



## The expedition team

Exequiel Ezcurra

Like many other improvised and somewhat frantic ventures, we organized the expedition in less than two months, calling upon the best specialists and support personnel within the small timeframe that we had. The original idea was incubated jointly by Octavio Aburto-Oropeza, research scientist from the Universidad Autónoma de Baja California Sur and doctoral candidate at Scripps Institution of Oceanography, Brad Erisman, a young post-doctoral investigator at Scripps, and myself, Exequiel Ezcurra, at that time Provost of the San Diego Natural History Museum, under the inspiration of Steve Drogin, a renowned explorer and submarine photographer, owner of the DeepSee submersible and personal friend of all three of us. The proposal was simple, but at the same time very difficult and daring. Steve was willing to generously donate the use of his submersible for ten days to explore the Gulf of California on the condition that we could obtain the resources needed to pay for the mother ship that transports and supplies the submersible, and that we develop a research project interesting enough to make the whole venture worthwhile.

The endeavor was truly exciting. The submersible we were being offered—the “DeepSee”—was a three-person Triumph model, built by SEAmagine Hydrospace Corporation in Claremont, California. It is a self-propelled electric vessel that can carry three occupants (the pilot and two passengers) sealed inside a one-atmosphere acrylic

Expedition team:

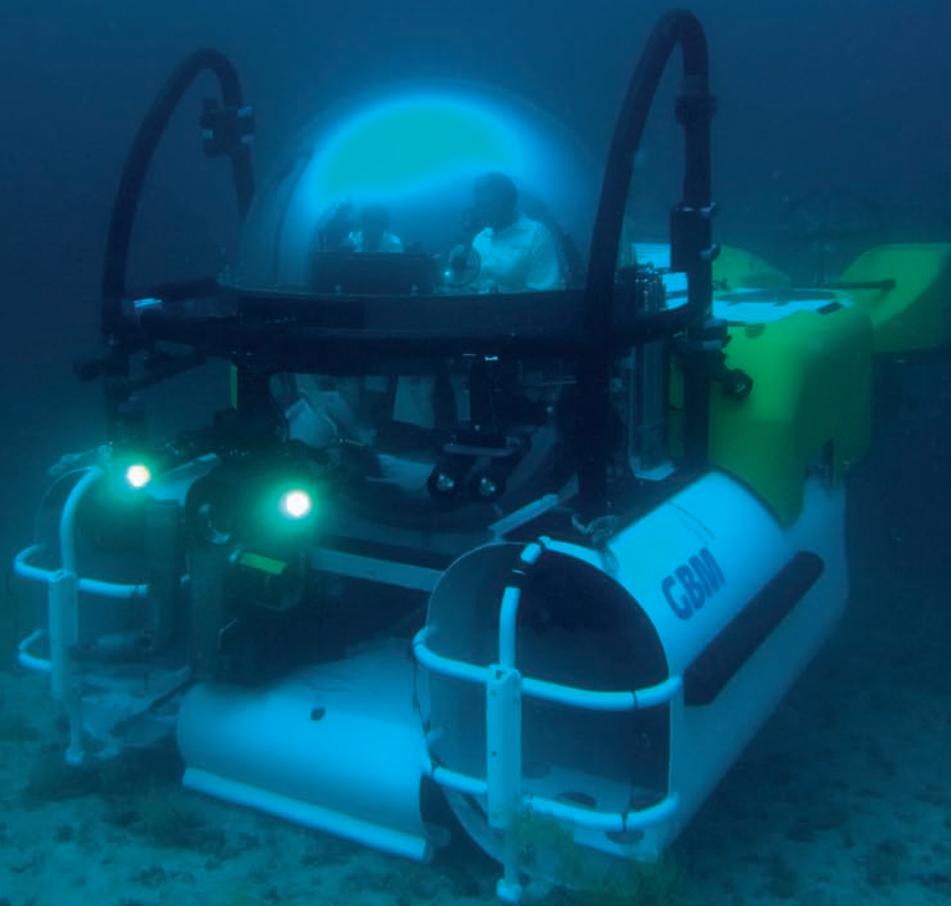
Front row, left to right, Octavio Aburto-Oropeza, Lorenzo Rosenzweig, and Francisco A. Solís-Marín; second row, Carlos Sánchez-Ortiz, Vivianne Solís-Weiss, Paula Ezcurra, Ana Ezcurra, Richard Cudney-Bueno, and Exequiel Ezcurra; background, in the DeepSee cabin, Brad Erisman and Ralph Chaney; out of the picture, Margarita Caso. Photo © Octavio Aburto-Oropeza.

cabin to depths of 450 m of sea water. It is 5.3 m long, 3.1 m wide, and 3 m high, and runs on electric batteries that allow up to six hours of immersion time (normally, two dives) and take six hours to recharge. The reinforced spherical acrylic cabin opens as a clam shell along its equator to allow the entry and exit of the occupants. The sealed cabin is equipped with an air regulation system, where scrubbers constantly remove the carbon dioxide emitted by the occupants, oxygen is replenished at a controlled flow, and the environment is constantly monitored by electronic air analyzers. The cabin is pressurized to one atmosphere and regulated constantly to maintain good breathing conditions.

Two large inflatable bladders allow the submersible to float on the surface of the ocean and navigate autonomously. When the surface flotation devices are fully deflated the craft remains slightly positively buoyant and will only submerge when driven downwards by its vertical thrusters. Both depth control and horizontal movements are controlled by fixed electric propulsion thrusters that can either push or pull depending on the direction of rotation of the propellers. The pilot operates the craft using a joystick in the cabin. At the end of a dive the flotation bladders are re-inflated such that the craft floats back on the surface and, once docked by the mother ship, the cabin can be opened. The submersible's 1.5 m acrylic cabin offers a wide and open field of view in all directions including directly below the occupants. The craft is equipped with a robotic hydraulic arm to collect underwater samples, a system of underwater lighting illuminating the front of the vessel, and a hydraulically controlled high-definition video camera that allowed the occupants to film marine life. For a submarine explorer, the opportunity seemed truly a dream, a fantasy come true.

We began working frantically to raise the resources that would make this fantasy a reality. To our amazement, in a few weeks we had secured the generous donations that

Forty meters below the surface, the DeepSee descends into the deep Gulf gliding over a sandy slope rich in black corals *Antipathes galapagensis*. Photo © Ofer Ketter.



made this project possible. We received support from two Mexican Federal Government institutions that immediately understood the value of the project and gave their support from the start: the National Institute of Ecology (INE), and the National Commission for the Knowledge and Use of Biodiversity (CONABIO). The Mexican Fund for the Conservation of Nature (FMCN) also endorsed our endeavor from the beginning. Christy Walton, a personal friend and an ardent Gulf of California enthusiast, sent us a personal donation as soon as she learned of our dream. Almost at the same time we received news from Susan Anderson and Anne Gondor, two dear friends at The Nature Conservancy's offices in Tucson, Arizona, that their organization would also be supporting the project financially. The rest of the funds arrived shortly thereafter from other philanthropic institutions interested in conservation: the Sandler Foundation, the Marisla Foundation, the Walton Family Foundation, the David and Lucile Packard Foundation, the International Community Foundation, and the National Geographic Society, to all of which we are deeply grateful for making this project possible.

With little less than two months to go we organized the expedition team. Honoring the excellent natural scientists of Mexico, we decided that the expedition team should consist mostly of Mexicans. The scientific core would be integrated by five specialists from different marine groups and two ecologists, who would be in charge of putting the taxonomic specialists' information in the context of the general ecosystem. In a few days, the researchers invited had agreed and the group was complete: Carlos Sánchez-Ortiz, a research scientist at the Universidad Autónoma de Baja California Sur, would study cnidarians and other reef species; Francisco A. Solís-Marín, from the Instituto de Ciencias del Mar y Limnología at the Universidad Nacional Autónoma de México, would concentrate his efforts on the echinoderms, his specialty group; and Vivianne Solís-Weiss, also from

the Instituto de Ciencias del Mar, would focus on the polychaetes. Octavio Aburto-Oropeza, Brad Erisman and Richard Cudney-Bueno would concentrate on the study of fishes and fisheries, and Margarita Caso, a researcher at the National Ecology Institute (INE), together with me, would devote our efforts to integrate the information and interpret it in the context of ecosystem processes.

The rest of the group was completed by Lorenzo Rosenzweig, from the Mexican Fund for the Conservation of Nature (FMCN), who would photographically document the group's work; Ana Ezcurra, a book editor, who would be in charge of editorially formatting the material gathered during the expedition; Ralph Chaney, a San Diego videographer in charge of documenting the entire project in digital video images; Paula Ezcurra, a student of environmental sciences, responsible for supporting the general processing of samples and images; and, finally, Christian McDonald, SCUBA diving safety officer at Scripps, in charge of security during tank dives and of the expedition in general.

Most of the team members did not know each other until the expedition launch date, and the question of how this sudden and spontaneous expedition would work was floating in the air. Could we live together for ten days in harmony amidst the tension and stress of the expedition? Could we each make our visions and research focus compatible with those of the rest of the team, work in harmony, and deliver a quality product at the end of the expedition? Would we be able, as a group, to work together creatively?

This narrative is, in a way, the answer to those questions. An answer we did not have at the beginning, but that we found along the long journey.

Pages 30–31:

In Las Ánimas, some 120 meters deep, the lights of the submersible shine on a rocky mound with colonies of orange sea-fans *Ellisella limbaughi*, and a new species, still to be described, of a white sea-fan *Eugorgia* sp. Photo © Carlos Sánchez-Ortiz.



