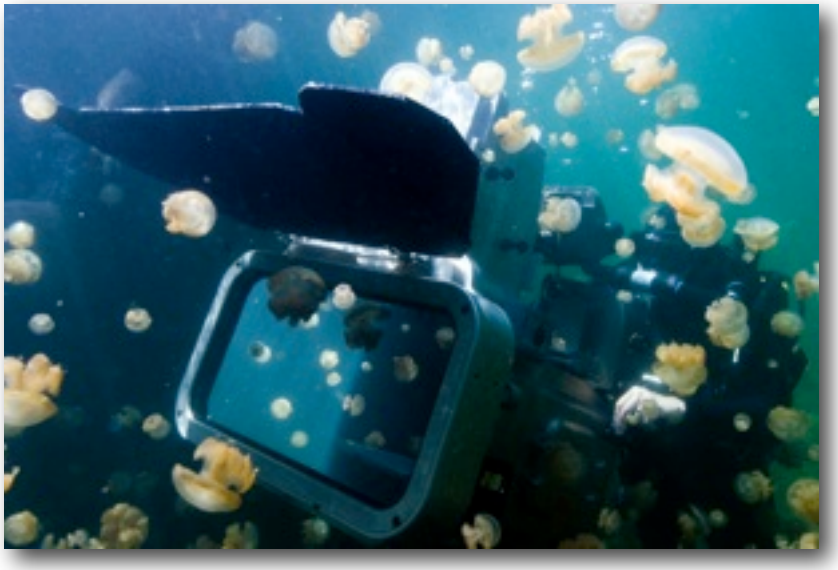
DIRECTORS NOTES DEC 2011

With the production of our large format movie, Wild Ocean, we had gained real experience in the field using every form of 3D movie camera available at the time: 70mm and 35mm film, and underwater, using the Pace 3D HD rig. We had chosen the Sardine Run as a striking natural event that simply had to be captured in 3D. When considering our next movie, we wanted to explore further the possibilities of shooting digitally underwater, and realised that underwater 3d macro photography had not really been seen in any format, let alone on the giant screen. Furthermore, digital photography is more successful in close up: for grand vistas and aerials, film was still untouchable, but when the subject matter is only a few inches wide, digital has ample resolution and has many advantages over film.

Inspired by the underwater macro photography of stills photographers like Dave Doubilet , our project was provisionally titled MACRO. At the time, however, there was no macro 3d underwater rig in existence, so Luke and I approached DJ Roller, underwater cinematographer with the idea of developing our own rig. To shoot 3d macro requires a beamsplitter system, which enables the two lenses needed for stereo photography to appear to be much closer to each other than they are in reality, since the cameras are shooting through a mirror. One camera sees a reflection, but the other (positioned at a right angle) sees straight through the mirror glass.

No one, to our knowledge, had ever constructed an underwater housing to enclose a beamsplitter system (the Pace rig used in Wild Ocean, and the Solido rig used by Howard Hall are both side to side, or parallel configurations). Ours was to be the first, well ahead of anyone else who may now be claiming to be first online!



Where to shoot was the next question, and the choice seemed pretty clear: Palau, 500 miles West of the Philippines in the South Pacific. For many years the waters around Palau were considered to be the most biologically diverse on the planet (that distinction is now claimed by the Raja Ampat archipelago, Indonesia). Palau had the attraction of an established dive community and infrastructure, and a film production company (Roll 'em) already based there. Kevin Davidson was a photographer DJ had worked with before, based at Sam's Tours in Palau, and he became our guide on the first recce trip.

On our first trip to Palau, which was really a quick visit to get to know the dive sites and search out specific locations, we kept hearing the same refrain over and over again from the old timers, be they ex pat American divers or Micronesians: you should have seen Palau twenty years ago, its not what it used to be, the reefs are disappearing. Much like our visits to South Africa, seeing the shrinking sardine shoals over the years, it seemed impossible to take on a marine subject and not be faced with some kind of ecological downturn.

So our focus turned from a "macro movie based in Palau" to cover something we felt was of huge importance: it was clear from all of our research that reefs all over the world were dying. And the biggest factor in that decline, the biggest hurdle reefs all over the world face is ocean acidification. Reefs simply cannot build in an acidified ocean: they weaken and crumble... How is the ocean becoming acidified? A third of all carbon emissions dissolve into the sea, irrevocably changing its chemistry. The same process that contributes to global warming or climate change, is also transforming the ocean.

Since reefs make up an entire ecosystem, and since other ecosystems interlock with them, there seemed to us a very real possibility that coral reefs could be the very first ecosystem to be completely destroyed as a result of man's interference. Surely, if one ecosystem dies, there would be a domino effect, others would fall in turn...

It seemed to us that it would be irresponsible of us to make a beautiful macro reef movie without taking on the threat that hangs over reefs everywhere.

So we broadened the scope of the movie to show how the oceanic food chain is connected to reefs: how tiny nudbranchs (smaller than your little finger) are part of an ecosystem than connects and supports huge shoals of fish, sharks, dolphins and manta rays... how islands and mangroves are protected by reefs, how lagoons harbour a completely different ecosystem.

We already had the notion with the macro movie that we would compare a reef to a city, but now there was even more reason to show the similarities and striking constrasts between our world and the underwater world.

With lots of macro footage from Palau's reefs (much of which was shot in the idyllic calm of Mandarin Fish Lake), and shots of sharks from the famous Blue Corner, shots of Mantas in the German channel, much of the subject matter in the film had been covered. We also shot contrasting cold water reefs off Vancouver Island, but none of that footage is being used in the current movie. We decided to look for more shark, ray and dolphin footage in the Bahamas, specifically in dive sites around the island of Bimini. Reef sharks and Atlantic Spotted Dolphins were caught on camera here, but Bimini is also home to rich mangrove areas and Lemon Shark nurseries.

We like to incorporate 70mm film aerials in our Large Format movies, and we knew we would shoot New York from the air to represent the city, We were fortunate in that we chose a day of amazing visibility and clarity for our New York shoot, in the height of summer, 2010. After trying and failing to mount a 70mm aerial shoot in Palau, we decided to head to French Polynesia, where we could shoot a whole range of reef formations, atolls and volcanic islands ringed by reefs... using the Spacecam 65mm rig, we shot Bora Bora, Rangiroa, Tupai and Maupiti from the air.

In tandem with DJ's underwater photography and aerial footage, we also shot a great deal of time-lapse for The Last Reef: in Palau, in New York, but also in LA, Miami, Northern Italy and even Yorkshire and Southampton in the UK... for many different reasons. Some of the LA and Southampton footage was to represent the modern world and carbon emissions, whilst the mountains of Northern Italy and the limestone rock formations of Malham in the UK were to represent the geological history of reefs on our planet. We wanted to show how reefs have been a part of our planet for millions, actually billions of years, have helped shape it, and are in tune with the very basic geology of our world. Using Hasselblad cameras and medium format digital backs in our own 2 camera rig, we aim to make timelapse sequences worthy of the giant screen.

Finally we wanted to show how reefs have the ability to fight back and recover from total obliteration, so long as the ocean is not acidified: what better example of this than the reefs of Bikini atoll? Bikini's story is worth a movie all of its own, and in putting our prologue together, we've been surprised how many people had no idea that the word Bikini came from a small atoll in the middle of the pacific that was the site of several nuclear explosions in the 40's and 50's... about the same time that Jaques Cousteau invented the aqualung. A whole new world was opened up to us, yet at the same time we began to destroy it.

We had already begun post production on The Last Reef when by chance we came across some images of the work of Jason deCaires Taylor, a British sculptor based in Cancun, Mexico. His lifesize sculptures, casts of real objects and real people, form underwater sculpture parks in Mexico and Belize. They encourage new reef growth, whilst at the same time attracting tourists away from protected reefs. We felt that they would give our film a perfect coda, to balance the explosive beginning, connecting humanity to the underwater world in a different way. Hastily we reconvened and flew the 3d rig to Mexico, to capture the very last shots for the movie.

We always edit our own films, and compose the soundtrack at the same time: we see the rhythm of the edit and the rhythm of the soundtrack as one and the same thing, so always develop them in tandem, recording as much of the music track as possible live, with string sections, brass, woodwinds and a huge array of percussion instruments. We always see ourselves as musicians who are making movies, in much the same way we see ourselves as musicians making theatre, with our stage show, STOMP.

Post production brings us back to Fotokem, back to Rick Gordon and the team that worked to make Wild Ocean one of the first entirely digitally post produced Large Format 3d movies. Technology has advanced considerably, and The Last Reef will be one of the first movies to be shot and projected digitally in 4k 3D.

Its always been our aim to be at the cutting edge of large format 3d, but also to make a movies that is moving, uplifting and will hopefully inspire action to help save our living reefs. As our trailer says, time is running out...