

## **I Want to Live for Two Weeks Underwater in Aquarius Because...**

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### **Conserving What We Love...**

I want to live for two weeks underwater in Aquarius because this incredible opportunity would allow me to explore the underwater world, protect the delicate reef ecosystem, and educate others about preserving our oceans. The Senegalese conservationist Baba Dioum once said, "In the end, we will conserve only what we love, we will love only what we understand, we will understand only what we are taught." If I were to spend two weeks in Aquarius, I would eagerly learn about the reef, contribute to its preservation, and share my experience so that others could come to understand, love and conserve the reef as well.

A two-week visit to Aquarius would be a thrilling and unique experience. Under ordinary conditions, divers who stay at sixty feet for more than 80 minutes risk decompression sickness, or "the bends." When a diver ascends too quickly, nitrogen bubbles accumulate in the blood and cause this painful condition. As an aquanaut, however, I would experience saturation diving, which would allow me to stay underwater indefinitely. After 24 hours, a diver absorbs the maximum amount of nitrogen possible; regardless of the length of his dive, the decompression time is the same. Saturation diving allows humans to conduct extensive underwater research in pressurized habitats like Aquarius. With an ample air supply, aquanauts can live comfortably inside their research station for weeks (with amenities such as hot water, computers, and a kitchen!). Aquanauts can make repeated dives and conduct underwater experiments that were previously impossible. As long as a diver undergoes decompression treatment, there is almost no risk of decompression sickness. Divers who ascend too quickly - by accident or in an emergency - are the most in danger. As long as I dive responsibly, I would willingly accept the risk of this amazing opportunity.

Although Aquarius could operate nearly anywhere, from the Arctic to the Amazon, I believe the underwater laboratory is most needed exactly where it is - at Conch Reef in the Florida Keys National Marine Sanctuary. The reefs of the Florida Keys are natural treasures; they are the only coral reefs in the continental U.S., they attract six million visitors annually, and they support a \$2 billion economy. Unfortunately, these reefs are also endangered by human and natural threats. Overfishing imperils thousands of reef fish and invertebrates. When humans overharvest a particular species, the loss affects the entire ecosystem. A lack of predatory fish, such as king mackerel or red snapper, causes the invertebrate population to rise unchecked and erode the coral. Conversely, when herbivorous species such as shrimp or queen conch are overfished, the reef becomes overrun with algae. Furthermore, certain fishing practices are lethal to the coral and reef inhabitants. Cyanide and blast fishing needlessly destroy precious habitat, while gill nets ensnare countless fish, turtles, and marine mammals in addition to the desired catch species.

I would participate in fish-monitoring studies such as REEF (Reef Environmental Education Foundation) to evaluate which species are threatened, how they can be protected, and how their populations are recovering. Additionally, I would join scientists in mapping and identifying key fish habitats that could someday be designated Sanctuary Preservation Areas (SPAs), or “no-take” zones. These areas, which prohibit fisherman but allow snorkelers and divers, are important refuges for overfished species, including groupers and spiny lobsters. Hopefully, these efforts will balance human economic interest with the survival of marine life.

My further research would concern reef restoration. Previous Aquarius scientists, such as Kenneth Sebens of the University of Maryland, have investigated coral reproduction. If we understand how corals naturally colonize an area, we could remediate coral bleaching; a pandemic caused by ultraviolet radiation and increased ocean temperatures. Eventually, we might be able to regenerate a damaged reef from a few coral polyps. I also hope to investigate the biology and life cycle of the long-spined black sea urchin - once considered a destructive creature but actually an essential member of the reef community. By grazing on seaweed, urchins limit plant growth and maintain balance in the ecosystem. After an urchin disease swept the Caribbean in the 1980's seaweed overran reefs without a natural population restraint. Perhaps laboratory-bred urchins could be reintroduced into damaged reefs, where they would reduce seaweed growth and promote coral recovery.

Finally, I would publicize my Aquarius experience as a video documentary. Throughout my stay, I would take pictures and recordings in order to share the beauty and wonder of the reef with people across the globe. The wireless telemetry system, installed by Wave Wireless Networking, would broadcast my latest scientific findings to the surface. Thanks to modern technology, viewers anywhere could experience the adventure of a reef dive from their own homes. Ultimately, I hope to serve as a voice for the coral reef and the underwater laboratory dedicated to studying it. I would persuade people of the reef's aesthetic, scientific, and economic value, whether for tourism, research, or the discovery of medicinal cures. Once the government and the people recognize the immense potential of research stations like Aquarius, perhaps underwater missions will receive the funding and support they deserve.

I can already imagine the pulsing waves, the reassuring hiss of a regulator, and the enchanting call of the ocean, beckoning me to a world of pristine beauty and untold discoveries. I know that if I am privileged to live in Aquarius amid the underwater paradise of the Keys, those will be the most wonderful and unforgettable two weeks of my scientific career. Surrounded by coral gardens and dazzling multitudes of tropical fish, in the company of expert researchers, I cannot imagine ever wanting to leave Aquarius. Yet the glimmering waves will call me back to the familiar world, for a lifelong mission of conservation and education will await me. I will have learned so much about a fascinating marine ecosystem, and it will be my responsibility and honor to protect the reef in turn. My visit to Aquarius may last for two amazing, all-too-short weeks, but the message of conservation endures forever.