



Introduction

Exequiel Ezcurra

Coasts are fine lines that separate the sea from land and define two totally segregated worlds. From the very moment we dive underwater we feel surrounded by a completely different universe; a silent world, with dim and oddly bluish lights and life forms incredibly different from the ones we are familiar with on land.

In the 3.7 billion years of the existence of life in this planet, the first multi-cellular life forms appeared just 700 million years ago beneath the shallow waters of the Precambrian oceans. About 300 million years later, during the Silurian, macroscopic life started to appear outside the oceans' water. If, in order to understand the concept of deep time, we imagine the time that has passed from the appearance of the first complex multi-cellular organisms in a scale of one year, then during the first four months of this "evolutionary year" life was present exclusively in the oceans. The first forms of emerged life capable of inhabiting land became visible in June, when living species had been teeming in the ocean's waters for hundreds of millions of years. Only a few biological groups were capable of adapting to survival on earth, and once they emerged they evolved and radiated into countless species, almost all of them developing from a few basic morphologic designs: arthropods with a chitinous exoskeleton; vertebrates with a central nervous system and a spinal cord; vascular plants with green leaves distributed around a stem; and fungi with white, cotton-like tissue capable of growing over decomposing organic material.

The memory of past evolution survives in present life, and for this reason the diversity of evolutionary groups is overwhelmingly greater below the sea than it is on land. While the land-dwelling invertebrates are reduced to mainly insects and other groups, great quantities of

The islands of Baja California Sur as depicted in an official chart from 1823 (fragment of the *Carta Esférica de los Territorios de la Alta y Baja Californias y Estado de Sonora*; by José M. Narváez, México, 1823).

sponges, anemones, corals, jellyfish, sea urchins, polychaetes, echinoderms, crustaceans, and mollusks survive underwater, to mention only a few groups within a truly prodigious biological mixture. The same occurs with photosynthetic plants, which showcase an incredible collection of ancient organisms whose evolutionary age amounts to thousands of millions of years, with strange and variable forms that go from microscopic diatoms, red algae and dinoflagellates, to coralline algae and giant kelp.

The land and the sea are, in effect, two worlds dramatically divided by the thin line of coasts and sandy beaches. Through surf and tides they meet and watch each other from afar, as if wanting to keep a respectful distance.

With the hopes of breaking that evolutionary gap and to better understand the dynamics of life in the depths of the ocean, we organized an expedition to the deep waters of the Sea of Cortés. We wanted to dive into that unknown microcosm untouched by light, witness the diversity of life forms, the richness of species and the abundance of life below water, and wonder at this world that has been evolving for thousands of millions of years before ours, and which we often destroy without even being aware of what we are losing. We wanted to see evolutionary time reflected in the splendor of the algae, sponges, corals, anemones, polychaetes, crustaceans, seashells and clams, cephalopods, echinoderms, tunicates, and fishes of all kinds.

We wanted to witness the deep treasures of the Gulf of California; to discover an unknown environment to satisfy a personal urge of exploration, but also to reflect on ourselves, our relationship with the rest of the biological world, and on the mysterious sense of our perception of nature.

Collecting of the deep water crab *Maiopsis panamensis* with the robotic arm of the DeepSee at more than 300 meters deep.
Photo © Octavio Aburto-Oropeza.

