

MUSANDAM BIOSPHERE EXPEDITION

FEATURE AND PHOTOGRAPHY RITA BENTO



From the 18th to the 31st of November, Biosphere Expeditions with the support of EDA, organized a Reef Check Expedition in Musandam. During the two weeks, two groups of 12 team members (one group each week) joined the expedition where they helped collect data after being trained in Reef Check. The group contained members from the UAE, Germany, UK, Oman, Brazil, Australia and the USA. Among the 24 team members involved, three were EDA members: Adel Abu Haliqa, Ken Atkinson and Rob Beaumont, to whom we would like to give our special thanks for taking part in this expedition (please read their inputs regarding their own experience on board).

After the first two days of hard Reef Check training with EDA's marine biologist Rita Bento, the team members were finally ready to collect data. In each dive site selected, two transects were deployed at two different depths; one between 2 and 5 meters (shallow dives) and the next between 6 and 12 meters (medium dives). In groups of two, divers covered the 100 meter transect tape collecting fish, invertebrates and substrate data.

During the two weeks, 18 dive sites were covered making the total of transect data collected to 36 Reef Checks. The dive sites selected included known touristic dive sites, known sites for fisheries as well as sites that weren't known by the diving or fishing industries. With this panoply of dive sites it was possible to get a general idea of what can be found along the Musandam coastline. As preliminary results, an average of 38% of hard coral coverage was found in the shallows of the Musandam coastline, and even though it looks like a small number, it is slightly higher than the global hard coral coverage average of 30%. The second higher substrate found was rock (around 35%) meaning that there is a high area for the recruitment of new coral colonies in the area.

Nutrient indicator algae was not found, and less than 1% of silt and sponges were observed, indicating that dredging or sewage is not an actual problem in Musandam, as it was already expected. Unfortunately the biodiversity of fish and invertebrates was low, especially in the last group. An average number of less than one sweetlip and less than four groupers (bigger than 30cm) per transect indicate a probable overfishing problem. The average number for groupers in a 100sqm area of healthy coral reef should be around 20 individuals bigger than 30cm. The recent harmful algal bloom in the region from August 2008 to March 2009, together with the cyclone Gonu in June 2007, probably had some influence in these results.

The main impacts found in the region were general trash and lost fish nets as well as boat/anchor damage. This indicates the lack of awareness in the region, especially among tourist operators as well as in the fishermen community. Bleaching is not a problem at the moment with an average of 2% of bleaching per dive site. Unfortunately this number can rapidly change if some new stress reaches the area, like a new algal bloom, a rise in the sea surface temperature or pollution. After a more detailed look into the data, more information will be obtained.

Besides the dives, some of the team members visited the remote villages of Musandam where Dr Barbara Steinbauer-Groetsch distributed her books, "Aisha Saves The Reefs" and "Aisha and The Turtle" among the children and the EDA encyclopedia, "Encyclopaedia of UAE Marine Terminology" was distributed among the fishermen. Along with the book distributions, some interviews and conservation awareness talks were had with the local fishermen.

The expedition was made possible thanks to the support of Sultan Qaboos University and Six Senses - Zighy Bay.

FOR MORE INFORMATION GO TO:

- www.biosphere-expeditions.org
- www.reefcheck.org
- www.sixsenses.com/six-senses-hideaway-zighy-bay
- www.squ.edu.om/



EDA MEMBER: ADEL ABU HALIQA

"I don't know, was it because of all the warnings Biosphere Expeditions showered us with, 'Things could go wrong in expeditions... you need to be prepared... days could get tough... etc, etc'... or was it really the case. But, if I am to go back in time and redo this expedition exactly the way I dream of, and I'm seriously speaking here, either it's the team leader; the expedition scientist, the location scenery both below and above water; the scope and scientific contents, the skipper and his helper; the cook and his helper; the dive master; the volunteers, the dive sites, the food, the boat, the sky, the stars, the dolphins, the turtles, the single reef shark, the shy sweetlips and the lovely parrotfish, the list could go on and on. I would choose to have exactly the same, no more and no less! Well, if I had to change something then maybe it would be to have a 75% hard coral average coverage on both shallow and medium dives and maybe having a 30 minute freedive hold time.

A successful expedition, reaching its scientific goals for the first time in this area is something to be proud of being part of. I know it will have a wonderful "impact" on our marine life. Thank you very much for this."

EDA MEMBER: ROB BEAUMONT

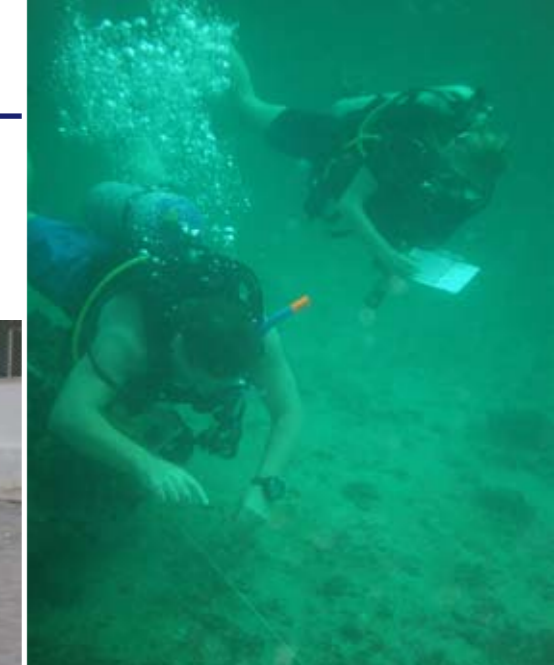
"I consider myself lucky to have spent a fantastic week participating in a Biosphere expedition to perform the first surveys on the coral reefs in Musandam. It has been a truly excellent experience that has allowed me to work with a professional organisation while getting to know an outstanding bunch of people who voluntarily gave up their time and money to support the cause.

The professionalism of the Biosphere team and their knowledge of the environment greatly impressed me. Led by Dr Matthias Hammer and Marine Biologist Rita Bento, we were put through our academic paces to make sure we were up for the the job at hand, while this was hard work, it was a very enjoyable experience and allowed us to learn more about the complexity and frailty of these underwater environments.

Diving continuously for the best part of 4 days, allowed us to put what we learnt into practice. MAGNIFICENT! We found out how hard it is to swim slowly, read a tape, watch for fish, record it on a slate. It's much tougher than you imagine. The pre-expedition briefing had said to be prepared to work, this is going to be no holiday and they were right. I can honestly say I have never enjoyed working quite so much.

In summary: rays, dolphins, ospreys, tuna, coral, squid, cuttlefish, great people, lots and lots of fish, jellies (no stings), great boat, great crew, magical scenery and a Snapper Tragedy (you can ask Rita to enlighten you).

Roll on next year!"





EDA MEMBER: KEN ATKINSON

"I get a number of emails saying, 'come and help in this region' and 'come and help with research on turtles and dolphins' and as much as they would be interesting, when I received the email asking for volunteers for Reef Checks in the Musandam area, I was in. I had not done the reef check training so I thought what better way to learn and not only does the data collected assist in the region I dive, it has to make me a better instructor:

The reef check training started off and I thought ok, here starts the roller coaster, but Rita was so professional and patient to everyone's questions and in-line with a couple of the training aids, which supported the training beautifully, the 3 exams were passed and it was off to count fish. My buddy was from the UK and along with the rest of the team it was a barrel of laughs from start to finish. Dr Hammer even tried to entice her to his team but there was no breaking 'Team Fish', the A Team (Ritas team).

There were so many highlights, rare starfish, crown of thorns, rays, giant eels which even made Dr Hammer jump back and Pollys cooking. There were also some not so good points; abandoned nets covering coral, aquatic life caught in other nets and dead coral. Thankfully, the data collected will go to educate decision makers and hopefully ensure the coral reefs and aquatic life in the region will be sustainable for generations to come.

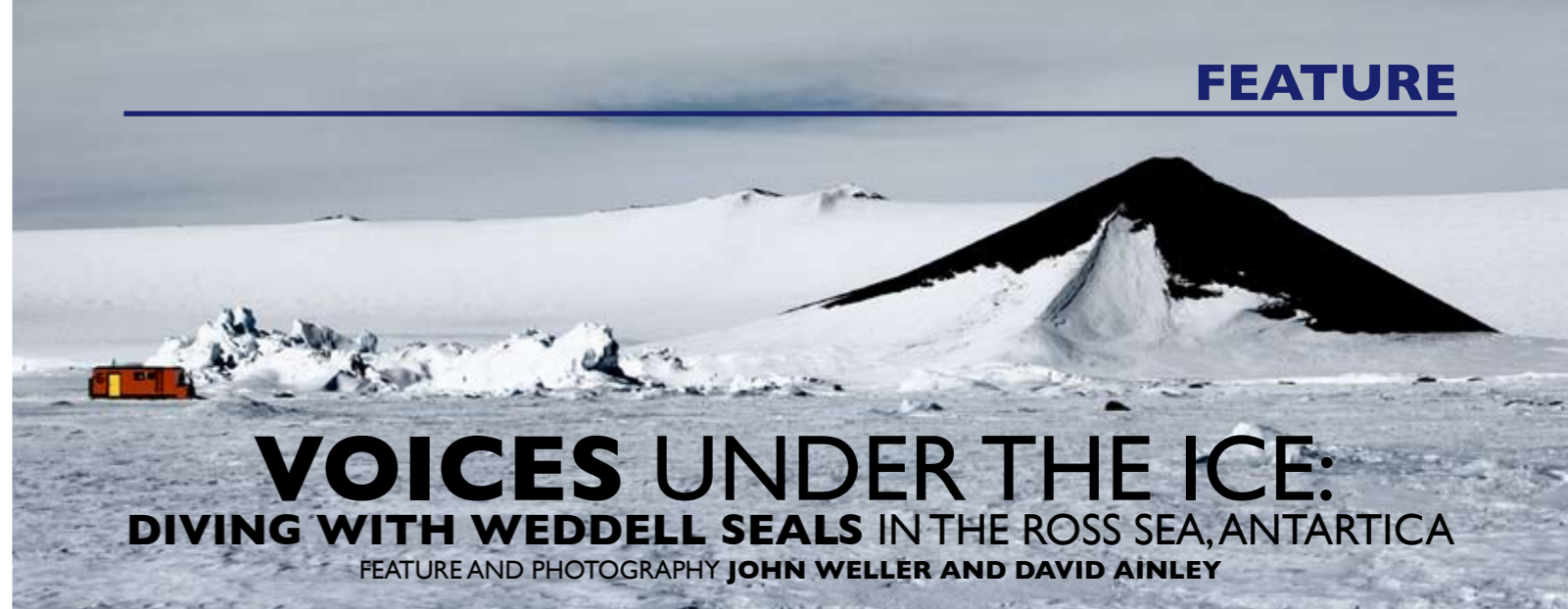
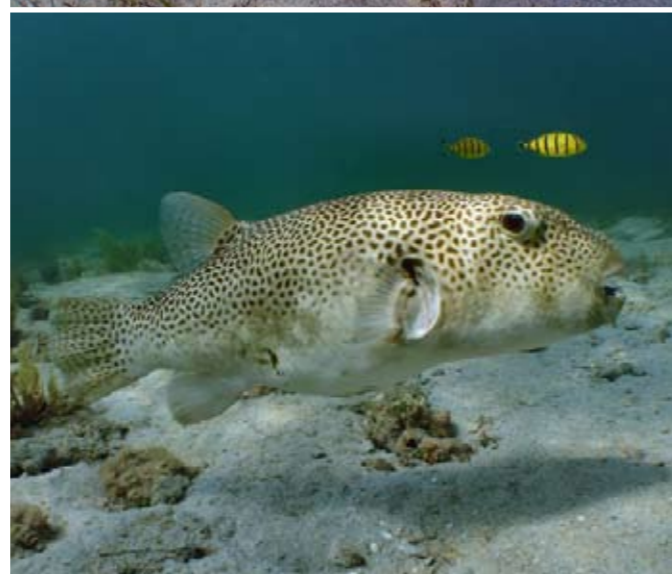
A big thanks to the Biosphere Expedition Team and Rita and I will certainly be back to do it all again next year."



Photos by Ken

IMAGES AT A GLANCE

**EDA MEMBER: PHILIPPE LECOMTE
SOME ENCOUNTER IN ABU DHABI**



**VOICES UNDER THE ICE:
DIVING WITH WEDDELL SEALS IN THE ROSS SEA, ANTARTICA**
FEATURE AND PHOTOGRAPHY JOHN WELLER AND DAVID AINLEY

At this point, no marine system in the world is completely untouched by human influence. That being said, the Ross Sea has sustained the least damage of any open ocean ecosystem. There has been no widespread pollution, no mineral extraction, no native fisheries, and no introduction of alien species. Perhaps most importantly, all the natural predators that existed in the Ross Sea before our arrival 150 years ago are still there, and at close to their original densities. This is not the case in any other open ocean ecosystem on earth. To say it another way, in the Ross Sea, and nowhere else, the dynamic balance is still intact. The ecosystem is still healthy. This is the Ross Sea, the last ocean, and it has many stories to tell.

There is quite a long story about how I (John Weller) came to be standing in a dry-suit over a hole in the ice covering McMurdo Sound, Antarctica. Of course, it has a lot to do with help from the U.S. Antarctic Program, but as I stood there, looking down, the previous four years, actually the entirety of my life's experiences up until that moment, seemed to drain out of my memory. The only thing left was that hole, and what I would experience in the world below.

Squeezing through that tunnel of ice at Turtle Rock I emerged as if a skydiver under a low-hanging blanket of expectant clouds. With the lid of ice clamped shut, shades of blue and cyan replaced the veils of white, finally merging with the black water at the margin of my vision in a seamless hinge. The temperature was -1.8°C, the freezing-point of salt water, and though it was late in the season, with phytoplankton starting to grow under the ice, visibility was still nearly 200 meters – clearer than any other water in the world.

And then there were the sirens... Weddell seals live on and below the fast-ice all year long, through the winter, maintaining holes in the ice – portals to their cold-water world – with their teeth. Above water they are barely mobile as they lie on the ice with their young, but below water they are dancers. And their voices are more than sound. The call seems to start as semi-conscious thought, a memory of

wind whistling through a drafty window, sharp and sweet. It has no direction, no source, and it cuts clearly through the dark shadows of the mind even before the tone starts to accelerate and deepen, crossing fully into consciousness as the long descending note breaks abruptly into thumping vibration, almost too deep to hear.

Turtle Rock rises steeply out of the sea ice that covers the Sound. The seasonal fast-ice was approximately 2.5 meters thick in that area of the Sound in 2008, and though it was more than sufficient for vehicles and a dive hut, it was still in motion. Fifty meters past the dive-hut was the evidence: a gapping crack, arched underneath like a railroad tunnel, perhaps 3 meters across and extending into the distance as far as I could see. The crack is a function of the geography in that part of the Sound and the prevailing ice movement, thus it forms every year in nearly the same spot, and has done so for millennia, providing predictable access for the seals, which slip smoothly into the water through holes in the thin ice at the center of the arch. At the right time of day, shafts of light shot down through the seal-holes, illuminating patches of the seafloor, nearly 70 meters below.

On the dive in question, my dive partner and I headed south from the dive hole just under the blanket of ice and alongside the crack towards the rocky island. We slowly descended as the steep slope of the approaching island rose out of the dark, meeting the bottom at 12 meters, where the slope abruptly tops-off into a wide, flat shelf for perhaps 50 meters before continuing steeply upwards again to break the surface. Here the prevailing ice movement and local geography combine to form another striking feature. While that combination dictates that the ice splits and spreads to form the crack, here it dictates that the ice is piled up against the side of the island. As the ice is piled against itself, it rises skyward above water, buckling into spectacular sculpted ridges. But below it is even more spectacular – the crumpled ice is pushed deep underwater, in some places even touching the 12-meter-deep shelf. The result is a twisted complex of

underwater ice caves. I had seen these caves on two previous dives, and had peeked in from several different entrances along the outside of the shelf. I signaled to my partner. I was now ready to go inside.

The entrance of the cave was hidden around a thick wall of ice, extending from the shelf floor to the ceiling 10 meters above. The darkness was immense, seemingly impenetrable, until I had turned the corner around the great triangular wedge. There, a 3-meter archway led to a cathedral chamber, filled with light. The ocean floor was a mosaic – writhing piles of lurid sea stars, urchins and meter-long nemertean worms. Giant sea spiders progressed over the substrate with their bizarre walk, sometimes taking amphipods or other freeloaders along for the ride on their vivid red legs. I swam carefully under arch and into the chamber, floating only half a meter off the sea floor.

The ceiling of the chamber was like a cloud formation from an El Greco painting – tortured clouds and shafts of light. The end of the chamber narrowed, seemingly ending in another wall of ice, touching the ocean floor. But behind that wall was another archway, this one only a meter high. It was nearly pitch black again, the brilliant light of the first chamber now hidden behind the wall, but I could see a dull blue light beyond the arch. I was 16 minutes into the dive, so I floated through into the second chamber. My eyes adjusted to the dim light. An assortment of benthic creatures had assembled on a small group of rocks. It looked like they had been arranged by hand. A thin blue crack in the low ceiling seemed to originate from the assemblage, snaking up like a plume of smoke. It was perfect.

I carefully placed the legs of my tripod on the seabed and hung on, rotating to release air from my suit and reset my buoyancy before I let go. I rotated back, now neutrally buoyant again without the weight of the camera and tripod, floating just above the seabed. I started to work. I positioned the camera, and pointing my dive-light at the sea stars, brought the scene into focus. Next I brought the strobes around