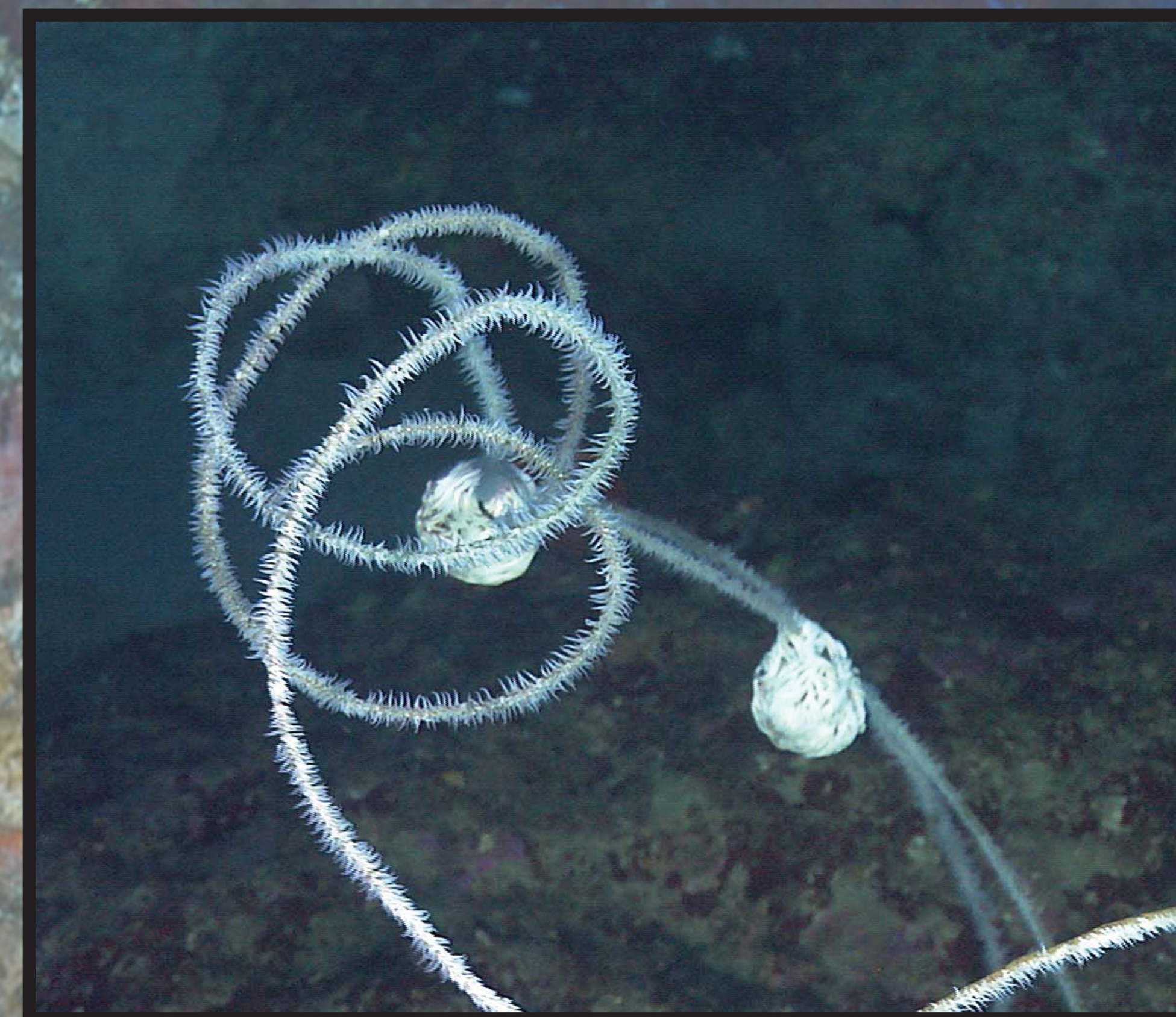
The Smooth Trunkfish (inset) is found on reefs throughout the Caribbean and Gulf of Mexico. But, only in Flower Garden Banks will you find this bright yellow variant (although there are rumors of sightings off Honduras). DNA analysis tells us that it's the same fish. We just don't know what causes the golden color.



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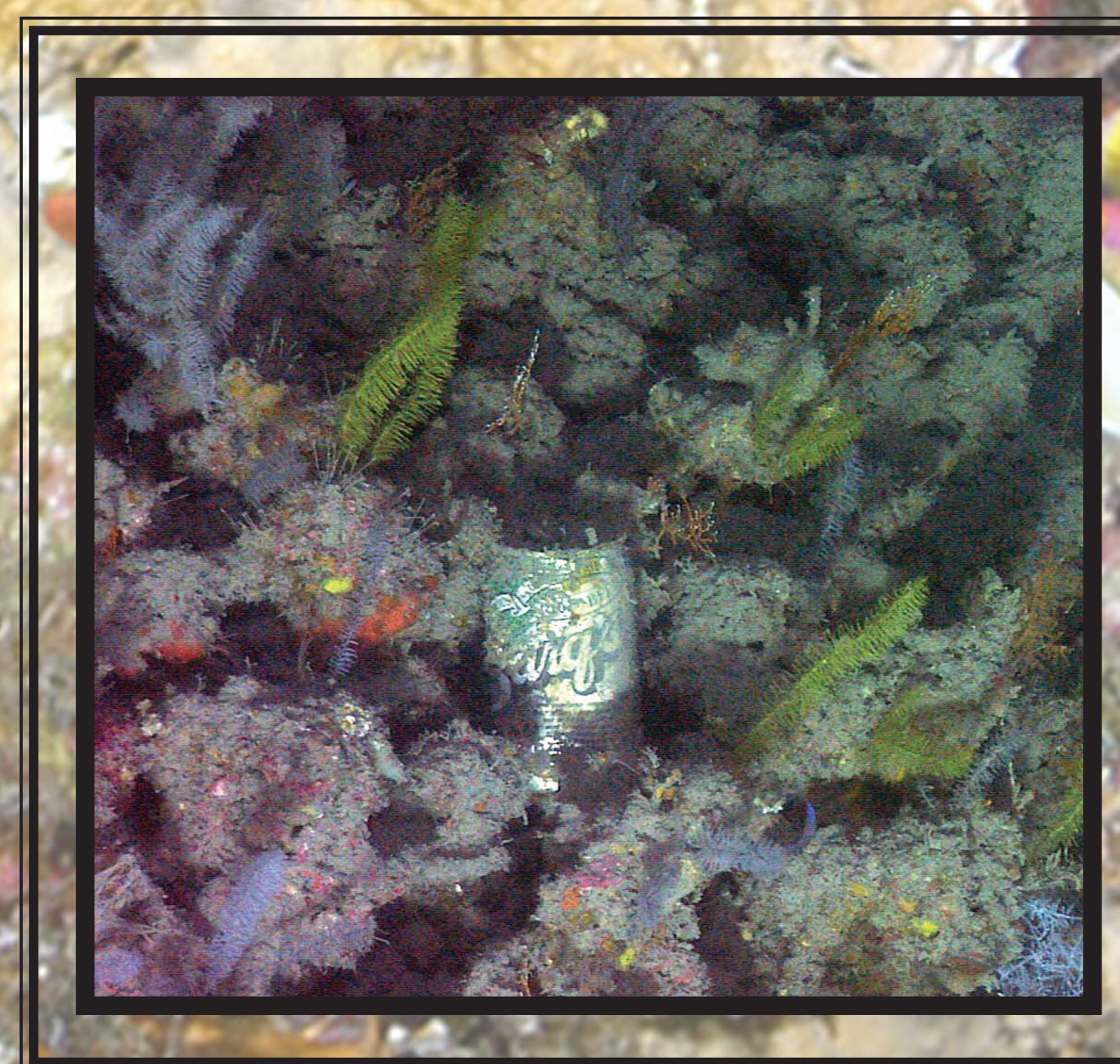


Until we started exploring below recreational dive depths (130 feet), we had no idea of the diversity and density of organisms found below the coral caps. Now we know there are sea fans, sea whips, or other gorgonians in the deeper mesophotic zone, along with soft corals, black corals and numerous other wildlife.

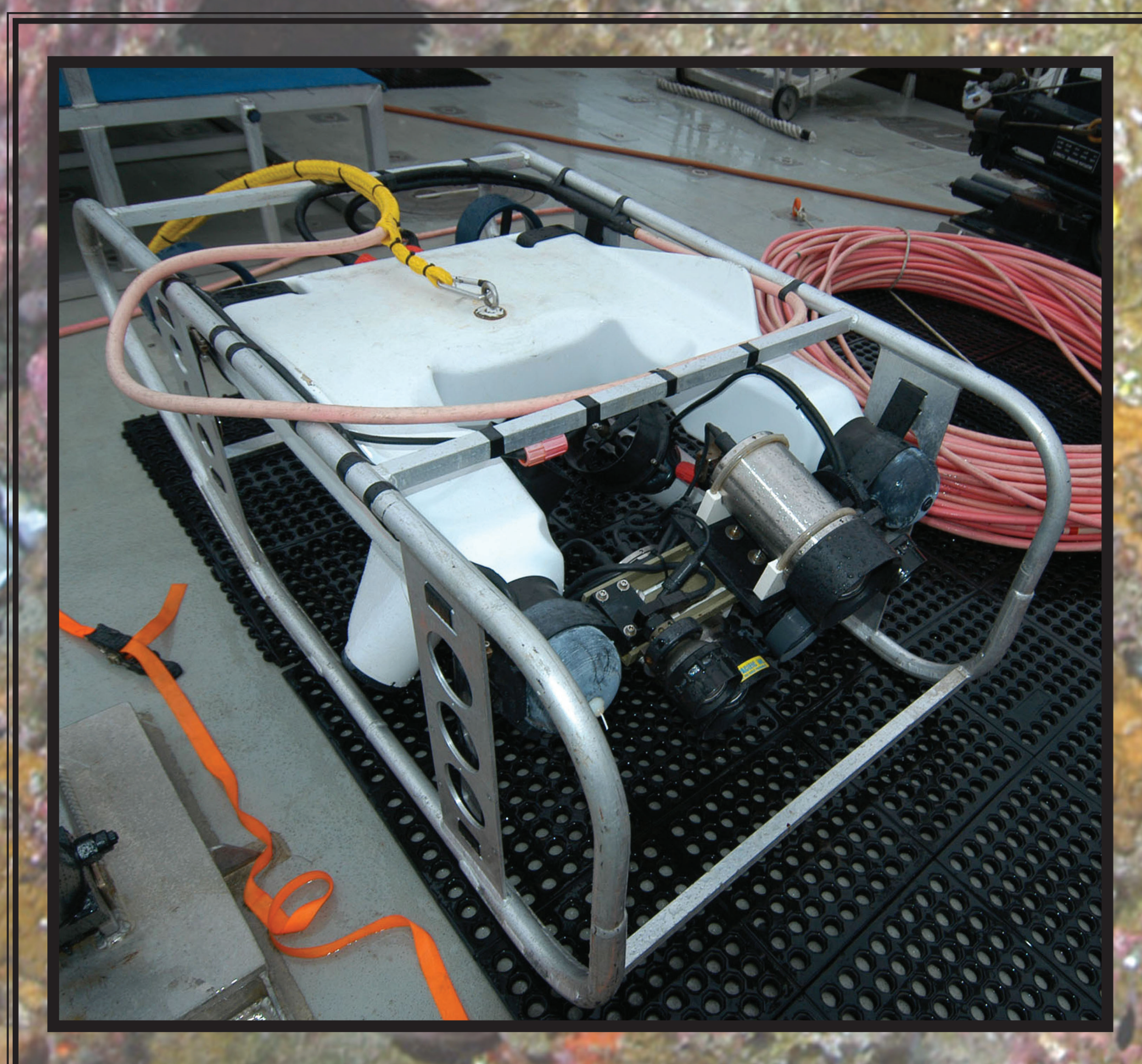


It is difficult to identify deep water organisms from photographs because experts only know most of the organisms from preserved samples and have never seen them alive. Pairing freshly collected specimens with photographs is helping us build a regional catalogue of deep water species in the northwestern Gulf of Mexico.

Remotely Operated Vehicles (ROVs) are an essential tool for exploring areas beyond recreational dive depths. They stay submerged longer than divers and take geo-referenced video and still photographs, which enable us to accurately find interesting spots again.



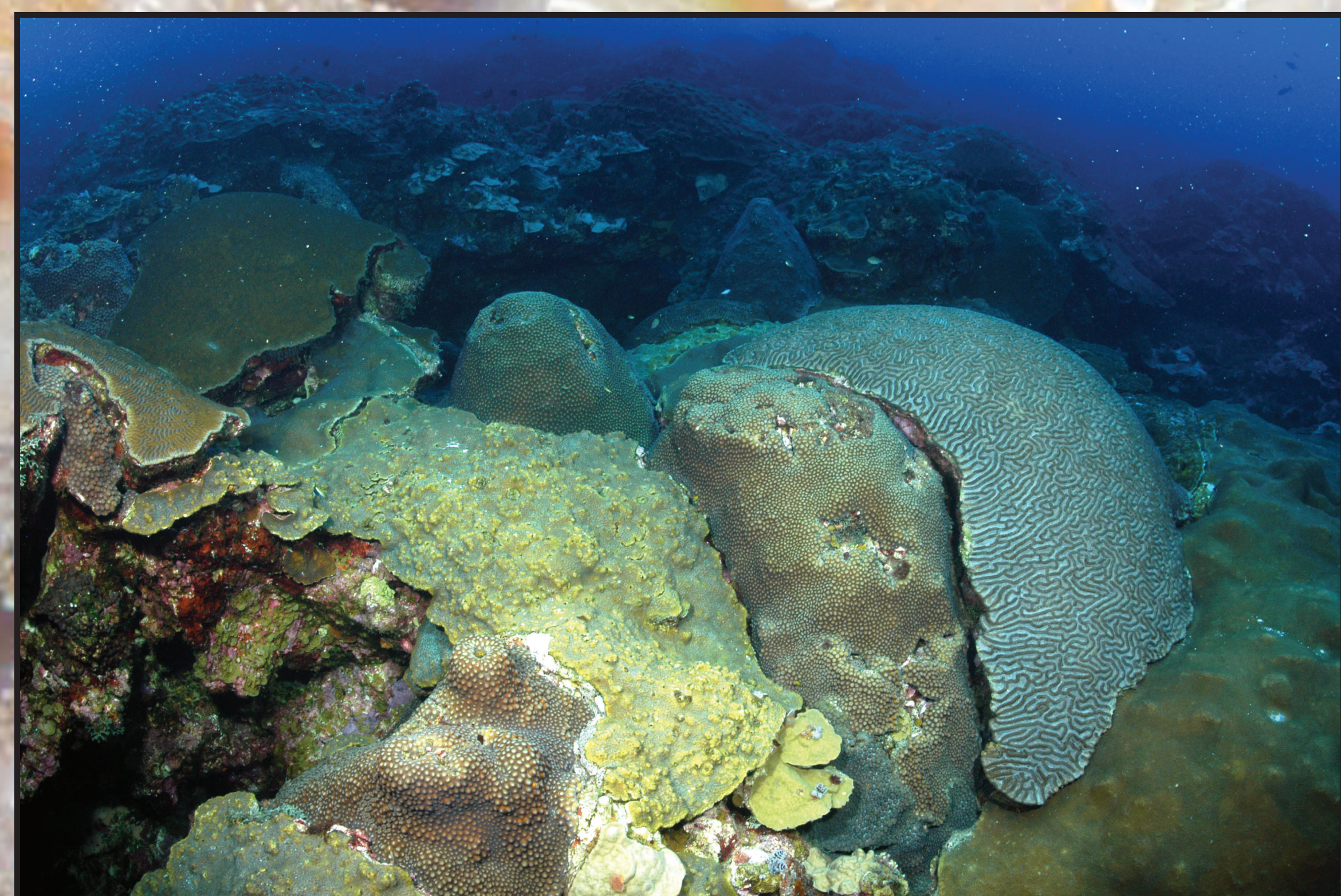
Marine debris favors no particular depth. Just because we can no longer see it, doesn't mean it's not there or that it's not affecting the environment.



20 Things We've Learned About FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY

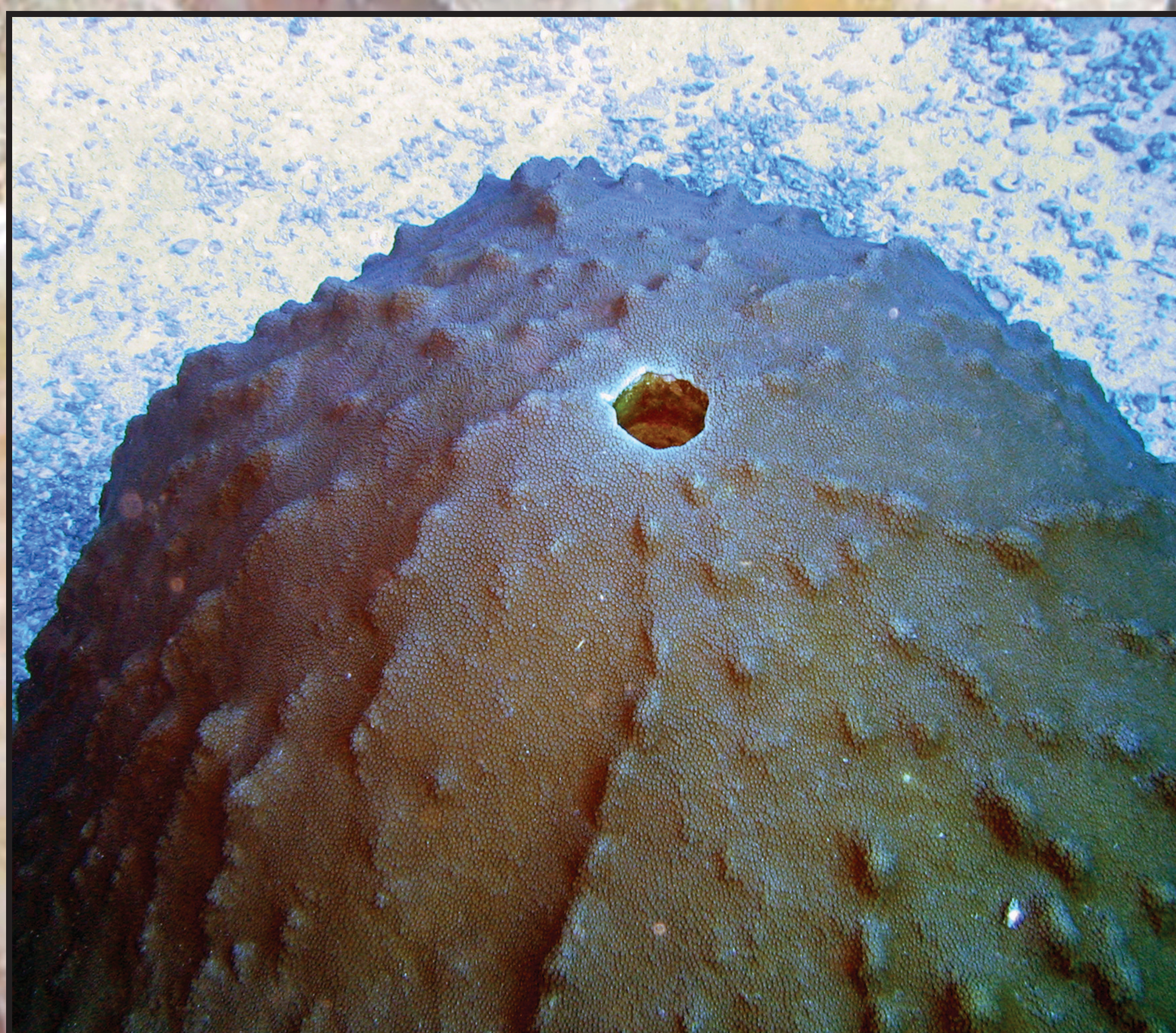


Flower Garden Banks National Marine Sanctuary is possibly the healthiest coral reef ecosystem in the Caribbean and Gulf of Mexico. Water quality is good. There is an appropriate balance of organisms in the food web. Human visitation is limited by its distance from shore. All this is key to the reefs' resilience in recovering from hurricanes, coral bleaching, and coral diseases.



Over 50% of the bottom is covered in living coral, which is at least twice as much as anywhere else in the region. Most of this coral grows in large boulder formations of star and brain coral species.

Some coral colonies have been growing in the sanctuary for over 200 years. This can be determined by looking at growth layers in skeletal core samples taken from large colonies. These cores also help us learn about previous climate conditions (paleo-climatology) in this part of the Gulf of Mexico.



X-ray of coral core



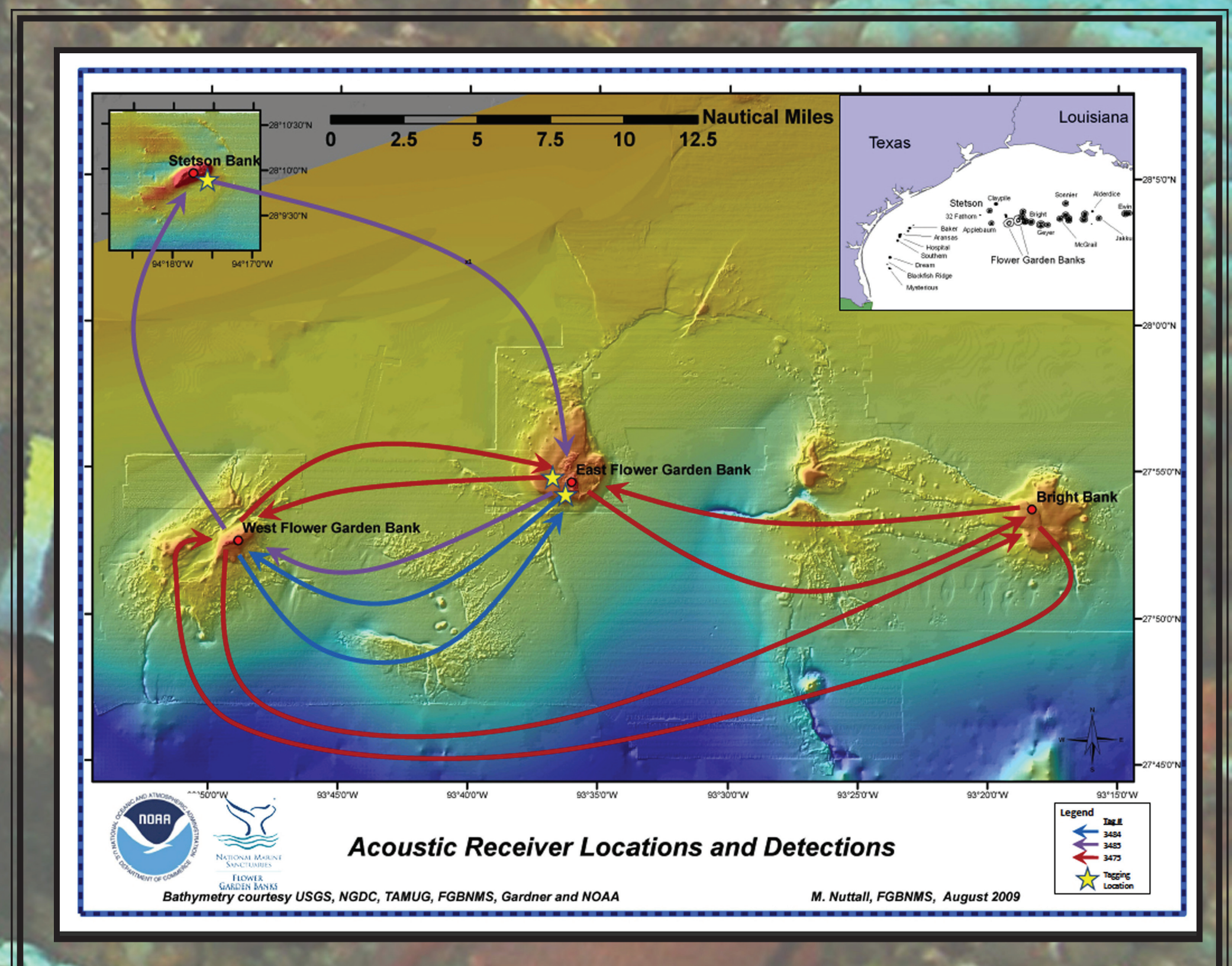
20 Things We've Learned About FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY



Whale Sharks visit the sanctuary seasonally, usually during the warmer summer months, but we are not sure where they go the rest of the year. A Whale Shark tagged near Holbox, Mexico was recorded on an acoustic receiver at Bright Bank, near the sanctuary, verifying our suspicions that the animals we see are traveling from as far away as the Meso-American reefs.

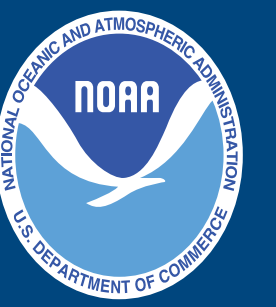


Manta Rays can be identified by the unique markings on their bellies. These markings have helped us identify over 70 individuals that frequent Flower Garden Banks National Marine Sanctuary. We encourage divers to submit photos/video of mantas and whale sharks to help us continue documenting these animals.



With the use of acoustic tags we've been able to determine that Manta Rays travel between banks within the sanctuary, and to at least one bank outside the sanctuary. A larger array of receivers in the Gulf of Mexico may help us learn more about where else they travel.

20 Things We've Learned About FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY



Scuba diving is an important skill for working in and around coral reefs. There are just some things that people do better than machines.



Freshwater from land reaches over 115 miles offshore, bringing with it any nutrients or pollutants that it may be carrying. This is evident in satellite photographs showing storm runoff after hurricanes and readings from water quality instruments stationed in the sanctuary year round.



An appropriate work platform is essential for doing science at sea. The R/V MANTA was designed specifically for the research and monitoring activities that take place in the sanctuary each year.