MARINE *Life*

June July 2014

ISSUE 31

Our Goal

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

The Crew

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Cover photo, Hulk "Francis Henty", Port Phillip Bay, Victoria by Phil Watson

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Some Marine Parks are Not Working

Some MPAs are just too small, poorly protected from fishing and in the wrong spots

A recent study compared fish communities inside protected zones in 40 countries at nearly 2,000 different sites across the world. Professor Graham Edgar from the University of Tasmania says fish stocks weren't much better in many protected zones than nearby fished areas. Some other marine protected areas actually had incredibly large differences in terms of very high numbers of fishes and other species. Those marine parks had twice as many species of large fish and 20 times more sharks. The most effective marine parks shared five key factors.

- no fishing was allowed;
- they were well policed;
- they were relatively large in size;
- they'd been there for at least 10 years;
- locations were isolated by barriers so that the fish didn't swim across the boundary and get captured outside the area.

The study looked at 26 protected areas in Australia, about a quarter of those are effective, including the Middleton Reef off the north-east coast of New South Wales. "In many situations it only requires a very small modification to the zoning system to make effective habitat boundaries around the edges that might just mean extending the boundaries for 100 metres or so, so that there's a sandy beach at the end of the zone".

The D-Generation --our bad report card

You don't want to hear this and have your own theories as to how it happened, but the results of our inactivity mean we are looking at a good caning at some time in the future.

The latest United Nations climate change report card predicts Australia will continue to get hotter. It's highly unlikely that we'll stay below 2 degrees warming if we keep going as we are. That means whole ecosystems could be wiped out.

The IPCC's report has identified eight risks for Australia:

- There is the possibility of widespread and permanent damage to coral reef systems, particularly the Great Barrier Reef and Ningaloo in Western Australia.
- Some native species could be wiped out.
- There is the chance of more frequent flooding causing damage to key infrastructure.
- In some areas, unprecedented rising sea levels could inundate low-lying areas.
- In other areas, bushfires could result in significant economic losses.

- More frequent heatwaves and temperatures may lead to increased morbidity - especially among the elderly.
- Those same rising temperatures could put constraints on water resources.
- Farmers could face significant drops in agriculture - especially in the Murray-Darling Basin.

"Higher degrees of temperature change also carry with them higher degrees of rainfall change, both in terms of their average rainfall and likely increases in rainfall intensity. CSIRO chief research scientist Mark Howden said the latest science predicted production could drop by up to 40 per cent under a severe drying scenario.

There is likely to be "significant change in community composition and structure of coral reef systems in Australia".

"If we keep on doing on what we're doing - and that's ramping up local and global stressors - coral reefs will disappear by the middle of this century or be in very low amounts on reefs around the world."

The report summary says the concentration of carbon dioxide in the atmosphere has risen by 40 per cent since the pre-industrial era.

Scientists agree ocean surface temperatures have continued to increase throughout the 20th century and into the 21st. IPCC drafts indicate the Indian, Atlantic and Pacific oceans have warmed by as much as half a degree, which has profoundly altered marine ecosystems. Rising water temperatures and some levels of ocean acidification mean species are on the move. The majority of climate models point to a mean temperature rise of around 2 degrees Celsius. The smallest predicted temperature rise is 0.3C and the largest rise is 4.8C.

The majority of the modelling points to a global mean sea-level rise of between 26 and 82 centimetres by 2100. The worst case scenario is for a sea level rise of 98cm.

The Intergovernmental Panel on Climate Change (IPCC) says there is now a 95 per cent probability that humans are responsible for global warming.

Federal Minister for the Environment Greg Hunt told Saturday AM that the Coalition accepts the scientific assessment published in the report. US secretary of state John Kerry says the report is a wake-up call.

UN secretary-general Ban Ki-moon says the study is a call for governments, many of which have been focused on spurring weak economies rather than fighting climate change.

Australia must triple its carbon emissions reduction target for the nation to have a "credible response", according to a report from Australia's Climate Change Authority. The cost of reaching a 15 per cent reduction target would be around $210 to about $850 million (from a budget of 500 billion) over the seven-year period between now and 2020. However, the Government says it will not be changing emissions targets.

Out of sight but still cared for

The Depths over 200M may be beyond our reach as visitors, but the deep ocean is an important and fragile habitat that needs our help.

Covering more than half the planet, the deep ocean keeps us going by sequestering lots of our excessive atmospheric CO_2. It also recycles major nutrients giving us food. It is predicted to hold millions of yet-to-be-described species that may have the compounds needed to cure disease. It may also store large quantities of untapped energy resources, precious metals, and minerals. The deep ocean is critical to the health of the planet and human well-being.

A recent report by IMAS in Hobart calls for stewardship of the world's largest living space—striking a balance between wise use of vast resources and maintaining the deep ocean's delicate ecological balance—now, before permanent loss occurs.

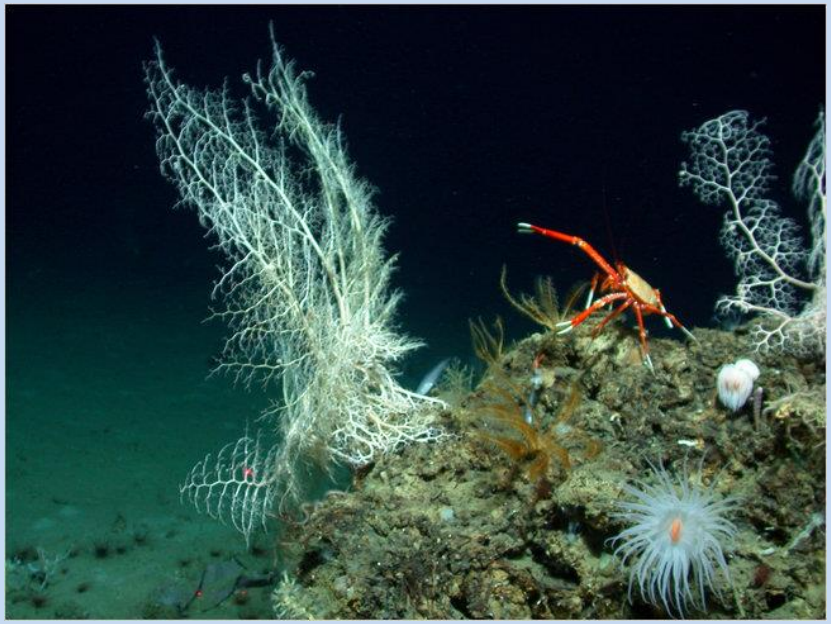
The deep ocean remains largely unexplored. "What we have seen reveals vastly diverse life forms and habitats important to the health of our planet. Slow growing species are the norm, and some ecosystems once injured may never recover.

"Technological advances have greatly improved access to the deep ocean and the resources it holds. We need to move from a frontier mentality and looking at sectors in isolation to a precautionary system."

The paper was published in *Science* and poses an approach to deep ocean stewardship built on protection and mitigation, research, and collaborative governance.

Co-author Dr Lara-Lopez said. "It is vital that scientists and the community, here in Tasmania and around the world, engage in the debate."

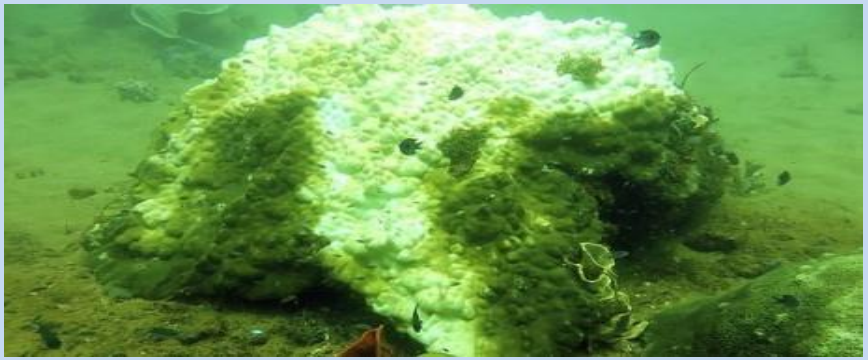
The ideas for the paper arose during an inaugural meeting of the Deep Ocean Stewardship Initiative (DOSI), to provide guidance on environmental management of the deep ocean.



WA NEWS

Pilbara reefs destroyed

Researchers have found ancient corals that have survived centuries have been killed off by two severe marine heatwaves.



Large reefs of staghorn and table corals in a remote region off Western Australia's Pilbara coastline have died. The damage is stretching from Ningaloo Marine Park to the Montebello Islands and the Dampier Archipelago. Corals have died or were severely damaged by unusual heat events in 2010-11 and 2012-13. In probably half the total area there has seen quite severe bleaching.

Some of the coral specimens were more than 400 years old. "Very few environmental events can affect them, let alone kill them."

Separate research suggests the reefs may have been hit hard by the first heatwave, leaving them more susceptible when the second one struck.

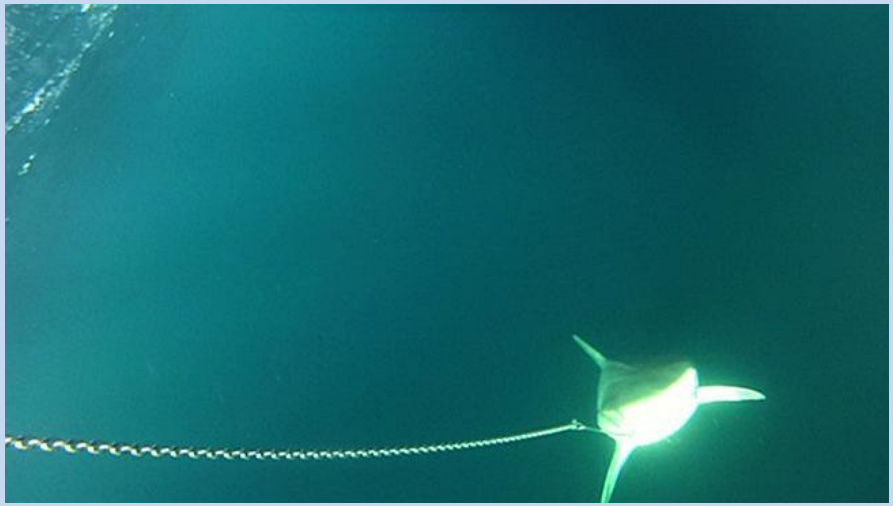
Researchers plan to study the health and changes in the ecosystem, including why some reefs to the north managed to survive largely intact.

The Final Toll

WA Government's shark cull trial has been called a failure, with 68 sharks killed yet no measurable public safety outcomes, the Australian Marine Conservation Society (AMCS) said.

"Not a single great white shark has been caught, even though this species was arguably the main target of the cull. Yet four protected mako sharks have been killed needlessly, along with the capture of 163 tiger sharks and seven stingrays.

Premier Barnett now wants to extend the trial of the cull for a further three years. The proposal to extend the shark cull is currently being considered by the Federal Government, but they have recently indicated they are in no hurry to approve the plan.



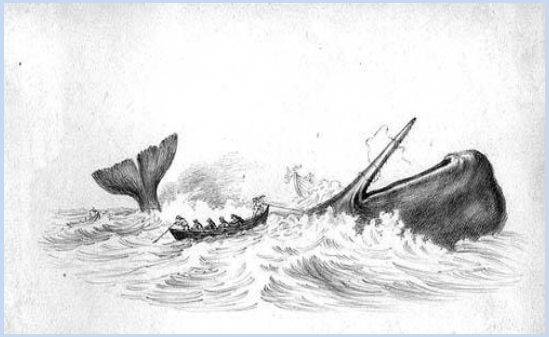
WA Sperm whale numbers not recovering

Researchers say there is no evidence of a recovery in sperm whale populations off Western Australia's south coast, more than 30 years after they became a protected species.

"I mean their reproductive recovery rates are pretty slow but we still would have predicted that at least they would have been holding their own. "I think we need to get out there urgently and have another look."

Off the Western Australian coast, where the continental shelf slopes less steeply, Sperm Whales appear to be less concentrated close to shelf edge and more widely dispersed offshore.

However, Sperm Whales will oddly concentrate in particular places, like a narrow area only a few miles wide at the continental shelf edge off Albany. Similar concentrations of Sperm Whales have been found elsewhere in Australia, such as south-west of Kangaroo Island. In the colonial era these concentrations made it much easier for whalers to severely dent their numbers.



The greatest Sperm Whale catches have occurred since the 'modern' era of whaling with engine-powered whaling vessels, harpoon guns and other technical aids. They killed approximately 900 000 Sperm Whales.

Whaling ceased off the Albany coast in 1978 but in 2009, the number of sperm whales spotted was much lower than at the end of the whaling era. The current population is about 32% of the pre-whaling level and is therefore considerably depleted.

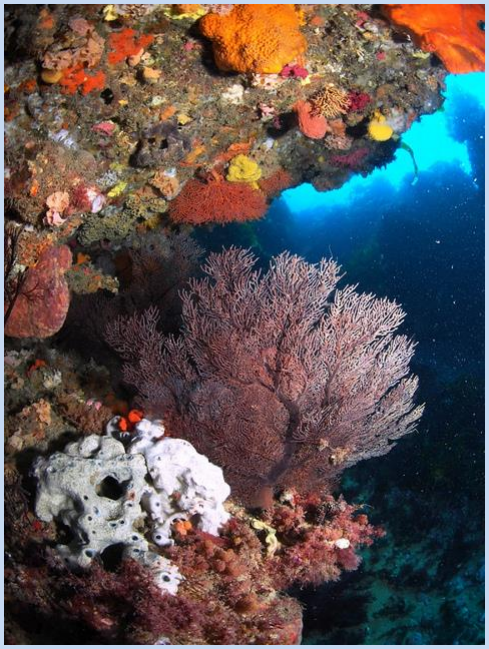
It is possible that Sperm Whales, in Australian waters, occur in severely fragmented populations. The complex social structure of Sperm Whales may increase the potential for loss of particular subpopulations and their associated genetic diversity and social culture.

But before we lose too much sleep, overall, the Sperm Whale remains the most abundant of the large whale species.

Sperm Whales have been recorded from all Australian states Females and young male Sperm Whales are restricted to warmer waters, while older males travel to and from colder waters and to the edge of the Antarctic pack-ice.

Marine Parks in Vic are working

Photos by Phil Watson



The Victorian Environmental Assessment Council (VEAC) released the outcomes of their two year investigation into the performance of Victoria's marine national parks and sanctuaries.

The VEAC report shows that Victoria's fully protected marine national parks and sanctuaries are working. The report also recognised the need for improved management, research, monitoring and better resourcing of the network.

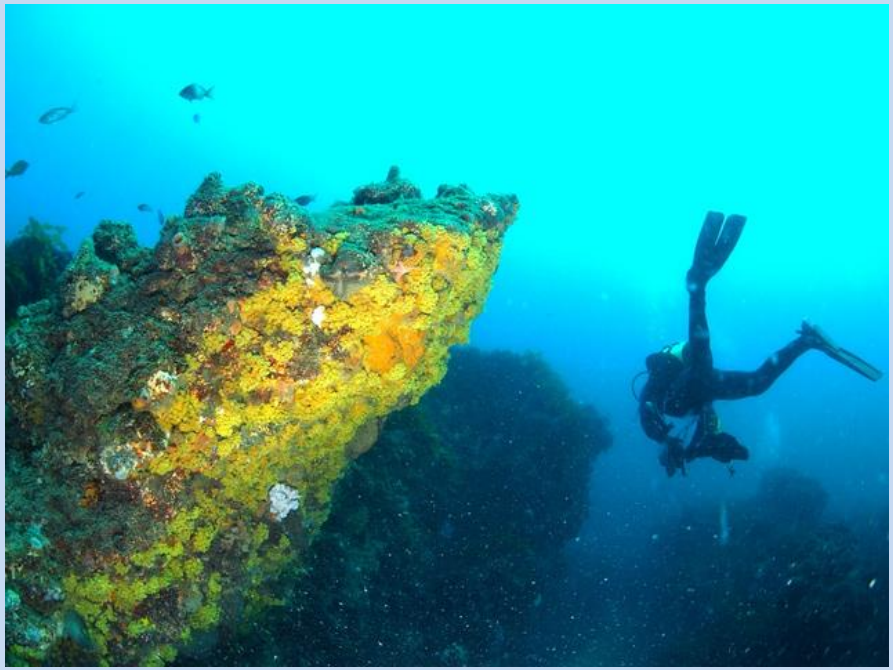
The investigation follows a damning Auditor General's report in 2011 which found Parks Victoria was not effectively managing the state's marine protected areas.

The rather long and sprawling VEAC report shows a very different approach from the NSW MPA audit/review. The latter was created in a highly politically-charged environment, and included a hard core of fisheries management scientists that were known to be hostile to no take MPAs.

The VEAC committees had a very broad membership, including many user groups and community groups. Its scientific committee was only one source of information in what seemed like a far more broad-ranging discussion about values and conservation objectives.

This doesn't mean that all is now well. Fisheries officers patrolling the Port Phillip Heads Marine National Park have recorded a 20 per cent rise in infringements this year, with people either inadvertently or deliberately flouting the law. *"I am surprised because the markings of the marine national park have been improved over the past two years,"* senior Fisheries officer David Burgess said.

Instead of seeing this as a major flaw, VEAC saw improving compliance as a long-term management project, with a need to improve education and attitudes.



Moreton Bay Concerns– fishing and dredging

New research released this month by CSIRO and Queensland University of Technology shows that recreational fishers are actually benefiting from rezoning of Moreton Bay Marine Park – counter to initial claims from some lobby groups.

In 2009 South-east Queensland's Moreton Bay Marine Park was rezoned, increasing the level of protection in marine national parks ('green zones') from 0.5% to 16%.

During the planning process recreational fishing interest groups claimed that the increased protected zones would devastate the local fishing community. The new research shows that these initial fears were unfounded. Key findings include:

- Recreational fishing in Moreton Bay is valued at $20M/year
- Higher catch rates were observed following the marine park zoning
- Rezoning increased recreational benefits by 5-12%.

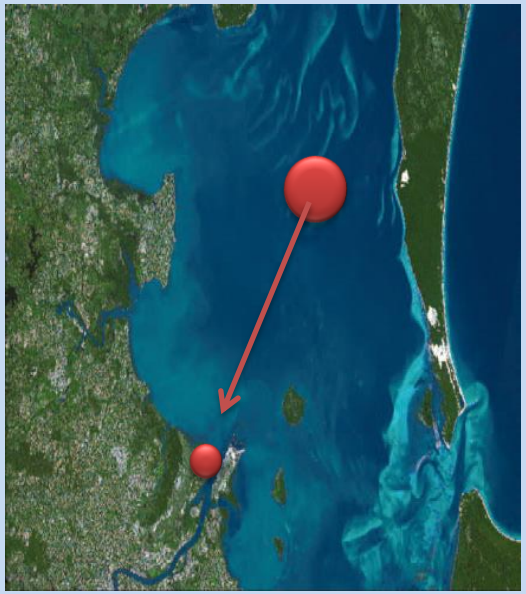
A week before the Redcliffe by-election held on the 22nd of February the Newman Government announced that recreational fishers could soon be able to fish at Scotts Point marine national park in Redcliffe and that further changes to protected zones would be considered. This move was heavily criticised by scientists, the dive industry and environmentalists.

Recently the Queensland Government's abandoned this proposal and committed to maintaining Queensland's current marine national parks.

One project that is still on the go is the dredging of more than 13 million cubic metres of seabed is to commence in the Moreton Bay Marine Park for the next stage of Brisbane's second airport runway.

Sand from Middle Banks near Moreton Island will be sucked up and spread across 350 hectares of mangroves to provide the extra land for a parallel runway, costing $400 million. More than 13 million cubic metres sand will be "vacuumed up" over 9 months.

The Middle Banks are not considered to have high biodiversity and are a naturally tide and sediment affected area. *"Some localised, short term impacts to benthic microflora and possibly seagrass within the immediate vicinity (within 200 m) of the plume may occur, although this is not expected to result in changes to ecological functioning at all but these highly localised spatial scales"* the EIS said.



The concerns relate to loss of mangroves and turbidity. Even environmental groups seem to see the project as one more impact in an area with too many stresses, rather than a large project of itself.

The dredging and reclamation stage will be finished by the middle of 2015. The complete site is surrounded by a protective bund wall with a watertight liner.

SA news

Wave energy plan sinks

A bold plan to float a wave energy plant off Port MacDonnell has foundered.

The initial plan had been to install it three kilometres offshore and feed into the electricity grid to power about 1,000 south-east properties.

Funding for the SA project had been dependent on meeting installation deadlines. A multi-million-dollar wave energy generator was damaged last month while under tow from Adelaide. It could take up to a year to salvage the wave generator.

After its wave energy unit ran into trouble, a receiver was appointed for the Oceanlinx company.

The $7M energy unit was been towed to shallow waters at Carrickalinga but there has been no decision on what will happen next. Rahul Goyal from the receiver Korda Mentha says the wave unit will be secured until an insurance claim is settled.

Transport Department says it will help the receiver solve the problem of the stranded and damaged wave unit. "We also don't want the community to be left with a massive structure like that in their beautiful bay."

"They're going to put some life buoys out there, some signs on the beach and a light beacon as well so people know from a distance that it's a no-go zone."

Granite Island's little penguins gone

Penguin numbers at Granite Island have fallen dramatically over the past decade, with researcher puzzled.

The captive breeding program is at full capacity with plenty of penguins for tourists to see in the visitor's centre, but in the wild it's a different story.

Census results show population numbers have dwindled from an estimated 1600 to 1800 penguins in 2000 to just 20.

Little penguins are vulnerable to foxes raiding eggs, and dog and cat attacks. Another possible reason was predation from the local New Zealand fur seal colony, a theory that fishermen have latched on to call for culls. "There is also potential that there may not be enough food out there for the little penguins. We actually don't understand why these colonies have diminished," a government spokesman said.

Other populations in S.A. could also be declining and more research is needed in those areas."

Whyalla Cuttlefish are Back!

Hundreds of giant cuttlefish have returned to their traditional breeding grounds in South Australia's Spencer Gulf.

It might only be hundreds instead of thousands, but a definite improvement in the population has been noted after a three year long population crash. Local dive operators had expected none this year after very poor recruitment last year. "Well, really I'm just going to stop predicting anything, because I can't explain why those numbers are better this year. "I really did expect virtually nothing, so, as I said, it's good to be wrong!"

The recovery raises hopes that this was only a cyclical variation, Attempts to work out what had caused the population drop were not successful. Although found around south-eastern Australia, Black Point at Whyalla is the world's largest known aggregation site. Suggestions have also been made that while the Spencer Gulf population is genetically different from other populations, they may also use other breeding sites in the Gulf that are unknown. "It does highlight how little we know about nature. It continues to surprise us."

Focus on the Spencer Gulf

Research is being done into how to best manage South Australia's Spencer Gulf

The Spencer Gulf Ecosystem and Development Initiative is led by the University of Adelaide. Researchers have recently been making presentations to local councils.

Bronwyn Gillanders is a specialist in marine biology at the university and says, "You have got significant aquaculture and fisheries in the region, but increasingly there are other users as well.

"There are things like mines developing nearby that will potentially ship their material out through ports around Spencer Gulf and also desalination plants, so there is a lot of people operating in that one area and there is potential for conflict if we don't manage it properly."

There will be a map created to show areas of vulnerability and how they relate to current uses. This 'decision support system' will hopefully assist Gulf users, the government, investors and the community to make evidence based decisions.

http://www.adelaide.edu.au/environment/water/spencer-gulf/

NSW news

Artificial reef off the South Coast

It's hoped an artificial reef will boost recreational fish stocks and provide dive opportunities for the local tourism industry.

A reef will be deployed 4.4 kms due east of Shoalhaven Heads and 6.6 kms north east of Crookhaven Heads. The $900,000 structure will be funded entirely from revenue generated by recreational fishing license fees.

The reef isn't expected to attract new fish species to the region but will boost the fish stocks that already exist.

"Because the structure is going to be inherently different to what you find naturally out there the community will be made up of a similar suite of species to what you find on natural reefs around here," he said. *"But the actual breakdown of how those species are spread throughout the reef will be different and that will be exciting for us to watch how it will develop."*

"The sort of fish we will see definitely, yellowtail king fish, snapper, blue morwong, and because we chose an area that is devoid of natural rocky reef habitat - it is a fairly sandy sub straight out there - you'd expect there's also going to be a number of flathead species around the perimeter of the reef as well."

What a difference a bottle of Grange makes

There are signs that the new Premier and new Environment Minister could overturn an amnesty on recreational fishing in marine sanctuaries.

New NSW Premier Mike Baird represents city seaside electorates, and has spoken of his love of the ocean. Baird has said that he wants to see increased protection for marine sanctuary zones.

Environment Minister Rob Stokes has said that strengthening protection for marine parks is a key priority of his time as Environment Minister.

This has gone down well in their electorates, as urban voters never really accepted the changes, but we are yet to see real action. The Fishers and Shooters Party still control the Upper House, and obviously won't be pleased about such a policy. They were looking forward to dealing with Premier Baird who is seen as more approachable than O'Farrell.

They have already ruled out supporting some large government measures, like the sale of electricity infrastructure. This sale is needed to prop up the budget. Is there a divorce on the way, or will MPAs get sold down the river during all the likely horse trading? We'll have to see how it all unfolds before getting too excited about an end to the MPA fishing amnesty.

NT NEWS

False killer whale off NT coast

False killer whales belong to the dolphin family. They are found worldwide in deep tropical and temperate waters. Most of the data available for the species is from strandings. No global abundance estimates are available, but judging by the large group sizes and regular reports, it was originally assumed that this species is fairly abundant.

They normally live in waters more than 200 metres deep, so when they appeared in the shallows of the Garig Gunak Barlu National Park north-east of Darwin, there was a unique opportunity to study them. Scientists have attached radio trackers to four of the dolphins.

Researcher Carol Palmer said over the past 30 days they had travelled hundreds of kilometres across the Top End.

False Killer Whales have previously been seen travelling in line formation and one large herd of about 300 individuals has been seen. Little else is known of the foraging behaviour of False Killer Whales. Their propensity to steal bait and catch from longlines and sport fishing gear are behaviours that would make them vulnerable to harmful interactions with fisheries. False Killer Whales primarily eat fish and cephalopods, but have been known to attack other small cetaceans in the eastern tropical Pacific.

Substantial differences in cranial characters have been reported between False Killer Whales from Australia, Scotland, and South Africa. Genetic research is required to ascertain whether Australian False Killer Whales could be divided into east and west coast stocks. Ms Palmer suspects there are two varieties of false killer whales, one that inhabits the deep and another that plays and hunts in the shallows.

ALIEN SEA SQUIRTS

If you were brought up right, you have been down in rock pools as a kid annoying sea squirts

In rock pools, kids can give sea squirts a poke. The sea squirts release a small jet of water with surprising speed and energy. Pretty thrilling if you are under ten [*I like doing it too*].

The most commonly seen sea squirts, (also called ascideans or tunicates), are these tough inter-tidal sea squirts that are a favourite with children. They are also commonly found on jetties, or in deeper water.

They might seem boring compared to coral, but tunicates as a group come in a variety of amazing forms and colours. There are 3000 ascidean species world wide, 717 known species in Australia and at least 249 just from Tasmania. Every year more get discovered.

Where to find them

During Coastal activities

Tough, brown sea squirts are really common in the intertidal zone and on jetties where there is a bit of wave movement. In NSW, pyura sea squirts dominate a belt of agitated water in the inter-tidal zone, but they are less numerous on Victoria's Bass Strait coast and in Tasmania.

There are many others to be found as well, but most are usually hidden under rocks and boulders near the low tide mark. The more delicate and most colourful species, are more commonly seen by divers.

Divers and snorkelers

Other tunicates can be seen everywhere in deeper waters, even in the cover of the kelp forest where a lot of other bottom-dwelling invertebrates are not usually seen. Ascideans are particularly common near shady overhangs, crevices, or caves.

Why are they Important?

In the sub-tidal zone sea squirts can give barren areas a bit of structure and will provide a lot of hiding places for small fish and invertebrates. Mollusc can burrow inside their flesh and live as parasites inside them. Most other animals just use it for shelter including little amphipods, shrimps and crabs. Fish will sometimes use them as an attachment points for their eggs.

What eats them?

Sea squirts occasional get eaten by stingrays and starfish. Smaller species also get attacked by nudibranch sea slugs,

chitons, shelled molluscs and some fish. In Chile, humans also eat some sea squirt species.

sea squirts provide structure on the bottom for other animals to live and breed on, including this annoying nudibranch laying its eggs

What do sea squirts eat?

Sea squirts are filter feeders. The mouth opening leads into a sack which is perforated with thousands of gill slits. Sea water is drawn in at the mouth and food particles are filtered out. The gills also extract oxygen from the sea water.

Pyura sea squirts suck in mostly tiny phytoplankton (plant) cells. They don't appear to have any helpful bacteria or fancy enzymes to break down complex food like we do. They are basically totally vegetarian, sitting there waiting for large booms in the supply of 'greens' in the water.

The water left after the filtering has been done leaves through the "squirt" opening. The exhaust opening is always smaller. The smaller exhaust means that the water comes out forcefully and it 'jets' away from the sea squirt. This feature is to stop the sea squirt from wasting its energy re-processing the same water. They can filter a large amount of water. A tiny 2cm wide sea squirt can filter one litre of water an hour.

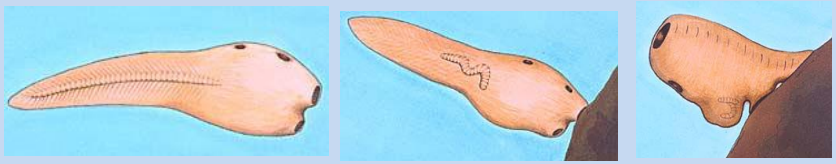
Crazy Blood

Squirts have a small v-shaped heart and blood. The heart can alter its direction of flow for reasons that aren't understood. Some species have high levels of the rare metal vanadium in the blood rather than iron, and others have slightly acidic blood. So they are a bit like the "Alien" of movie fame.

Breeding

When the water goes a nice green shade with a bumper crop of new plant food, such as the algal blooms that follow the Spring winds, they can build up energy for breeding.

Sea squirts don't understand the male/female thing and have both male and female parts (they are "hermaphrodites"). Their reproductive organs mature at different times, that way they don't fertilise themselves when they release into the water. The larvae of pyura sea squirts look a bit like tiny tadpoles and have a spinal chord but no backbone. They also have a rudimentary brain and eye spots. After a brief life of a few hours in the plankton the little "tadpole" attaches itself by the head to something solid in shallow water. It then transforms.



Common Species Australia

In the tide pools and shallows

Pyura Stolonifera or "Cunjevoi"

These sea squirts occur in reefs and on sand in 0-12m depth. They are found from Shark Bay (W.A.) to Noosa (Qld.), including Tasmania. They are also found throughout the southern hemisphere. They can grow to 300mm in height. Pyura can be distinguished from other species of tunicate by its thick leathery tunic, a flat upper surface surrounded by a ridge, and two siphons that lie close together and project slightly above the flat surface. They are often used by fisherman as bait or eaten as food in Chile.

P.stolonifera loves to hang out in big clumps. That way as they breed they have more chance of being fertilised by a neighbour before the current rips the reproductive products away. They don't disperse far, which is one reason why populations of sea squirts seem to be patchy.

In deeper water

Colonial ascideans

Botrylloides magnicoelum, courtesy ncmg.org.au

Some species of tunicates are colonial meaning that they group together and share some body parts. These often colourful colonies of sea squirts can also reproduce in clusters by budding off new tunicates to more rapidly expand the colony.

Sycozoa

A common tunicate in Southern estuaries is *Sycozoa pulchra*, a tunicate that attaches to the bottom with a long stalk. They are an important breeding habitat for juvenile fish.

The stalk allows it to 'rise above' other filter feeders

and take advantage of the slightly faster and less disturbed current that flows away from the bottom. The stalk also sways in the current in a way that always presents an open mouth to the prevailing current. Rare spotted handfish use these stalks as breeding structures in the Derwent River.

This tunicate literally loses its head in summer. Sycozoa sea squirts store up their food inside the stalk in good times, ready for the approaching famine. In early summer the 'head' of the tunicate slowly dies and the remaining stalk stays dormant through the summer and autumn. In winter, the 'head' regenerates from energy stored in the stalk, ready for the next spring bonanza of food.

Red-mouthed solitary ascidean

This is a very noticeable tunicate on southern reefs. It use to be called *Herdmania momus,* but recently this species has been split into 5 new species (including two new Australian species).

The commonest and biggest species is the one found in Tassie, *H. grandis*. *Herdmania fimbriae*, a new species found from southern to north-eastern Australia is different again. It is a big job to work out the differences for yourself unless you are dissecting it (after first getting a science degree).

Stalked sea tulip

This sea squirt is sub-tidal but likes rough and shallow reefs with strong wave action. The Sea Tulip comes in a variety of colours such as orange, purple, yellow or pink. These bright colours aren't from the Sea Tulip but an encrusting sponge, *Halisarca australiensis*, which covers its surface. The Sea Tulip gains protection from predators by using the sponge's chemical defences, and the sponge benefits by having a surface on which to grow

Brain Scycozoa

Not all sycozoa come in stalks, *Sycozoa cerebriformis* consists of folded colony of colonial sea squirts of vertical zooids in double rows. The siphons are positioned along the top edge of the twisted colony structure. Colonies of this species start as small flattened fan shapes. As they grow and expand, the colonies fold and bend which results in the brain-like appearance. They are common to southern and eastern Australia.

Sea Squirt Mystery

The Primrose Sands handfish project divers have noticed a belt of yellow pyura sea squirts out on the sand. They seem to provide structure for lots of interesting little things.

We tried to identify them using internet resources and by talking to the CSIRO. The more we discussed it, the more confusing it became. It could be *P. stolonifera*, or maybe even a completely different NSW species?

The common sea squirt species *Pyura Stolonifera*, which is thought to be common across the southern hemisphere, might actually be as many as 5 species. So that means our Primrose Sands tunicate could be one of 6 possibilities.*[yes, the names are confusing, stay with us]*

A new South African research paper uses the name *P. stolonifera* only for a South African species. The South Africans have decided the Australian species are different, *P. Herdmani, P. Praeputialis and P. Dalbyi*.

P.Dalbyi has a yellow tunic and is said to occur in deeper and more sheltered areas of SE Tas, just like the ones we saw at Primrose Sands. [*If you want a deeper explanation I'll have to mail you a microscope and a research paper]*. However, this hasn't quite been accepted here and who are these South Africans telling us what out tunicate species are anyway?

We tried to solve the mystery by bringing in a local specimen. This great contribution to science was as follows;

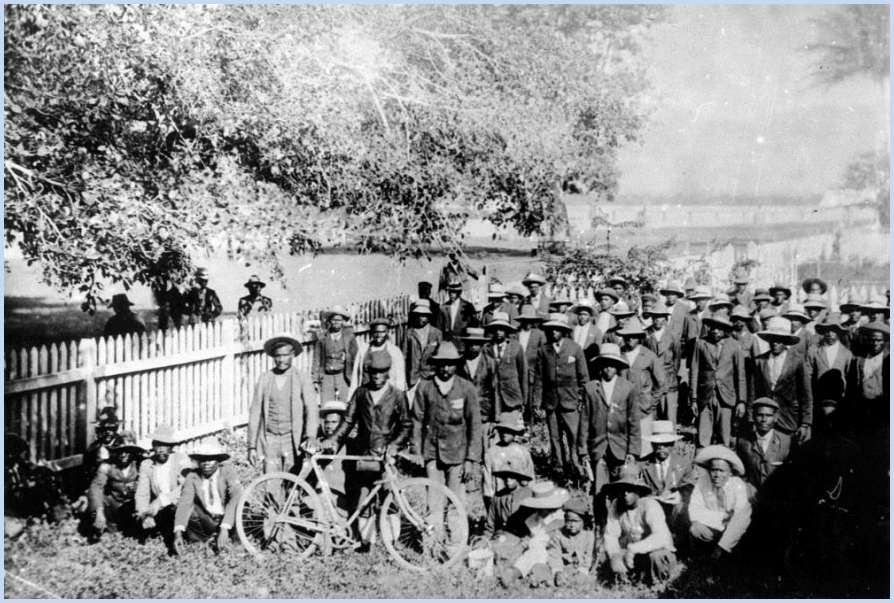
1. lazy amateur diver collects sample and leaves it in his car for 3 days,
2. Said diver deposits sample in the reception area of the CSIRO and runs away.
3. Green and shrivelled remains are cut open for examination, nose pegs!
4. Mystery solved, it's just the common *P.stolonifera,* nothing fancy and no concessions to the South Africans yet.

[*The mystery will eventually be settled, I recommend via a post-conference fight with cardboard swords, as that might be quite entertaining to watch*].

Queensland Heritage Feature

Cairns' Malay Town and it's Artists

A shunned but vibrant shanty town in the tropical north once inspired great artists, but today it is totally forgotten



The Queensland government began selling land in Far North Queensland in 1878 and by 1884 the sugar industry had been established. This early industry relied upon indentured labourers, mostly Melanesian, Chinese, Javanese or Malaysian people. The Queensland Year Book of 1901 recorded that 4.7% of the Queensland population were "coloured Asiatic". This included 1.85% Chinese, 1.85% Pacific Islanders and 0.45% Japanese. 1.32% of the population were Aborigines and 93.98% were recorded to be of 'other nationalities'.

Around the turn of the century people began to congregate towards Cairns as it grew large enough to offer good schools and regular work. Many of those attracted to work around the port and in the sugar mills were Aboriginal people, Torres Strait Islanders, South Seas Islander "Kanakas", Malays, Japanese, Chinese and other non-Europeans. They were often treated with indifference or hostility in this age of the White Australia policy.

There was no housing for these migrant workers so they set up a shanty town near the harbour where Bunda Street meets Kenny Street, at Alligator Creek, called "Malay Town". The Chinese had their own quarter nearby in the market district.

The conditions were squalid and the area became synonymous with crime and poverty, whether it was fully deserved or not. The area was a mangrove swamp and the huts were built wherever space could be found. The homes in Malay Town were mostly built from the timber of the mangrove trees on stilts above a rotting mangrove swamp. Malaria was rife.

Davidson described Malay Town thus, "It stinks at low tide, but looks very picturesque with its crazy little jetties built of stakes, its coil of mangrove, its moored boats…" Palmer said, it"... had somehow kept itself from sinking into slumdom". It was stated that the non-white inhabitants had been forced to relocate here "by the whites who had

Donald Friend

despoiled them of their original homes upon the high ground nearby."

In 1904, an outbreak of bubonic plague occurred in Cairns. The settlement was destroyed because a Singhalese named Houssain died there of the plague. Kerosene was liberally sprinkled and sixteen humpies were destroyed after the occupants had been allowed to remove all bedding, furniture and clothing. As the residents had nowhere else to live, they soon returned to the area and rebuilt their shacks.

Cairns suburb, Ray Crooke

The young Malay inhabitants of Malay Town made a living cutting mangrove wood. The older Malays made a living by fishing in the inlet.

There was a dark side. In the 1930s, some residents supplemented their income through involvement in opium smuggling, the drugs being sold to the Chinese.

Torres Strait Islanders moved in and became the numerically dominant group from the mid 1920s. However this does not appear to have caused much friction. Descendants of the original inhabitants remember growing up in Malay Town surrounded by a warm and caring community.

Cairns was a pretty straight-laced town and Malay Town was known for its dances and singing. The dances were held in a big hall built by some enterprising local men. On most Saturday nights there was an organised dance accompanied by lively music, drinking and fighting.

Many Cairns residents were not aware that Malay Town even existed. It was geographically separate from the town and out of sight. Working class white families in the adjoining suburb frequently visited Malay Town and interacted with the families there. However children of middle class families, who lived further away from Malay Town, rarely went near there.

The cultural diversity in the area attracted Anglo-Australia artists, Bohemians and quite a few 'do-gooders' from the south, including some Communist activists campaigning for the rights of the locals.

Among the artists attracted there were Ray Crooke, Roy Dalgarno, Ian Fairweather and Donald Friend. They often sketched the locals and attracted other artists and activists from the South to come an experience the tropical north.

Roy Dalgarno

Writers Jean Devanny and Kylie Tennant soon followed. Devanny was a staunch pacifist and Communist who toured the north in 1938 extolling women's rights and minority rights. She had widely travelled in the Soviet Union and was inspired to act.

Jean made one of the only detailed accounts of life in the town in her 1944 book, "By Tropic Sea and Jungle: Adventures in North Queensland".

The only time Malay Town made it into the mainstream media was in crime reporting. Despite the romantic way it was viewed

in the south, the local authorities were eager to remove it. For local whites it was just an unsightly slum.

In 1941 they got their way when the area was needed for harbour extensions. *"All of these people were informed that they had one month's notice, with the alternative of interviewing the secretary regarding any further tenure." H*owever, it sounded like the secretary had already decided, *" there was no alternative but to move these people now squatting on the area or to enter into suitable arrangements meeting with the board's and council's approval, in view of their present circumstances."*

In 1948, the local papers triumphantly announced, *"Malay Town, for half a century a blot on the Cairns landscape, has been eliminated. The old area has been absorbed in a reclamation scheme of the Cairns Harbour Board...In the earlier days of the present century. Malays, who were in larger numbers in North Queensland than they are to-day, congregated at this spot. In its heyday, Malay Town must have about 30 homes of varying descriptions. This is part of what is known as the Alligator Creek reclamation...Before obliterating the dwelling places of the last few inmates of the town, the Harbour Board made arrangements for their transference to the Pensioners' Reserve. In addition to the Malays a few islanders, kanakas, settled in Malay Town. As soon as the land is reclaimed, it will be devoted to oil depots and also for any industrial purposes."*

The vacant land in the Pensioner's Reserve in Martyn St then became the site of a new set of shanties.

MEAT FROM THE TROPIC SEA - Dugong Hunting.

By Jean Devanny

[1938 Malay Town].

Meat was short in the native village. Fishing had not been good lately, as many of the fishermen had been down with the 'flu, or with malaria and 'flu together, so some of the Torres Straits "boys" decided to go out on the chance of getting a dugong among the grasses that grew around the roots of the mangroves bordering Trinity Bay, North Queensland.

Spearing the Dugong.

But soon the lugger, under sail, was skirting the fringes of the mangroves, and the men searched for the dirty water that might indicate that the sea cow was tearing up the grasses from the bottom. No sign was found, however, though, having all the time in the world on our hands, we hung around till the evening star shone brightly against the green sky of the brief twilight.

The dugong is always speared. The spears are often heirlooms, handed down from father to son. Charlie Sailor, "king" of the Asiatics of Malay Town, Cairns, possesses a spear the origin of which is lost in the mists of time. It is made of Torres Straits black hardwood; so hard that It would splinter a sharp axe. The

pole is nine feet long; the spear, which is adjusted to one bulging end, is five inches and serrated.

Sailor exhibits it with justifiable pride, for there was no knife in Torres Straits when it was made. "His father got it from his father, who got it from his father," and so on. No one had seen it made. "It was there." It was cut with a stone axe, chipped a little, burnt in fire a little, and worked to its present round smoothness, like silk to the touch, with a leaf like a file. Local men in the north make spears from mangrove wood.

The Fatal Stroke.

The dugong is hunted in both deep and shallow water. Among the islands of Torres Straits a favourite method is for the hunters to search among the grasses at low tide for marks indicating feeding grounds. There they build a platform, upon which a man is stationed, to wait quietly, with harpoon attached to a rope, for the animal to come in with the tide. In this deep water spearing the hunter leaps into the water as he launches his weapon, to get added force. To avoid swallowing water he ensures that his back is to the dugong as it drags him along at great speed. Men come out in boats, and, when the animal is exhausted, haul it in.

Dugong are sometimes taken in the Cairns Inlet when the men are dragging for fish. In that district the hunters usually go out on the spring tide, keeping to windward of the likely spots. If they see dirty water they float, to ascertain if the discolouration is caused by dugong or by stingaree. If dugong, the animal will soon spout. The nose appears above the surface and a splash of water is extruded in a forward movement. The female usually comes up first, the male following. The head of the former is delicately shaped; that of the male is broad, like a bull's. The boat can move close to them, because, the hunter says, they are stupid, can't smell, and have very poor vision.

Like Cows in Pasture.

In shallow water the hunter simply spears the animal from the boat, when it makes off, I sometimes running on its tail, "like a seal." It can move faster than a launch under power for a time, but soon tires. In deep water it will spout and go down when harpooned. When it is exhausted it is hauled in, lassoed, and hung upside down at the side of the launch, where, unable to breathe, it soon suffocates. The natives claim that the oil, got from boiling down the fat, will cure many diseases.

Stinkfish

photo alcw.org.au – Painted Stinkfish

Swimming along a mud and rock bottom you will see startled little fish swimming away from you. Among the gobies and threefins that are commonly spooked, you are also likely to startle a stinkfish or two.

The stinkfish are species belonging to the same family as dragonets or sea robins (the Callionymidae family). Stinkfish are unloved, with an unflattering name and odd looking eyes close together on the top of the head. They have no scales, large tail and fins, and a slimy, foul-tasting skin. Their skin may be stinky, but it's very colourful, so they are cute in an ugly kind of way.

The Painted stinkfish is only found in Australia. It occurs in temperate marine waters from the central New South Wales coast, around the south of the country to south-western Western Australia, including Tasmania.

The Painted stinkfish is usually found at depths between 3 m and 50 m, in seagrass beds and areas of muddy, sandy or shell-covered bottom. It is often well camouflaged. The species grows to 13 cm in length, but is more commonly seen at lengths of 5 cm to 7 cm.

Stinkfish feed on small bottom-dwelling (benthic) invertebrates. The callionymids are sexually dimorphic (different males and female colours) with the males often brightly coloured and patterned. During breeding the fish rise up off the bottom in a courtship display before spreading their eggs into the current to become part of the plankton.

Both Common Stinkfish and Painted Stinkfish are quite commonly seen by divers and can be collected in Tasmania under permit, for the international aquarium market. We don't know a lot about their population dynamics.

Common stinkfish - Pt Phillip marine life website

Heritage Tasmania

Clive Lord – Naturalist and Adventurer

A hobby interest saw an architect become one of Australia's leading scientists and conservationists

Clive Lord started as an architect but had a hobby interest in birds which grew until he became the State's leading ornithologist. He was prominent in the Tasmanian Field Naturalists' Club and the Royal Society of Tasmania.

From 1923-33 he was appointed director of the neglected Tasmanian Museum and Art Gallery. It was a poisoned chalice, but he worked diligently to rebuild its reputation and funding base.

Very early on he got the whole 'conservation thing', well before it was a really mainstream idea.

His interests grew and he struggled to have areas reserved for wildlife on both land and sea. He also pushed for better systems of hunting and fishing regulation.

He also campaigned to preserve Macquarie Island, a struggle that sought to use popular public figures like Sir Douglas Mawson to change attitudes. The island was later proclaimed a wildlife reserve.

As secretary of the Royal Botanical Gardens for many years, he helped reorganize a similarly neglected public asset.

His major written work was, *A Synopsis of the Vertebrate Animals of Tasmania* (1924), but he compiled several handbooks and contributed numerous papers to scientific societies arising from his diverse interests and knowledge of the Tasmanian environment.

He also pursued an interest in history, tracing the landfalls of early navigators in his own yacht and writing *The Early Explorers of Tasmania* (1920). Lord made three trips around Tasmania's South Coast and named many features, including Telopea Point and Melaleuca Inlet.

Another position he held was on the Sea Fisheries Board. Here he and T.T. Flynn, Professor of Biology, took opposing views. He was always passionate and could be stubborn. Not all of his ideas were well researched. One debate that went on for decades was the introduction of pots into the rock lobster fishery in southern Tasmania. After four inquiries Premier Joseph Lyons and Albert Ogilvie replaced the Commission with a new body and reformed the industry, legalising pots in 1926.

Policy fights aside, he was genial, funny, and got on well with people. This helped him succeed in pushing through novel and often unpopular wildlife protection measures. Even the shooters liked him.

He died in his 40's in 1933 and was described in subsequent writings with the epitaph "a gifted and lovable man."

JOURNEYS TO THE UNKNOWN SOUTH-WEST

Part I - Voyage to Recherche

(Extracts from an article by Clive Lord 1926)

Few Tasmanians realise how large a section of their island home remains uninhabited, and, to a large extent, unexplored in detail.

To appreciate the true position it is necessary to take a map and mark off a line, say, from Macquarie Harbour to Lake St. Clair, then south to Adams River, and from the osmiridium fields, with an inward-curve to Recherche Bay. The area enclosed by this line and the rugged south-western ocean cliffs and beaches comprises many miles of mountainous country uninhabited, except for a few stray prospectors, who may happen to be camped within the area. Maps of this section, with the exception of a few special areas, are devoid of detail, and in some cases misleading. This is not to be wondered at when one considers the limited attention which has been given to this extensive and extremely rugged area.

There is promise of great mineral wealth in the future, and, without doubt, the south-west will come into its own, for apart altogether from the fortunes which lie hidden within the wind-swept hills and valleys, there are other attractions which will make this section of our southern isle famous in future years.

Tasmanian scenery is already recognised as being in the forefront of the world's natural beauties, but, even so, the true magnificence of our natural grandeur remain unknown to a large degree. The rounded outlines of the central and eastern mountain masses have gained their praises, but the sunset glows on the white quartzite and schist tipped peaks of the rugged Arthurs and other picturesque ranges have yet to become known as one of the chief items of Tasmania's scenery.

AN ANCIENT SHIPWRECK.

We left Hobart at 1.45 p.m. on Saturday, January 23, under power. Soon after passing Partridge Island at 7.30 we picked up a fresh W.S.W breeze, which increased as we went on, so we decided to put into Southport for the night, anchoring off the Deephole jetty at 9 p.m.

It is interesting to recall that the original Southport was the southern portion of Recherche Bay, the French naming this port Du Sud in 1792, whilst the harbour now known as Southport was named Mussel Bay. These designations, like many other place names in Tasmania, have been moved from their original positions.

We left Deephole jetty at 6.60 on the following morning, but our chance of proceeding along the south coast did not seem very bright. Running past Southport Island we had a good view of the bluff upon which rests the monument to the many souls lost in the wreck of the ship George III., which took place in April, 1836, whilst a couple of miles to the south there was sufficient sea to cause a large break on the submerged rock which was the cause of the, tragedy of 90 years ago.

To the south-east of the George III. Rock are the Acteaon Islands, originally called the Sterile Islands by D'Entrecasteanx, but later becoming more generally known as the Acteaon Islands, on account of the wreck there of the ship Acteaon in 1822. We sailed, close along the western shore of these islands, noting to the west the sea breaking upon the numerous rocks and sunken reefs which fringe Recherche Bay. Bowden's Mistake, the Images, the Sunken Reef, Mutton Rocks, and the Black Reef were all clearly defined by breaking seas, owing to the long and rather pronounced ocean swell which was-working in from the south. Well may Recherche be termed the home of reefs, rocks, and wrecks.

Standing out towards Whale Head a big southerly sea was met with, whilst westward of South-East Cape was a

In December 1834 The *George III* sailed for Hobart, with 220 male convicts, plus guards, their families and crew. A fire and unbalanced diet caused an outbreak of scurvy and fourteen convicts died.

The ship reached the coast on the morning of 12 March 1835 and at about 9.15 p.m. hit a rock and over a period of several hours broke up in the heavy swell. The convicts were kept below to allow the women and children to be safely evacuated by the ship's boats. The guards fired their guns in order to quell rising panic, this gunfire is believed to have killed between one and three of the convicts. Many others drowned below decks, including many of the sick in their beds. In all, 133 lives were lost in the disaster, of whom 128 were convicts.

An inquiry refused to ascribe blame for the disaster but resulted in the tightening up of regulations concerning provisions for the transport of convicts.

strong westerly, whipping the waves into white water. The legend of those who know the district, that there are distinct climates to the east and the west of Whale Head, was well borne out by our experience of the locality. We decided to return to Recherche.

A "LESSON" IN MINING

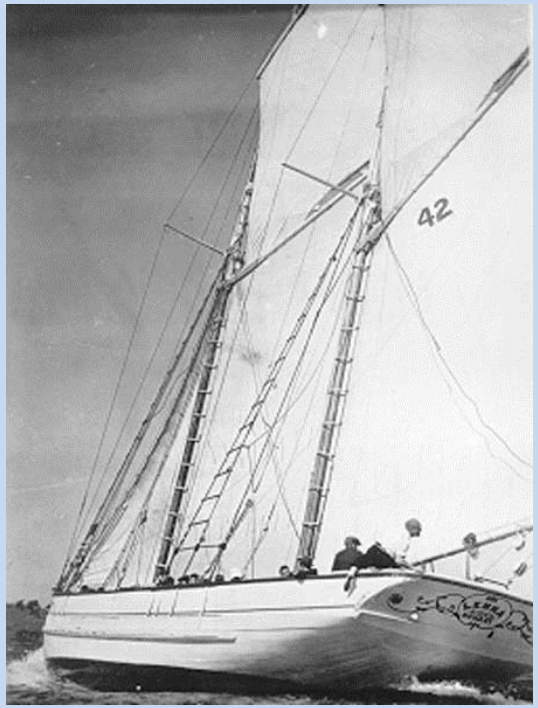
morning the wind was still from the west, and the barometer had fallen to 29.58. Leaving the Waterhole, we motored round past the Denmark Reef to Catamaran, where we entered the river, and brought up alongside the old mill jetty.

Here a most interesting day was spent. Mr. Mackenzie, the manager of the Catamaran coal mine, kindly took us to the mine workings, and generally afforded us information concerning the operations now proceeding. The new company is undertaking very large and extensive works, which are an “eye-opener” to anyone not aware of the developments taking place in that direction.

Members of the Telopea's crew were able to descend a couple of hundred feet underground into the coal mine by means of a wide, well slabbed, and ventilated shaft, and also to try their hands at mining for the sake of securing specimens of the coal.

Returning to Catamaran by means of the train, which runs from the mines to Catamaran township, one is struck with the works which are in progress on every hand, including the new line of railway which is being run from the mine to Everall's Point, in the vicinity of the Waterhole, as it is here that a deep-water jetty is being built.

[finding the weather improving, they departed along the South Coast, but had to run back after getting as far as Maatsuyker. Two further attempts failed]



The Evoral coal bins and tramway

Coal had long been mined in the area, but they were small undercapitalised operations that didn't last long. Some were also closed down as unsafe as they were sodden and prone to collapse. In 1925 a narrow gauge tramline over three kilometres long was constructed to Evoralls Point for a new mining venture. The bins built on the point could store 1,200 tons of coal. The hulk *James Craig* was filled up with coal when the bins were full, then towed to Hobart. The tonnages looked good for a while until a creek broke through and flooded the mine, costs rose, and the field proved to be patchy. The mine had to close for a while, then went broke in 1930. It was taken over by a smaller company. They met a fault and lost the coal seam. The mine closed in 1939, the same year as the last big sawmill closed. The little villages around the bay were abandoned and the bush rapidly reclaimed these ghost towns.

EARLY EXPLORATION.

Like many places in Tasmania, Recherche Bay has a varied history. The early era of exploration, which commenced with D'Entrecasteaux's visit of 1792, when he put in there in mistake for Adventure Bay, and his detailed charts have yet to be improved upon, as no large scale detailed marine charts of Recherche or any other section of the coast from here to South-West Capo have since been published.

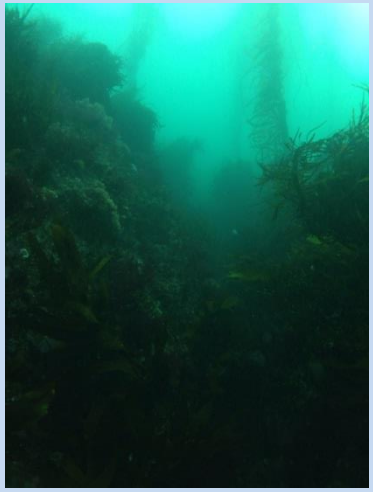
Looking south-east from the Waterhole across the bay one sees the projecting point upon which the French erected their observatory for taking observations and checking their instruments.

Another item of interest in the locality was that of collecting relics of the extinct Tasmanian race, for the dusky former inhabitants of this island wandered not only around Recherche, but along the south coast as well. At several places in the Bay there are traces of their old kitchen middens, and it is here as well as in other places that their chipped stone implements can be found. Several were collected on the point where the Catamaran River enters the bay as in cutting through to launch the ill-fated Annie Mc-Dougall many years ago they cut through an old kitchen midden which had probably been used for centuries.

Old Whaler Wreck Relocated

MarineLifers Mike and Andrew recently went to Recherche Bay for a day out and found a piece of history in the process.

The cool day started with a dive on the kelp near "The Images", a rock formation in the northern end of the bay. The viz was a bit disappointing and although this is the time of year when the kelp is at its lowest ebb, the kelp forest looked sparse and unhealthy. Hopefully it will spring back as this area on the southern edge of the Australian continent is one of the last refuges for giant kelp forests.



Driven back into more sheltered parts of the bay by a squally wind, it seemed like a good time to look for the old wreck in Waterhole Cove. The wreck of the "Offley" recently featured in our Feb/March 2014 edition.

In 1880 the whaling vessel "Offley" put into Recherche after an unsuccessful voyage. While anchored, a strong easterly gale sprang up, the anchor chain parted, and the vessel went ashore and was abandoned.

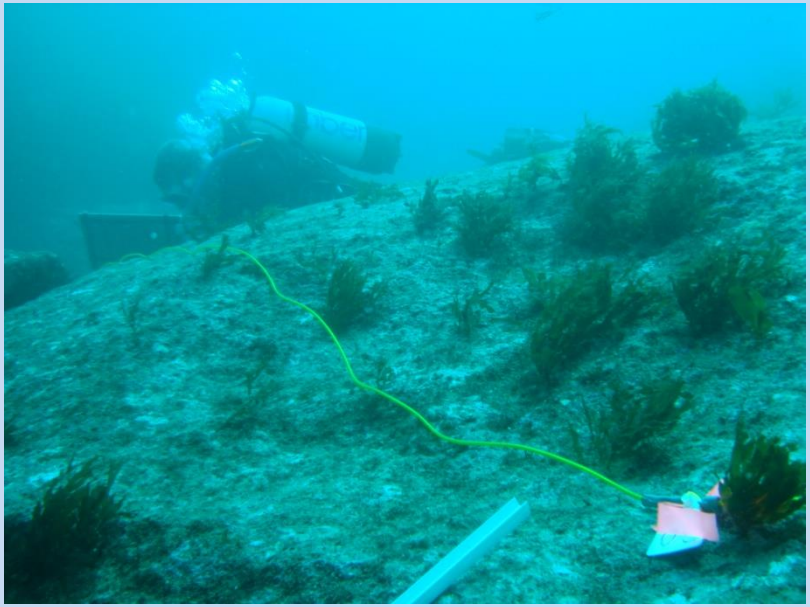
The divers picked a likely spot and basically landed on top of a scattered debris field of ironwork, buried timbers, decking pins, bricks and Muntz metal hull sheathing. A lot of it was hard to recognise, apart from what looked like the remains of a woman's shoe uncovered by recent storms.

The Feb/March 2014 explains the history of the vessel. Although the site was heavily salvaged and now contains few artefacts, the "Offley" was one of Australia's last whaling vessels. Its remnants are still a reminder of an industry important to the development of our society. They are also fun to find, if you are into that sort of thing.

Urchin Barrens

A normally benign little animal is munching its way through our marine environment in new and destructive ways. Research is just starting to uncover how and why

Mike Jacques, with additional photos James Parkinson



Leven Scuba Club at Elephant Rock St Helens on a black urchin barren, rocks so bare you can see the crystalline structure of the rock

An urchin barren is an area where urchins have eaten down the vegetation to the stage where it supports few of its original inhabitants and little in the way of a seaweed canopy. It's a lousy place to fish, doesn't support much marine life and makes for a pretty ordinary dive.

Basically, an urchin does no harm to the environment while its populations are stable and densities are relatively low. Then when an environmental change occurs, urchins can build up in numbers and starting stripping the bottom.

They start to thin out the weed regrowth, working on the easy to eat young seaweed first. When the larger and harder to eat old plants get ripped out by storms, there are no young plants to replace them. One minute the reef looks OK to the untrained eye, the next day there is bare rock.

Environmental changes that trigger this effect could be the loss of crayfish predators in the area, or abnormally good breeding conditions.

Black urchin barrens

In Tasmania we have heard a lot about NSW long-spined urchins, also called black urchins, (*Centrostephanus Rogersii*). They are native to NSW, but they have been extending their range, and have infested the East Coasts of Victoria and Tasmania. They are extremely voracious and can graze an area down to absolutely bare rock over huge areas. St Helens has been heavily damaged by this urchin activity and few areas in the 15-40M range, from the Gardens to St Helens Island, still have good marine life. Spots of urchin damage are now appearing all down the coast.

This development is impacting on fisheries already and is stripping vast areas of its natural marine life. This problem is believed to be caused by overfishing of large crayfish and warming oceans that are encouraging breeding.

Native urchin barrens

Fewer people realise that the Tasmanian native or purple urchin (*Heliocidaris Erythrogramma*) can also cause extensive barrens.

Oddly these only appear in sheltered areas. These barrens also tend to be smaller than black urchin barrens.

These natives can still be a big problem where they eat out environmentally sensitive areas like giant kelp beds, or rare Handfish habitat. They also create opportunities for newer vagrants to get established, like the introduced Japanese pest seaweed *Undaria Pinnatafida.* Unfortunately, this has happened in some important fisheries areas and marine biodiversity hotspots. Although no-one has good records, the barren areas may be growing.

New Research

Black urchins have been studied quite a bit lately. FRDC funding has allowed a major new study to be carried out into native urchin barrens.

Scientists Scotty Ling, Sam Ibbott and Craig Sanderson have been studying barrens for a long time. They picked two barren reefs on the East Coast of Tasmania for study and these held urchin densities of 4-6 per metre which is a density quite common on the East Coast. Seaweed canopy cover in these areas was down to only 5% of the bottom.

Fences were erected around patches of reef to ensure the urchins didn't get in or out as urchins do like to roam about during the year. They removed the urchins in each plot and divers measured how the reef recovered in each of the plots over the next two years.

When we have so many native urchins, why don't we get native urchin barrens everywhere?

The divers noted that when the native purple urchins build up in numbers they didn't always cause barrens. Some exposed areas will look fine even with 8-10 urchins per metre, way more than you needed to form a black urchin barren. Other more sheltered areas would be pretty bare with half as many native urchins.

This can be explained as a result of the greater whiplash action of the weed on exposed sites. In areas with heavy swell the urchins were forced to shelter in crevices and had no alternative but to mostly feed on drift algae, and with more drift weed swishing about in these rougher seas they did less damage to standing plants, even in relatively high numbers.

In sheltered areas, urchins were much freer to move around and caused more mayhem even at lower population densities.

Why are the native urchin barrens less bare than black urchin barren?

native urchin barren, bare but still covered in slime and some weed

Another noticeable difference between native and black urchin barrens is that the native urchin barrens also often look less bare and usually had at least some slimy fast-growing algae still surviving. In an earlier study, a recorded feeding front of more than 100 native urchins per metre still only ate 60% of the seaweed cover. Black urchins knock off close enough to 100%. The native urchins are basically much fussier eaters. When native urchin

densities get very high, native urchins can still eat out almost everything.

Do reefs recover from native urchin 'attacks'?

If the urchins were fully removed they found that the weed cover bounced back significantly in about 12 months, after 3 years it was pretty much back to a more 'normal' 30% canopy cover. This was quite a different result from an earlier study that showed urchin removal just resulted in so much sediment

Once the seaweeds are completely gone, they no longer sweep the bottom free of sediment with their fronds. The result is a build up of sediments on the bottom that makes it too hard for seaweeds to recolonise these sheltered areas even if the urchins are removed. This might explain the lack of success experienced by earlier studies that attempted to rehabilitate very bad native urchin barrens in very sheltered and sedimented areas.

Summary

The way the native urchins feed on the reef depends on where the reef is, and how much alternative food the urchins have to feed on. Numbers are important, but not the whole story. The native urchin will clear off the reef only as a last resort when the population gets too high for the local supply of drift algae.

These damaged areas can be fixed by controlling the population of urchins, but it seems like you have to try to get in early. Long-term and very bare native urchin barrens may prove to be very difficult to rehabilitate.

The best solution is to restore a natural population balance, preferably with natural predators. These population explosions are most likely caused by imbalances in the system due to environmental factors, and/or the removal of predators that might otherwise control their numbers (eg, big crays).

In short, the long-term answer is the same as for many problems in the marine environment. It probably doesn't need a man-made bandaid. Fix distortions in the environment like climate change and stop overfishing.

[Primary source; Recovery of canopy forming macroalgae following removal of the enigmatic grazing sea urchin Heliocidaris Erythrogramma" by Ling, Ibbott and Sanderson]

Sponges May Help Parkinson's Disease Sufferers

Marine sponges are complex organisms that contain a lot of compounds. Their way of surviving predators is by using chemicals. "It is a chemical factory producing lots of compounds to respond to its environment and some of them might be useful to develop for different applications.

Professor Quinn says doctors currently treat the symptoms of Parkinson's disease, but scientists still do not understand what causes it. "We have quite a number of patients that have donated some tissue and we've grown up the cells, so we have this array of cells so we can investigate the disease.

"We can then compare them against people who don't have the disease and try and see what's the difference. "In this case, one of those compounds shows a very unique action on cells from people with Parkinson's disease."

"What we're hoping here by using this compound and others that we find, hoping that it gives us some ideas of how the disease occurs and then be able to treat it. "Any therapeutic use or drug use is well down the track."

WANTED

HANDFISH – HAVE YOU SEEN ONE?




Handfish are a small fish less than 80mm (3in) long found in Tasmania. You may have heard of spotted handfish that live in the Derwent River, but there are other species of handfish that are even more rarely seen.

Other inshore handfish species like Red Handfish, Ziebell's Handfish and Pink Handfish are probably rarer than the Giant Panda and we don't know much about where they live. There are concerns for their survival. We want to know if you have ever seen any!

Some local divers are studying them and need information.

Handfish are very different from other small fish. They have fins that are modified as 'walking legs'. Handfish can both swim and walk across the seabed. They look like lots of other fish, except that they have fins that look like FEET and a little lure on their heads.


Not These Thanks! - Handfish are often confused with little red rock cod that are very common and about the same size. These ones have big fins but don't have 'feet' or a lure.

IF YOU HAVE SEEN A HANDFISH DROP US A LINE AND GET A FREE TANK FILL AS A TOKEN OF OUR GRATITUDE

EMAIL: *marinelifetassie@gmail.com*

Mike Jacques for Marine Life Network www.marinelife.org.au

Making Computers out of sea squirts

Scottish scientists have invented a whole new way to make computer chip components thanks to* Lissoclinum patella*, a sea squirt from the Great Barrier Reef.

In the future, this technology could lead to smaller, more efficient computers. It's also a more environmentally friendly way to produce computer chips. Though made from a natural resource—sand—a vast amount of silicon and energy is used."

The scientists' new method uses single molecules of patellamide, a peptide originally discovered in Australian sea squirts. The researchers found a way to produce these molecules in the lab and use them as tiny transistors.

Since these molecule transistors are smaller than the silicon kind, computer chips made with them would also be smaller and faster.

Tas News

Tasmanian Combined Clubs Weekend Queen's Birthday Long weekend, Bicheno.

Host Club: Tas Uni Dive Club

Apart from World Class Diving we have a heap of things on the go. For the latest information head to our website or like our Facebook Page.
Here is a rundown of what is happening.
Underwater Photo Competition Sidemount Experience Dives , Try Dives with Southern Tas Divers, MK5 Standard Dress demonstration dive, Sea and sea DX-GE5 and SOLA light dives, Group Dives, Scuba Olympics, Casual Dinner.
www.ccwtasmania.com.
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