MARINE Life

The mammoth national edition

Apr/May 2012
Issue 18

Marine Life magazine

Our Goal

To educate, inform, have fun and share our enjoyment of the marine world with like-minded people.

The Editorial Staff

Emma Flukes, Co-Editor, working through a marine science PhD by mothering batches of algae until they die.

Michael Jacques, Co-Editor, Tassie dive guide writer and sometimes argumentative swine.

Sometimes helpers
Phil White and Geoff Rollins

Main Contributors this issue
WCdr John Kelley RAAF – Qld Half Biggles' mascot and half George Clooney, you work if it's the top half or bottom half.

Michael Lee – WA
Defender of all things fishy and avid underwater photographer

Disclaimer: The views expressed in this publication are not necessarily the views of the editorial staff or associates of this publication.

We make no promise that any of this will make sense.
marinelifetassie@gmail.com

Cover Photo ; Giant Boarfish, John Smith

We are now part of the wonderful world of Facebook!
Check us out, stalk our updates, and 'like' our page to fuel our insatiable egos.

Contact us:
marinelifetassie@gmail.com

EXCITING ANNOUNCEMENT: Marine Life goes national (& high-tech!)

We here at Marine Life recognise the importance of staying fresh and exciting, so we're trialing a fancy new NATIONAL edition to expand our interests to a wider audience. All of your favourite Tassie features are still here, but you'll notice a bunch more news and feature articles from 'those' mainland states. Love it? Hate it? Let us know at marinelifetassie@gmail.com. We consider each and every piece of your feedback *very* carefully (mostly because we don't get any), but tell us what you're interested in reading and we'll do our very best to deliver. Better still, send us some stuff and we'll plaster a full-page colour photo of your head somewhere in the mag. What better incentive to contribute than eternal e-mag fame?

In another exciting development, Michael has decided to abandon his middle-aged Ludditism and try to learn how to make a website. The results are a bit awful and lack smart design features, or even photos [donations anyone?]. It does have his usual stamp, an excess of information (and he has plans to make it bigger). We would like to hear from you about whether or not we hit the mark for info on your backyard. We would also like to link to your local projects and associations [just as soon as he works out how to do that]. Keep looking, it will get better. For now, we are putting real meaning back into the word "amateur", www.marinelife.org.au

Antarctic and Southern Ocean News

Invasion of king crabs in Antarctica?

King crabs have been excluded from Antarctic shelf waters for millions of years because it was just too cold for them – but that's changing, according to research published in the *Proceeding of the Royal Society*. Dr Craig Smith and his researchers found 42 king crabs living at temperatures above 1.4 degrees off the western Antarctic Peninsula. The study predicted that as water temperatures rise in Antarctic shelf waters - at an estimated 0.01 degrees Celsius a year - so too will the number of king crabs over the next few decades. Why's this an issue? King crabs are voracious skeleton-crushing predators that feed on animals like sea urchins and starfish and the research showed there were very few of these species in areas patrolled by these crabs. As Antarctic seas warm, king crab numbers may threaten Antarctic biodiversity and even wipe out species.

King Penguin recovery on Macquarie Island

Macquarie Island is in the Southern Ocean about 1500 kilometres south of Tasmania. Before humans arrived, the island supported hundreds of thousands of penguins in two large colonies. Then, between about 1889 and 1920, the oil blubber industry harvested the penguins sending them to the brink of extinction. By 1930 there were just 3400 birds left when the island became a reserve.

The reduction of fishing and the eradication of cats on the island in 2000, led to a recovery in their numbers and today there are now four healthy colonies on the island. DNA collected from the bones of a penguin population that lived 1000 years ago was analysed and researchers were surprised to find that after just five generations, the genetic diversity of the penguins had also fully recovered.

NATIONAL News Roundup

Satellite Fish Tagging - results now online

CSIRO has posted on-line details of fish that have been tracked around Australia. These include tuna, swordfish, sharks, trevally and spangled emperor. Tagging research contributes to a better understanding of species movement patterns: their place in the marine ecosystem; managing threats and risks; population mingling; and estimates of population size.

One of the more popular pages is the one devoted to Columba, a 3.5 metre female white shark. She was tagged in 2006 off Port Lincoln, South Australia. She was estimated to be 10 years of age and 500 kg in weight. After being tagged, Columba swam west in shelf waters across the Great Australian Bight to Cape Leeuwin, Western Australia. There she turned north and tracked seaward of the continental shelf, in 500–1000 m waters, for much of her trip to Exmouth. She remained some 100 km off Exmouth until early October before returning to the Bight. She covered some 5600 kilometres on her six-month journey.

If you can be bothered downloading an app, the tracks are available at www.oceantracks.csiro.au/

Warming in the Tasman Sea - a global warming hot spot

CSIRO oceanographers have identified a series of ocean hotspots around the world generated by strengthening wind systems that have driven oceanic currents, including the East Australian Current, polewards beyond their previous known boundaries. The hotspots have formed

alongside ocean currents that wash the east coasts of the major continents and warming is at a rate far exceeding the average rate of ocean surface warming, according to an international science team.

In Australia's case, scientists report intensifying east-west winds at high latitudes (45º-55ºS) pushing southward and speeding up the currents that press against the Australian coast. This has pushed the East Australian Current around 350 kilometres further south, with temperatures east of Tasmania as much as two degrees warmer than they were 60 years ago. A combination of ocean watch systems and computer simulations we have been able to reconstruct an ocean history. Warming over the past century is 2-3 times faster than the global average ocean warming rate. The increase in carbon dioxide and other greenhouse gases in the atmosphere has been seen as the the major driver of the surface warming of the Earth over the 20th century. This is projected to continue.

The research called for a long-term monitoring of the western boundary currents. In March next year, Australian scientists plan to deploy a series of moored ocean sensors across the East Australian Current to observe changes season-to-season and year-to-year.

Redmap is going national

Researchers and representatives from around Australia recently travelled to Hobart to begin setting up a *Redmap Australia* website and program planned for late 2012. The business-end of the workshop saw the formation of the Redmap National Steering Committee and advisory panels to help launch Redmap into the national limelight.

But what does this all mean for Redmap? Fishers, boaters, divers and scientists all around Australia – from Hobart to Broome to Sydney to Melbourne— will soon be able to report any uncommon fish and marine life they don't usually see in their coastal area. "Potentially thousands of Australians will become 'citizen scientists' collecting their own data about the changes in Australia's oceans; as well as sharing their fish photos, tips and information." The Redmap project is supported by the Australian National Data Service (ANDS) and the Institute for Marine & Antarctic Studies at UTas. If you want to know more about Redmap Australia, please email enquiries@redmap.org.au

Making fresh fish go Green

Fishermen are being urged to invest in getting Green certification for their products as Coles announces it aims to put "Sustainable Choice" stickers on fresh, wild-caught fish.

Coles and Woolworths have both banned endangered fish such as yellowfin tuna and orange roughy and Coles plans to phase out all unsustainable species by 2015. The company expects the campaign to boost sales by another 20 per cent. Coles did not rely on the fishing industry claims of "sustainable fishing practice" but went to Green groups. Coles went to the World

Wildlife Fund, while Woolies used the Sustainable Fisheries Partnership Foundation. WWF marine scientists investigated 300 fish sold by Coles and identified a "red list" of 33 species. Local snapper, calamari, garfish and sardines caught in Victoria's bays and inlets have been put on Coles' red list, not because of environmental damage, but because the local industries had no harvest strategies or catch records.

Both supermarket chains want fisheries to get international accreditation from the Marine Stewardship Council.

Giant Bass Strait 'blob' found in ocean

Scientists always assumed the water from Bass Strait simply dispersed into the rest of the ocean and dilutes to nothing, but they've now found it stays together and is carried around in a huge blob. An ocean glider in 700 metres off Maria Island on the east coast of Tasmania was measuring an eddy. The robot came across a body of water that was a direct match in temperature and salinity for Bass Strait waters.

The mass of water from Bass Strait was about 40 kilometres in diameter and about 200 metres in height and was sitting inside an eddy formed from the East Australian Current. Through looking at the chemical properties they were able to establish that this water had come from Bass Strait, had moved up the New South Wales shelf, been taken into a large eddy off Jervis Bay and then moved with the eddy down south. Eventually perhaps it will travel all the way around to Western Australia in several more year. Other similar blobs of Bass Strait water were found in other eddies. The water from Bass Strait contains a lot of oxygen. Some fish species like to forage quite deeply, and might be using these oxygen-rich pockets to forage deeper.

Queensland News

GBR Real estate – It's location, location, location

When it comes to choosing a place to hang out, big reef fish like coral trout, snappers and sweetlips have strong preferences about shelter. In a James Cook University study of 17 locations round Lizard Island in far North Queensland, the researchers videoed the behaviour of large reef fish. They have found that big fish show a preference for sheltering under large, flat table corals, as opposed to branching corals or massive corals (known as bommies). "The importance of this finding is that table corals are among the types most vulnerable to climate change," Professor Bellwood said. "In shallow waters and on the tops of reefs, they are often the main source of cover for these big fish, If they die back as a result of bleaching or disease,

or are destroyed by storm surges, this would strip the reef of one of its main attractions, from a coral trout's viewpoint." The researchers also proved that it isn't the coral, so much as the shelter that is important to big fish, by deploying artificial shelters made from plastic in the lagoon.

Boost for rock lobsters

In a world first, Queensland researchers have successfully grown rock lobsters from larvae to baby lobsters in captivity. Dr Clive Jones from the Department of Employment, Economic Development and Innovation says it's taken a long time to get to this stage. "For barramundi and prawns, for example, that larval duration is 28 to 30 days, you know it's only a month," he says. "You go to lobsters and you're talking about 150 days to go from the egg hatching through to the last of the larval stages, and these larvae are very delicate.

New Coral Sea MPA

Federal Minister, Tony Burke, announced in late November that Australia proposes to create of the world's largest marine protected area (MPA) in the waters of the Coral Sea. The proposed Coral Sea Commonwealth Marine Reserve covers approximately 989,842 square kilometres - an area of ocean more than half the size of Queensland. "Australia's vast oceans provide a source of food and resources, and are a place of recreation. But we cannot afford to be complacent," Mr Burke said.

Under the plan, which the Australian government says will be the biggest marine protection area in the world, oil and gas exploration would be banned and new limits imposed on fishing. The environmental significance of the Coral Sea within Australia's Exclusive Economic Zone lay in its diverse array of coral reefs, sandy cays and deep-sea plains and canyons, Burke said.

"There is no other part of Australia's territory where so much comes together - pristine oceans, magnificent coral, a military history which has helped define us and now a clear proposal for permanent protection," he said.

It is also one of the last remaining places on the planet brimming with large predatory fish such as sharks and tuna. Burke said the side of the reserve closest to Australia's coast had taken into account recreational and charter fishing, and the proposed reserve was remote, with the nearest point 60 km from the shore.

Environmental groups, which have pushed for the Coral Sea to be safeguarded, said the proposal was a good start but fell short of fully protecting the area's fragile coral reefs and spectacular marine life.

"We welcome the exclusion of oil and gas extraction and the ban on fishing gear that destroys seafloor habitats," Imogen Zethoven of the Pew Environment Group said. "However, protection levels need to be stronger, particularly in vulnerable areas, to ensure the Coral Sea's long-term protection."

Terry Hughes from James Cook University in Queensland said it was a welcome step towards protecting "one of the last remaining wild places in the sea", but that under the proposal, fishing would be banned in only 51% of the park. The government will hold a three-month consultation period before making its final decision.

Queensland's peak commercial fishing group has accused the federal government of pandering to "green" ideology by proposing a marine park in the Coral Sea larger than NSW, possibly forcing at least 40 trawler operators to relocate.

Tourist dies on reef snorkelling trip

Queensland authorities are investigating the death of an Irish tourist on the Great Barrier Reef. The man in his 40s was on a snorkelling trip at Saxon Reef, about 40 nautical miles off the coast of Port Douglas, when he went into cardiac arrest. The Association of Marine Park Tourism Operators says nothing more could have been done to save the man. Earlier on Tuesday the Queensland Government released recommendations from an industry reference group to improve safety for dive and snorkel tour operators. They include having two staff independently conduct passenger head counts and compulsory medicals for any entry-level dive course candidates who are overweight, over 45 or have high-risk medical conditions.

National Sea Simulator for Townsville

The new $35 million National Sea Simulator is currently being built in Townsville and will give scientists the ability to regulate temperature, acidity, salinity, sedimentation and contaminants in large volumes of water. As a result, critical questions about the impact of our changing environment on coral reefs will be investigated in a controlled but realistic setting.

Poo protecting coral reef

A team from the University of Sydney has been studying the sea cucumber - also known as the bêche de mer - around One Tree Island off the central Queensland coast.

Scientists have found the humble sea cucumber can play an important role in protecting coral reefs from the impacts of climate change. Professor Maria Byrne says the creatures provide a natural fertiliser which helps protect the coral. "In the process of eating sand and defecating, they actually increase the local PH, making it more alkaline in the water around the corals, and thereby they would protect the corals from the impacts of ocean acidification."

That's handy as British scientists say the current level of carbon dioxide emissions will wipe out about 30 per cent of the world's marine species by the end of the century. Much of the carbon dioxide put into the atmosphere through fossil fuel burning is being absorbed by the world's oceans, causing them to acidify. "There's a tipping point that occurs at about the levels of ocean acidification we expect to see at the end of this century."But even before that, even within the next few years, the water becomes corrosive to the shells of organisms and some corals can't survive."

WA News

Whale Shark Tagging at Ningaloo

Concerns about the declining numbers and size of whale sharks visiting Ningaloo Marine Park have prompted an extensive tagging program by the Western Australian Marine Science Institute. A team are tagging whale sharks at Ningaloo and off Christmas Island to find out more about their migratory habits. While some tags fell off close to Ningaloo, some whale sharks travelled to the Eastern Indian Ocean—about the latitude of Sri Lanka—and a number went up to the Timor sea and along the coast of Indonesia.

Along the way Ningaloo's whale sharks were observed making yoyo-like dives down to 1000m, returning to the surface and repeating this a number of times. The more typical pattern is of deep dives of between 200 to 500m during the day and returning to the surface. At night the sharks do not dive as far. At the 200m to 400m mark is a layer full of plankton and shrimps. At night that layer migrates up towards the 100m thermocline. Dr Meekan says, "We think that maybe the shark is simply following its food up and down". It is hoped further research will reveal why the number of mature sharks are in decline.

Fewer but fiercer cyclones for WA

In the future fewer tropical cyclones may form off Western Australia but they may become more intense. CSIRO climate scientist Deborah Abbs says there could be a 50 percent reduction in the number of storms in the second half of this century, but there is a distinct shift towards more destructive storms.

Already a significant proportion of the Western Australian coastline, as well as offshore industry, is vulnerable to the threat of tropical cyclones, and this area is likely to change. Dr. Abbs' research shows 100-km southward movement in both the formation and decay regions of tropical cyclones in Western Australia by later this century: which means areas not currently affected may face the risk of tropical cyclones in the future.

The incidence and behaviour of tropical cyclones is complex. Wind speed alone does not fully explain a cyclone's potential to cause damage, particularly via wave or storm surge, so the researchers used an additional measure (called integrated kinetic energy) that accounts for both wind speed and the overall area covered by a cyclone's strong winds. Importantly, Dr Abbs' research shows this measure also indicates a distinct shift toward more destructive cyclones.

Western Australians have a long history of living with tropical cyclones. However, this research sends a clear message that we need to continue to plan towards and build upon our preparations and response to potentially more destructive storms in the future.

No 'fiddling' when it comes to decisions

Fiddler crabs are intellectual lightweights and don't have much of a central brain, but despite that they can make quick and relatively complex decisions. Dr Jan Hemmi of UWA's Oceans Institute has been spooking fiddler crabs with natural and dummy predators. Initially they run away from everything, but they can learn, "if we repeatedly approach the crabs and nothing happens they learn to ignore the threat". They also have a highly developed idea of distance and direction, called "path integration", and can work out where they are relative to their home. Caught out in the open they don't repeat the same decisions, but in a split second decide on the best strategy, depending on how far away they are from the burrow. Dr Hemmi says the visual and sensory motor system of the crabs combine to heavily influence the decision-making process. Basically, their brain is so tiny that they can also 'think with their eyes'. The highly developed 360 degree eyes play an important part in the crab's ability to process rapid responses.

Concerns sea lions at risk from gill netting

In a submission to the Federal Government, which is considering an export licence application by WA's shark fishers, a coalition of green groups said gill nets were the biggest threat to the endangered sea lions.

The Federal Government requires trained observers to be placed on shark fishing boats to report the nets' impact on sea lions. But, the Conservation Council's Tim Nicol says the State Government has only implemented a voluntary reporting system, meaning sea lion deaths are likely to be higher than reported.

"We don't know how many are getting netted off our coast but we do know that gill-netting is going on in areas where there are breeding colonies," he said. "And, in South Australia, when that happened, the numbers of deaths were very, very high.

The Department of Fisheries in Western Australia says the risk of interaction between shark fishermen and Australian sea lions is extremely low in WA waters.

Stumpy the Stingray

Wild Stingrays are now protected in limited areas of Hamelin Bay (WA) due to recent changes in fisheries legislation.

Wild stingrays and skates are very popular at the Hamelin Bay tourist spot where they interact with humans. Rays have been attracted into the bay and hand fed by local caravan park owners.

For 20 years a well-known eagle ray, called 'Stumpy' was the star tourist attraction. Stumpy was the friendliest ray in the bay and had no barb, "No visit to picturesque Hamelin Bay, 30km south of Margaret River, was complete without patting Stumpy the stingray". He was very popular with families and particularly children.

Then 12 months ago, 2 young snorkellers speared Stumpy and then hacked him to pieces on the beach in front of screaming kiddies. Stumpy's wings were cut off while he was still alive. Some people had to be restrained from attacking the fishermen. The locals were incensed, but it was all legal. The bay is open to recreational fishing. Interestingly, the boys were reported as 'foreigners' when they were actually from Busselton.

The death of this popular tourist attraction was enough to get action that was (for a government) effectively immediate. Odd, we often pontificate about conservation proposals for years. A proposed 2006 management plan for the coastal waters between Geographe Bay and

Augusta, which would have better protected the Hamelin Bay stingrays, is still in limbo. When mums and dads go beserk, apparently things can get done quickly.

More than 600 people signed a petition calling on the Fisheries Minister to turn the area into a marine park sanctuary zone. We all know that MPAs aren't acceptable or clever, no matter what the issue [;-)], even to protect a more valuable form of economic activity. The Minister instead wanted to erect beach signage, but then found out that signage had been in place at the time of the incident. It urged fishermen in the area to release stingrays. Thus, the raging 'mob' has now been placated with a limited ban on fishing stingrays, only in the tourist areas. Hopefully, Stumpy's mates never swim out of that bay.

The Minister said, "I appreciate the support Recfishwest and the Western Australian Fishing Industry Council have given to this solution". I would suggest he isn't as appreciative as they are.

New centre at the University of WA

A new ocean research facility being developed in Perth. The Indian Ocean Marine Research Centre is a partnership between three marine research organisations - the Australian Institute of Marine Science, the CSIRO and the Oceans Institute of the University of WA - as well as the WA Department of Fisheries.

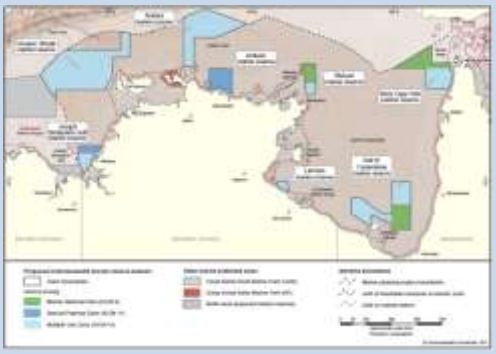
Its aim is to undertake research on the most important drivers of innovation in the marine sector, including climate change, the sustainable use of marine resources, conserving marine biodiversity, coastal zone management, and marine security and safety.

The Federal Government and the partner organisations are investing $65 million. This will help pay for a new building hosting 240 marine scientists at the UWA campus and the refurbishment of the Watermans Bay Marine Laboratory to provide world-class experimental facilities. This infrastructure is to be completed by December 2014.

Territory News

Fun in the Sun at Stokes Hill Wharf

by Mike Jacques



MPAs are again in the news as the Australian Marine Conservation Society called on the Federal Government to support the idea of 12 Commonwealth marine parks in the Top End.

Federal Minister for the Environment, Tony Burke, released a draft report advocating 8 northern reserves, with no decision yet on the amount of 'no-take' zones. Everyone loves their fishing, particularly in the NT, and it got a prompt and shrill response. The "NT News" hadn't really been following the issue, but then made up for lost time by issuing an attack on "tree-huggers and preservationists".

The "I Float and I Vote" rally last December was arranged by local bait and tackle shops, but also with the novel support of the local Murdoch rag [*what, no croc stories that day?*]. We also saw the edifying inclusion of a self-confessed local radio 'shock jock' who revved up the crowd. An early comment, "If Canberra decides to pacify the latte-sipping oxygen thieves of the south, then they'll just turn around and do it. They don't give a shit about our vote."

The debate had drawn out some local angler gems like, "Where do people get the idea we are supposed to keep everything on earth alive forever? Species have been coming and going for time immemorial." Then there was the more familiar chant, that the MPA idea "…is contrary to all available scientific advice, which shows that our NT Fisheries, particularly our recreational fishery, are sustainably managed and that closures are not necessary." Statements to the contrary from the Australian Marine Sciences Association (AMSA) were not reported.

Another media commentator said on the debate, "…the NT News vacated the field of quality journalism and really showed that ideology, populism and running with the mob triumphed over quality journalism. And that's a shame. They really could have done a lot better." Professor Karen Edyvane also noted, "We are literally seeing a 'race to the bottom' as each pro-fishing lobbyist and politician (on both sides) in each edition, tries to 'outshock' the previous 'anti-Marine Park' public statement."

The Federal Environment department has now received 12 861 submissions, 99 per cent were campaign circulars with standardised text and no meaningful detail. This rancour isn't that new to the rest of us, apart from a particular lack of ANY pretence of subtlety in the NT.

Welcome to the wilderness that is created by marine protected area public policy wrangles. As for the issues, let's hope the people of NT actually get a chance to DEBATE them at some point.

They affected Commonwealth waters (3 miles offshore) between Shark Bay in Western Australia and the Gulf of Carpentaria in the east. More details can be found at the Federal environment department website www.environment.gov.au.

NSW News

Pressure mounts for grey nurse shark protection

Marine scientists are calling on the State Government to reinstate grey nurse shark protection on the New South Wales mid-north coast. The Government revoked a series of protections when it came to power last year. A review has confirmed the shark population is depleted and more protection is needed at Green Island and Fish Rock, off South West Rocks. South Cross University's Dr Daniel Bucher says the grey nurse is endangered and gets hooked by recreational fishers. "The use of deep-set baited hooks is the big problem," he said. "Surface trawling and lures they don't seem to take them so much. "The big problem is using baited hooks and that was what the restriction was at South West Rocks to minimise the interactions of fishers by stopping the use of baited gear. "I find it frustrating that we know what the threatening processes are. "They're relatively easy to stop. At least in those areas where we know that there are aggregations of grey nurse shark and we know there's lots of public support for it now.

"So it's frustrating that a relatively simple step to reinstate the protective levels is not going ahead as quickly as possible. "The longer it delays [it], the more sharks are likely to be affected."

Ministers release audit into NSW marine parks

Liberal Ministers have recently released an audit report on the scientific and management processes employed in setting up NSW MPAs. In their words, "The Report highlights that the method in which marine park zoning was carried out by the former Labor Government was flawed and should have been done in a more sustainable and consultative fashion". The NSW Government, as part of its election policy, committed to deliver "an independent scientific audit into marine parks". "The NSW Government stands by the existing moratorium on the declaration of new marine parks, alteration of sanctuary zones and review of zoning plans".

A quick read of the actual report, authored by a mixed panel of pro-MPA scientists and a heavy measure of MPA fisheries management 'sceptics', reveals a series of much more measured and non-partisan recommendations to improve the processes, unlike the language in the government media release. Interestingly, it also supported further MPAs, in bioregions that aren't currently represented. As usual, the contentious issues seemed to revolve around the impact on fishing.

It's pretty obvious that the government is looking to appease the hunting and shooting lobby and are 'going after' no-take MPAs. The Government is now inviting public submissions on the Audit Report and will "...then consider the Audit recommendations as well as community feedback to develop our formal response". [*Pardon my scepticism, but we already have a taste of the tenor of that response -Ed.]*

Public submissions close on 30 June 2012. To view the report and the information considered by the Audit, please visit: www.marineparksaudit.nsw.gov.au

Fly and Halifax Pts woes

Fly and Halifax Points are popular coastal dive locations near Pt Stephens. Both sites are located within a marine park sanctuary zone and have been long recognised for spectacular sponge gardens and a diversity of marine life. Local dive tourism operators estimate the sites are worth approximately $14 million annually to the local economy.

Over several years, sand has been accumulating adjacent to Halifax Point and Fly Point, impacting on the sponge gardens and marine life. A recent consultants report found that photographs from the 1950's and 1960's show this has happened in the past, but now it's at a greater rate than before. This could be due to a number of factors including nearby works to add fresh beach sand, changes in storm frequency, and dune stabilisation works. They stopped short of directly blaming any recent development or dredging activity.

The report identified some short-term fixes including removal of approximately 57,000m3 of sand from the western end of Shoal Bay beach and from Little Bay beach and for dredging of approximately 80,000m3 at Fly Point and the lobe adjacent to Nelson Head. While it seems odd to be artificially altering the dynamics of a protected area, it seems this was cheaper than losing the dive revenue. The proposals are being considered.

Read more about the problem here .

SA News

Sharking Ban off Adelaide

Under the new rules, shark fishing will be banned from metropolitan beaches between 5am and 9pm but will be permitted at night. The new rules will be trialled for a year. Fishers are banned from using wire traces and a maximum hook size of 50mm will apply. Penalties include a $315 on-the-spot fine or fines of up to $20,000 if the matter goes to court. These rules are additional to the existing ban on using animal blood or bone as bait. Voters had raised concerns about sharks being lured close to shore during daylight hours when there are swimmers. It doesn't seem that there was a scientific analysis of the extent of that risk, but the regulations have been changed anyway.

Shark Fishermen move to Victoria

Recently, a zone on the SA west coast was the first to be closed to fishing after reaching the maximum allowable number of sea lion deaths from fishing.

A shark fisherman says industry operators are moving from South Australia to Victoria to avoid new rules aimed at protecting sea lions. "That's five boats that have gone to Victoria and that's five boats times 4,200 metres of net - that's 20 kilometres of net going in the water four times a day every day of their trip and it's all going into Victoria. Where is the environmental sense in that?," he said *[What the nets themselves, or the move to Vic-Ed]*. Mr Schmucker stated that he had "...never seen so many Australian sea lions, on every rock that I've been past. To me, it looks like they're flourishing".

The Australian Fisheries Management Authority (AFMA) says crews have options other than moving interstate. "We've taken a number of measures to provide other options for fishers, including the fisher that reported the recent deaths has actually been allowed to undertake hook fishing which doesn't pose any risk at all to sea lions, as an alternative to net fishing."

Seabird management plans

Efforts are being made to better protect seabirds in Australia's southern fishing waters. By the end of October, all fishing trawlers in the Great Australian Bight and south-east fisheries of South Australia will need seabird management plans. James Findlay from the Australian

Fisheries Management Authority (AFMA) says such arrangements are working well in Australia's Antarctic fishery.

Seals wash up dead at Pt Lincoln

53 New Zealand Fur Seals have washed up dead along a section of South Australia's Eyre Peninsula coastline, 51 of the 53 seals were juveniles. They washed up along six kilometres of coastline in the Wanna Beach area of the Lincoln National Park. The baby seal pups had sand in the trachea but no other injuries, so it is believed they were sitting on their rock and they got washed off and drowned in recent very heavy seas.

"Both seals and sea lions have very high infant mortality rate, mainly because the adults are pretty rough and a lot of the pups get squashed and the sub-adult males wrestle and argue and fight and the pups get in the middle of it and they can get bitten and so they have a very high mortality rate."

New Zealand fur seals are a protected species and found along Australia's south coast and along the coast of New Zealand's south island.

Rising fur seal numbers a problem for some

Scientists say the fur seal population has nearly doubled in the past five years, some politicians say the South Australian Government needs a coordinated action plan to deal with seal numbers.

MP Peter Treloar says fur seals are causing severe problems off Eyre Peninsula in South Australia. He says they are affecting tuna farming and crayfishing operations.

"They're moving into territory where we've not seen them before," he said*. "It's been reported that there's a decline in numbers of fairy penguins. "There's even been speculation that they may be the cause in the decline of cuttlefish populations...".*

The Opposition has called for an Abundant Native Species Management Plan. Apart from fisheries losses, they also claimed that little penguins form a significant part of the diet of New Zealand fur seals around Granite and West Islands, which may also explain why penguin

numbers in these areas have fallen in recent years. The shooters association is already offering their services for a cull.

In fact there are only about 40 seals hauling-out in the vicinity of Granite and West Islands according to a 2007 SARDI study. This IS possibly having an impact on a very small and declining penguin colony at the popular tourist site. According to the SA parliament's Natural Resources Committee this is not just due to one factor but,

> *"...a combination of increased predation by New Zealand Fur Seals who are enjoying a population boom after cessation of commercial sealing last century, and predation by dogs, cats and rats. Fluctuating fish stocks (food resources for both penguins and seals) may also play a part...While New Zealand Fur Seals are clearly implicated in declining penguin numbers it appears that different mechanisms are at work in different locations around the State and the overall picture remains unclear. For example, Little Penguin numbers have declined on islands that do not have seal colonies or are not known as haul out locations for seals. In other locations large penguin colonies are thriving in close proximity to large seal colonies. This suggests there is a need for more research to ensure an appropriate response."*

Cull demands have also been made to save a penguin colony on Kangaroo Island that is important to tourism. *"A recent survey by Department of Environment and Natural Resource officers on Fur Seal numbers around Kangaroo Island estimated a population of over 40,000 principally New Zealand Fur Seals".* I cannot find a copy of this study, but that would be a large increase. A 1990 CSIRO estimate of the NZ fur seal numbers for the whole of South Australia was 26,600, with half located on the Neptune Islands. I'd like to see the full report before drawing further conclusions on numbers.

In any event the Kingscote penguin colony numbers are actually stable, but it's the Penneshaw numbers that are collapsing. According to DENR this is a natural cyclical phenomenon *"...numbers of Penguins had become artificially inflated in recent decades in response to the reduced numbers of seals and that what we were now seeing with declining penguin numbers was a return to the status quo".*

This may be one of these issues where you criticise the government about something electorally tricky, knowing you won't have to do anything about it yourself. All seals found in Australian waters are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) which means that they couldn't be culled without Federal Government assistance which is unlikely.

According to the Federal Action Plan for Australian Seals, at a minimum it would basically be a pointless and costly exercise,

> *"Calls for a cull of seals on the Australian coast are often made, usually by frustrated fishers or fishing bodies. They are occasionally put in the context of the Ecologically Sustainable*

Development paradigm. A cull would not be economically viable in the current absence of a market for seal products ... the Scientific Advisory Committee of UNEP's Marine Mammal Action Plan agreed that "in the real world, the potential benefits of a marine mammal cull in fishery yield could be similar to or less than the normal fluctuations observed in fishery yield"".

So that's the story for now, and we can go over all this again the next time a taxpayer funded seal cull is proposed for the Australian Coast.

Critter info - New Zealand fur seal

Clearly, something this evil deserves to die…

Although New Zealand fur seals are native to Australia, they also occur at several other islands in the Southern Ocean and around the South Island of New Zealand, where they were first described. New Zealand fur seals breed adjacent to the South-west Marine Region on rocky islands off South Australia and the southern coast of Western Australia. There are approximately 51 known breeding sites for this species in Australia, mostly in South Australia (30) and Western Australia (17). Large breeding populations, which account for more than 80 per cent of the national pup production for the species, are found in South Australian waters at North and South Neptune Islands, Kangaroo Island and Liguanea Island. Colonies in Western Australia are centred on the islands of the Recherche Archipelago; the westernmost population is found near Cape Leeuwin. Available information suggests that the range of the species is expanding in Western Australia, with greater numbers of animals hauling out and breeding on the south-west coast.

VIC News

Mixed picture for Port Phillip Bay fisheries

Victorian DPI research scientists can forecast the likely snapper and King George whiting fishery based on the number of baby fish that settle in Port Phillip Bay each year. This year is expected to be a great fishing season (thanks to a successful breeding season in 2007 &

2008), but the successful spawning and survival of young snapper and whiting in the Bay varies greatly. Catches are expected to fall over the next three years.

Snapper spawned in Port Phillip Bay are the mainstay of Victoria's 'western snapper stock' extending from Wilsons Promontory to the mouth of the Murray River in South Australia. Snapper is one of the most highly prized fish caught in Victoria by recreational and commercial fishers. Ongoing research is determining how water temperature, nutrient supply, river flows and currents influence the food supply, growth and survival of fish in the bay.

Blue gropers are now protected [well a bit].

New regulations have recently been introduced to prohibit the take of Eastern and Western blue groper by all fishing methods. The no-catch limit provides protection until April 2012. DPI /Fisheries will then decide on whether the species requires further protection.

Mixed picture for Port Phillip Bay fisheries

Victorian DPI research scientists can forecast the likely snapper and King George whiting fishery based on the number of baby fish that settle in Port Phillip Bay each year. This year is expected to be a great fishing season (thanks to a successful breeding season in 2007 & 2008), but the successful spawning and survival of young snapper and whiting in the Bay varies greatly. Catches are expected to fall over the next three years.

Snapper spawned in Port Phillip Bay are the mainstay of Victoria's 'western snapper stock' extending from Wilsons Promontory to the mouth of the Murray River in South Australia. Snapper is one of the most highly prized fish caught in Victoria by recreational and commercial fishers. Ongoing research is determining how water temperature, nutrient supply, river flows and currents influence the food supply, growth and survival of fish in the bay.

Toxic blue-green algae in Gippsland Lakes

Scientists say they expect the blue-green algae outbreak in the Gippsland Lakes to clear up soon. Tests have found it is now safe to swim in Lake King and Lake Victoria but warning signs remain in place around Lake Wellington, Bunga Arm, Ocean Grange and Steamer. Authorities say fish caught in the lakes are safe to eat provided they are gilled and gutted before cooking but mussels, prawns and crabs should not be eaten.

The cost of having abalone in your underpants

A 52 year old Victorian man has been fined $5000 after hiding illegal abalone in his underpants. Fisheries officers watched him gather abalone in shallow water at Seaholme, near Altona in Victoria. He was wearing only a T-shirt, goggles, black underpants and shoes as he prised undersized and out-of season abalone from the rocks. He emerged with the abalone stuffed down his underpants and when approached shouted obscenities and threatened to kill the officers. He has also been banned from holding a recreational fishing licence for 12 months.

Rare whale photos

An Australian Antarctic Division team was searching for blue whales off the coast of Portland in Victoria last month when they spotted the pod of Shepherd's beaked whales. They captured video footage of up to a dozen of the black and cream-coloured whales which have prominent dolphin-like beaks. Voyage leader Michael Double says the mammals have been seen in the wild only a few times. "To encounter this group was amazing but the fact that they remained at the surface for so long that we could get many minutes of footage is unique," he said. "I've never seen any other footage of Shepherd's beaked whale and since we've come back we've been doing a fair bit of research on this but really there are so few photographs even, never mind about footage." Voyage member Natalie Schmitt says the chance encounter will give scientists a better understanding of the mammal which was only discovered in 1937.

New Artificial Reefs in Port Phillip

The good news for anglers is that governments across Australia are falling over themselves for your vote. It appears that conservative governments in particular see rec fisheries issues as something they can tap into to shore up voter support, in reaction to the 'green tide' that people perceive as having limited fishing activity in some areas.

The Victorian Coalition Government will soon construct a $1 million oceanic reef structure off the coast of Anglesea and Torquay, the first offshore artificial reef in the state. A generous gift by the government? Well perhaps not, as the activity will be wholly funded from recreational fishing licence fees. I suppose we need to be grateful they didn't spend it on something else. This large reef structure will be deployed in about two years' time.

Another eight recreational fishing reefs will be constructed over the next four years using another $900,000 from the "government's" Recreational Fishing Initiative *(I'd guess that is probably all your money too)*. Locations such as Gippsland Lakes, Western Port and Port Phillip Bay are being assessed.

The environmentally-friendly reefs are made of specially designed concrete domes. Three older reefs, named Rec, Yakka and Tedesco, are in the south east corner of Port Phillip Bay in 11 metres of water about two kilometres off the shoreline. A three-year scientific monitoring trial of the existing reefs showed they had been successfully colonised by a diverse range of marine plants and animals. However, exotic pests are also taking up residence.

The current reefs appear to have been more carefully planned than some earlier attempts. Several artificial reefs were established in the bay more than 30 years ago, and only the barge in 18m of water off Carrum and the Mordialloc tyre reef can still be fished. The other reefs have disappeared under sediment, or been dispersed in storms. Since 2001, anglers have been pushing for more reefs using better concrete reefball technology. Land-based anglers will also be catered for with three pier-based reefs currently being planned for Port Phillip Bay, using $400,000 of recreational fishing licence revenue. "The reefs will be in casting distance from the Portarlington, Altona and Frankston piers". Work is due to start in May.

Artificial reefs are fairly common around Australia including at Hervey Bay (QLD), Moreton Island (QLD), Spencer Gulf (SA), Darwin Hbr (NT) and Devonport (Tas).

See the [*damn, I forget which one, read them all*] issue of Marine Life for discussion on reefball reefs and a Devonport dive club's solo efforts.

TASSIE news (that 'other' island)

Marine food web game for kids

The Tasmanian government has just put together an educational game for the classroom, check it out here.

REDMAP

A snapper, over 700mm long and weighing an estimated 7 kgs, was reported caught off Kingston Beach in Hobart whilst bottom fishing. Snapper of this size are a rare catch in southern Tasmania. Congratulations to the young fisher on what is truly a prize catch. If you catch something that is unusual for your area we suggest you log the details onto the REDMAP website, www.redmap.org.au.

No changes despite cray stock decline

Minister Bryan Green has announced that the Total Allowable Catch (TAC) for commercially caught Rock Lobster for the 2012/13 season will remain the same as in 2011/12, i.e. 1273.24 tonnes. No changes have been announced for either the recreational or commercial TACs. According to TARfish, the recreational fishing peak body, "2011 saw another year of small rock lobsters not settling in our waters in the numbers that are required for a sustainable fishery". It isn't just me that finds that odd it seems. TARFish also continues to express concerns about the lack of area management control for the East Coast, where rock lobster stocks continue to significantly decline.

2011 State of the Derwent Report Card

A report card looking at the health of the Derwent has found that investments to improve water quality are paying off, but that a broader scope may be needed to sustain river health in the longer term to also includes the River Derwent catchment and D'Entrecasteaux Channel areas.

Industrial discharges into the Derwent continue to fall with 90% falls in discharges of organic matter from the Norske Skog paper mill. Nine of the Derwent's 18 swimming sites are currently classified as having good water quality; seven are fair. Windermere Beach and the western end of Nutgrove Beach received poor water quality ratings.

Oysters and mussels from the Derwent estuary- including Ralphs Bay - contain high levels of heavy metals, particularly zinc, lead and cadmium. Some fish species from the Derwent estuary have elevated levels of mercury, particularly black bream. More than 15 new

stormwater projects have been completed to capture litter, sediment and other pollutants. Weed management has continued to eradicate rice grass, while the introduced New Zealand weed 'karamu' has emerged as a new challenge. *For a full copy of the 2011 State of the Derwent Report Card, go to www.derwentestuary.org.au or pick up a copy at Council or Service Tasmania offices.*

Breaking News - TCT goes for the hip pocket nerve

The Tasmanian Conservation Trust has stated that may challenge the Australian government's renewal of the Tasmanian lobster export license. The Trust says declining fish stocks and the encroachment of the long spined sea urchin means the industry is on the verge of collapse. Spokesman Jon Bryan says, "We've been trying to work with government and industry for many years to get meaningful management regimes in place and that simply hasn't happened. We're left with a situation where we can either do something now and fix the industry and fix the problem or we can let it go. [*in other words, "this is what happens when you fob us off all the time"-Ed*]

Marine Biologist, Caleb Gardiner, from the Institute of Marine and Antarctic Studies told ABC Local Radio studies showed stock numbers were increasing. "The really important thing, and I think where Tasmania's industry has done well, is they've responded," he said. "So that willingness to change if there's a problem, that's the most important thing to do in looking forward with the lobster stock. They need to continue to be adaptive."

Seafood processor and exporter Michael Blake says lobsters will still be caught, but their value will plummet and make it hard to compete with WA who put a lot of product into Australia as well at a cheaper rate. The Deputy Premier Bryan Green has dismissed the legal threat as a stunt and said there was no scientific basis to the claims. He says the Tasmanian Government has already made cuts to the total allowable catch to secure long-term viability of the fishery.

Critters of Tropical waters

Yellow-bellied sea snakes

(photo courtesy of Redmap)

This sea snake was spotted by a guide on Maria Island in Tasmania. Yellow-bellied sea snakes are not often seen in Tasmania. They are generally warm-water snakes found around the edges of the Pacific and Indian Oceans where the waters are 18-20 °C.

In New South Wales, the species occasionally washes up dead or in poor condition after strong onshore winds or storms. They may have been resident in Port Jackson and Botany Bay in colonial times, but they now seem to be breed further north. Females brood the eggs internally and bear live young in tidal pools after a 6 month gestation. The yellow-bellied Sea Snake eats only fish. When feeding in tanks, the snakes will lunge and bite at anything, including other snakes in the tank. They have few predators and their skin many be toxic.

Yellow-bellied Sea Snakes are only bothered by a species of barnacle that grows only on sea snakes, they manage this issue by frequently shedding their skin. While highly venomous, they

aren't normally very aggressive and don't appear to have caused any human fatalities. They live entirely at sea and sometimes form large aggregations of thousands of snakes in calm seas, within long lines of debris, foam and scum brought together by converging water currents. It is not clear whether the snakes actively swim into the slicks for social reasons, or whether they are carried into them passively.

Local Bits & Pieces

A Day out at Gordon (on the other Big Island)

by Mike Jacques

I recently saw 10 elephant shark and a seven gill shark cast aside by the Gordon boat ramp. They had probably been caught as by-catch in nets, and then thrown away. It was a cruel and pointless death and a waste of food at the least.

Perhaps someone at the jetty had reminded them that the Channel is a shark nursery area. To avoid getting into trouble they dumped the fish, leaving behind a smelly nuisance for other ramp users, a bit of stupidity that only the Pacific Gulls seemed to appreciate.

Next time, maybe leave the nets at home if fishing in a shark nursery area, and if you do accidentally kill sharks as by-catch that you won't eat, at least dispose of them thoughtfully *[look a flying pig!-Ed]*.

This isn't just a Tassie thing, if you want to read up on Mick Lee's attempts to stop similar things from happening at Ammo Wharf WA, see the "Friends of Ammo Wharf" page on Facebook. We'll feature more on that later.

Dances with Sealions

- In Jurien Bay with Mick Lee

Sitting in bed during the week wondering where I would be diving this weekend, decision had not been set until I saw a post on the Western Australian Underwater Photographic Society Facebook page needing 2 extra divers for a trip to Jurien Bay to dive with the sealions.

Yep that's me I'm in, so in a flash email was sent and booked on. You see for me part of the attraction to diving is not just the experiences underwater, people you meet and places you go, but the spontaneity and anticipation of a new dive (any dive).

So Saturday morning came, luckily I was staying half way at Guilderton which was an easier wake up car loaded and off I went, with a quick return to pick up my regulators (ooops need them somewhat) and off I went North bound on the new Indian Ocean Drive. Now this drive probably won't go down as listed with the Great Ocean Road in Victoria or Route 66 but what a great drive it is. It did get me thinking about the Triffids song *Wide Open Road* as I chugged along at a leisurely pace.

With signs flashing by warning of wildlife crossing, a standard within Australia the landscape changes from salty wind blown banksia's to tall grass trees as far as the eye can see, then just as you pass Lancelin massive white sand dunes that reminded me of scenes from old Paris to Dhakar races (how can it be called that now!!). The dunes seemed to carrying out a silent march carried along by the wind.

Pulling into Jurien Bay my first though is wow this place has changed somewhat since I was here last … ok that was 15 odd years ago I admit. But what a bustling little town. I was pretty early so decided to get a paper and coffee from the cafe next to the dive shop. Slowly but surely the others starting arriving in dribs and drabs. Paperwork done, chats had and it's off to the marina and meet the boat.I love boat dives, load up, gear up, float out and jump off. No sand, long walks with gear on and no sore backs.

Leaving the marina we where guided out by an osprey and then met outside by a pod of dolphins who joined us for a play. Dolphins are so cool, it does not matter how many times you see them a buzz goes around the boat. They came up from the side then all as one turned in

to join the bow wave and have a surf, sadly this did not last and as one they all peeled off to get some food or have a frolic elsewhere.

Everyone was beaming, dolphins joined us and the weather was perfect it just does not get better than this sometimes made better when you are joined with friends with a common purpose. As we chatted and sorted through our gear we pulled closer to Essex Rock, home for the colony of sea lions. Essex Rock is a rugged limestone outcrop off the coast. Jagged outcrops of limestone covered in salt bush with two ospreys keeping guard is the home to this small colony of sea lions, and to them it was home and they loved it. What they seemed to love just as much was having play with their human friends. With two kissing on the beach seemingly unaware of our approach the others raised their heads from a siesta and made their way to the water to await our arrival.

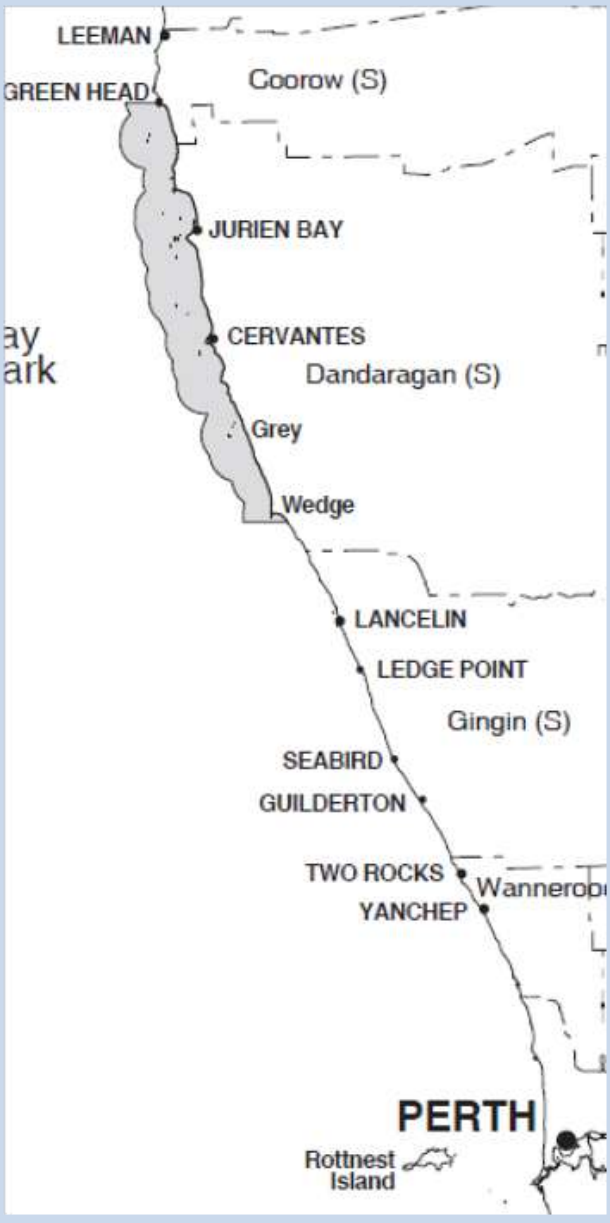
Slipping off the boat I dropped down, much easier underwater than a surface swim, heading closer to the beach. It by no means is deep about 3 – 4 metres max so bottom time was not an issue. Unfortunately there was just enough swell to churn things up a bit, with lots of sand and weed being thrown about. But hey we had sea lions to play with. Soon enough I was surrounded by these delightful animals. Three buzzed past and then turned on the spot for a closer look. Coming so close they would sniff at my red Inon D2000 strobe. Maybe it was the red or just curious but it seemed they loved my strobe with one cheeky bugger trying to grab it with his flippers.

Sea Lions are dead set cute and damn fun to dive with. They revel in the fact the underwater world is their domain, flashing past and then stopping to look back almost laughing at us as we clunk about amazed at their skills and trying to get a photo in frame at the same time. At one point I was watching looking over one shoulder for where the next "fly by" would come from, turning to my right there was sea lion face, he gave me a kiss on the mask and zoomed off. Taken aback I jerked my head up only to see Tammy laughing at me from above. In a more tender moment I was watching Leigh freediving and taking photos, pretty damn cool actually, a pup came

up and sniffed his dome and strobe, slightly moving his hand the sea lion came closer for a scratch under his chin, very cool.

It really is a privileged opportunity to be able to dive with such wonderful animals. They are funny, curious, intelligent and god damn cute animals. All up we had two dives with the Essex Rocks Sea Lions and I enjoyed every second of it Diving with friends from WAUPS makes it even better and adds to the enjoyment levels. Jurien Bay Charter 'n Dive sure run a good operation and if you are up that drop in. If you can't dive then why not snorkel with them its just as much fun diving with my new friends.

BACKGROUND FACTS - Jurien Bay Marine Park



The Jurien Bay Marine Park is located 200 to 300 kilometres north of Perth by road and covers 82,375 ha.

The marine and coastal environment of the Jurien Bay region, with its unique combination of offshore reefs, islands and sheltered lagoons, was identified as an area that is likely to be representative of the marine biodiversity of the central west coast of Western Australia. The move to create a park was sped along by proposal to build a coastal road linking Lancelin to the Cervantes-Jurien Bay area, in advance of the projected increase in visitors. Even then it took more than 6 years, ending in 2003, to get the park established.

The islands within the marine park have also been vested as A Class nature reserves. A concern over the impact on native title rights saw it limited to exclude the inter-tidal zone. It The park extends south from Green Head to the southern boundary of Nambung National Park (Wedge Island).

Activities

Jurien Bay is great for a wide range of water-based recreational activities. The most popular dive areas in the region are off North Head, on the seaward side of Favorite Island, on the wreck of the Lubra and, weather permitting, on the overhangs, rock walls and caves at North Tail, Seaward Ledge and The Boomer. Surfing is

increasing in the area. Windsurfing is most popular at Cervantes, which hosts a major annual windsurfing event, which is part of the "pro-am" circuit and includes the Asia Cup. This event attracts participants from all over the world. Nature appreciation and underwater photography are also popular activities amongst marine park visitors. The park is also located near popular tourist spots like the Pinnacles at Cervantes.

Geology

The Jurien Bay Marine Park is considered to be broadly representative of the Central West Coast Tamala limestone reef system. The coastline in the Jurien Bay region generally consists of curved beaches backed by low dunes, with intervening sand promontories, rocky headlands, or low cliffs of limestone.

Out at the 20 m depth contour, there is another series of long limestone reefs running parallel to the shore, which form part of the largest continuous temperate limestone reef in Australia (running from Dongara to Trigg). Associated with this reef are numerous rocks and islands with large intertidal rock platforms. It is this system of reefs and islands provides protection from swell waves, and in places, shallow lagoons.

Birds

At least 15 species of seabirds breed within the marine park. Twelve species of seabirds have been recorded breeding on North and South Fisherman Islands alone. In addition to seabirds, four species of shorebirds are common to the area. Seabird breeding colonies no longer exist on the coast thanks to foxes and feral cats, but on the island nature reserves they can survive. Tropical bird species include the globally threatened Roseate Tern, increasingly using the islands in the marine park for breeding.

As well as being of ecological significance, these seabird colonies are one of the attractions for people who visit these islands. As a result the most significant pressure on these populations is disturbance by humans landing on the islands and, to a lesser extent, by general boating activities around the islands.

Sea Mammals

The Australian sea lion (*Neophoca cinerea*), the world's rarest species of sea lion, breeds on Buller and North Fisherman islands (not actually in the marine park) and uses other islands in the Jurien Bay region as 'haul out' sites. Charters from Jurien and Green Head are available to take people out to see seals.

The Australian sea lion is an uncommon animal and populations are thought to have declined significantly since European settlement. Of the total Western Australian population of 2,700 -

3,400 sea lions, approximately 800 - 1,000 are found in this area. Even though there are seal haul-out sites on islands adjacent to the Perth metropolitan area, breeding has not occurred on these islands for over 100 years. However, male seals from Perth are known to migrate north to the Jurien Bay area for breeding. As the next breeding area to the south for sea lions is at Haul Off Rock, east of Albany (off the south coast of Western Australia), it is thought that the Central West Coast sea lion colonies may be a genetically distinct sub-population.

The sea lion breeding population may now be stable, with approximately 150 pups born every 17-18 month breeding cycle. Sea lions are also at risk from disturbance on their breeding sites, and entanglement in discarded litter and fishing gear. Sea lion pups have become caught in lobster pots and drowned. The frequency of entanglement and entrapment is not known. On boat trips it is also common to see migrating whales and pods of dolphins. The bottle-nosed dolphin and humpback whale are the only cetaceans that are regularly seen in marine park waters. Humpback whales migrate northward along the Western Australian coastline each autumn (April/May). The humpback whales return to marine park waters in spring (September/October) during their southern migration to summer feeding grounds in Antarctica.

At least three species of marine turtle have been recorded in waters off the Central West Coast. Turtles have not been recorded breeding in the marine park area.

Aboriginal Heritage

The Amangu and Yued clans, two of the 14 tribes of the Nyungar, are believed to have occupied the Jurien Bay region for more than 30,000 years. There is evidence that Nyungar people occupied limestone caves in the Jurien Bay region, with stone artifacts being found in some caves. The coastal dunes in the Jurien Bay region were used for food gathering and Jurien Bay has the largest number of midden deposits in the south-west of Western Australia. The Nyungar people also used the dunes as burial sites and human skeletal remains can be exposed by dune blowouts. These sites should not be disturbed.

Maritime heritage

It is thought that the first white people to live on the Central West Coast were survivors from the Gilt Dragon, a Dutch East Indies ship wrecked in 1656. It was not until 150 years later that a French expedition investigated and charted much of the Central West Coast. The settlement of the Swan River in 1829 led to an increase in shipping along the Western Australian coastline. Poor charts, unknown currents and violent winter storms took their toll on ships, as did the islands around Jurien Bay. There are four recorded historic shipwrecks :

- the American whaling ship *Cervantes*, wrecked off Cervantes Island in 1844;
- the *Maid of Lincoln* wrecked off Jurien Bay in 1891;

- the *Europa* wrecked offshore from the Hill River mouth in 1891; and
- the *Lubra* which foundered adjacent to the Jurien Bay townsite in 1898.

Underwater animals

The marine park contains a mix of plants and animals both temperate (65%) and tropical (35%). Biological surveys indicate that the park's marine plant and animal communities are very diverse and include a number of species that are at the limit of their geographical distribution.

Some areas along the indented coastline are less exposed to the hot and strong Leeuwin Current and the islands and lagoons have varying degrees of water exchange. This means lots of habitat variety, species diversity and also opportunities for endemic WA species, such as the area's unusual sponges, to thrive.

Marine invertebrates are those marine animals without a backbone and include such animals as rock lobster, squid, cuttlefish, abalone, sponges, corals, shells, jellyfishes and anemones. Invertebrate communities are amongst the most diverse and ecologically important groups within the marine park .A 1997 survey recorded 205 invertebrate species, with the highest diversity of invertebrates being recorded in the subtidal limestone reef habitats. Endemic cold-water species found at their northern distribution limits included the turban shell, *Turbo jourdani* , the abalone, *Haliotis scalaris*, and the sand dollar, *Ammotrophus arachnoides*. Rare animals include the cowrie, *Cypraea (Zoila) venusta*.

Numerous colourful corals grow in the deeper areas (although they don't form reefs) and extensive limestone reefs contain grottos and overhangs. These are covered with colourful sponges and sea squirts and surrounded by a diverse variety of fish and other marine life. At the southerly extreme of their range, two coral species of *Acropora* are, with the exception of a few colonies of *A. yongei* at Rottnest Island, the most southerly Western Australian records of living *Acropora.*

The ten most abundant reef fishes in the marine park waters consist of one tropical species, six subtropical species and three warm temperate species, Western king wrasse (C*oris auricularis)*, Brownfield's wrasse (*Halichoeres brownfieldi)*, McCulloch's scalyfin (*Parma mccullochi)*, Miller's damselfish (*Pomacentrus milleri)* , Black spotted wrasse (*Austrolabrus maculatus)*, Western buffalo bream (*Kyphosus cornelii)*, Orange spotted wrasse (*Notolabrus parilus)*, Western scalyfin (*Parma occidentalis)*, Baldchin groper (*Choerodon rubescens)*, Red-striped cardinalfish (*Apogon victoriae).*

Marine Algae and Seagrass

Macroalgae are the dominant plant communities in the park. The macroalgal (seaweed) communities consist of at least 125 species of algae. This rich diversity occurs mainly on intertidal reefs, on shallow and deep (>20 m depth) subtidal limestone reefs. Intertidal rock platforms are dominated by small red and brown turf algae. The large brown Strap Weed *Ecklonia radiata* dominates from the seaward edges of the tidal platform and the limestone reefs in 20 m. Deeper, offshore reef platforms are dominated by red algae (95 species), with some brown algae (22 species) and green algae (8 species).

The Central West Coast marine bioregion contains more seagrass species than any other area in Australia. Seagrass meadows are important habitat and nursery areas and support a high diversity of marine species. Seagrasses also trap and bind sediments thereby helping to maintain water clarity. The densest seagrass meadows are between the Jurien Bay town site and Black Rock and these areas are dominated by perennial (i.e. long-lived) *Posidonia sinuosa* and *Amphibolis* species that may take decades to recover if lost. Higher energy mobile sand areas support smaller meadows of Paddle Weed *Halophila ovalis*, which are often removed by winter storms. Seagrass meadows cover an area of over 215 square kilometres or about 25% of the total area of the marine park. The seagrass meadows in the Jurien Bay region are generally in good condition with some localised damage from boat moorings and anchoring evident in Ronsard Bay, which has between 40-50 permanent moorings. The majority of these moorings are used by commercial fishers.

Potential Issues

The area is considered to be in a pristine condition largely as a result of the low human population and lack of industry. However, it is becoming much more popular which creates its own problems. We could love it to death if we decide to make it the next "Cable Beach". These problems could be,

- Coastal facilities such as marinas can causein major changes to beaches.
- Nutrient enrichment by human activities, such as sewage discharge.
- Overfishing, only relatively small areas of the park are in a "no take" area.
- Oil drilling - onshore reserves of hydrocarbons are exploited at nearby Dongara.
- trampling from reef-walking and recreational fishing
- Visitors also bring in domestic animals, and leave litter. Misuse of coastal areas by pets and vehicles disrupt nesting shorebirds.
- Recreational vehicles (RVs) can lead to erosion.

Critter Files

EIGHT MILLION DOLLAR DUMBO

Recently we saw a juvenile elephant shark cast aside and washed up on the South Arm beach near the jetty. Obviously they are now schooling in local bays.

Elephant shark are found from N.S.W. to southern W.A., including Tasmania. and parts of New Zealand. On its snout it has sensory canals used in foraging for food on the muddy bottom. They snuffle around the sediments in depths of 200m to 500 meters looking for small marine animals.

In spring, adults migrate into coastal bays and estuaries such as Western Port in Victoria, or D'Entrecasteaux Channel in Tasmania, to lay their egg cases on the sandy or muddy bottom. Large eggs are contained in a yellow-brown horny capsule measuring up to about 25x10 cm. Eggs take up to eight months to hatch and Elephant Fish take about 5 years to reach maturity. The distinctively shaped egg cases are sometimes found washed ashore after storms.

World-wide there are only three species of elephant fish. All belong to the order of Chimaeras, a family of fish sharing shark-like characteristics including a cartilage skeleton. Unlike other shark species though, the skin of Chimaeras is fine, smooth and shiny. The cartilage skeleton is also relatively soft, quite unlike the tough cartilage of most sharks and rays. Elephant sharks are exploited commercially, particularly during spring and summer when they migrate into shallow coastal waters. The white flesh fillets of elephant shark are very popular with 'fish-and-chips' shops.

Recently, the elephant shark was proposed as a research model because of its relatively small genome size. A Singapore company is spending $8 Million to map the genome. The sequence and the gene order are quite similar to humans and they may help us to understand the human nervous system.

Very little is known about the conservation status of this species. Modern commercial fishing methods such as demersal trawling are able to catch huge numbers of these fish.

Feedback Corner

We love all kinds of feedback, even if you violently disagree with us. It shows you care :-) WARNING: Rant material ahead…

Did we get it wrong?

This is an interesting one that has been ongoing for quite some time. We're fortunate enough to have been receiving feedback from a local senior scientist who is weighing in on the debate about perceived crayfish stock collapses and commercial quotas. See MJ's rant below, followed by Dr Caleb Gardener's response to the debate. There's a lot more to this one than Michael's usual ranting, so well worth the read. - *Emma*

CRAYFISH STOCK COLLAPSE AND COMMERCIAL QUOTAS

by Mike Jacques

In Marine Life Jan 2010, Dr Caleb Gardner stated that this magazine had made some factual errors.

We had published a rumour that a proposed cut of 20% in the commercial crayfish quota wasn't a 'real' cut, *"they settled on 20% because they weren't catching that amount of their quota anyway as a result of the parlous state of the stock."*

Caleb corrected us, *"...This was wrong as the commercial catch in the previous year was 1492.2 t or 2.02% below the quota, which is about the size of their normal carryover. Their proposal for a 20% cut is a real and substantial reduction in income and I think their action should be applauded, not dismissed".*

This opinion would seem to contrast with stock assessments published by TAFI/IMAS. It is now clear that the recent 20% commercial crayfish quota cut has not resulted in a "*real and substantial reduction in income"* for fishermen. The Fishery Assessment Report Tasmanian Rock Lobster Fishery 2009/10 states, *"The TACC has not constrained the commercial catch for the past two seasons"* [2008/09 and 2009/10]. In the previous 2008/09 assessment, the report acknowledged that this has been a trend for the previous three years [ie, since 2006/7]. IMHO it would not be reasonable to characterise this significant shortfall in catch as a "normal carryover", but it is better described as the result of a long-term decline in stocks.

Perhaps, with the benefit of better information we need to revise our earlier statement. It might have been fairer to say, 'Commercial fishermen appear to have proposed 20% quota cuts in circumstances where they were unlikely to catch this reduced target anyway due to declining stocks. This leaves open the possibility that this was a political ploy to call for deeper recreational cuts. Commercial fishermen are yet to make a meaningful quota reduction that actually constrains their fishing effort'.

In fact, the fishery is in such a bad state due to low recruitment that "*State-wide fishing effort ... is now equivalent to 1998 when QMS [commercial quota setting] was introduced...much of the stock rebuilding that occurred since QMS management commenced has now been undone".* These days we will admit (we wouldn't at the time – we never do) that prior to QMS the fishery was in a mess. We again have an explicit statement that the fishery is in just as big a mess. What then is the rational basis for comments of this kind from commercial lobster exporters?, *"Whilst wild fisheries are in serious decline around the world...The Tasmanian rock lobster fishery has been sustainably managed for over 120 years".*

I agree that we needed recreational cuts and what we got didn't even go far enough. What I'm not happy about is the way we tried to go about getting there. The recently offered commercial "cuts" only give us a distorted picture about where we are, what we need to do next, and who needs to do it.

According to Dr Gardner the 20% commercial cuts were, *"the most significant act in terms of marine biodiversity conservation I've seen...".* Accepting that as a true statement, it says a lot about the poor contribution we have all been making to marine biodiversity conservation with our crayfishing practices. We all need to get our act together. **SO, WHEN ARE WE GOING TO SEE SOME MEANINGFUL COMMERCIAL QUOTA CUTS???**

The response – CRAY QUOTA CUTS ARE REAL!

by Caleb Gardner

The argument that the commercial fishery only proposed cuts to quota because they couldn't take the catch anyway is wrong. The quota is constraining, the TACC was taken in the last year and the cuts were real.

There was high demand for quota from fishers with record prices being paid (for quota, not lobsters) and most of the fleet was tied up two months before the season finished. The TACC is constraining and the stock will rebuild. So I think you need to expand on what you mean by a "meaningful cut". We'd normally evaluate effectiveness of a quota by its probability of achieving a target in an acceptable time period.

The argument that the commercial fishery only proposed cuts to quota because they couldn't take the catch anyway is wrong. It would have required a crystal ball and ignores the sequence of events and the debate that occurred around the cuts. The original 20% cut was part of package developed by a commercial industry sub-committee. They commissioned research from IMAS to estimate the profit maximising total allowable commercial catch (TACC). That analysis concluded that current stock levels were too low to maximise long run economic yield and that a lower quota would increase catch rates and lower costs - this benefit from reduction in cost of fishing would exceed loss of revenue from a smaller harvest. They set a target that approximated maximum economic yield of 1.4 kg per potlift by 2020. That analysis was completed with data up to 2007 before catch rates started to decline. Reaching

their target required quota cuts but numerous possible paths were possible. For example, they considered rolling cuts of between 1% and 6% per annum ongoing until the point of maximum economic yield was reached, or a single large cut. The final commercial industry position settled by vote was the original 10+5+5 package.

Conservationists often find the process described above somehow unsatisfactory because the decision making process that led to quota cuts was based on self-interested economics. But this is the point of quota systems and it's the reason why they are promoted as conservation tools. Biomass targets based on economic yield from the stock are almost invariably higher than targets based on recruitment or ecosystem objectives. The concept is that individual transferable quotas or catch shares align commercial fishers interests with long term conservation of the stock rather than short term revenue. This is because the catch shares are tradeable and become such a valuable financial asset that decisions get made to protect the value of that asset rather than create short term cash flow. This creates the concepts of resource stewardship. That's the theory. Highlighting flaws in the theory is a research focus of mine ... but in this case it's clear that resource stewardship was aligned with the quota setting decision and produced the result. There was no conspiracy amongst the commercial industry or clairvoyants predicting future quota markets.

While there's no debate from me that quota owners would have increased the value of their assets by calling for lower TACCs earlier, or that the failure to take the TACC for two years was a poor outcome for the economics of quota owners, the public discussion around the causes and implications of the TACC shortfall has been naïve. The ability to take the catch is affected by the willingness of quota owners to lease quota to fishers in a market and like any market there are people who hold out trying for a higher price. The demand for quota to catch was also driven by the lag time required for new entrants to come into the catching sector. For these reasons, whether the TACC was taken or not is used as a performance measure for economics of the commercial sector but it is not used as a performance measure for recruitment or ecosystem function. It's meaningless to try linking the taking of the TACC to fishery sustainability. There are perfectly sustainable fisheries where the TACC is not taken and fisheries in decline where the TACC is constraining.

The current catch has been reduced by 28% and is at a level lower than any point in at least the last 50 years (reliable catch data only goes back to 1963). Recruitment has been above average for the last two years. It is logical to expect the combination of below average catch and above average recruitment to lead to increase in legal sized biomass. This will be further assisted by the translocation operations which are now funded through a special levy on the commercial sector. This involves shifting slow growth lobsters to faster growth areas. When combined with a cap on total catch the effect is an increase in the rate of growth of the legal sized biomass. The current operations are estimated to have an effect on the stock comparable to a further 10% reduction in quota.

The ability to develop stock targets for the commercial sector that maximise their long-run, sustainable, economic yield contrasts with our ability to set targets for other objectives. We

limit catch to ensure egg production stays above standard international benchmarks of 20% (the Tasmanian production is actually around double this and thus it's perfectly reasonable to claim it's been sustainably managed). But targets for the recreational sector and for ecosystem function are more difficult. The hope for the MPA monitoring run by IMAS was that it would provide biomass limits for lobster management to protect ecosystem function. This may become an output in the future but at the moment we have no empirical data to guide us and are simply left with the basic assumption that more lobster biomass is a good thing ecologically.

Rebuilding of large lobsters to address urchins is a more concrete goal but that research is still underway. At the moment we lack both a target biomass and a target year. Both the commercial translocations and the TACC reductions are expected to lead to rebuilding of large lobster biomass to higher levels by 2020 than seen for decades but we have no way of assessing whether this is fast enough or large enough until the research is completed. This seems to me to be a case where precaution is warranted and it's why we (IMAS) have been working on management options to increase the rebuild rate even faster. We have found that both MPAs and maximum size limits would be ineffective despite strong promotion from some individuals. More effective approaches involve reducing catch on the east coast and we're working on this currently.

MPAs – An endless forestry debate under the sea? *[follow the previous articles by MJ, starting with Marine Life Dec11-Jan12, and Feb-March12]*

A local scientist was kind enough to forward some feedback and provide clarifying material. We got into a discussion about the MPA debate.

> *"I find the issue fascinating, not the discussion about it. And I agree, the science can only contribute so much. In the end, it is a decision the community and politicians have to make about different criteria: the values of protecting biodiversity/marine habitat, and values of the extent/access of fisheries. I guess the decision would be easier if it was only monetary... The MPA and forestry debates are very similar in this regard, both having a clash between two sides that see principles or livelihoods affected, and neither showing much willingness to find a compromise somewhere in the middle".*

I [Michael] found this an interesting discussion, particularly about compromises, the role of money and comparisons with the forestry debate. I actually think the MPA argument is in a very early stage compared to the forest debate. We are still in the Lake Pedder era, where 'green' involvement is often by relatively poorly organised moderates. That's why people on the other side of the fence haven't accepted that a meaningful discussion is necessary as the 'greenies' don't currently have the political means to force the issue. [Interesting that straight after I wrote this, TCT threatened a legal challenge to export licences].

Money - We shouldn't make the mistake of thinking the current debate is only about money, some sort of rational logic vs emotionalism debate, as I have heard it described by some fisheries managers. Fishermen love the lifestyle too and they are just as emotionally invested in this argument. One common theme I hear is 'greenies' threatening their "freedoms", not their money.

Uncompromising, yes it's getting there. It's going to be a long-term debate run by people with strong values commitments, so strong they can last through serial disappointments. You can expect attitudes to harden and radicalise over time. If you think Jon Bryan is a 'radical' and the TCT are some sort of tree-hugging ratbags, well some protagonists should just stick their heads in the sand for a bit longer and see what comes along next.

MPAs aren't a hard or novel concept - Everyone seems to have forgotten that an MPA is just some defined sub-area with some extra fisheries protection. We have been protecting marine areas (estuaries and bird lagoons) since the early colonial era. Fishermen proposed George III Rk as a 'no take' reference area in 1985. Perhaps the issue is not that we have no-take areas, it's about control, who is allowed to propose them.

I think the chances of doing lasting harm to a fishery from a poorly run MPA system extremely low compared to the possible conservation benefits, unlike the longer-term environmental harm we could do from a poorly run fisheries system. I'm no longer convinced by the repetitive statements about 'leave it to us we do it well' when fisheries can be typified by inaction, or ineffectual measures.

I think people are increasingly wanting to know that there are places, just like land national parks, where animals live in an environment free from human disturbance (as much as that is possible), at least in some relatively small unique areas. That isn't going to go away no matter how mad or bad the supporters are labeled, it's a concept bigger than just fishing export returns.

Sorry, to the person who got this tirade after a short email, I'll take a valium and lie down. Perhaps that's what we need, more sedatives. *[agreed – Emma]*

Queensland Maritime Heritage

The Wreck of the "Aarhus"

- by John Kelley

This old three-masted barque built in 1875 in Hamburg, Germany hit Smiths Rock and sank very quickly on 24 Feb 1894. All the cargo of kerosene from New York was lost. Fancy going all that way, thousands of kilometres, blown along by the wind, only to drop all your cargo just before the finish line on the sand at Smiths Rock. As the boat landed on her keel there is speculation that she would have stood almost upright for some time her masts and sails flagging in the wind some 30m above the waterline. What a sight.

All hands were saved but the Danish authorities were not impressed with the Australian Maritime Board who took the Master's licence from Captain Christian Gram of the Aarhus. He argued that it was their fault as he signalled for a pilot but none turned up. He was turning to anchor offshore to wait for a pilot when he hit the rock. The Danes gave the Captain another Master's licence – now what biases are running there?

Starboard bow

Anemone fish

Our Club (URGQ) had a bit to do with finding the wreck. Club member and keen maritime heritage enthusiast, Linton Holroyd, talked the US Navy into locating all the wrecks off Moreton Island with their sophisticated sonar gear hanging off a helicopter. He passed that information to the Maritime Archaeological Society who gave it to Ben Cropp. In 1979, Ben also used some sophisticated gear he owned to locate the wreck out on the sand.

Starboard bow

Admiralty anchor and bowsprit

Apart from the history, the wreck is also an oasis in a sandy desert for fish life. There are schools of pelagic fish such as kingfish, amberjack and schools of smaller bait fish, although few were present on the day I dived it. Anemone fish dart about in the few anemones that have managed to find a space on the heavily algal-covered remains. On this dive a large school of stingrays had buried themselves in the sand nearby and raised a cloud of "dust" as they hurried off in response to our descent. A large turtle had his head wedged in a corner oblivious to the passing divers. Other divers spotted, and photographed, a numbfish and a fish-hooked cod.

Collapsed deck plating

Starboard bow

There is not much left of the wreck, but enough to recognise it as such. A large starboard bow section still sits upright and the bowsprit pushes out into the endless sand held down by a couple of Admiralty-pattern anchors. These anchors always add that historic touch and remain too heavy for the odd petty marine thief to lift. Yes it is an historic wreck and protected. A permit (free) is required before diving on her. Further aft is a mass of cross-hatched metal ribbing the remains of the deck plating. A bollard sits upright and many other bits and pieces lie about. It has been pounded by seas for over 100 years in its sandy grave so it's remarkable that even this remains.

Tasmanian Underwater Explorers

Fragments of an early history

"It is given to few in this world to investigate the secrets that are hidden deep down under the surface of the sea, where live strange creatures and growths unknown to the ordinary human being, and where death is courted at every step. There is, however, a class of men who make their living under the water…" ***Mercury 1929***

Commercial divers - 1841 to 1945

Look at a general history of diving apparatus and you will see that diving equipment has been used for centuries for commercial salvage work, varying from leather bladders in improbably dangerous configurations, to the more readily recognized brass helmets of the nineteenth century.

By the late 1840s the design had settled on a variety of brass helmets and rubberized drysuits. In the days before the internal combustion engine, the air was supplied by the sweat of a surface crew, pumping air to divers and struggling to keep up with their pressure requirements in the relatively modest depths achievable at that time. This new apparatus gained slow acceptance, first for salvage, construction and military work. Once a local port authority was convinced to buy a suit, then the poor port diver was used for anything and everything underwater. This could include repair of wharves and navigation aids, recovering dead bodies, scrubbing hulls, replacing moorings and repairing damaged ships. The jobs all had one thing in common, dark, dangerous, physically demanding and often in smelly industrial ooze.

It wasn't until much later that the value of the equipment for scientific research and recreation was recognized and people spread away from the worksites to explore more widely.

The first Tasmanian commercial divers

Tasmanians appear to have had a long fascination with the underwater world. Locals were aware of the design of diving bells from as early as the 1830's, when they were a bit of a fashionable new 'thing'.

In 1834, Dr Ross at the Hobart Mechanics Institute proposed that a diving bell was needed in Hobart for wharf construction work. It is likely that he had sketches of them in books sent out from England.

Three big shipwrecks in the D'Entrecasteux Channel during 1835 spurred on some local inventors. Francis Jones came up with the plan for a "diving car" which was assumedly some type of diving bell, come mini-sub, but he needed £l00 to build a prototype.

> *"The art of exploring the depths of navigable rivers or has, has hitherto been much neglected, though I have for some time considered it practicable to bring it to great perfection. The recent catastrophes in the Derwent and D'Entrecastcaux's channel, have inclined me to consider more attentively the possibility of constructing an apparatus or machine, by means of which one or two persons might descend to any depth in the water, and be enabled to make fast any rope to any article or substance, on the bottom of any bay or river. I have at length invented a machine, which I call a diving car".*
>
> *The construction of this car is such that the adventurer requires no assistance from persons above the water, but can at his own command raise or sink or move his car in any direction he pleases. The adventurer is also provided with a messenger by means of which he is enabled to communicate with persons in attendance above water... He can remain under water with safety for any length of time not exceeding 48 hours."*

As he seems to have later turned up in Bankruptcy Court, it is unlikely that the diving bell was built.

The transported convict, Richard Johnson Burbidge [also called George Durbige in other reports], was Tasmania's first commercial diver. He was a housebreaker and all round hard sort that had been convicted again in Sydney for another offence and sent to Van Diemen's Land for further punishment. He was assigned to the road gang and there had contact with the government engineers working on the roads. The government was eager to remove shipping hazards in the Tamar, so he claimed some experience with diving dress in a scheme to earn his freedom. He did manage to invent his own diving apparatus. The details of it aren't clear, but it's possible that in England he had seen a Deane brothers smoke helmet, or an early Siebe suit. It is unlikely they had the means to make a proper brass helmet and I suspect it was a glorified wooden bucket with a simple glass porthole and a leather collar. The engineers would have known how to make a convict-powered air pump as they were using such devices in the convict coal mines. Burbidge's gear, as rough as it may have been, is pretty remarkable achievement as diving dress was a very new invention. The Royal Navy hadn't even started using diving dress.

27/2/1841 *"Whirlpool Reach Rock. A crown prisoner some time hence; intimated to the engineer department that be understood the construction of a certain sort of diving apparatus and the use of it, and that he would undertake the removal of the rock in Whirlpool Reach for his pardon. The offer was of course assented to, and the man has*

made several descents, and expresses himself quite confident of succeeding, if he be furnished with the means."

"*WHIRLPOOL REACH ROCK*.-*The diving apparatus recently constructed, and which we have before noticed, was tried on Monday last, at Whirlpool Reach. The diver remained under water about a quarter of an hour, and from his examination of the rocks, is confidently of opinion that their removal can easily be accomplished. There is at least, therefore, some hope that this dangerous obstruction to the navigation of the Tamar will be speedily removed. The apparatus was found to answer its purpose well, and will admit the diver to remain under water for any length of time; a few pounds of gunpowder will soon do all that remains to be done "

17 April 1841. "*The man now employed with the diving apparatus asserts, that if he is provided with needful assistance in boats and men, he will engage in nine months to clear away as much of the rock as to give over it eighteen feet at dead low".*

Later reports suggested he didn't make much progress and with his plans for a pardon in tatters, he absconded in a stolen whaleboat.

By **12/10/1844** *"This man, who escaped many months since in company with others, and absconded with Mr. Cox's boat from George Town, was recently apprehended on the coast of New Holland, transmitted to Hobart Town, and thence a few days since to George Town. The man is commonly known as the "Diver", having been employed in that capacity at Whirlpool Reach; he became the leader of a strong party of runaways."*

The earliest record of a commercial dive undertaken in Hobart using recognizable diving apparatus is 1852. Unfortunately the workman responsible was considered too insignificant to name,

"…yesterday morning some repairs were made in the seam of the "Maid of Erin", below water mark. A workman from the establishment of Mr. MacGregor having equipped himself in a diving dress with helmet, fitted with strong glass bull's eyes, descended, and fastened a sheet of copper to the side of the vessel. This occupied about an hour and a quarter, at the expiration of which time the diver ascended, apparently nothing the worse for his temporary submersion."

In 1857, Mr. Ackerman had a hardware store at the Launceston wharf specialising in mining gear and ships stores. He also imported diving suits, *"Mr Ackerman, who has a diving apparatus lately received from England, has purchased a punt and secured the services of an experienced diver to search for gold in some of the basins of the Esk."* One of the miners, *"Butcher, who has volunteered to explore the South Esk basins in Mr. Ackerman's diving apparatus, is quite prepared to do so now, and Mr. Ackerman has no objection to supply the diving apparatus and a punt to work it from; but he is not willing to bear the whole expense, himself"* and sought other investors. It was a scam as not much gold was ever found in the Basin.

Ackerman went on to run a public baths and bazaar onboard the cut-down hulk of the condemned vessel "Kains". It seems that you could pay to try out the Tyler & Sons diving apparatus in the baths. As Tyler was an English brassfoundry owner, it was probably a very early type of brass diving helmet.

We didn't have to wait long for the first fatality as the gear and procedures were all new, and no-one understood the medical limitations of this kind of work.

In 1855 the *Katherine Shearer* exploded off Dover, taking to the bottom a valuable cargo of general merchandise. It was in inaccessible depths of 15 metres, but the cargo was sufficiently tempting to entice someone to try a diver with the new-fangled breathing apparatus. Early attempts were partly successful, so they came back to recover more in 1858. Unfortunately, they picked someone who suffered from epilepsy, nowadays considered a 'no-no' for diving,

> *"the deceased, whose named was George Smith, aged 38 years, was employed on board the schooner 'Louisa Ann', Solomon master, as a diver, to work at the wreck of the 'Katherine Sharer'. He had been down in the diving dress on two previous occasions in search of the wreck, which lies at Point Scott, in about seven fathoms of water. During his third descent on - Monday, the I3th inst., at 4 o'clock in the afternoon, he bad been down about 10 minutes walking about, when his movement appeared to be arrested for a few minutes, The master of the schooner, Mr. Solomon, who was attending the hose (by which the air was conveyed to the pump to the diver) and the signal line as well, not feeling him check the latter when expected to do so, became alarmed, and having given a signal without receiving a reply, he immediately hauled Smith up and removed the helmet, when, to the dismay of all on board, the poor fellow was quite dead. The pump had not ceased in supplying the usual volume of air while he was immersed. After a post mortem examination the medical evidence showed that the deceased was predisposed to apoplexy, which was possibly accelerated by an insufficient supply of fresh air. The verdict returned was " Died from apoplexy while under water in a diving dress, and that no blame could be attributed to any person."*

*[stay tuned for **Part II** next edition]*

WHAT'S ON in April – May 2012

WOULD you like to advertise an event with a marine flavour, or advertise a web address (local or national-wide)? Let us know! So far mostly only the scuba divers send us stuff.

Local (Tassie) happenings

SCUBA diving clubs online calendars

TUDC – www.tudc.org.au/diving/dive_calendar.php
TSDC – www.tsdc.org.au
Contact us for TSAC, Ocean Plus and Leven upcoming events.

Coastal walks

hwww.hobartwalkingclub.org.au/html/fwdwlks.html

Sea and Shorebird sightings

www.eremaea.com/BirdlineRecentSightings.aspx?Birdline=3

AMSA-NZMSS 2012 joint conference

Sunday, July 1, 2012 - Thursday, July 5, 2012 Wrest Point Hotel, Hobart.
The theme of the Australian Marine Sciences Association Inc. and the New Zealand Marine Science Society conference is *Marine Extremes - And Everything In Between.* A creative reflection of the environmental events of the past year, and covers extreme events such as cyclones, floods, tsunamis, dust storms, thermally-induced bleaching, hypoxia, ocean acidification, biological invasions or ecosystem shifts, to name a few.

Nation-wide stuff

Centenary of Antarctica

http://centenary.antarctica.gov.au/events

NSW - Australian Museum

Museum Night, 17 & 18 May, Explore the Museum after dark armed with a torch, a glass of champagne and an expert guide. Scrutinise our darkest galleries as you've never seen them before.

Discovering the origins of sex from ancient fish fossils
Monday, 2 April 2012 from 6:30 PM to 8:30 PM Sydney, NSW

Discover Long Reef Aquatic Reserve
Thursday, 5 April 2012 from 12:00 PM to 3:30 PM Collaroy, NSW

NSW - Australian National Maritime Museum

Centenary of the Lady Denman Ferry, Jervis Bay – 4th April 2012
Take a day-trip by luxury coach to Jervis Bay. Visit *Lady Denman* Heritage Complex for a guided tour of exhibitions and the historic ferry.

Garden Island Naval Heritage Tour - 19th April| 10.30am-2pm
Behind-the-scenes guided tour of Garden Island heritage precinct with representatives of The Naval Historical Society of Australia.

WRECKS, REEFS AND THE MERMAID Travelling Exhibition
In 2009 the Australian National Maritime Museum organised two archaeological expeditions to remote coral reefs off the coast of Queensland sponsored by the Silentworld Foundation. Photographs document the search for the Colonial Schooner Mermaid,

wrecked in 1829, the wrecks of HMS Porpoise and Cato, both lost in 1803, and the marine environment of these sites.

WA – WA Museum Perth

Exhibition on the Dampier Archipelago. Explore the region's marine diversity. This exhibition showcases a selection of organisms found along the shores and beneath the waters.

WA -Ningaloo Whaleshark Festival

25 to 27 May, Exmouth, The Ningaloo Whaleshark Festival features a family day in Federation Park with live entertainment, music, exhibitions and educational displays.

NT - Free evening concert to celebrate the Darwin Waterfront's 3rd birthday

Darwin, Saturday, 5th May - Symphony Orchestra joins with the Australian Children's Music Foundation for a free evening concert and fireworks. Arrive 5:30pm to get up close and learn about the different instruments of the orchestra.

NT - Would you like to be a marine biologist?

Charles Darwin University Ellengowan Drive Brinkin, 19th May 2012, 9:30am - 10:30am - take a walk around CDU's aquaculture industry training facility where we might run into marine life such as red claw yabbies, sea cucumbers, corals and starfish. Free

NT - Easter Saturday at the Darwin Waterfront

Saturday 7th April, Fun for kids, Enjoy free arts and craft, circus workshops, games by 'Life.Be in it', balloon modelling, face painting and chocolate Easter eggs for all children.

VIC – Surfriders Association

Revegetation Project at Fisherman's Beach Torquay working on a section of cliff above the famed 'Fishoes' surf spot. Their first working bee is Sunday 22nd May, 11am and everyone is invited to come along and do some planting. Meetings are the first Wednesday of each month, 7.30pm at the Bird Rock Cafe, Torquay.

VIC - Field Nats Marine Research Group

Various walks and activities, see www.fncv.org.au

We're on Facebook!

Check out our "Marine Life Magazine" page on Facebook to interact directly with us famous people, and to hear the latest news and updates.

How to make a contribution

This involves sending us an article by email, preferably not too long and with a photo or two. Sorry, no money, it's all a love job and just for the glory. We'll use your contribution for the purpose for which it was given, for non-commercial uses and with attribution. *Contact Us; marinelifetassie@gmail.com*

Back Issues

We have been gathering together a lot of information and stories since November 2009, so if you are new and interested, please log on our back issues page which has been generously hosted by the Tasmanian University Dive Club,

www.tudc.org.au/news/marinelife.php