

# Beyond the Seven Mile Bridge

A PAINTING BY CHRISTOPHER M. STILL

OIL ON LINEN, 158¼" BY 56"

Seaward of the Florida Keys lies a treasure whose value is beyond measure. It is Florida's crown jewels—a necklace of coral reefs that extend south of Miami to the Dry Tortugas. Beams of life-giving sunlight penetrate clear waters and bring energy to the diverse multitude of plants and animals that can be found here. Brightly colored fishes dart in and out of this complex structure, while other creatures hover motionlessly—cleverly camouflaged. Each forms a vital strand in a complex ecological web.

The Florida Reef Tract is the most extensive living coral reef system in North America—the third largest in the world. And it all began with one tiny coral larva swimming about looking for a suitable home. Once settled and attached to the sea floor, the developing coral polyp excreted calcium to make a hard shell to live in. Eventually it grew, branched, and reproduced—creating a colony of polyps that did the same. Over a time span of 7,000 years, these tiny creatures formed a foundation for the miraculous reef system of today.

Each individual coral polyp consists of a mouth encircled by tentacles that gathers food and defends it. Within the tissues of the corals live vast numbers of microscopic algal cells called zooxanthellae (zo-zan-thel-ee). In a true symbiotic relationship, the

corals provide the tiny plants with a safe home, carbon dioxide and waste products that facilitate photosynthesis. In return, the zooxanthellae provide the corals with oxygen, remove waste, and supply organic materials that help each polyp live and grow.

Parrotfish nip at the coral, crushing and excreting it as sand. Sea urchins graze on algae, clearing a surface for new corals to grow. Damselfish pick, prune, and plant a variety of algae in their own small gardens, while crabs and shrimp hide in tiny crevices from sea turtles and octopuses. Nothing is wasted.

Florida's reefs provide housing, food, and shelter, as well as breeding and nursery grounds for a vast number of species—many of economic importance. They are natural breakwaters, protecting coastal areas. And they are intricately and vitally linked to other ecosystems. Unfortunately, their health is in

serious decline today as their corals weaken and die due to environmental and human-caused stressors.

Life on land ultimately affects life in the sea—and vice versa. Florida's tourism, seafood, diving, boating, and fishing industries cannot thrive unless its marine environments are healthy and safeguarded. This is a vast challenge as well as a tremendous responsibility for today's leaders. Florida's coral reefs are fascinating to explore—but essential to preserve.



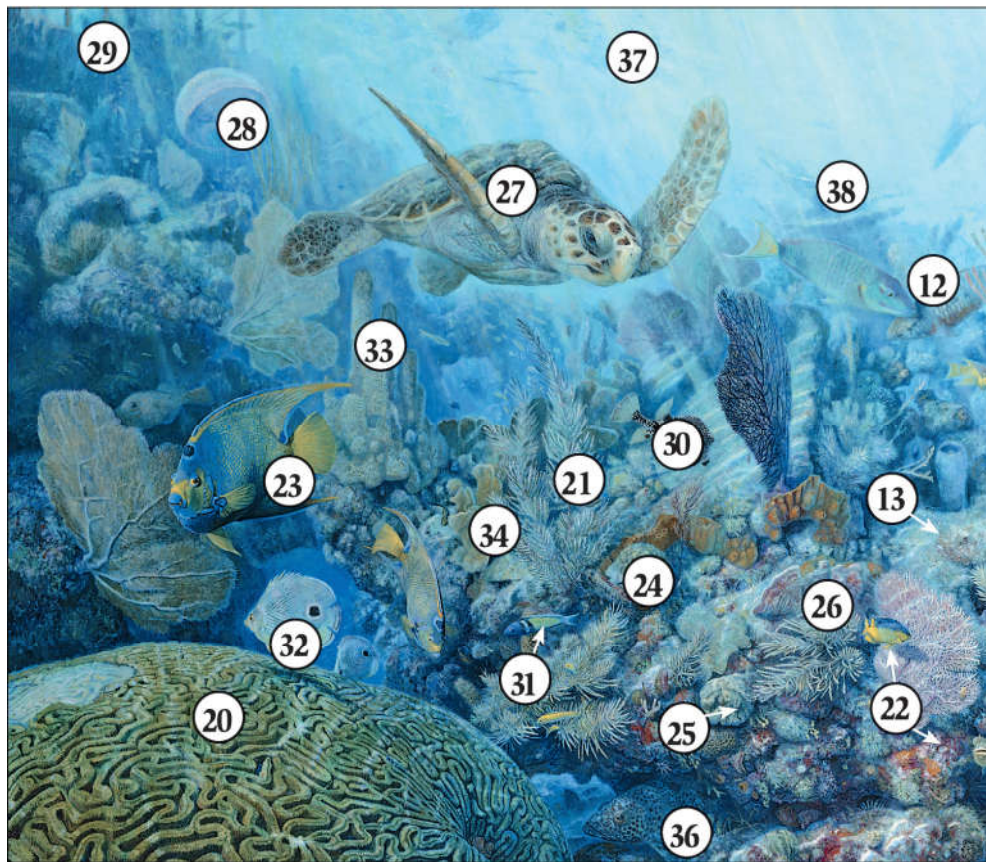


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CHRISTOPHER M. STILL

The artist designed an underwater painting box and made color studies while diving. Marine biologists helped teach him about the fragile reef system. Research was conducted from the Carysfort Reef Lighthouse, located seven miles off the coast of Key Largo. The painting is an attempt to imitate the complexity of the reef—much can be missed without careful observation.

- 1) **Florida Spiny Lobster.** There is a large commercial and recreational fishery for spiny lobster—often nicknamed “bugs” by the thousands of people who go lobster-diving each year during Florida’s regulated seasons.
- 2) **Queen Conch.** These large marine snails with pink shells feed on algae. Quite plentiful and popular at one time, they were over-harvested and are now a protected species. Long-time natives of the Keys acquired the nickname “Conchs,” and the queen conch remains the symbolic mascot of Monroe County.
- 3) **Brown Encrusting Sponge.** A sponge is a very simple form of multicellular animal that pumps and filters water through its porous tissues—extracting oxygen, nutrients, bacteria, and tiny animals to live on. Although many sponges help provide stability to a reef, the brown encrusting sponge belongs to a group that burrows into the coral skeletons, using chemical and mechanical action to remove limestone, in a process called “diagenesis.”
- 4) **Longspine Squirrelfish.** The squirrelfish has alternating red and white stripes, and very large eyes. It is nocturnal—resting in holes and behind corals during the day, hunting at night.
- 5) **Green Moray.** Usually called a moray eel, the green moray is a long snake-like fish that hunts from caves and tunnels in the reef. Its green color actually comes from a skin coating of algae. A moray looks ferocious and can bite, but will not attack a human unless provoked.
- 6) **Bluestriped Grunt.** This common blue and yellow striped fish is usually seen in schools of up to several dozen, sometimes with porkfish intermingled. Grunts are named after the sound they make when caught.
- 7) **Goliath Grouper.** The largest of the groupers, this fish can grow to ten feet



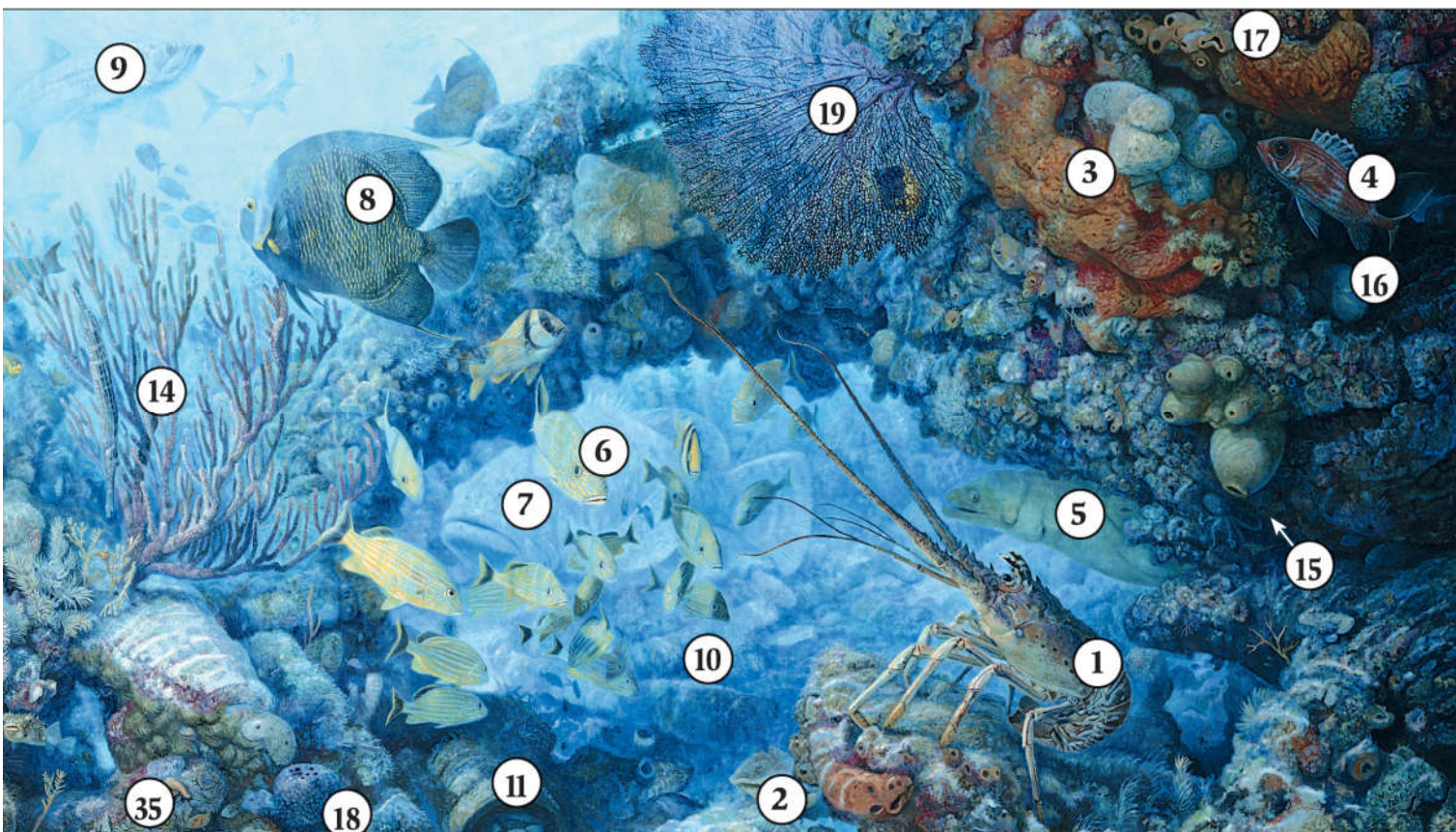
long and weigh several hundred pounds. These fearless giants, once fairly common, were spear-fished nearly to extinction. They are now fully protected by law.

- 8) **French Angelfish.** These graceful swimmers—often seen in pairs—are curious of divers.
  - 9) **Tarpon.** A prized game fish with an exaggerated lower jaw, the tarpon is often called a “silver king.” Many competitive “catch and release” tarpon tournaments are held in Florida each year.
  - 10) **Spanish Ship’s Anchor.** In 1733, a fleet of Spanish galleons was sunk in a hurricane off the Florida Keys. Many reefs contain evidence of such shipwrecks.
  - 11) **Ship’s Bell.** This bell is from the *Henrietta Marie*, a ship which foundered on a reef 34 miles off Key West in 1700. Treasure hunters who discovered it did not find the gold coins they had hoped for. Instead they found shackles. The *Henrietta Marie* was a slave ship.
  - 12) **Stoplight Parrotfish.** Parrotfish feed on corals and algae, scraping off pieces with their strong beak-like front teeth. In the back of their mouth are unique pharyngeal teeth which grind up the coral so it can be digested. The remains are excreted as fine white sand.
- Both a juvenile and an adult color phase of this interesting fish are depicted. Like some other reef fish,

parrotfish go through radical color changes as they age.

- 13) **Spotted Scorpionfish.** Superbly camouflaged, this fish lies motionless until a small, unsuspecting fish or crustacean swims by. Dinner is served. The spines atop the scorpionfish are poisonous.
- 14) **Trumpetfish and Porous Sea Rod.** A long, mottled brown fish with a snout that resembles a trumpet hovers motionless in a vertical position next to porous sea rod. Porous sea rod is one of over 40 octocoral (soft coral) species found in the Florida Keys reefs. These corals often look more like plants than animals. Look closely and you can see its tiny polyps, each one with eight tentacles. You might also spot a small seahorse.
- 15) **Octopus.** An octopus is a mollusk with eight arms and no shell. It hides in crevices, blending into the reef using specialized pigment cells called “chromatophores” to instantly change color when needed. A clever, voracious hunter, it feeds mainly at night.
- 16) **Queen Parrotfish.** Another variety of parrotfish, this one is depicted sleeping inside a cocoon made of mucus—a device that is believed to provide it with protection from predators.
- 17) **Brown Clustered Tube Sponge.** Shown growing at the base of coral heads, this is one type of sponge that helps bind the reef together.





**18) Loggerhead Sponge.** This sponge is a favorite in the diet of loggerhead turtles—hence its name.

**19) Purple Sea Fan.** Another member of the octocoral group, sea fans generally face directly into oncoming seas. Polyps on the face of the fan harvest particulate matter and plankton as it passes through.

**20) Grooved Brain Coral.** The hemispheric shape, symmetry, and convoluted ridges of this coral give it the look of a brain. If you look into its valleys, you can find a map of Florida, along with little fish called gobies, and a Christmas tree worm. There are five species of brain coral in the Keys reefs.

You might also notice an example of disease affecting the coral. Coral disease is often manifested as a narrow to moderate band in a different color than the coral tissue—white, black, or yellow. Circular splotches are not uncommon. Many corals have become infected with diseases in the past decade.

**21) Sea Plum.** A sea plum, also an octocoral, has tubelike polyps, giving it a rough appearance.

**22) Striped Burrfish and Cocoa Damsel.** With a spine-covered body and the ability to puff up with water to look larger when confronted, the striped burrfish discourages many predators. It is swimming past a purple fan where a sea snail called a flamingo tongue is grazing.

Nearby is a cocoa damsel. The female damselfish lays her eggs in a garden bed of algae which she carefully tends and protects.

**23) Queen Angelfish.** This brightly colored blue and yellow fish is known by divers to be shy. With its slim body, it can easily slip away into a crevice to hide.

**24) Mustard Hill Coral.** Knobby-looking and small to medium in size, mustard hill coral ranges in color from chocolate brown to mustard yellow-green.

**25) Rose Coral.** A close relative of brain coral, this species has a wider distribution than most stony corals. It can be found in seagrass beds as well as in reefs, and in the eastern Gulf of Mexico it ranges as far north as Tarpon Springs. Look for a bearded fire worm, an arrow crab, and a soldierfish nearby.

**26) Scaled Lettuce Coral.** Lettuce corals are comprised of thin plates with concentric rings of polyps. They are typically found attached to the vertical walls of the reef. Above this coral is a brown encrusting octopus sponge.

**27) Atlantic Loggerhead Turtle.** These sea turtles, named for their large heads, visit the reef to mate and for food and refuge. The turtle shown was raised at Clearwater Marine Aquarium and has since been released into the wild.

Southeastern U.S. beaches are very important nesting grounds for

loggerheads, and 90% of that nesting occurs here on Florida's beaches.

**28) Moon Jellyfish.** Pink-blue jellyfish with potent stinging apparatuses under their umbrellas, moon jellyfish are a favorite food of loggerhead turtles. Turtles sometimes die when they ingest carelessly discarded plastic bags which they mistake for jellyfish.

**29) Carysfort Lighthouse.** Built off of north Key Largo in 1852 under the direction of Lt. George Gordon Meade, the famous Civil War general, Carysfort Lighthouse is still functioning today. It is a valuable location for marine research.

**30) Smooth Trunkfish.** The trunkfish is covered in articulated bony plates fused together like armor. This unusual fish blows a jet of water at sediment on the sea floor to uncover food.

**31) Bluehead Wrasse.** This common small fish is mostly bright yellow when young. It feeds on parasites that it cleans off of other fish.

**32) Four-eyed Butterflyfish.** The two black false "eyes" near this fish's tail confuse predators, who can't tell what direction it is planning to go.

**33) Pillar Coral.** This is one of the few stony coral species in which the polyps can be seen undulating during daylight. Large individuals with multiple spires resemble a gothic cathedral.

(Continued on the next page)

**34) Fire Coral.** Closely related to the Portuguese Man-O-War, the two species of fire coral can also deliver painful stings to humans.

**35) Common Comet Star.** Starfish have the ability to regenerate an arm if it is lost. A typical starfish is shown here along with a batwing crab, tunicates (sea squirts), a corallimorph (a coral that resembles an anemone), and nudibranch sea slugs.

**36) Rock Hind.** Sometimes called a “calico grouper,” a rock hind is a relatively small, spotted member of the grouper family. It can be found lurking in holes and behind the reef corals.

**37) Mooring Buoy.** Florida law prohibits dropping an anchor on living corals. Mooring buoys are put in place so boaters can tie up their boats and avoid injury to the reef below.

**38) Elkhorn Coral.** A large, branching species, elkhorn coral originally formed most of the Florida Reef Tract. It grows rapidly, and though it is not strong and is easily dislodged by storms, its fragments quickly reattach to the reef, forming new populations.

As probably the most important coral species contributing to Florida reef growth and habitat, it is unfortunate that populations of elkhorn coral have declined extensively over the past two decades—due mainly to white-band disease (WBD). WBD has been linked to poor water quality and weakening of the corals due to environmental and other stressors such as sewage, sediment, and pollutants. Scientists are attempting to culture this coral and reseed some of the decimated areas in the Florida Keys.

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