




OCEAN LIFE

Sylvia Earle, ocean saviour

WRITTEN BY TRISTAN RUTHERFORD

Dr Sylvia Earle proves that age and sex are no barriers to saving the planet. In her 20s she became the first marine botanist to dive the virgin Seychelles. In her 40s she was strapped to a submarine to test the latest ocean floor scuba suits. Now in her 80s, Dr Earle travels 300 days per year persuading presidents and movie producers to protect our seas.



Tektite II was a NASA-funded underwater laboratory sited off the US Virgin Islands. In 1970 five female aquanauts swam into the spacecraft structure. For two weeks they lived under the waves to assess oxygen toxicity, blood compression and sleep patterns. For the lead scientist, Dr Sylvia Earle, it was a fantasy commission. The 34 year old spent between 10 and 12 hours a day diving from the capsule into a tropical aquarium of 400 reef species, ranging from snarling tiger groupers to candy-coloured fairy basslets. The laboratory's moorings can be snorkelled today in 15m of gin clear sea.

“On Tektite II, time was unlimited, so I spent entire days and nights alongside individual animals,” recalls Earle. “You’d witness attitudes and personalities, like the family of angelfish on their morning stroll.” The government funded study added valuable physiological data to NASA missions, opening the door to the first female American astronaut in 1983 - some 22 years after the first male. It later propelled Earle to television stardom, a *TIME* magazine cover and a position as the first female chief scientist of the U.S. National Oceanic and Atmospheric Administration.

Although the Tektite II women spent longer underwater than their male counterparts, Washington journalists took their project less seriously. “Five Gals Face Plunge With One Hair Dryer,” headlined the *Associated Press*.

Sexism could have stopped Earle from becoming marine botany’s most vocal spokesperson. Fortunately the ocean has been her only judge. At the age of 12 she was uprooted from New Jersey to a beachfront home on the Gulf of Mexico. When not snorkelling, her head was in the books of William Beebe, a marine

naturalist who recorded near-1,000m descents in his *Bathysphere*, a horrifically crude diving bell that carried pans of calcium chloride to absorb CO₂. Inside air was circulated by swishing palm leaf fans. A telephone cable provided communication with the surface. More curiously, Beebe’s 1930s technology didn’t stretch to flash photography, so fine art paintings of bioluminescent jellyfish and twilight zone sabertooths graced his *National Geographic* features. Within a few decades Earle would smash his records as both a deep ocean diver and marine educator.

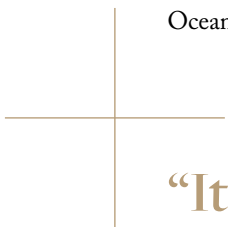
A chance to play with cutting edge tech aided Earle’s gathering career. In the 1950s Jacques Cousteau showcased the scuba tank on *The Silent World*. The viewing public was stunned by the first colour reels of Technicolor coral communities. Earle’s college, Florida State University, received two of the world’s first commercially available tanks. “It was magical because fish keep swimming deeper. Therefore the deeper and longer you want to dive too.”

By 1964 Earle was the only female scientist with the diving credentials to undertake a biological study of the Indian Ocean. Again, the headline in Kenya’s *Mombasa Times* was predictable: “Sylvia Sails Away With 70 Men.” For Earle her first trip outside the United States was a pioneering ocean study. Not least because she sailed aboard the former presidential yacht, *USS Williamsburg*, which was converted into a cutting edge research ship. (More recently it was offered for sale by Camper & Nicholsons.) It was the first time Indian Ocean species like eagle rays and spinner dolphins had ever seen a diver so they crowded round Earle and the rest of the scientists. “The pilot whales we were supposed to be studying ended up watching us instead.”

IMAGE Sun sets over the sea off South Africa.

The research trip's Indian Ocean destinations remain a list of seldom swum scuba hotspots. Like Fungu Yasini Island off Tanzania, which is still an uninhabited atoll frequented only by coconut crabs. And Aldabra, the world's second-largest coral atoll, which is only accessible by private yacht. The latter is home to a giant tortoise species saved a century earlier by Charles Darwin, after he lobbied the governor of nearby Mauritius for protection.

Two years later, Earle was probably the first person to see the Seychelles with a scuba tank. Although biodiversity has declined since the 1960s, its million-kilometre-square seas are still a wall-to-wall diorama of butterflyfish and nudibranchs. "I'm so pleased the Seychelles government has preserved its waters before the high-tech tuna fishing fleets, hailing from Europe and East Asia, have stripped so much other Indian Ocean sea life away."



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But depth remained a problem. Across the Indian Ocean, and later in Australia and the Galapagos, Earle's team had to collect species from a mile down using hooks and nets. "Imagine if Jane Goodall had to study chimpanzees from a helicopter a mile up, instead of being down there in their midst." The submariner solved the problem by founding Deep Ocean Exploration and Research (DOER Marine), a mini-sub manufacturer that allowed "anybody to take the controls and fly".

In 1979 Earle's research into marine mechanics led her to break another human depth record, this time for JIM diving apparatus. "It's essentially a metal space suit that wraps around your entire body," she explains. Instead of being connected with a cable like her hero Beebe, Earle hitched a ride to the seabed by clinging to the nose of a submarine. "I stepped off with no connection back to the surface. I wasn't alone but surrounded by life. You might think that London or Beijing are busy cities, but where you dive deep you see the history of life itself."


Such career-defining moments inspired film maker and Earle devotee James Cameron. "There was a sense that women couldn't do (underwater exploration)," he claimed in an interview. "How could they pick up the tanks?" In 2012 Cameron took a custom one-person submarine to the bottom of the Marianas Trench, a full 10km below the waves, surpassing Earle's depth record for female solo submersible divers in the process. Earle, then aged 77, proposed that she would make a better pilot for his ocean floor voyage. Alas the director of *Titanic* and *Avatar* insisted he visit "a landscape unchanged in billions of years" himself.



FROM TOP Hammerheads near Socorro Island, off the Pacific Coast of Mexico. Dr Sylvia Earle diving in the Bahamas Hope Spot. NEXT PAGE A sea lion dives deep. Dolphins at Cocos Island.







“The advantage I have is documentary evidence of how the sea looked in the 1960s,” claims Earle. “I can therefore explain how we can avoid losing tuna forever. Or how humans can avoid losing a species as grand as the blue whale.”

Sadly changes abound in *Mission Blue*, a feature length Netflix documentary which profiles Earle’s aquatic career. She recalls seeing thousand-strong parades of hammerhead sharks off Cocos Island, some 550km from Costa Rica. This was before shark fishing became a business, where live animals are caught, definned, then thrown back to drown. Their fins are then used in soup, mostly in China. Finning has decimated global shark numbers to less than 10% of their 1970s population, destroying a key section of the food chain. “I feel like a time traveller having witnessed such abundance compared to what we have now.” Even James Cameron saw plastic debris deep in the Marianas Trench, as have subsequent explorers using submersibles and ROVs.

On the flipside Earle can personally persuade those in authority, including recent Presidents Barack Obama, Bill Clinton and George Bush. Submersibles play a key part of her plan, as she can take those in authority directly into the sea to witness reef damage or whale migrations for themselves. “The advantage I have is documentary evidence of how the sea looked in the 1960s,” claims Earle. “I can therefore explain how we can avoid losing tuna forever. Or how humans can avoid losing a species as grand as the blue whale.” (The species were 250,000 strong before commercial whaling began, with their population declining to a mere 400 in 1966. Numbers have recovered to 20,000 today.)

Earle now travels the world lecturing on how to save the world’s oceans. She is National Geographic long-standing Explorer-in-Residence, has chaired Google Earth’s Ocean Advisory Council and is the recipient of dozens of individual accolades. She has also advised governments on environmental disasters, including the 1991 Arabian Gulf oil fires, the Exxon Valdez spill and the Deepwater Horizon disaster in her former Gulf of Mexico backyard. “I tell the kids of today they’re lucky as they’ll be last generation to see some wild species like Bengal tigers, where 12% of land is fully protected. It doesn’t have to be that way in the sea, where only 1% of the ocean is protected. I tell them they now have the knowledge and the energy to turn that curve around.”

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Yachts in the Indian Ocean

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Silver Angel

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Crew	19
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IMAGES, FROM TOP Dr Sylvia Earle smiles for the camera. Benetti's 64.5m *Silver Angel*, available for charter through Camper & Nicholson's.