

Newsletter SOS

EXCITING NEWSSTORIES FROM AROUND THE GLOBE. UPDATES ON THE MMO COURSE AND FUTURE DATES

We had a fantastic response to our first newsletter and hope that this newsletter is just as exciting and informative to all Marine Mammal Observers and enthusiasts.

SOS Training moving forward

Well another year has leaped forward and here we are in May already! A number of courses have been completed by students

since the last newsletter. We are pleased to say to date we have a 100% pass rate although its about to get tougher! Each course we run evolves,

as we take on board the students feedback on each of the units, and the staff post course meeting recommendations. As we have been running the courses since 2003 we know they have evolved considerably, and we are constantly looking to improve them.

The first courses were basic informative units to give the budding MMO a footstep into the world of spotting marine mammals and for us to test their skills using this information. By the time we decided to venture forth into the commercial sector, the course had grown in unit numbers and information for the students to take on board.

This year we have introduced test papers, previously all the tests were verbal. As we are moving forward the written tests have come into play and will be reviewed before the next courses.

Each student has a chance of a one to one session with each of the trainers so there is no lack of help or information along the way.

The RNLI college are moving forward with us and as a charity all of us at sea rely on, SOS will be training RNLI crew to be Marine Mammal Observers as part of our dedication to have more informed people out at sea.

We hope that this newsletter will be forwarded to those people who you feel will benefit and gain from reading it.



Funded Students



► KATHERINE SNELL - POOLE DORSET
— MARCH 2008

We are now getting more and more students applying for student funding, we really wish we could sponsor all of them as we all know how difficult it is to get over the huge financial burdens associated with graduating from university. The criteria for funding is set out on the website and all students are invited to apply. We do follow up all references and hope to only take on the students who will follow through working as an MMO. SOS have been fortunate with some funded students who have gained placements, and look forward to their tales of life at sea as an MMO. And to those of you who have not got a placement yet, make sure you keep looking at the website as there are so many jobs now on offer for our students. If you want to be sponsored please look at the website for details on how to go about being sponsored. All students will have a chance to work in Australia gaining experience to observe marine mammals.

2008 Courses in the UK and Oz

2007 saw the start of the commercial side for Scanning Ocean Sectors training company and a different market for the company to get into.

All the courses went well last year and we have seen a huge increase in the number of people wanting to use us to train them.

We have had a number of enquiries from different regions around the world asking us to take the training to them., which is very exciting! So we are in the midst of negotiation and will let you all know as soon as negotiations are complete.

October sees the start of our Passive Acoustic Monitoring courses or PAM as she is affectionately known! Again a new section to our training, as we feel that PAM is becoming an essential tool for MMOs to use. We feel that each MMO should know how to use it and how to read the spectrograms. If you are interested in attending please take a look at the website for an outline of the two day course in October and the dates for this course.

Ed Harland our acoustics expert will be taking on this new project with the assistance of a long standing work mate, Graham Smith. If you are interested in attending, please book early as places are limited. We are hoping to continue running the PAM courses alongside the MMO course.



“October sees the start of our Passive Acoustic Monitoring courses or PAM as she is affectionately known!”

SOS are also looking into working with a University in Australia, and a college in the UK. So please watch this space as we will let you know all the new venues and dates of courses.

We have had a number of enquiries for other courses and are looking into starting some different courses up, so please watch this space, as it

will either be in the next newsletter or announced on the website.

There are 7 courses remaining in 2008 so please book early. Please visit the website for more details on the courses.

www.scanningoceansectors.org/

If you want to enquire about the training company coming to your work place to train a number of employees please contact us through the website for a quote.

We look forward to seeing you on a course in the future!

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<http://www.boatclub.com.au/>

Winner of the December 2007 Species Identification Competition

We had a number of entries for the 2007 December Newsletter, and unfortunately someone posted the answer on the website forum for everyone to see. So all the entrants after that date had to be null and void. For all further competitions please do not post your answer for everyone to see. As I am sure everyone wants a fair chance of winning a prize.

Jacob Ling from New South Wales, Australia was the 2007 December Issue WINNER

"The answer to the quiz in your newsletter is Melon-headed whale (*Peponocephala electra*). These are different to the Pygmy killer whale (*Feresa attenuata*) with head, body and flipper shape."

Thanks Jacob Ling (age 13)

"I read the newsletter on my Dad's email. I really enjoyed the newsletter. I love reading of other people's experience, especially the story of swimming with orcas.

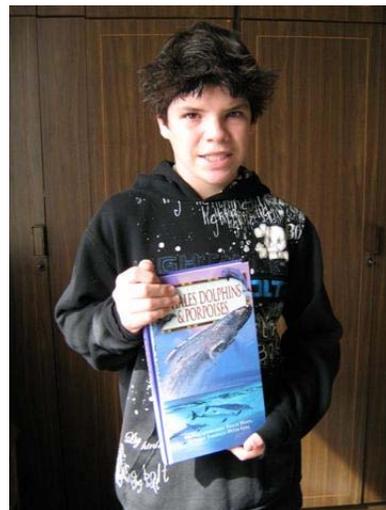
My family and I often like to go whale and dolphin watching, both on boats and on headlands. We see many animals including, turtles, penguins and I knew it was a Melon-headed whale as my Dad has helped rescue some before. I would love to be a body boarder and fishing.

My interests involve body boarding and fishing. Thanks for answering my email."

Jacob WON — Whales, Dolphins and Porpoises by Mark Cawardine

"I really love the book you sent me, it's fantastic. I haven't put it down yet! I am learning so much about whales and dolphins."

different types of marine whales, seals, dolphins, sharks, shoals of fish, sunfish, many other sea birds. MMO, I think my Dad is the water a lot. I love to snorkel. I also like beach-combing, fishing.



Diver breaks leg while swimming with Whales



March 15, 2007

Randy Thornton's swimming adventure earlier this month was skewed after one of his fellow swimmers, a humpback whale, flipped its tail. The 50-year-old diver had to be hospitalized for a broken femur at HealthSouth Rehabilitation Center in Sandy. The incident happened on March 1 during an excursion trip in the Dominican Republic. Thornton and 17 other divers were on the last dive of the last day of their weeklong trip to the reefs called the Silver Banks, an area where divers are allowed to swim with humpback whales. The whales are playful and they "slow down and let you catch up with them," explains Thornton, who called his mishap just a bizarre accident. "I was just in the wrong place at the wrong time," Thornton, the owner of a dive shop, Dive Addicts, in Draper, told the Desert news.

Recalling the incident to the Desert news, Thornton said the accident happened when the water current washed him and other divers too close to a mother whale who had a calf sleeping on her top.

"The calf woke up and got spooked, and that startled the mother, who swished her big tail twice," Thornton said, adding that he was hit and his femur broke "like a twig."

However, this was not the end of the adventure. Thornton's diving buddies made a splint out of fins and a weight belt and after nine-hours of rough journey he landed in a "prehistoric" hospital where the surgeons used a sledge hammer to pound a steel rod into his leg.

Staff Whale Tales

Whale migration off Mozambique by Nathan Gricks an ecologist with a special interest in large whales, and member of the SOS staff.



During a period of work off the central Mozambique coast in June, I witnessed one of nature's marvels. Although a similar phenomenon is occurring at the same time off the coasts of South America, west Africa and Australia, the humpback whale movement in the southern hemisphere is a marvellous sight to behold.

In late May the whales arrived out of the distant south, from as far as the frigid waters of Antarctica, where they feed in summer. However, it was not until mid-June that the real migration began, with up to 37 whales in one day passing under the Bazaruto Island lighthouse, perched 70 metres above the waves on a giant sand dune. Scientists believe east African whales follow three distinct routes up the east side of Africa - over the continental shelf, in the middle of the Mozambique Channel or close to Madagascar's coasts. In the warm waters of that island, as well as Tanzania, Kenya, the Comores and Mozambique, they winter and breed.

In the fourth week of June it was noticeable that some whales were spending time in the immediate area, and not heading north. Much 'surface active', rowdy behaviour was obvious - with some animals swimming strongly to the east then west, synchronising their diving, repeatedly tail-lobbing and even on occasion upside-down tail-lobbing. This may have been suggestive of pre-sexual activity - there were often parties of more than two whales, six being the maximum, in which males might be expected to chase available females.

We have decided to run the story again as the last section of the story was cut off in the last issue. We hope you enjoy it all this time to the end.

By month's end, more than 400 humpbacks had passed along the coast during daylight hours. It is suspected that the passage rate had not peaked by that time since at well-watched Cape Byron in New South Wales, which lies at a higher latitude, the peak only occurs by the end of the first week of July.

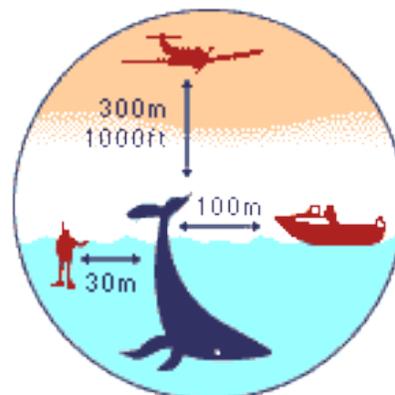
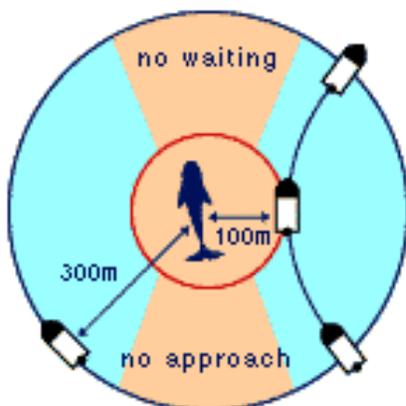
The connected movement of so many large mammals - in this case determined by the urge to procreate - is much less understood than its terrestrial counterpart on the Serengeti plains. And so, with the humpbacks came other baleen whales. I noted several dwarf and Antarctic minke whales, although these are difficult to tell apart in most cases since you see them only briefly. In Queensland, it is commonplace to find dwarf minke off the Ribbon reefs, as they move north to the tropics from May. It seems the same occurs off Bazaruto in Mozambique.

It is possible that the behaviour of at least some whales was modified by the presence and threat of killer whales in these coastal waters, although the latter were few and only rarely observed. For whilst some of the minke whales I saw at another time further offshore were much easier to view, and the dwarf minke in Queensland allow swimmers to come near, these small whales were very rapid in their movements, sometimes not raising the body beyond the blowhole above the sea surface.

There has been historical whaling for humpbacks off these shores, although numbers were reportedly low to the north of eighteen degrees South. The threats are not consigned to the past, for although an estimated twelve per cent yearly increase in numbers continues, Japan is to 'harvest' up to 50 humpbacks this coming austral summer, in a newly adopted 'scientific whaling' quota for the year. Many hundreds more Antarctic minke are to be slaughtered too.

Quick Tips

Minimum Approach distances when whale watching in Australia

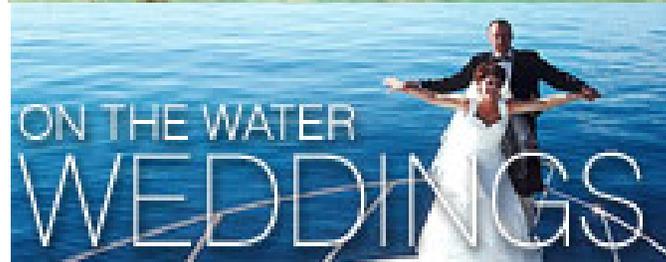


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Student Adventures

A short story about one of our SOS students.

SOUTHERN OCEAN

The Sei is too quick, the seals are brown blips so the submitted photo is of a Black-browed Albatross observing the Observer.

Besides with 1km+ shut down zones the focus is the 'Response Plan'. To measure the distance, inform the ship, record the details ASAP....Repeat process. Camera comes out last. I'm finding I am definitely an

Observer that likes quick response rather than chase the animal with binoculars to positively determine the species before acting. Its a whale, the guys out back need to know. Would shudder to write:

'Guns shut down 10 minutes after sighting within zone because MMO was wondering if it was a Fin or a Southern Right before acting.' So with the swift Sei I make the Mate jump as I suddenly come to life and

I am definitely an Observer that likes quick response

CAROL. SOUTHERLAND

look like a demented Ahab with a sextant. I am sailing with lovely Officers and the morning banter is sharper than the double short black coffee. Hitting port soon so I'm sure we will eventually find the Meaning of Life at the first bar. All home for Xmas and left the tinsel out for the relieving crew, so all those MMOs out there, have a good Xmas, may the seas be calm and the cheques have suitable decimal places. Kotek

New course dates 2008:

- UK: RNLI College
March course 1
 17th—19th
March course 2
 24th— 26th
June course 1
 18th— 20th
June course 2
 26th— 28th
October course 1
 27th— 29th
October PAM
 30th— 31st
- AUSTRALIA: Boat Club
February course
 11th — 13th
May course
 26th — 28th
November course
 24th — 26th

Meet the big Guys

Words and Images by Gavin Parsons.

Underwater photojournalist Gavin Parsons, hunts down and shoots (in a photographic sense) the largest fish in the sea.

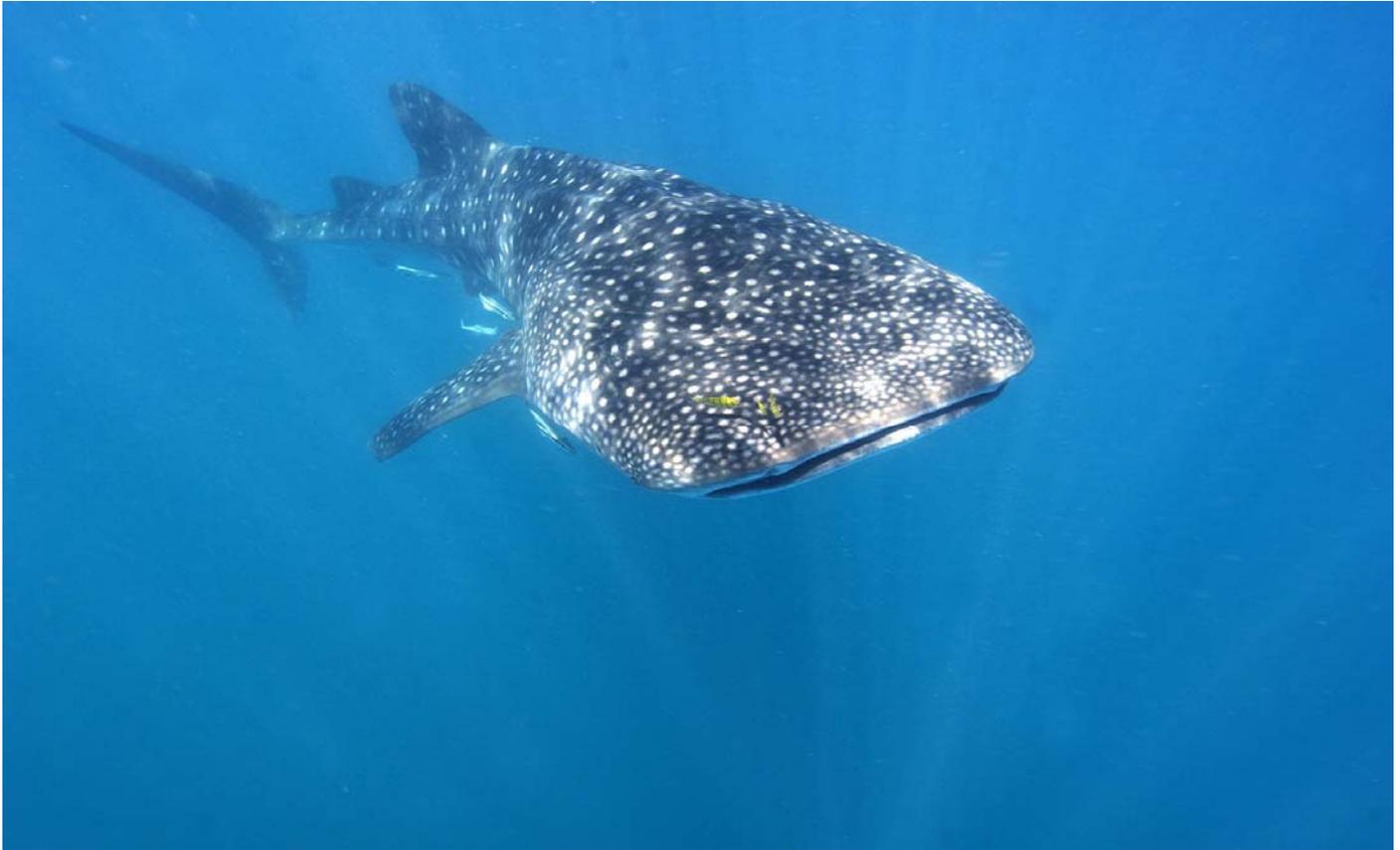
Gavin an underwater photojournalist lives in the UK and travels the world for out of this world encounters. All enquiries for photo adverts for your company please contact, gavin.parsons@h2o-images.co.uk

Yesterday the hull of the dive boat slammed into Steve's head in heavy surf; this morning he looked like a cross between a teenager with chronic acne and a cooked lobster thanks to the mosquitoes and sun ravaging his skin. Yet bizarrely he was smiling. Not because of that lot - obviously. It was because today was his 38th birthday and he'd just climbed back into the boat after seeing his very first whaleshark. Soon after he saw and swam with his second and a third, but that was the reason he'd chosen to visit Mozambique. The Eastern face of the Barra Peninsular near the town of Inhambane in Mozambique is a hotspot for the planet's largest fish. They



come to feed in the plankton rich waters and a dive industry has grown up around this annual migration. Not that diving is the best way to see whalesharks - far from it. They may look

chop. I put my head about the surface to check where the boatman was pointing and I was still heading in the right direction.



lumbering, but a 10 metre long shark on idle can still easily outpace a human in scuba gear. The best way to view whalesharks in their environment, therefore, is to snorkel. I have seen whalesharks in several parts of the world - western Australia, the Maldives, Tanzania, Djibouti and Thailand, but until I went to Mozambique I'd always had to search for them. In Mozambique we simply came across them either on the way to a dive or coming back. One day we'd seen so many the dive master's voice was getting a bit lacklustre when another shark was spotted.

Our enthusiasm had yet to be extinguished though and as the boat slowed near each shark eager splashes indicated another snorkeller had entered the water. There were only six people on the boat, so the shark didn't feel crowded and none dived or showed any sign of irritation. Whalesharks in my experience are inquisitive creatures and quite often stop or turn towards snorkellers. If they are not in the mood to play, they simply carry on at a pace and leave humans flailing in the water. Or at worst, they sink slowly downwards aware that humans cannot follow.

As we neared one shark, the cox slowed to a crawl and lined the boat up parallel with the shark's path of travel. I slipped into the warm Indian Ocean and made for the shark. The water was a graduated blue - the seabed out of view. The only things visible were a few small fish flitting in the surface

“The fishermen surround the feeding sharks with a large net to catch the fish that swarm around the sharks”.

The water in the distance grew darker as the shark emerged out of the visibility edge. She swam directly at me seemingly unfazed by my presence. Her sensory system would have told her I was there long before she could see me, but a predator my size would need to think very hard or be very hungry to take on an 8 metre long shark so she wasn't perturbed and carried on. As she neared, I could see the lack of anal claspers meaning she was female and surprisingly she had very few hangers on. Whalesharks, like other ocean wanderers pick up all manner of hitchhikers such as remoras and pilotfish. This one was fairly free.

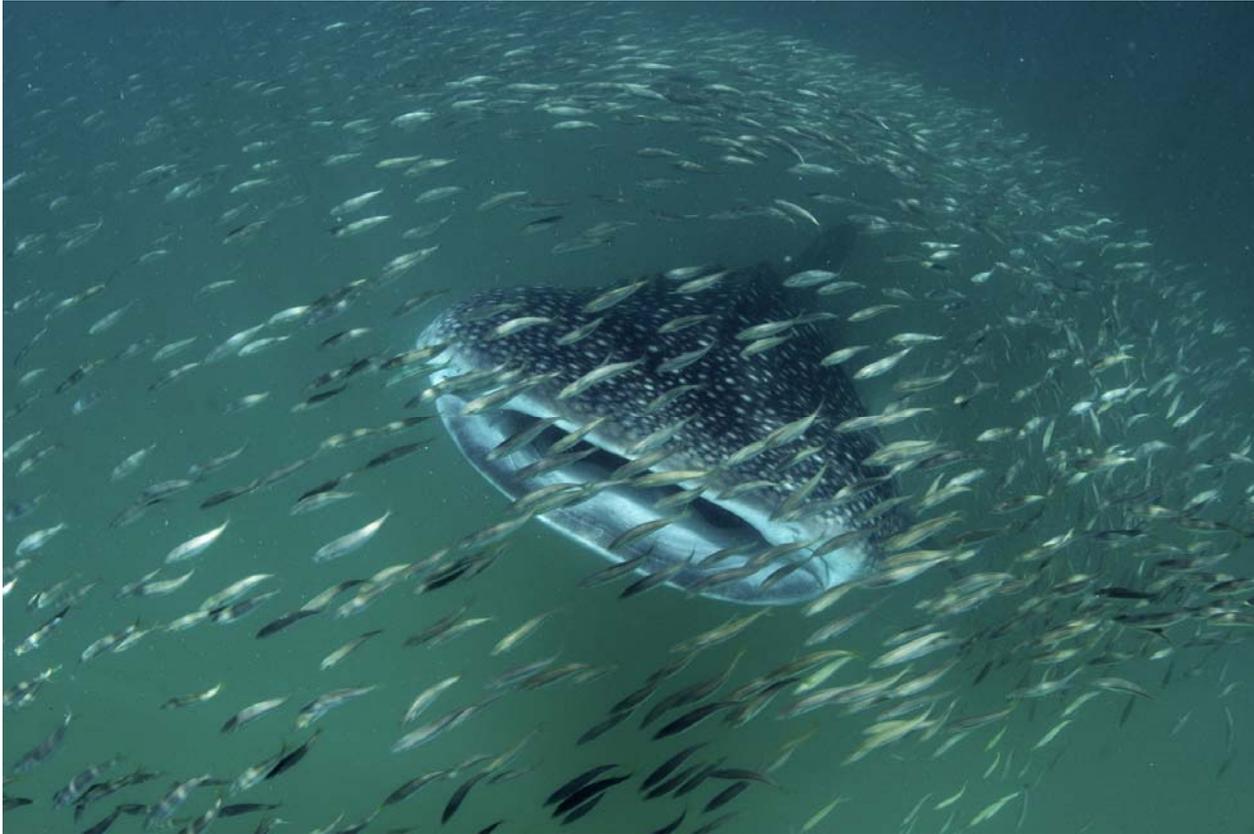
I stopped and waited. At first she started to veer off and my heart sank a little as I thought she was going to pass me by at a distance. Instead though, she turned. Soon my vision was filled with spotted whale shark and still she kept coming, dipping below just before we collided. I lay as flat against the surface as I could, but had I wanted to, could have reached down and touched her head. I was also conscious that following her head was a large dorsal fin and then a tail, both of which stuck up a long way. She knew that too and her dorsal drifted by just a few centimetres from my mask and most importantly - groin (A tonne worth of fish slamming into my nether regions would be the complete opposite of pleasant!). It was a thrill to have interacted with such a huge animal, but then it always is fun when whalesharks are around as I discovered

Getting the shot

I travelled to Mafia Island, off Dar Es Salaam, not to see whalesharks, but to discover the outcome of a marine park that I helped create. I found out, while there, that whalesharks are often seen on the other side of the island. So we took a trip out with a fisherman to see what we could find. We used other fishing boats to pinpoint the sharks, because they target the large animals too. They don't catch them, but have formed a sort of loose symbiotic relationship. The fishermen surround the feeding sharks with a large net to catch the fish that swarm around the sharks. The sharks are released to continue feeding while the fishermen haul in a net

One photograph I captured had the shoal of fish swimming between me and the shark. It won highly-commended in the Shell Wildlife Photographer of the Year competition in the highly fought over Underwater World category.

The gather that never was
And its underwater photography that took me to Djibouti. I went to photograph the annual gathering of whalesharks in the Gulf of Tadjoura. Here, whalesharks gather for a few weeks at the end of the year to feast in the plankton rich water. I went to record this spectacle... and failed. A week before, the boat crew were seeing upward of ten



sharks in one place. We saw about ten sharks in one week. Not a bad haul admittedly, but not what I was expecting, but that is wildlife for you. One minute it's frolicking in numbers difficult to comprehend the next it's buggered off somewhere else.

As the largest fish in the sea and one of the largest creatures on earth, you' expect whalesharks to be easy to find. But little is known of their

full.

It's a system that works well and the sharks don't seem disturbed by this behaviour.

As we approached one shark - a small female of around six metres - she turned towards the boat and went to go beneath us, only she didn't come out the other side. I dipped my head in and saw her vertical in the water beneath us, using the boat's shadow as we were using sunglasses to protect us from the glare. The water was misty and the white sandy sea-floor reflected the harsh sun causing bad glare beneath the surface. The only thing I could imagine the shark doing was resting her eyes. Several of us slipped in to join her and she moved around, but stayed below in the boat in its shadow surrounded by a shoal of small fish - the kind the fishermen caught.

movements across the planet and only a few gathering spots have been found. Some like Ningaloo reef in Western Australia, Gladden Spit in Belize and Richelieu Rock in Thailand have been well documented. Others such as the East African coast areas of Mozambique, Tanzania and Djibouti are what could be referred to as up and coming, but how the sharks migrate between them and where they go and feed between times remains a mystery. Some research is being done, but compared to many land animals; it is in its infancy. Which means that anyone who encounters a whaleshark may have something to offer biologists studying them? So the next time you are out on a boat in the tropics look out for a dark smudge just below the surface, it could just be a whaleshark, and if you have the time I wholeheartedly recommend getting in the water to experience it.

Undersea Explorer

Take a dive on the Wildside!



Rainebow Recaptured

Passengers aboard Undersea Explorer were treated to an extraordinary experience last week when, Rainebow, a 15-year old female Tiger Shark was recaptured and retagged as part of Undersea Explorer's Remote Far Northern Expedition (24/11 – 3/12).

She was captured at Raine Island, the world's largest Green turtle rookery, in the Far Northern Section of the Great Barrier Reef. Shark researcher and filmmaker Richard Fitzpatrick, is conducting research into possible migration patterns of Tiger sharks that may coincide with the summer nesting of Green turtles. This project is a joint project between Richard Fitzpatrick from the Australian Natural History Unit, CSIRO and Undersea Explorer.

This is the first recapture as part of this project. She



was caught in the very same area exactly one year apart! The recapturing was significant because they now know that there are no detrimental effects on the shark with tagging. There was only a little bit of algae on the tags antennae. This new type of tag, called a Splash Tag, can now not only plot the shark's movements, but also get a depth profile so that we can learn about their diving capabilities.

Last year, Rainebow (a female shark) was 3.2metres. When captured this year she measured 3.68 metres and is estimated to be 15 years old.

In the last week, Rainebow has had a few readings so far. She is still around Raine Island and has dived to 400m! Rainebow's movements can be followed at our website: www.sharkresearch.com or www.thereefchannel.com.



There will be a 2 hour special on this subject on the Discovery Channel next year in August.

Undersea Explorer is Australia's most exciting live-board offering 3, 6 and 9 day adventure diving expeditions with a marine research focus. We visit the Great Barrier Ribbon Reefs and magnificent Osprey Reef (an isolated atoll with spectacular visibility). We dive with whales, sharks, & nautilus. See www.undersea.com.au for more information.

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Identify this animal! If you can tell us what you see, give us the full scientific name , geographic location and any information about this species you will receive a prize!

Please post all entries via the web site www.scanningoceansectors.org/
All entries must be sent via the Information email on the website info@scanningoceansectors.org
PLEASE DO NOT POST THE ANSWER ON THE WEBSITE FORUM AS EVERYONE WILL KNOW AND WE WILL HAVE TO CANCEL THE COMPETITION

Winner will be announced in the next edition of the SOS newsletter.



Spy v Spy as Airbus joins the fight against Whaling

Andrew Darby in Hobart January 22, 2008
AUSTRALIA has flown its first whaling surveillance mission as forces opposing the Japanese fleet in the Antarctic are stepped up.

The flight by an extended range Airbus, along with the sighting of a Japanese fishing boat said to be shadowing Sea Shepherd, raise spying over the "scientific" whaling program to a new level.

There are also signs that international attention on the program is creating unrest in Tokyo.

The Airbus A319, fitted with surveillance and imaging equipment, is being used by the Rudd Government, with the Customs patrol ship Oceanic Viking, to gather evidence for potential international legal action against the whaling.



The aircraft performed well on a six-hour low-level search out of Hobart on Sunday, locating two foreign fishing vessels in Antarctic seas, a spokeswoman for the Home Affairs Minister, Bob Debus, said yesterday.

Bad weather prevented it from flying into its original search area but, depending on the weather and the activities of the whaling fleet, the A319 would fly another mission again soon, the spokeswoman said.

Greenpeace International's whales campaign co-ordinator,

Sara Holden, said the vessel Esperanza was still following the Nisshin Maru and in turn was being tailed by the Yushin Maru No. 2, the catcher ship at the centre of last week's detention crisis involving Sea Shepherd activists.

► Home affairs Minister
Beb Debus

Sea Shepherd's leader, Paul Watson, said his vessel, the Steve Irwin, had been followed for three days by a Japanese trawler.

"The Fukuyoshi Maru No. 68 is a large drag trawler," Captain Watson said.

"It's a fast ship and can easily stay out of reach of the Steve Irwin. The Sea Shepherd helicopter has flown over and it is not equipped with any fishing gear. There is evidence of electronic surveillance gear."

A Japanese Government spokesman could not be reached for comment.

Ms Holden said: "So long as they are not whaling, that's the point. The fact we are in day 10 without any whales being taken is fantastic. We suspect that the orders from Tokyo are for nobody to see them whaling. This is a delicate time for them politically."

She said Japanese people were raising doubts about whaling.

Greenpeace's Japanese language website had leapt in popularity. The number of page views jumped last week from 10,000 a day to 10,000 in one hour.

"Visitors to the website are also signing up to a online petition asking Japanese ministers to stop squandering taxpayers' money on whaling," said Dave Walsh, a Greenpeace spokesman.



Staff Profile

Cows, sheep, pigs & dolphins!?

Little did I expect when I started work at the VLA (or VIC as we were then known) that in addition to the work we do with farm animals I would become involved in work with cetaceans (whales, dolphins, & porpoises) and pinnipeds (seals, sea lions, walrus etc).

VLA Truro or VIC Truro as was then has been involved in marine mammal work since the early 80's. The first marine mammal post mortem was carried out in 1985 on a 4 year old grey seal from the National Seal Sanctuary at Gweek near Helston, Cornwall - it had ingested 45 ceramic tiles from the bottom of its pool !

During the early days post mortem examinations for several local and national organisations (RSPCA, National Seal Sanctuary, Cornwall Wildlife Trust and the Nature Conservancy Council) were carried out. At that time there was no coordinated national scheme in place. In fact Truro VIC was the only veterinary laboratory in England carrying out post mortems on marine mammals. During this time we formed links with a number of other organisations, Liverpool



► Common dolphin (*Delphinus delphis*) showing by-catch lesions note haemorrhage in eye.

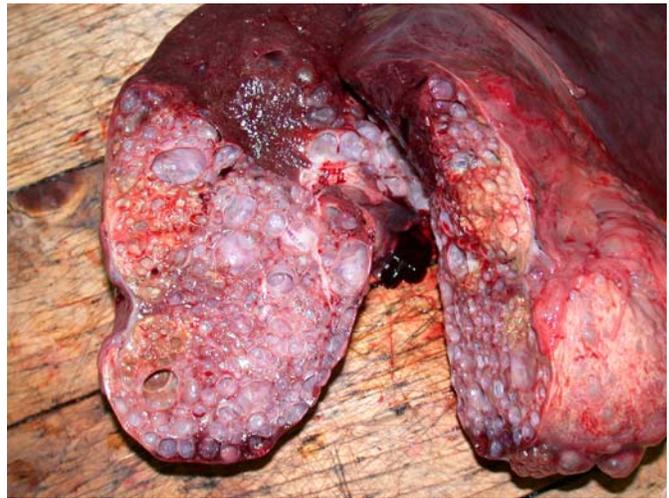
University carried out histological examinations; the Natural History Museum in London assisted in identification of parasites; the University of Glasgow Veterinary School carried out screening of samples for morbillivirus.

On the 5th of July 1990, after much public pressure and media attention focused on the southwest and in particular Cornwall where large numbers of common dolphin carcasses were being washed up, the government announced funding for a number of environmentally-based projects. These included coordination of examinations of stranded marine mammals in England and Wales and the post mortem and contamination analysis of small cetaceans. Funding was provided to the Institute of Zoology (IOZ) at London Zoo to enable them to develop a national strategy to carry



► Nick Davison and Bottlenose dolphin (*Tursiops truncatus*)

out this work. When this work started the IOZ made arrangements for post mortem examination of animals stranded in Cornwall to be carried out at the Truro VIC.



► Common dolphin liver showing chronic decompression sickness (DCS) lesions

Since then the Cornwall wildlife trust has set up a volunteer stranding network and strandings hotline which enables



► Common dolphin (*Delphinus delphis*) showing healed bycatch lesions

members of the public to ring in sightings and for trained volunteers to attend animals washed up on the beaches around Cornwall. As a result of this carcasses can be quickly assessed and if fit for post mortem can be transported to the lab for examination. This system has proved so successful that it is regularly used as a model for other organisations both nationally & internationally.

Since 1985 to date (06/06/2006) 126 carcasses of five species of pinnipeds and 414 carcasses of ten species of cetacean have been carried out – a total of 540 marine mammals post mortems in all. We have also examined 1204 laboratory samples from a range of marine mammals.

During this time VLA Truro has collaborated with other departments within the VLA and other outside organisations which has resulted in a number of important discoveries:-

In 1993 in collaboration with the EM dept at Weybridge a mixed calicivirus and poxvirus infection was identified in grey seals.

In 1994 we were able to establish that the large numbers of common dolphin washed up in Cornwall during the winter months were in fact dieing due to incidental capture in fishing nets.

The same year in Scotland two new species of *Brucella* were discovered in cetaceans, pinnipeds and an otter by SAC Inverness & *Brucella* research dept at Weybridge. Since then we have been involved in collaborative work with the *Brucella* research dept at Weybridge.

In 1998 we were also involved in a survey of helminth parasites of cetaceans. In 2000 work on the pulmonary pathology of porpoises was also published.

In 2001 we isolated *Mycoplasma phocaceraabrae* from the bite wounds and teeth of grey seals this organism is considered to be the causative organism of seal or speck finger a condition seen in humans after being bitten by a seal.

Bacteriology can be challenging with these animals to say the least with lots of bacteria that are new to science being discovered on a regular basis and some that still remain unidentified. In 2004 & 2005 we were involved in the discovery of two new species of *Streptococcus* from seals.

Probably the most controversial work that we have been involved in so far is gas bubble disease or decompression sickness (DCS) in cetaceans. The hypothesis is that there is a behavioural response to the noise of naval sonar which results in a rapid ascent to the surface where the animal remains until the noise stops. This causes rapid decompression of the nitrogen in the tissues and gas bubble formation and DCS if the animal remains on the surface for too long.

In 2005 we extended the marine mammal work to VLA Starcross, since then we have become more focused on the fisheries and bycatch problem and are collaborating closely with the IOZ & Sea Mammal Research Unit (SMRU) to see if we can attribute specific net lesions to a particular fishery.



► Harbour porpoise (*Phocoena phocoena*) showing lesions consistent with an attack by a bottlenose dolphin

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Marine Life Photographic Competition

Budding Amateur Photographers only

As we have had a number of photos that have been donated to the ID training that have been rather spectacular, SOS decided that some of these photographs should be recognised for their effort and composition, of some very difficult species to photograph.

All entries must be sent via the website, where there will be a specific page set up on the public forum for all people to enter their pictures.

We are going to limit entries to 3 per person

All pictures should be of one of the

- Marine Mammals
- Marine plant life
- Marine Animals

All winners will receive a prize and will have their winning photos in the next newsletter and displayed on the SOS website

Closing date is 12th July 2008

Minke Whale Encounters on Australia's Great Barrier Reef

Pavlova Steals the Show

By Laurence Buckingham

If you want to see minke whales up close this year, go to the Northern Ribbon Reefs of the Great Barrier Reef (GBR) during June and July. That's where by far the most in-water encounters between dwarf minkes and swimmers occur on the GBR. Mike Ball Dive Expeditions conducts dedicated minke whale charter during the peak minke season, mid-June thru Mid-July, when the chance of extended and close encounters with the minkes is at its highest.

The dwarf minke whale species that visits the GBR is currently classified as a subspecies of the Northern minke whale (*Balaenoptera acutorostrata*) and may yet be described scientifically as a separate species. There's only one other minke whale species, the Southern minke whale (*Balaenoptera bonaerensis*). Both species are rorquals, a type of baleen whale of the same genus as the blue, fin, sei whale and Bryde's whale.

Where the dwarf minkes come from and why they visit the Great Barrier Reef (GBR) isn't completely understood. When they aren't on the Great Barrier Reef, they are sometimes attacked by cookie cutter sharks. These small sharks carve out a scoop of tissue with their oversized jaws leaving a golf-ball sized crater. Although not pleasant for the victims, such scars are useful in identifying individual whales.

Minke whale researchers from James Cook University in Townsville join us on our peak-season charters. Their on-

board activities include shooting and compiling whale ID photos and recording whale numbers at sites. Their informative topside presentations cover whale identification, whale behaviours and safe whale interaction. Information sheets and books are provided. At the end of the trip, the passengers voluntarily fill out questionnaires detailing their interactions and donate photos and video for whale identification. All this is part of the researcher's Minke Whale Project which deter-



► "I'm watching you!"

mines duration and frequency of whale interactions, the identity of individual whales, tracking of individual whales over time, etc.



► "Author with minke whale at Lighthouse Bommie" Photo Courtesy of Matt Curnock

Last year, more than half of all dwarf minke sightings in Australia occurred in the Ribbon Reef #9 & #10 area of the GBR according to the researchers. Their data showed that interactions there averaged nearly two hours with three to four minkes seen at a time. Last year, at one site called Lighthouse Bommie, the number of whales seen above and underwater averaged a whopping 5.0 per encounter. And that's just the average.

The stats underpin the fact that if you go there during peak season, that's mid-June thru mid-July, you'll almost certainly have significant and lengthy encounters with the gracious animals.

But statistics can't fully capture what it's like

(Continued on page 15)

for divers to get close to the up to eight metre long “dwarves”. What makes swimming with minkes unique is that the whales are intrigued by swimmers and boats and stay for hours on end. They entertain with a wide range of behaviours including spyhopping, belly presentations, and close-range approaches.

Divers simply hang on the deco bar or shot lines and watch in awe as the sleek and streamlined rorquals glide by. For photography, a wide-angle lens is needed to fit the amicable giants in frame. During and after dives, long lines attached to the boat are let out for snorkeling interactions. Minke whales generally approach snorkellers closer and more frequently than divers.

Last minke whale season on Mike Ball’s liveaboard dive vessel Spoilsport, I was lucky to witness some remarkable moves made by a whale affectionately known as “Pavlova” at Lighthouse Bommie. During one encounter there she did many “pirouettes” where her snout pointed upward and her body rotated around it. She’d also poke her eyes and nose out of the water to “spyhop” and get a good topside perspective of everything.

On the same encounter she made many close passes. Sometimes she’d stop and hover in front of snorkellers (including me) and then slowly swim past on the surface with her large eye clearly visible. There were other whales swimming nearby at close range but Pavlova definitely stole the show.

Josie Ruth, manager at Dive 2000, a well-known dive shop in Sydney was also on the trip and had the following words describing her experience.

“Mike Ball’s Minke Whale experience exceeded all my expect-

tations. Unlike other whale encounters where you spend hours searching for a few whales then quickly jump in to catch a few precious moments before they continue on their way, the minke whales actually come to you. Spoilsport stops and the whales themselves manage the encounter, coming and going over a period of hours rather than moments with as many as ten or more seen at a time. A truly unique experience.”



► **Whale eyeballs a snorkeller” Photo Courtesy of Rob Rath**

The Minke Whale Project based has identified many individual whales over the years, including Pavlova. She used to be called Rake Scar Left in 2005 when she was first seen, photographed and subsequently identified on three separate dates. Renamed Pavlova, she was seen, photographed and identified on three days in 2006 and three more in 2007.

When you see a dwarf minke from a distance underwater, the first thing you see besides the outline of the whale is the white region just above the flipper. Upon closer inspection, you can see that this region varies with each individual. In fact, there are many regions of the body that differ and aid in identification (similar to fingerprints with people) but the flipper region is the most important.

While people on Mike Ball’s Minke Whale charters definitely expect to see minke whales, they usually don’t expect the whales to approach so closely to stay for so long. They are often moved by the experience.

So if you keen to see whales this winter, be like the minke whales and migrate to the GBR’s Northern Ribbon Reefs. Dedicated minke charters this 2008 season run from 12 June through 17 July. Book now while space is still available.

And don’t forget your camera.

For more information, contact Mike Ball Dive Expeditions at 0740530500 or email at resv@mikeball.com. Snail mail address is Mike Ball Dive Expeditions, 143 Lake Street, Cairns,

Beached dolphin guided out to sea

A dolphin that was washed ashore in Dorset tangled in fishing rope has been rescued by a sailor who swam with the creature to guide it back out to sea.

The dolphin, which was struggling to breathe, was found beached in Swanage Bay by local residents on Sunday. Coastguards cut the rope from its tail before Mike Cemm, a member of the nearby sailing club, got into the water in a wet suit to help the animal.



Mr Cemm swam with the creature into the bay to guide it back into deeper water. He had just returned from a sailing trip. "At first it was gasping for breath," he said. "I think it was very tired, the rope had

just been cut away from its tail by the Coastguard."

Mr Cemm tried three times to coax the dolphin into swimming out to deeper water.

"The first time it circled round on its side for about five minutes, like when a fish goes out of water," he said.

"The second time it did the same but for longer."

On the third attempt Mr Cemm swam with the creature until he was out of his depth.

"Its tail was flexing much more and it seemed to have got its breath back," he said.

"Its fin was upright and it looked like it was going to be alright," he added. He said the dolphin seemed to have scrapes and abrasion wounds from the rope.

The RSPCA and the Durlston Marine Project were consulted throughout the rescue, which took about half an hour.

Three Coastguards vans attended when a crowd of about 200 people gathered to watch.

The dolphin was last seen swimming towards Old Harry Rocks.



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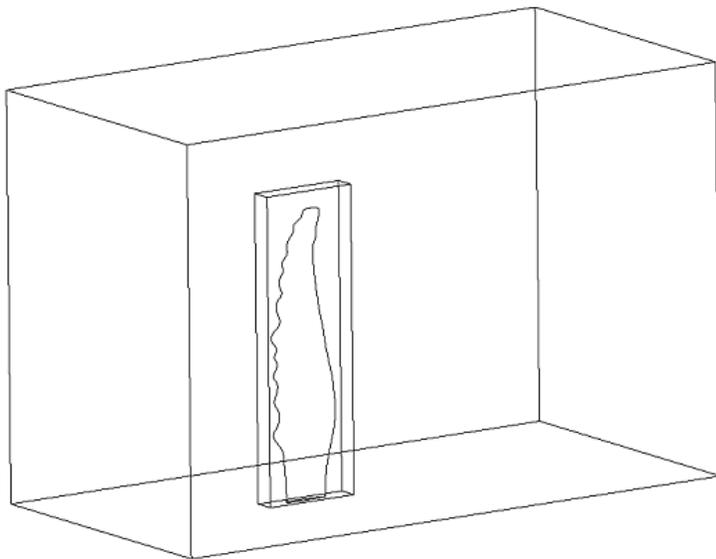
Book Now!



Tubercles on Humpback whale flippers – what’s their purpose?

Numerical simulations of the flow around the pectoral fin of a humpback whale suggest that the peculiar tubercles (knobs) play an important role in the extraordinary agility of these creatures. The humpback gains additional manoeuvrability during foraging without incurring significant drag during long distance swimming

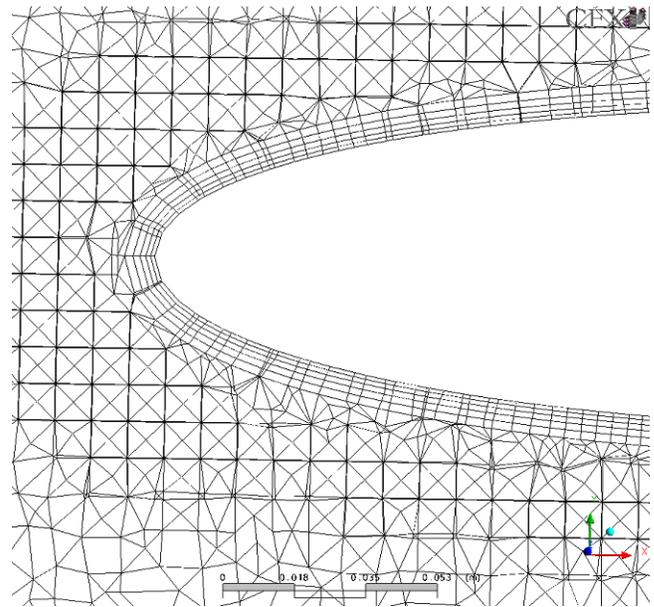
“Why these knobs?” This exclamation came up after watching a BBC-documentary with a few fellow aerodynamic-geeks



► **Picture 1: The flipper in the box with virtual water**

five years back. Being used to readily available information on the internet one would expect to find the answer there in a matter of seconds – but that wasn’t the case. Our continuing curiosity marked the beginning of an interdisciplinary project that would burn countless hours of computer-time and many a free evening along with it.

Our initial working hypothesis was that these tubercles could not be a ‘design flaw’, meaning they should have some purpose other than looking pretty and possibly attracting mating-partners. Humpbacks (*megaptera novaeangliae*) swim up to 8000km annually and if you ever tried so swim a fraction of that wearing loose-fitting instead of skin-tight swimsuits you learn a lot about a hydrodynamic effect called drag. To do that every day and pay for it in extra-krill just doesn’t fit the picture of an animal otherwise perfectly adapted to life in the



► **Picture 2: The calculation-grid (cut-out)**

sea.

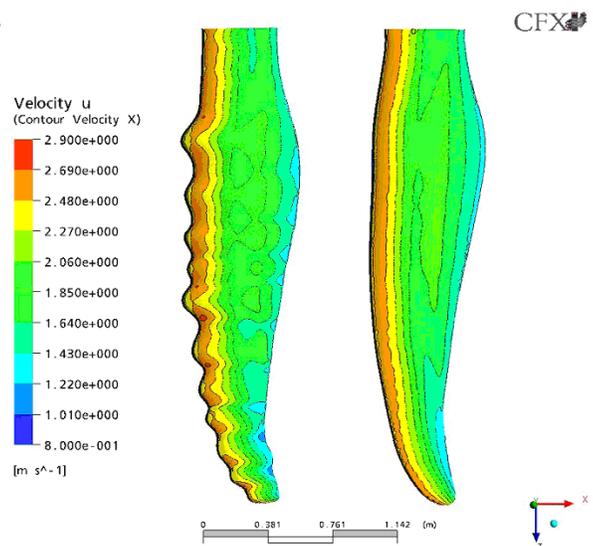
what’s to be gained from knobs?

Something similar to tubercles can be found on the wings of stunt-flying planes. This structure is called a vortex-generator and it enables these aircraft to fly more extreme manoeuvres. Is it possible for something like that to evolve naturally? And if that is the case, how do you prove it?

Ever since the Wright-brothers, engineers have been busy improving aircraft-wings and propeller blades, leading to the development of software that can calculate the flow around wings. This method is called computational fluid dynamics (or CFD for short) and will work just as well for the flow around the pectoral fin of a humpback.

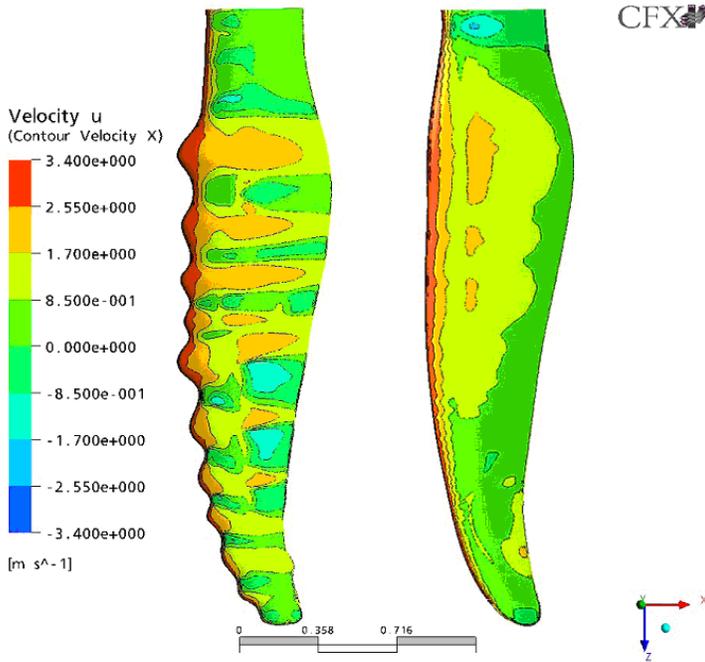
virtual flipper

The most important and sensitive input of these CFD-simulations is



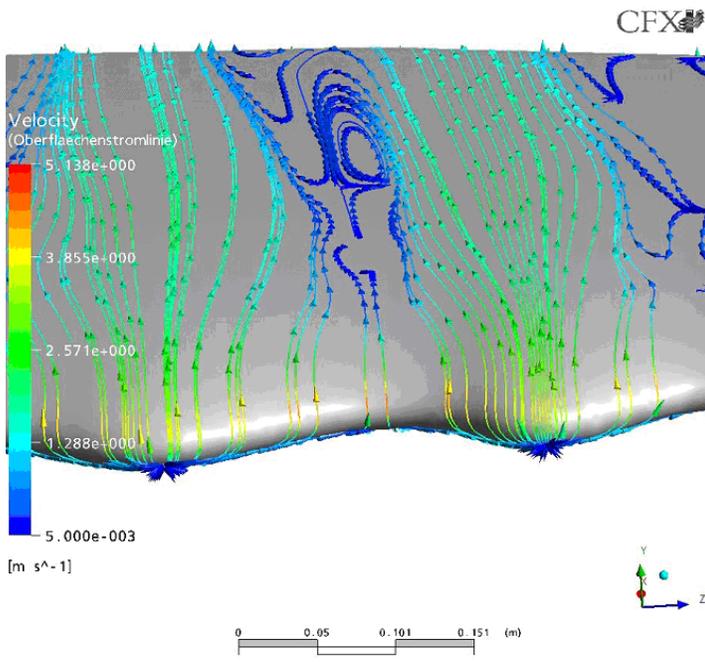
► **Picture 3: Colour-coded surface velocity, straight flow (angle of attack = 0°)**

(Continued on page 18)



► **Picture 4: Colour-coded surface velocity at 10° angle of attack**

the shape of the wing or in our case the pectoral fin. While simulations of structures derived from or inspired by tubercles



► **Picture 5: Vortices created by the tubercles at 10° angle of attack – detail**

had been tried before, no one had ever attempted to simulate a whole flipper. So we had to establish a flipper-shape from photographs and from few publications with cross-sections of the fin taken from strandings. Luckily we found that the flipper's profile resembles an airfoil-shape that the American national advisory committee for aeronautics (NACA) had researched before being dissolved in 1958. This is not too surprising as the flipper has to cope with the same environment that a propeller or rudder has to work in. That's also why bird-

wings look similar to aircraft-wings.

With the planform (the wing-shape you see when you watch a high-flying aircraft from the ground) and the airfoil (the wings cross-section) identified we created two different flippers: One as real as we could make it – complete with tubercles – and one with a smooth leading-edge. This provided us with a reference geometry that would give us the tubercle-free flow for comparison.

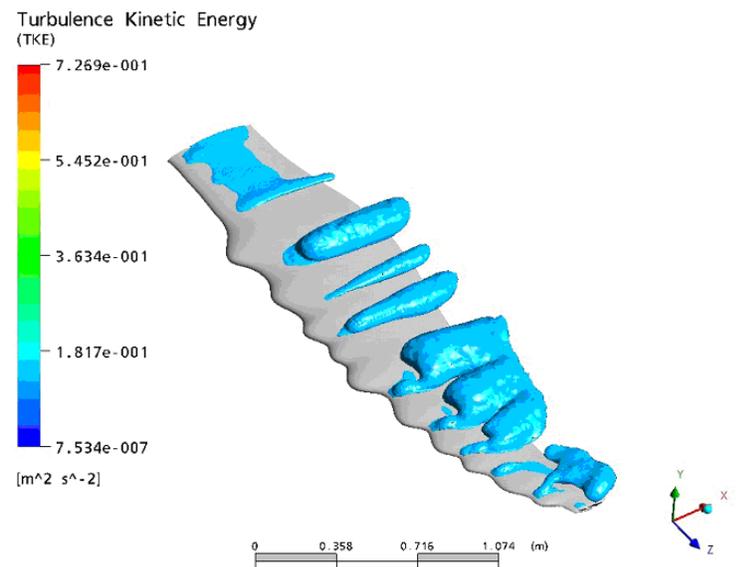
Before starting the simulations we had to tackle one more problem. You have to define a box of virtual water around the flipper (picture 1) and then subdivide it into literally thousands of little cubes or tetrahedrons (picture 2). The software for that had very obviously never seen a whale before and had a hard time generating a grid that would ensure a good flow-simulation.

Simulating the flow

The simulations were conducted with the software-package Ansys CFX, the license kindly being provided by the Institute of Jet Propulsion and Turbomachinery in Aachen, Germany. We concentrated our efforts on a comparison of the flow under cruise-conditions (water coming from straight ahead) and in a foraging-scenario with a 10° angle of attack between water-flow and flipper. We assumed the flippers to be positioned without back-sweep, that means sticking out at a right angle from the whale's body. These figures were applied to both the flipper with and without tubercles.

hydrodynamic X-files

The first thing we observed by comparing to our 'smooth' reference-flipper was that the tubercles increase drag under cruise-conditions by 6%. Picture 3 shows a plot of both flip-



► **Picture 6: Vortices at 10° angle of attack with tubercles**

pers colour-coded with the surface-velocities. That may

separates from the surface. Given the amount of optimisation that went into creating this exact spoon-shape, uncontrolled changes to it can't be wise. But if you can induce a vortex that 'removes the honey' you'll have your old airfoil-shape back to do what it's designed for – create the lift that allows the whale to chance its course.

Summing that up you 'pay' for vortex-generation with increased drag but gain more lift in the process because the flipper stays free of 'sticking' water. The interesting thing to note here is that the vortex-strength is low under cruise-conditions or in other words the vortex-generator only kicks in when you need it.

Aftermath

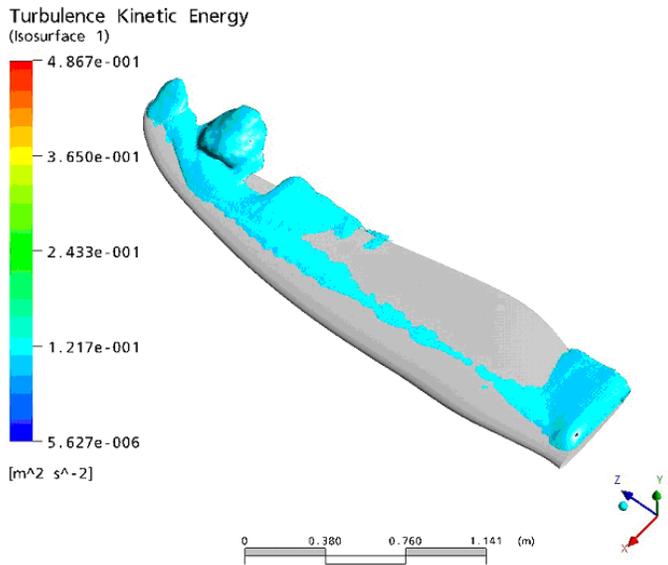
Numeric simulation in our case led to interesting insights into the flow-phenomena that occur around a humpback's pectoral fin. But it also raised a bunch of new questions – most of which can only be answered by field-observation and experimental lab-work. And these observations might in turn lead to more refined flow-simulations that raise the next set of questions. One example for this is that the pattern of barnacles on the flipper seems to correlate with certain flow-conditions on the surface. To prove this connection may e.g. require analysis of the skin surface in these spots.

CFD-calculations are a promising method that has so far been rarely utilized on marine mammals. They are difficult to set up because they require a solid background in flow-physics. In most cases this will necessitate a close cooperation between marine biologists and aerodynamic engineers. Done correctly though, they can give new impulses to both parties.

bullet-points

- We conducted numerical simulations of the flow around a humpback whale's pectoral fin
- Our results show that the tubercles on the leading edge of the flipper increase manoeuvrability of the whale during foraging with only insignificant increase of drag under cruise-conditions
- Commercially available software tools exist that can perform such simulations but the implementation and interpretation of the calculations for biological geometries is challenging

► Passbild Jens



► **Picture 7: Vortices at 10° angle of attack without tubercles**

sound like a lot but it's the figure for the flipper alone – which are small compared to the overall drag-producing surface of the whale. Also, we have not simulated the usual backswept position of the flipper during straightforward swimming. So it's safe to conclude the tubercles are no significant 'design flaw'.

At 10° angle of attack some exciting things happen (picture 4). The most important result is that the tubercles generate higher lift than the reference-geometry. That is paid for in higher drag but considering the enormous propulsion forces that can be generated by the fluke this doesn't seem significant. Otherwise the flipper is doing fine. In contrast to that, the reference-geometry is close to complete hydrodynamic failure – a situation called 'stall' that is feared by aircraft-pilots.

What happens here is indeed the same thing that the vortex-generator of an aerobatics-craft experiences: First of all the tubercles generate a series of vortices (picture 5) – hence the increased drag. That's the reason you won't find tubercles on commercial air liners: they don't have to hunt their own fuel. These vortices mix water that has 'interacted' with the flipper with 'fresh' water taken from above the surface. The difference between these two is that the 'interacting' water experienced friction with the flipper's surface and as a result starts to match its speed to that of the flipper. Doing so leaves it sticking to the surface like honey to a spoon – and that in turn blocks the way for new water trying to flow over the surface. Picture 6 shows the vortices responsible for this mechanism – the difference between the real and the smooth flipper (picture 7) is obvious.

What's the problem here you might ask. Well if you look at a honey-encrusted spoon you'll realise it has a different shape than before. Any flow hitting the flipper head-on will have to move around the 'honey+spoon'-geometry. This phenomenon is called flow-separation because the main flow literally

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Boaters warned to be careful of right whales off Cape Cod

Up to 70 spotted

BOSTON - State officials are asking boaters off the tip of Cape Cod to slow down and avoid up to 70 endangered right whales feeding in the area.

The state Division of Marine Fisheries issued a mariner advisory today, warning boaters to slow to 10 mph.

PROVINCETOWN, Mass., April 13 (UPI) -- Observers say about one-fifth of the world's population of North Atlantic right whales is feeding off the coast of Massachusetts.

The Center for Coastal Studies in Provincetown, Mass., which has done aerial surveys of Stellwagen Bank, puts the number at 79, the Boston Globe reports. There are believed to be only 350 North Atlantic right whales remaining.

A system to monitor underwater sounds detected 219 right whale calls in one 24-hour period last week.

The reason for the gathering is copepods, minute crustaceans that are one of the right whales' main food sources.

Ships crossing the area have been asked to proceed slowly to avoid hitting feeding whales.

The Stellwagen Bank National Marine Sanctuary is an area between

[Cape Cod](#)

and Cape Ann where schools of fish and large numbers of plankton provide food for dolphins and whales.



"When you get that number of animals in one place at one time, it's so exciting," said Dave Wiley, the Stellwagen research coordinator.

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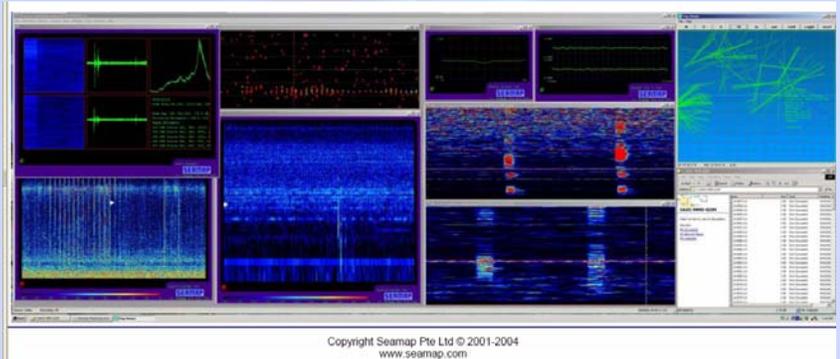
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- The future possibilities for PAM



Please book early as there are limited places on this first course of 2008

Please visit the website to find out more details about the course and to register.

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Footnote from the Editor

As I was sitting on the front veranda reading Gavins piece for the newsletter on whalesharks and feeling rather like I was missing out on so much fun diving as I have been hard at work getting the company training events organised, a bird came silently flying in and landed on the table in front of me. I looked down to make sure the dogs did not jump up to see what was going on. Cooper was dozing in the sun, he lifted his head and then put it straight back down again. By the time I looked up to see if the bird was still there he was sitting on my laptop looking directly at me. Smiling I realised I was just thinking about how much I was missing out on being stuck in front of the lappy, and this bird was just perched watching me! He finally flew off after I had given him a few pieces of dried fruit and I was very grateful that he did not decide to lift his tail feathers and make a deposit on my keyboard!
So much for feeling sorry for myself!

March winds and wet weather gear!
There were no Easter eggs in sight for the first or second course in March! Easter being so early this year I am sure most of us were not really ready for it, except for the very good few who had decided to give up for lent their favourite past times, the odd drink or two! I take my hat off to them in a bid to be humble, but living in Australia I do miss a pint of real ale and the fact it is served warm! So I was definitely one of the few who had not given up!

The March MMO course went almost very smoothly! Apart from leaving the organisation of the weather to nature!
It is very interesting how each of the students attending each of the courses seem to match their group in ability, education and enthusiasm, (perhaps worth a study itself?). The large number of students in the first group made for long interesting days with heavy discussions between all, (secretly the staff love this even though we keep trying to push on with the work ahead) and interesting outcomes to some of the debates. The weather was kind to the first group, with only some

short blasts of chilly wind, which were warmed up with some hearty soup. The group worked well together and were well organised within their teams and assignments.

The second group were not so lucky with the weather and encountered icy winds, rain, and some sleet. Nick Davison managed to stand watch with them for the first half while Ed set up good old PAM for some work and I had the difficult task of making the coffee! We swapped after I realised that Nick was soaked to the core and face as pale as a polar bear! The students were the epitome of good, verging on great MMOs doing their jobs under the best of circumstances, when this group of girls left us we realised these girls were going to take no prisoners when they were on watch! With rain battering them constantly and dribbles running off the ends of their noses nothing took them away from the tasks at hand, we were very proud of all of them. Each deserved their certificate, which made the SOS team think that we might start introducing levels in the certificates for the next courses. They would rank three levels, Pass, Credit and Distinction in the experience of the MMO, giving greater perception of the quality of MMO to their perspective employers.

The SOS team are constantly working on new and exciting ideas and concepts to bring into the classroom and really take on board the comments from the student feed back forms. So please make sure that you fill them in and ensure that we get them back from you.

Lastly, we're not a bunch of English majors but want to make sure the newsletter provides everyone with an enjoyable and well-written read and we welcome any constructive feedback, regarding any of the articles. If you have some information or topic you would like to share please send it to us at info@scanningoceansectors.org



A Dolphin Poem
by Meish Goldish

What sets dolphins apart?
They're very smart!
What makes dolphins first-rate?
They communicate!
How do dolphins "speak"?
They click, whistle, and squeak!
How was this information found?
By recording their sound!



Why do dolphins only swim in salty water?

Pepper makes them sneeze!

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