



MARINE *Life*

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Andrew Newton

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, Port Phillip Bay, Victoria by Andrew Newton



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National News

Commonwealth MPAs Going Nowhere

The previous government announced a string of new parks including one of the world's largest in the Coral Sea. Two years on and the parks only exist on paper.

Commentary by Mike Jacques, Source ABC, The Conversation and Dept Environment



No one was too happy with the parks proposals, environmentalists claiming that most of the no-take zones were in areas either rarely fished, or already protected. Commercial and recreational fishing groups protested energetically, at one point publishing newspaper ads showing an angler unable to drop his line off the rocks (no new MPA was anywhere near the shoreline).

Professional fishermen funded a new film to put their case "Drawing the Line" as a counter to an environmentalist's critique of European commercial fishing, "End of the Line". The pro-fishing film featured Professor Colin Buxton as a key expert. Professor Buxton studies in the area of commercial fisheries management and has a long history of generalised opposition to marine protected areas, as do many other more conservative commercial fisheries managers. He also participated in the "New South Wales Government Audit of Marine Parks", sometimes called the "Independent Audit" that was called by the former NSW Coalition government. The current Commonwealth Government obviously liked the result of that review which was highly critical of many of the previous restrictions on fishing. The Coalition Government ordered a suspension of new fishing restrictions in the Commonwealth parks, and are now holding their own "independent review", with the same learned Professor as co-chair.

Here is a taste of Prof Buxton's 'independent' views on MPAs, "We perceive that we need to have the world's largest marine protected areas. What for? They're not tackling the main problems in our ocean. So, you know, all they're doing is that they're eliminating sustainable use of our ocean resources". I understand that this was uttered quite recently to the ABC when he was still in the process of consulting with the public and forming an 'independent view' as co-chair of the review panel. Colin Buxton reportedly "bridles" at criticisms from environmentalists attacking his independence. "I'm not an apologist for the fishing industry. I think that people that criticise me personally on that level need to go and read some of the publications that I've written in my academic career".

Well I have read many of those articles, and I conclude that Professor Buxton doesn't oppose everything about MPAs, just most things. The end result is a strident opposition to MPAs as anything other than nominal 'paper parks' whenever and wherever they might impact on areas of fisheries productivity.

This view is not confined to Professor Buxton and is quite typical of the assumptions that drive the views of more

conservative commercial fisheries managers. It is primarily their job to improve fishing practices, not focus particularly on secondary environmental impacts of fishing on non-target species and biological systems. That's more of a job for a zoologist, and which of these scientists are placed in charge of a panel makes a big difference to the end result.

Public consultation sessions were doing the rounds in March, with some people telling the ABC that it seemed to be not very strenuously



CSIRO, Seamount life

advertised and awkward to find out where they were unless you were a fishing industry representative.

The Review is being conducted to “consider what management arrangements will best protect our marine environment and accommodate the many activities that Australians love to enjoy in our oceans”. “This will ensure the management of Australia’s Commonwealth Marine Reserve Network is based on scientific rigor and genuine consultation with communities and businesses.” This is part of an election commitment for a “More Competitive and Sustainable Fisheries Sector” [my emphasis].

As part of the Commonwealth Marine Reserves Review, five Bioregional Advisory Panels have been appointed to consult across sectors and to provide advice to Government.

An Expert Scientific Panel will also review zoning and allowed uses (meaning primarily fisheries restrictions), as well as priorities for scientific research and monitoring.

Prof Buxton is not acting alone, the other chair of the Panel is Associate Professor Bob Beeton of the School of Geography, Planning and Environmental Management, University of Queensland. One of his study areas was carbon storage in farm soil, a favored idea of the current Government, but seemingly unrelated to MPA management. However, he has addressed the issues before, as chair for the aforesaid “New South Wales Government Audit of Marine Parks”. There is also fishing industry representative and a former Director of National Parks. No sign of any environmental activists though.

There is actually one marine biologist, Associate Professor Sabine Dittmann of Flinders University, a former member of the Marine Parks Council of South Australia. That puts the balance of discussion at about 3/2 (or perhaps 4/1) in favor of the assumptions of commercial fishing science, or the current conservative Government. If I were a person concerned about MPA impacts on fishing, that’s just the kind of “independence” and “good science” I’d be praying for.

For more information about the Commonwealth Marine Reserves Review and the Panels, visit: www.marinereservesreview.gov.au

Former Marine Park Authority Director’s Parting Shot

Source: The Conversation

Former Great Barrier Reef Marine Park Authority (GBRMPA) director John Day has criticized the selective reporting to the UNESCO World Heritage Centre.



Mr Day states that:

“The Australian government’s latest report on the Great Barrier Reef, submitted to the UNESCO World Heritage Centre last Friday, has been carefully crafted and word-smithed, with many of its claims supported by excerpts from earlier reports such as the Great Barrier Reef Marine Park Authority’s 2014 Outlook Report and Strategic Assessment.

But in compiling it, the government has been very selective regarding which facts are presented and which facts are ignored.

With the World Heritage Committee considering whether to officially list the Reef as “in danger”, here are various ways that the true picture is more complicated than the new report implies.”

Things being excessively downplayed include water quality issues, climate change and inadequate monitoring. Instead, he recommends The Great Barrier Reef Marine Park Authority’s Outlook Report released last August which summarizes the situation as,

“Even with the recent management initiatives to reduce threats and improve resilience, the overall outlook for the Great Barrier Reef is poor, has worsened since 2009 and is expected to further deteriorate in the future. Greater reductions of all threats at all levels, Reef-wide, regional and local, are required to prevent the projected declines in the GBR and to improve its capacity to recover.

Qld News

Crown of Thorns Thriving on the GBR

Rising sea temperatures and low numbers of natural predators are a boon for the coral-eating Crown of Thorns seastar

Source: Australian Institute of Marine Science (AIMS)



Crown of Thorn Starfish (COTS) outbreaks are a significant stress on the survival of corals on the Great Barrier Reef (GBR).

The crown-of-thorns starfish (COTS), *Acanthaster planci*, is a specialist, feeding only upon the flesh of live corals. This animal has several biological attributes that contribute to its ability

to undergo massive population fluctuations. With adults consuming up to 10 m² of live coral per year a population outbreak of hundreds of thousands to millions of COTS can deal a significant blow to coral reefs. They are second only to the destructive power of tropical cyclones.

A range of scientific research indicates that COTS outbreaks are a major contributor to the estimated 50% decline in coral cover during the period between 1985 and 2012. Corals have no discernible defence against an approaching aggregation of hunting COTS

New research has been carried out in the National Sea Simulator at AIMS, a high-tech marine laboratory near Townsville in Queensland.

A 2^o C increase in sea temperature was found to increase the probability of survival of COTS by 240% under certain conditions. These conditions include the availability of nutrients for COTS larvae to feed on.

Most moderate climate change scenarios predict a 1-2^o C increase in average sea temperatures by the end of the century.

Other research shows that they are also getting a lift from the absence of certain predators.

The giant triton (*Charonia tritonis*), named after the Greek god Triton - son of Poseidon and god of the sea, is one of the world's largest marine snails reaching a length of up to half a metre. Due to the beauty of their shell, the giant triton has long been unsustainably harvested from coral reefs, primarily for sale to shell collectors. While the giant triton was declared a protected species in the 1960s, after a century of heavy fishing pressure, they remain quite rare on the GBR.



Very little has been published about the biology or ecology of the giant triton, but their preference for feeding on COTS is well known. There is nothing more alarming to a COTS than the scent of a giant triton, enough to cause the starfish to rapidly move away. Once detected, a COTS will be purposefully hunted down by the giant triton.

Giant tritons typically only eat one COTS per week so they have little chance of feeding down a population of COTS numbering in the



hundreds of thousands. However, their very presence disperses starfish. As aggregations are dispersed, and fertilization success rates decline, the likelihood of massive recruitment in a spawning season may well be reduced. Based on early results, scientists are investigating the possibility

that giant tritons may play a significant role as a natural control agent for COTS outbreaks.

No Easy One Stop Solution for the GBR

Commentary by Mike Jacques

After preparing the above article I heard the Environment Minister on the radio talking about a magic solution to the COTS problem,

"We've recently doubled crown-of-thorns funding. The breakthrough with the one-stop hit on crown-of-thorns starfish has been extraordinary and has received worldwide attention, and as we go forward there will be additional funding for crown-of-thorns management."

Have I missed an important new development? No, it seems that the Minister is talking about a physical removal method that's great, but isn't that new. However, it has been a common theme in his speeches since late 2013. It formed a significant part of the Coalition's 2050 statement for the GBR.



The Minister risking a stained suit to bash some COTS, but it's not a fair fight unless you get wet.

The new method involves a small single injection that produces an allergic reaction in the starfish, causing it to break apart and die within 24 hours. Divers from the local Association of Marine Park Tourism Operators in Cairns were culling over 1000 crown-of-thorns starfish on a 40-minute dive. 250000 have been killed. I'm not sure if there are millions or billions of COTS on the GBR and doubt whether this could be the 'fix' for plagues. It will be a godsend for popular tourist reefs.

Impressive numbers, immediate results, and that means a positive message, so the Government has stumped up for an additional control vessel. It makes for a great press release and doesn't agitate farmers or coal miners.

To give them their dues, the

Government also recognises the importance of prevention. "Other measures under the Reef 2050 Plan over the longer term will see improvements to water quality entering the Reef, further limiting the COTS thriving in its larval stage on water-borne algae which results from nutrient-rich waters".

The Coalition will commit \$40 million to establish a Reef Trust. The Reef Trust will focus on improving coastal habitat and water quality along the Great Barrier Reef. Apparently, "Labor has let down the Queensland and Australian communities as a result of its poor management of the Reef". The dugongs and turtles along the Great Barrier Reef also got a look-in under a \$5 million plan. Is it just me, or does that sound like both small money, and money taken from somewhere else?

Environmentalists complained the plan did nothing to address climate change, the number one threat to the reef. But those cornrow wearing hemp sandal chardonnay swilling townies would say that. Not so easy to ignore was the Australian Academy of Sciences, *"While the draft Reef 2050 Long-Term Sustainability Plan contains many positive elements, based on overwhelming scientific evidence the Academy concludes that, in its present state, the draft plan is inadequate to achieve the goal of restoring or even maintaining the diminished Outstanding Universal Value of the reef. While the draft plan acknowledges the greatest risks to the reef are "climate change, poor water quality from land-based run off, impacts from coastal development and some fishing activities", it fails to effectively address any of these pressures. Rather, the draft 2050 plan represents business-as-usual in terms of how escalating pressures on the reef are adequately regulated (or not), when much bolder action is required to restore the values of the reef and prevent further degradation"*.

But I'd say they must be stooges for the Labor Party, cut their funding! There are only 476 scientists of that view, what would they know.

However, the Minister appears much more genteel and controlled than me, saying basically nothing adverse that might get into the papers. About coal developments, after some pretty heavy ragging, he merely said, "It is casual, uninformed and it is false and untrue...". You've got to respect the scientific view of a fellow who knows a good suit and a good chardonnay when he sees one.

National News

What NASA says about climate change



The Earth's climate has changed throughout history. Just in the last 650,000 years there have been seven cycles of glacial advance and retreat, with the abrupt end of the last ice age about 7,000 years ago marking the beginning of the modern climate era — and of human civilization. Most of these climate changes are attributed to very small variations in Earth's orbit that change the amount of solar energy our planet receives.

The current warming trend is of particular significance because most of it is very likely human-induced and proceeding at a rate that is unprecedented in the past 1,300 years.

Earth-orbiting satellites and other technological advances have enabled scientists to see the big picture, collecting many different types of information about our planet and its climate on a global scale. Studying these climate data collected over many years reveal the signals of a changing climate.

The heat-trapping nature of carbon dioxide and other gases was demonstrated in the mid-19th century. There is no question that

increased levels of greenhouse gases must cause the Earth to warm in response.

Ice cores drawn from Greenland, Antarctica, and tropical mountain glaciers show that the Earth's climate responds to changes in greenhouse gas levels. They also show that in the past, large changes in climate have happened very quickly, geologically-speaking: in tens of years, not in millions or even thousands.³

Sea level rise

Global sea level rose about 17 centimeters (6.7 inches) in the last century. The rate in the last decade, however, is nearly double that of the last century.⁴

An indicator of current global sea level as measured by satellites; updated monthly.

Global temperature rise

All three major global surface temperature reconstructions show that Earth has warmed since 1880. Most of this warming has occurred since the 1970s, with the 20 warmest years having occurred since 1981 and with all 10 of the warmest years occurring in the past 12 years. Even though the 2000s witnessed a solar output decline resulting in an unusually deep solar minimum in 2007-2009, surface temperatures continue to increase.



Warming oceans

The oceans have absorbed much of this increased heat, with the top 700 meters (about 2,300 feet) of ocean showing warming of 0.302 degrees Fahrenheit since 1969.



The Greenland and Antarctic ice sheets have decreased in mass. Data from NASA's Gravity Recovery and Climate Experiment show Greenland lost 150 to 250 cubic kilometers (36 to 60 cubic miles) of ice per year between 2002 and 2006, while Antarctica lost about 152 cubic kilometers (36 cubic miles) of ice between 2002 and 2005.

Arctic sea ice has declined rapidly over the last several decades. Arctic sea ice extent both affects and is affected by global climate change.

Both the extent and thickness of



Glacial retreat

Glaciers are retreating almost everywhere around the world — including in the Alps, Himalayas, Andes, Rockies, Alaska and Africa.

Extreme events

The number of record high temperature events in the United States has been increasing, while the number of record low temperature events has been decreasing, since 1950. The U.S. has also witnessed increasing numbers of intense rainfall events.

Ocean acidification

Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by about 30 percent. This increase is the result of humans emitting more carbon dioxide into the atmosphere and hence more being absorbed into the oceans. The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing by about 2 billion tons per year.



Decreased snow cover

Satellite observations reveal that the amount of spring snow cover in the Northern Hemisphere has decreased over the past five decades and that the snow is melting earlier.

Australian fish moving south as climate changes

The University of Tasmania has found that 35 species face shifts in their ranges and egg-laying patterns as the oceans warm

Per redmap.org.au



Snapper stocks may climb in Tasmanian waters due to climate change, but decline off the coast of South Australia.

International research published in 2013 found that fish species were being pushed towards the poles at a rate of 7kms every year as they chase the climates they can survive in. The global sea surface temperature has increased by around 0.1C per decade since the 1970s. As well as warming waters, marine creatures have to deal with increasing acidification as excess carbon dioxide is absorbed and lowers the pH level of the oceans.

The south-east coast of Australia is one of more than a dozen global ocean “hotspots” – others include off Brazil, in the Indian Ocean and the North Sea – where the water is warming much faster than the global average for the world’s oceans.

Australian scientists have assessed how 35 common fish species are coping with climate change. The 35 species had a varied response to increasing sea temperatures and changing levels of nutrients and plankton.

Species such as abalone, blue swimmer crab, southern calamari, southern rock lobster and western king prawns will experience a high impact from changing temperatures. Australian salmon will face similarly large changes due to altering winds and currents, while black bream will have to cope with changed freshwater flows. Scallops and blue grenadier were also found to be highly sensitive.

Researchers stressed that not all of these changes would be disastrous for fish, but that most of the studied species will have to alter their habits or range of habitat in some way.

“We found a mixed bag – some positive and some negative,” said Dr Gretta Pecl, lead author of the study. “Some species are shifting south and increasing their range, while others are already at their tolerance for temperature and as it warms, their range will shrink.

“In Tasmania, there’s been an increase in snapper and yellow-tailed kingfish, which is great for the fishing industry. But in South Australia, there may be parts of the gulf regions unsuitable for snapper and it may decline there.

“Temperature will be the major factor and off the coast of Tasmania the rate of warming is four times the global average. For species that are highly sensitive to temperature, it will affect the rate of growth, the amount of energy it needs and its oxygen consumption. Almost no aspect will be unaffected.”

Dr Pecl said fish species were being increasingly sighted outside their traditional ranges.

Can't Catch the Wave, The Trials of Wave Energy

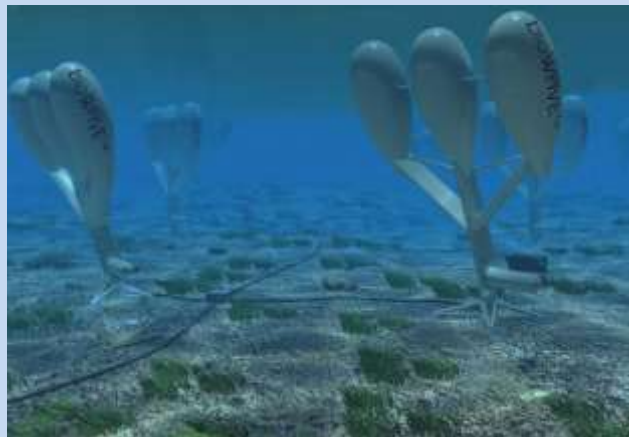
The world's oceans have all the energy we could need. So why haven't we worked out how to harness it yet?



The World Energy Council estimated in 1993 that the world's oceans contain enough energy to generate double the current world electricity demand. In theory, the waves in our southern oceans alone could power the whole country five times over. In practice you can't collect it all though.

With a bit less hubris, in 2012 a CSIRO report predicted that by 2050, wave energy converters will be able to affordably produce around 11 per cent of Australia's electricity. However, the technology has largely lagged behind other renewable energy sources, such as solar and wind. "New energy technologies take a long time to progress from the lab to maturity, and wave energy is no different," says Russell Marsh, the policy director of the Clean Energy Council. "Different wave energy technologies across the world are currently competing to be the most effective and least expensive, but it will be years from now before this is resolved."

Dr Michael Ottaviano,



the managing director of [Carnegie Wave Energy](#) — which has successfully installed a wave energy prototype off the coast of Perth — believes wave energy is currently in the same stage of development that wind energy was 30 years ago. " While all emerging technologies are costly, wave is more expensive than land-based options. Plants have to withstand corrosion, fouling and the destructive power of waves.

Most designs already harvest up to 90 per cent of a wave's power — but it's risky and money is tight. In 2010, a world-first \$5 million floating converter built by local company Oceanlinx broke free of its moorings off the coast of Port Kembla in New South Wales and smashed up on the shore, where the wreckage still remains. Another South Australian project went the same way. The failures scare off the small number of investors.

Carnegie will soon begin feeding electricity into the grid. Its \$45 million prototype CETO 5 was installed off the coast of Perth at the end of last year. It sits on the ocean floor and there it is more protected from intense storm damage. Carnegie announced before Christmas that it has already safely operated for more than 700 hours in swells of up to four metres. Their device also acts as a small desalination plant and is now ready to begin providing electricity and fresh water to the Garden Island Navy Base in the coming weeks — a service the Australian Navy will be paying for.

The other converter about to begin ocean testing is the bioWAVE, created by [BioPower Systems](#). Their researchers have built a device inspired by kelp, and the generator is anchored to the ocean floor where it sways with the motion of waves. Their first prototypes will be installed this year off the coast of Port Fairy in Victoria.

The industry is still a long way off achieving its potential. Once a technology proves itself, energy companies still need to go through the environmental and efficiency testing, and scaling up; steps that other renewable energies have already passed.

I think that is Code for 'watch this space', but don't expect too much too soon.

Emperor penguins

Photo ; Penguins.info, arcticphoto.co.uk, emperor-penguin.com, natureswonderland.com.au



Emperor penguins breed in colonies scattered around the Antarctic continent. Colonies range in size from a few hundred to over 20,000 pairs.

The emperor is the largest of the 17 penguin species growing up to 1.15 metres tall and weighing up to 40 kg.

The emperor penguin can spend the whole year out on the Antarctic mainland exposed to the worst weather. Emperor penguins are the only animals that breed during the Antarctic winter.



They have insulation in the form of several layers of scale-like feathers and it takes very strong winds (over 60 knots) to get them ruffled. They have a very small bill and flippers, which conserve heat. Their nasal chambers also recover much of the heat that is normally lost during exhalation.

Emperor penguins have a low

level of activity during winter.

Another special adaptation of the emperor penguin is the ability to 'recycle' its own body heat. The emperor's arteries and veins lie close together so that blood is pre-cooled on the way to the bird's feet, wings and bill and warmed on the way back to the heart.



Emperor penguins eat fish, Antarctic krill and some species of squid. An adult penguin eats 2-3 kg per day. When they need to fatten up before a moult or at the start of the breeding season, they can eat as much as 6 kg per day. Each chick needs about 42 kg of food from each parent.

Emperor penguins mostly

forage at depths from 150 to 250 metres, the deepest dive recorded was to 565 metres. On average dives last 3-6 minutes but the longest dive on record was 22 minutes.



Natures Real Survivors Pt V

The Mesozoic Era - Triassic Period

(251-199.6 million years ago),



Well time travellers, after the disruption to travel plans caused by the Permian extinction, evolution has gone into overdrive in an effort to provide some alternative attractions. The lizards are starting to take over the land, but as usual the crucible of life is in the sea.

During the Mesozoic, new fauna arose including new species of sea urchins, crustaceans, and fish. The Mesozoic also witnessed the advent of marine reptiles.

On the seabed, the void left behind by the demise of crinoids, blastoids, bryozoans and horn corals was filled by molluscs such as bivalves (clams) and gastropods (snails).

The mid water area is home to a variety of swimming ammonites (nautilus-like animals) and fish. Feeding on the fish and ammonites were different kinds of marine reptiles ranging from short-legged, short-necked varieties resembling seals to long-necked plesiosaurs with

whale-like bodies and broad, paddle-shaped fins. The neck-span of plesiosaurs could reach 17 meters in length.

The ichthyosaurs, or "fish lizards", had dolphin-like bodies, well-developed paddles, and a long bill with teeth for catching fish. Most ichthyosaurs were less than 3 to 5 meters long, but some reached 15 meters in length.



They first appeared approximately 250 million years ago during the early Triassic Period. Ichthyosaurs evolved from a group of, as yet unidentified land reptiles that had returned to the sea. They resembled but are not related to dolphins and whales.

In the later Jurassic Period they were replaced as the top aquatic predators.

Mosasaurus, related to modern monitor lizards, had a flattened tail for underwater propulsion, large flippers, and nostrils located on the top of their heads in order to breathe while swimming. The largest mosasaurs grew more than 14 meters in length.



The earliest dinosaurs appeared in the Triassic Period of the Mesozoic Era and were small, bipedal animals less than 1 meter in length. By late Triassic time, primitive archosaurs were replaced by a great radiation of dinosaurs.

Flying reptiles included the pterosaurs, a close relative of the dinosaurs. Early pterosaurs were the size of birds, later ones, scarily enormous.

Travel suggestions, go earlier in the era before the big predators really get going. Hitching a ride on a turtles (there are no other humans looking) can be fun, but not if spoiled by an encounter with an early crocodile.

Flying Fish



With predators getting bigger and better, prey had to adapt. An evolutionary strategy that appeared in the Triassic was the ability of fish prey to leap out of the water when threatened. Soon fish specialised in this strategy and evolved increasingly larger fins that could double as wings.

A near-complete skeleton found in China has been identified as the oldest known gliding fish. *Potanichthys* is related to a now-extinct family of over-water glider known as thoracoferids. The fossils suggest that *Potanichthys* was squat, almost as wide as it was tall. Fish of that era usually aren't very aerodynamic, being heavily built, so finding a flying fish this ancient was a surprise.



If *Potanichthys* were anything like modern flying fishes, glides of tens of metres are not out of the realm of possibility. Flying fish possibly moved between what is now Asia and Europe, avoiding deep water. They instead travelled close to the shoreline that extended from what is now China to what is now Europe.



Turtles



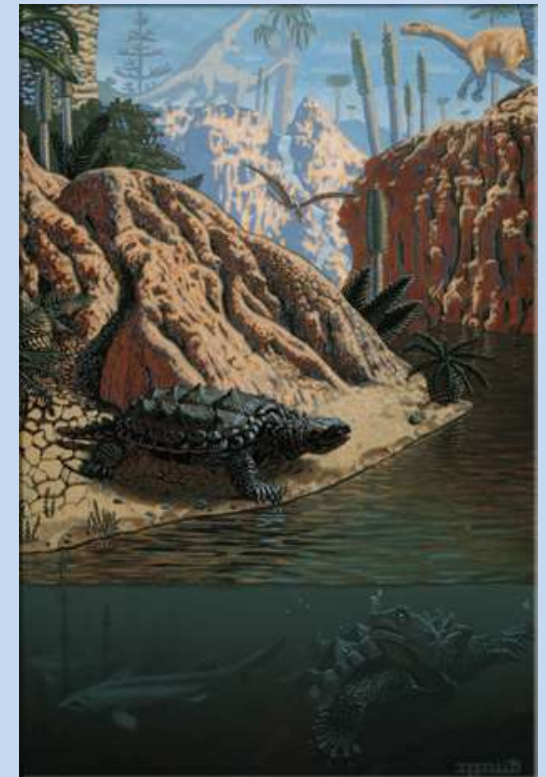
The first proto-turtles are believed to have existed in the late Triassic Period, about 220 million years ago.

They are thought to have evolved from bony extensions of their backbones and broad ribs that expanded and grew together to form a complete shell. Fossils of the freshwater *Odontochelys*

semitestacea or "half-shelled turtle with teeth", from China display a complete bony plastron and an incomplete carapace.

A molecular analysis of genes from 16 vertebrate taxa suggests that turtles are a sister group to birds and crocodiles. The date of separation of turtles and birds and crocodiles was estimated to be 255 million years ago.

The earliest known fully shelled turtle is the late-Triassic *Proganochelys*. This genus already possessed many advanced turtle traits, and thus probably indicates many millions of years of preceding turtle evolution. It lacked the ability to pull its head into its shell, had a long neck, and had a long, spiked tail ending in a club.



Secrets of Tiger Shark Migration



Photo: ocearch ; source AIMS

Tiger sharks are commonly thought of as a warm-water shark but they migrate over very large distances ranging from the tropics to cool temperate waters.

Tracked tiger sharks were recently fitted with satellite transmitters off Ningaloo, on the north-western coast of Western Australia. The data from the tags revealed one of the largest geographical ranges of movement reported for the species, with one tiger shark moving over 4000 km during 517 days of tracking.

In the AIMS study, the 11 sharks tracked exhibited behaviours that challenge long-held beliefs about the range of the species. "Our study shows that tiger sharks in Western Australia not only inhabit the tropics but can also move into cool temperate waters, sometimes venturing as far as the Albany coast. This is significant because it means that unless we have management strategies for the species that encompass wide areas – most of the WA coast and even north to Indonesia – our efforts may be compromised" says Dr Mark Meekan.

Not all tiger sharks moved such large distances with some staying in the region of the north-west where they were tagged. However, one of the sharks resided in shallow waters in the Kimberley/Rowley Shoals, Jurien

Bay/Perth and Albany regions and moved seasonally among these places. The same shark also briefly visited Indonesian waters.

"At least some tiger sharks appear to be making directed and seasonal migrations and crossing large areas of open ocean...Our results show that regional marine protected areas are offering some protection for tiger sharks but the ability of these animals to travel long distances will mean that they move across management zones and national boundaries".

Ms Ferreira also said the study also showed that tiger sharks may be adapting their diving behaviour to the water temperatures, staying closer to the surface in cooler, more southern latitudes but diving deeper in tropical latitudes.

Other researchers plan to tag 40 tiger sharks across two expeditions, one in Queensland and one in WA. .Also for the first time, the real-time tracking information will be freely available to the public online using an app.

While the U.S. based OCEARCH "mothership" vessel and crew will provide the capacity to catch the sharks. A new platform reduces the stress levels of the shark when comparing them to other species caught using other methods. The research work, focussing on conservation and shark behaviour, will be carried out by local scientists.

The WA government has previously turned down two offers for OCEARCH to carry out shark tagging expeditions, worth a combined \$2 million, in favour of its own tagging program.

People can track a 3.5m female tiger shark near Fraser Island. This shark, named Jedda, will hopefully be the first of many tagged tiger sharks.

After the tagging and studies of the sharks around the Fraser Coast area are finished, the Queensland team will be heading north to Mackay and Cairns. Once the OCEARCH crew finish their WA expedition from Broome to Perth in May, they go to New Zealand for their next expedition in December.

Researchers said tiger sharks migrated up and down the coast, but those that go to New South Wales in summer usually came back to Queensland in winter and scientists want to know why.

WA Feature

Albany

The story of Albany is really about its harbour, the reason why it was settled in the first place. It's a natural wonderland of dazzling white sand, quiet bays and channels set among amazing granite landscapes. But it is also a major industrial port, with all the problems and benefits that are associated with heavy industry.



per amazingalbany.com.au

History

The local Menang Noongar people called this area Kinjarling, which means "The place of rain". They occupied the land for many thousands of years. Their fish traps can still be seen in Oyster Harbour and their descendants still live in the area.

The first sign of change came when the Dutch ship, "Gulden Zeepaert", or Golden Seahorse sailed by Captain Francois Thijssen charted the area

in 1626, before exploring as far east as the Nuyts Archipelago in South Australia. No log survives. The principal evidence consists of



contemporary maps, a brief references to the voyage.

The area was so remote and mysterious that Jonathon Swift's "Gulliver's Travels" placed Lilliput on the southern Australian coast. George Vancouver explored the South coast in 1791, naming Michaelmas Island, Breaksea Island, King George the Third

Sound, Princes Royal Charlotte Harbour and Oyster Harbour. Captain Dennis of the whaler Kingston, and Captain Dickson aboard the Elligood, caught three whales there in August 1800. Matthew Flinders arrived in King George Sound in 1801, closely followed by Nicholas Baudin in 1803.

Albany was the first white settlement in West Australia, it was founded in 1826 when Major Edmond Lockyer arrived in the Brig Amity. He wasn't the first European to land in the area. As he arrived in the harbour he noticed a fire on Michaelmas Island. It turned out later that four Aboriginal men had been abandoned there by American whalers and had to be rescued.

Soon after official settlement, some of the settlers set up bay whaling stations at a few sheltered beaches, mainly to the east of the town. Albany itself prospered from trade with these early whalers. Old whaling reached a peak around 1845 when there were approximately 300 whale ships (mostly American) and numerous shore stations operating along the South Coast of Australia. The numbers declined rapidly after 1859 when petroleum oil was discovered in Pennsylvania. Whaling resumed in 1912 when a Norwegian company obtained a license from the Western Australian Government and operated from both Frenchman Bay near the



current Historic Whaling Station site. They used steam whalechasers fitted with harpoon guns, but after a poor season in 1916 they left.

There are a few older whaling shipwrecks in the area. A wooden barque, the Fanny Nicholson was being used as a whaling vessel when it ran ashore during a gale in 1872. The remains can still be seen in shallow water in Frenchman Bay. Another whaling barque, the Runnymede, met a similar fate when it ran aground during a storm in 1881.

Until the construction of Fremantle Harbour in 1897, King George Sound contained the only deepwater port in Western Australia, and so was the favoured location for delivery of mail and supplies from abroad to Western Australia. Two later wrecks within the sound are the wooden barque Athena that sank in 1908, and the wooden boat Elvie that sank in 1923.

Albany has a number of historical sites including the Museum, Albany Convict Gaol, The Princess Royal Fortress (commonly known as The Forts) and Patrick Taylor Cottage, one of the oldest dwellings in Western Australia, c1832.

Natural environment



Albany sits on a large sound fringed with sandy beaches that are protected from the prevailing westerly winds. It provides the best anchorage on this often exposed South Coast. As well as the sound there are also a number of large enclosed bays that were, and in some places still are, packed with birdlife, seagrass and shellfish beds.

Near the town, Oyster Harbour is a shallow basin. About half of the harbour has water less than 1 m deep. Shallows are found along the

entire eastern side of the harbour. There are similar areas in the south-western and north-western corners, making up about 40% of the harbour's total area.

Princess Royal Harbour is a deep basin bordered by shallow sandflats. About half of the harbour is less than 2 m deep. The shallow sandflats are most extensive off the western and southern shores and along the Vancouver Peninsula. Princes Royal Harbour has been dredged and has now become a major port, while Oyster Harbour is often filled with canoes and sailboats enjoying a day out on the water.



On my visits to Albany it has reminded me a little of Tasmania's granite areas. Scorching hot when the sun is out (although cooler than Perth), giving it a Mediterranean look. Moments later, grey and brooding rain-sodden clouds are brought in by strong westerly winds from the Indian Ocean. Jacket on, jacket off, jacket on, jacket off.

It is a calm oasis in the relentless westerly storms that often batter the south coast in winter, and the easterly gales that tend to dominate in summer. These winds drive strong circulation of water in the sound, and even in the sheltered harbours. Up to 30 million m³ of water may enter or leave the main Harbour. The tidal range at Albany is small. West to north-west winds in Winter generate predominantly anti-clockwise circulation patterns in the bay and harbour. East to southeast winds in Summer reverse the circulation patterns. Big Winter storms can create nasty waves and currents for the diver or boater, with 1 knot currents being recorded outside the sound even at depths of 40 metres. While there can be bad easterly winds they tend to be less energetic than the westerly winter storms.

The sound becomes a perfect habitat for migratory wading birds during the summer, when an estimated 2,000-3,000 birds flock to the area to feed in the shallow mudflats of the harbours.

Southern right whales and humpback whales frequent the area between July and October when they congregate to mate and calve in the protected waters of the sound. Sperm whales were known to visit the sound during the whaling era, but none have been sighted recently.

Tourism



The most recent Whaling Station, which operated from 1955 to 1978, has been converted to a museum of whaling, and features one of the 'Cheynes' whale chasers that were used for whaling in Albany. The station was the last operating whaling station in the southern hemisphere and the English-speaking world at the time of closure.

Natural sights are also numerous, especially the rugged coastline, which includes the iconic sites at Natural Bridge and the Gap. The beaches have pristine white sand.

Albany caters well for water activities with good boating, fishing and diving infrastructure. The destroyer HMAS Perth was sunk in King George Sound in 2001 as a dive wreck. The former whale chaser Cheynes was sold for scrap in 1961 and subsequently sunk between

Michaelmas Island and the northern shoreline of the sound. There are lots of interesting dive sites, sheltered beaches, quiet coves and remote camping spots in the surrounding area.

Albany is also close to two low mountain ranges, the Porongurups and Stirling Ranges for nature strolls. Albany is the southern terminus of the long Bibbulmun Track walking trail.

Heavy Industry

From 1952 to 1978 whaling was a major source of income and employment for the local population. Albany's main industries now are tourism, fishing, and agriculture (mainly bulk grain exports). In 2001, a new wood chip export terminal also enhanced forestry-related activity in the area.



The Western Power Wind Farm is located at Sand Patch, to the west of Albany. The wind farm, originally commissioned in 2001 with 12 turbines, now has 18 turbines, driven by strong southerly winds, and can generate up to 80%^L of the city's electricity usage.

Big ships loading grain serve our economic needs, but they also bring unwanted visitors. The pest seaweed, *Codium fragile ssp. tomentosoides* arrived in 2008 from the northern hemisphere, with the potential to smother shellfish beds.

Mercury pollution

If you were deciding to place an outfall on a well-circulated sound, or a poorly circulated embayment, where would you put it? Unfortunately, in the 'old days' after the war, easy access to infrastructure was more important than pollution risks.

Whilst the main harbour area is well flushed, lack of wave energy and turbulence results in organic detritus hanging about in the western end

of the harbour. With heavy industry and houses pumping in nutrients and industrial pollutants to a semi-closed bay, a health scare was only a matter of time.

The main source of industrial contamination was a fertilizer (superphosphate) plant that was commissioned in 1955. Initially, it discharged untreated effluent to the harbour via a drain. In 1968 a 1 km 15 cm diameter plastic pipe was installed discharge it directly to sandy mud flats, about the worst spot to put it if you want mercury to accumulate as it binds readily with fine silts and seagrass.

In the 1970s concern grew about these industries, mainly because of a visual blight caused by rafts of rotting algae. In fact, this was more likely to have been caused by a 1950s sewerage outfall into the harbour, and stormwater off the roads. It did lead to more monitoring, and in 1982 the industrial outfall pipe was extended another 600 m to the edge of the sand flats after a lead contamination complaint. In 1984 excessive levels of mercury were detected in the western end of Princess Royal Harbour and it was closed to fishing and taking of shellfish. Then the industrial outfall pipe had to be disconnected.

Fishing was allowed again in 1992. Monitoring indicates that contamination of seafood in the western end of the harbour may not naturally recede to a background level for many years. It is hurting the humans rather than the marine life. As soon as fishing stopped, the number of fish, shellfish and crustaceans flourished.

Seagrass Decline



Seagrasswatch.org

Seagrass beds forms an extensive habitat and nursery ground for juvenile fish and crustaceans apart from providing a food supply. A number of studies carried out in Oyster and Princess Royal harbours have highlighted the decline of seagrass cover and density. Fast-growing, highly productive macroalgae and epiphytes smothered the

seagrass and reduced their light supply. The over-supply of nutrients to the harbours provided an excellent environment for the growth of slimy algae. From 1962 to 1984, 45% and 66% of seagrass cover in Oyster Harbour and Princess Royal Harbour respectively had been lost. By 1988 almost 90% of seagrasses in Princess Royal Harbour and 80% in Oyster Harbour had been lost. Macroalgae reached densities that exceeded 1000 g dry weight per square metre in shallow areas of both harbours.

The original recommendation was to harvest the algae to reduce its harmful effects. That was treating the symptom rather than the disease. All told, the operation removed about 30 000 t of algae over seven years. The algae was deposited at the tip. Residents collected some of it and used it as garden mulch. The operation was costly and seemed to reduce the algae by only a small amount. Work was also done to reduce nutrients getting into the harbour and this provided a better solution. The harvesting operation stopped in April 1998.



A survey of both harbours in 1996 showed mild improvement. In Princess Royal Harbour substantial seagrass regrowth was happening in the deeper basin and shallows around South Spit. A dramatic improvement in seagrass distribution was noticed in Oyster Harbour. Furthermore, the spread and amount of macroalgae had declined since 1988 in both harbours.

Dredging

If you thought that was an end to heavy industry impacts, think again. Following the mining investment boom, new inland mines opened and needed access for ever larger ships. Dredging was proposed for Grange Resources' Southdown Magnetite Project near Cheyne Bay. However, the mine project is currently on hold as iron ore prices have plummeted, but the Port Authority is persisting and gained a further Federal Government approval in October 2014. Having watched the importance of the port decline for a century, due to poor facilities and competition

from other ports, the port authority is keen to move to reverse the trend as soon as the economic conditions allow. The Albany Port Authority proposes to expand the port by reclaiming approximately 9 ha close to the entrance of the Harbour and dredging up to 13.54 million m³ from both Princess Royal Harbour and King George Sound, to allow Cape size vessels to access the port.



Dredging isn't new, the harbour was less than two metres deep until it was dredged in 1901 and its entrance was dredged again in 1952. It gets regular maintenance dredging.

The Albany community is concerned that these activities may further impact Albany's precious marine ecosystems.

As an aside, the last round of maintenance dredging uncovered lots of unexploded ordinance that was negligently dropped into the harbour at the end of WWII, while loading for disposal at sea. Dredging is likely to be a slow operation for this reason alone.

As part of the mitigation program, divers have been hired to plant seagrass in Princess Royal Harbour. They harvest the seagrass from proposed dredging areas and replant it out in the middle of the sound. It takes about 4 hours to plant 1 hectare with a plant being planted at least every metre apart.

So there are the issues, but overall Albany is a very natural place. Unless sunsets painting mountainsides pink, edged with azure seas and white beaches is way too lurid for you, definitely put the South Coast of WA on your bucket list.

Award for Seagrass Volunteer

A lone volunteer from Albany has been recognised for his efforts in seagrass restoration and community collaboration. Geoff Bastyan was awarded the 2014 Southseas Oceans Hero Award at Oceans Community



2014 for his dedication to the study and restoration of seagrass in Western Australia. He pioneered the successful transplantation of seagrass in badly degraded environments within Oyster Harbour in Albany. Geoff was presented with a cheque for \$5000.

Working alone over several years, Geoff conclusively demonstrated that seagrass could be returned to degraded habitat. He then contributed his knowledge and passion to the local

community, teaching high-school students how to transplant seagrass. This motivated the local community to play an active role in helping to repair Oyster Harbour's marine environment. Geoff developed a program to monitor seagrass and fish as part of Great Southern Grammar School's science curriculum, which was adopted by other local schools.

He has also proven to be an enthusiastic teacher, supporting the field and laboratory work of a core unit in UWA's Marine Science Degree (Field Techniques in Marine Science) at Albany over the past 20 years.

"This award was completely unexpected," Geoff said. "How will it be put to use? My head has been full of exciting plans for new innovations in seagrass restoration but I couldn't see how to put them into action without some support.

"Building on my earlier years of experience in seagrass transplanting, the award will make it possible for me to extend restoration into more difficult environments, as well as expanding our knowledge of the unique seagrasses that inhabit these environments."

NSW Heritage

The Wool Clippers and Walter Hood

As gold rushes ended, the wool trade provided for our economic prosperity. One of the shipbuilders to respond to this demand for wool ships was Walter Hood, and four of his ships now survive as wreckage on the seabed of NSW.

As the gold rush passed its prime the numbers of emigrants wanting to pay a premium for a fare on a fast American-built softwood clipper dried up. Freight rates fell, and bigger shipping tycoons like James Baines started to go broke.

As the new migrants spread out from the goldfields more land came under cultivation and the annual wheat and wool harvest required a new ship. This one needed to be built of tougher hardwood material to keep down maintenance costs. They also had to be smaller, to load and unload more quickly for the annual London wool sales. Speed was still important, but it took second place to sturdiness, cheapness and ease of handling.

The vessels would load with emigrants and manufactured goods on the outward journey, then arrive in Geelong or Sydney to load with produce. They would time their arrival to meet the wool harvest. Each year, every small sheep station in Australia loaded up drays with compressed wool bales and these slowly plodded towards the sea.

One of the more recognisable shipping lines waiting to receive these bales was George Thompson's Aberdeen White Star Line, also known as the "Loch Line", as they named ships after Scottish lakes. The "Loch Line" was also usually associated with Walter Hood & Co. ship builders; of Aberdeen. This is hardly a surprise, as the "Loch Line" were also part-owners of the shipyard.

The Walter Hood yard opened in 1839. Walter Hood had trained as a shipwright and was the yard's chief manager and designer. He was noted for his fast but sturdy vessels, exactly what was needed by the shipowners of the times. The "Phoenician", built in 1847, made his reputation. These vessels sailed mainly to Australia in the emigrant and wool trade.

Walter Hood built three ships wrecked in Australia, all in New South Wales. These are the *Fame* (wrecked in Sydney Harbour), the *Queen of Nations* (wrecked north of Wollongong) and the *Walter Hood* (wrecked south of Jervis Bay).

By the time of his drowning death in 1862, he had launched the wooden clipper *Kosciusko*, one of the largest sailing ships ever fitted out in Aberdeen.

LOSS OF FAME

The small barquentine *Fame*, 210 tons, was one of Walter Hood's earlier creations, built in 1840 just as he was starting his career.

By August 1857, she was a regular trader on the Australian coast. Captain Poole was bound to Melbourne loaded with 280 tons of coal. He decided to run for Sydney after enduring one of the severest easterly gales remembered. Having made Port Jackson he anchored at the



Heads. The gale grew in strength. The schooner *Venus* was moored nearby. She dragged her anchors and went ashore while a terrific sea was running. The crew escaped in a boat.

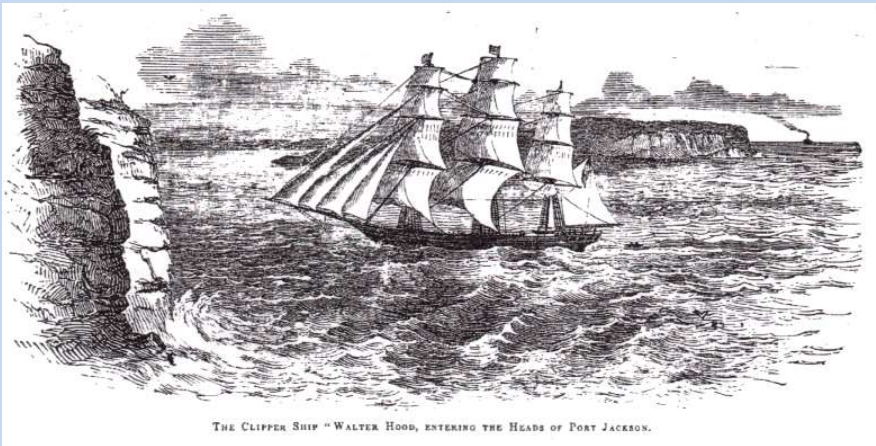
The captains of the *Fame* and *Indus* were father and son and coincidentally the barque *Indus* was also lying nearby, dismasted in a dangerous position within a few cables' length of Middle Head. She rode out the night safely and had to be towed into port next morning.

In the early in the morning the *Fame* drifted from her anchorage and ran aground at the Sow and Pigs Reef in the middle of the harbour.

A steamer was dispatched to the wreck to render assistance but only masts were seen close to the Sow and Pigs, the hull being totally submerged. All hands were saved. She broke up and nothing has been found by way of wreckage.

Death and looting

The Wreck of the Walter Hood



The Walter Hood, a ship of 937 tons, was built in Aberdeen in 1852. The Walter Hood was, at the time of launching, the largest sailing vessel ever built in Aberdeen. The vessel was named in honour of its famous builder. The vessel belonged to George Thompson's White Star Line and was built expressly for the Australian-China trade.

The vessel's maiden voyage to Sydney in 1853 resulted in a record run of 80 days from London. This was then matched by the fastest return from Sydney.

The vessel would commonly sail from England in the northern summer and arrive in Sydney some time just before, or after Christmas. The return voyage to England would be completed by the next northern summer.

General cargoes were typically traded. Manufactured and processed goods, luxuries and necessities were exported from London to Sydney, while wool, cotton and other raw materials were exported in return.

The Walter Hood left London on 22 January 1870 under Captain Latto. The vessel carried a general cargo, tiles, beer, iron bars, railway irons, cork, cement, wine, salt and even theatrical costumes.

The vessel encountered a heavy storm. The Walter Hood was stripped of sails and a seaman was killed. Next day, land was sighted amidst mountainous seas. The Walter Hood was crippled and did not have enough sails left to beat out to sea. Captain Latto attempted to tack the ship but the vessel was embayed.

At 7.30 pm, the Walter Hood struck a reef 200m off Wreck Bay. The survivors were trapped on board for four nights as the ship slowly went to pieces. The crew attempted to swim to the shore. Many could not swim and died in the surf. Others died from exposure while clinging to the hull. An injured Captain Latto was washed out of his cabin and drowned.

Finally on the fifth day the seas began abating, a few survivors left the wreck and managed to reach the shore in an exhausted state. The thirteen remaining on the exposed stern had been without food for three days and nights. In desperation they killed a small dog belonging to their Captain, ate its flesh raw and drank the blood.

The passing steamer Illalong arrived alongside a day later. By then, of the thirty five hands on board the Walter Hood twenty three were still alive.

Spectators arrived and fought over the most costly articles of flotsam, it is even the bodies of the drowned were robbed.



Queen of Nations – What a Beach Party!



Built in 1861, the Queen of Nations, was one of the most highly-regarded vessels in the Aberdeen White Star line. For twenty years she had plied between London and Sydney.

The 1870s saw a major change in the Aberdeen White Star Line. The older timber ships were sold, scrapped or given a secondary role as competition with steamers increased. In 1879, Captain Donald, who had commanded the Queen of Nations for almost 10 years, was washed overboard and lost at sea. Captain Samuel Bache took command.

In 1881, they left London with a cargo that included thousands of bottles of spirits and wine. Captain Bache and the first mate decided to sample the cargo and were "hopelessly drunk" for the entire voyage.

In the pre-dawn hours of May 31, 1881, she was only a few kilometres south of their final destination. Captain Bache mistook a slag heap fire on Mount Keira off Wollongong for the light on Port Jackson's South Head. Believing he was entering Sydney Harbour, he turned the ship toward shore and literally drove through the surf onto Corrimal Beach, just north of Wollongong.

The crew prepared to abandon ship. To their horror, the first mate came crashing onto the deck brandishing a pistol, announcing that anyone leaving the ship would be shot for desertion. The crew headed to shore anyway and while shots were fired, none found their mark. Fortunately, the first mate was too drunk to reload. Unfortunately, one person drowned trying to reach shore on a high tide.

Cargo, including a great deal of liquor, began washing ashore. People came from miles around and a wild beach party began. Some people didn't leave the beach for weeks and even had meals sent out to them.

The wreck of the Queen of Nations site lies approximately 70 metres off Corrimal Beach opposite the outlet of Towradgi Creek, 4 kilometres north of Wollongong. The remains cover an area of approximately 60x15 metres in a water depth of 3-5 metres, just beyond the surf zone.



At least once a decade, violent storms uncover parts of the wreck. In 1976, the wreckage was once again exposed. The Queen of Nations was now regarded as a swimming hazard. Huge amounts of timber were dragged from the water by bulldozers. Most of this was chopped up and either burned or used as

landfill. The lower hull and its contents could not be removed and slowly succumbed to the shifting sands.

Despite this, the Queen of Nations still contained a great deal of artefacts and after yet another big storm in 1991, almost the entire remaining structure was exposed. Bottles of spirits and preserved food, railway iron, tins of lead paint, crates of rubber galoshes and even a cemetery headstone were revealed. Within days, heavy looting had begun. The wreck is now protected.

Centurion - An Extraordinary Accident

Primary source; Michael McFadyen



The *Centurion* was built by Walter Hood & Sons in Aberdeen, Scotland in 1864. She was 63 metres long and displaced 1004 tons. The ship was built for George Thompson and Company's Aberdeen White Star Line to replace a vessel of the same name.

On the morning of Sunday 16 January 1887, "one of the most extraordinary accidents to shipping that has been recorded for a long time past happened..." The *Centurion* left its wharf at Dawes Point being towed by the *SS Pheobe*. The *Centurion* was loaded with 400 tons of coal and 60 tonnes of ballast stone for Honolulu via Newcastle (NSW).

As they neared Sydney Heads, the barque *Manhegan* was seen to be anchored right in the middle of the Heads and in the way. She was anchored here with her tug, the *SS Young Bungaree*, keeping *Manhegan* from dragging anchor and running aground in the bad weather and poor visibility.

The tug captain saw that if he kept going they would get tangled up with the *Manhegan* and put his engines into reverse. The tow rope went slack and got fouled around the tug's prop. The *Centurion* drifted towards the rocks at North Head and very soon the tow line was cut by the prop.

The *Centurion* was now going towards the rocks so Captain Charles Taylor let an anchor go but in the strong southerly the ship was soon

aground near Old Mans Hat (halfway between the Inner and Outer Head).

The pilot vessel, *Captain Cook* came to the aid of the *Centurion* but it was too late. The *Captain Cook* dropped two lifeboats and the crew jumped off the wreck to safety. Captain Taylor was the last to leave.

It is reported that within 30 minutes, the

Centurion slipped off the rocks and disappeared. Neither the ship (valued at £9,000) nor its cargo (valued at £250) was insured.

The *Centurion* is now located just off Quarantine Point, well inside the Heads of Sydney Harbour. It is in about 18 metres of water on a sandy bottom, the wreck consists of twisted iron, masts, timber and some other pieces of the ship. The wreck is in two parts, with a major section of the wreck located under the sand.

Things to see include the remains of the masts, anchor chain, coal, the stone ballast, plating, beams and sometimes, timbers. While the actual wreck site is not very large and can be explored in 15 minutes or so, the wreck has attracted a lot of fish life which greatly adds to the quality of the dive.





Allan

Warrnambool egg farmer who is no stranger to being constantly up all night with a rifle battling feral foxes. A neighbour had a maremma dog and said they were good with chooks. One night he noticed the dog barking "and the light went on in my head". Maremmas are bred to look after sheep in the Italian Alps and protect them from wolves. Marsh got himself a maremma dog named Oddball, and after six months of training and bonding with the chickens, he had no need to shoot foxes.

Described as aloof but highly intelligent. Maremmas are a dog that is usually too noisy for a pet, but it was just right for this job.

Dave Williams, an environmental science student was working part-time on Swampy's organic egg farm. He wondered what else the Maremmas could do. Williams wrote an essay for one of his science subjects about the plausibility of Marsh's idea.

Middle Island, just beyond the Warrnambool breakwater in Stingray Bay, and is part of the Merri Marine Protected Area. Its is a small clump of limestone only 1.5 hectares (3.7 acres). Its south face backs onto the wild Southern Ocean and it shelters Stingray Bay, making it a popular swimming and snorkelling spot. Little Penguins were known to be raising chicks in burrows near the island's sandy summit. In the 1990s, when volunteers began record keeping, 700 penguins lived there. 'The old fishers used to tell me when they were going out and loading up their boats early in the morning they couldn't hear themselves think for all the penguins squawking,' says Marsh.

At low tide, when the channel separating it from land is less than six inches deep, Middle Island then becomes accessible to foxes, with disastrous consequences. At the same time, human use of the fragile island increased, and burrows were trampled, crushing penguin eggs and chicks. In response, the Warrnambool City Council tried various unsuccessful predator-control methods and built a 280-meter (919-foot) boardwalk to keep people off the rookery area. Even so, from 2000 to 2005, penguin numbers plummeted to fewer than 10 birds.



In 2005, Williams approached the Warrnambool City Council, asking to test the idea of using Maremmas. Marsh says it wasn't the easiest of things to achieve. 'The problem was I was an amateur and not involved in the bureaucracy, and here I was telling bureaucracy how to suck eggs and the bureaucracy quite frankly didn't like it.' Allan has also been described as a person who uses colourful language, has strong opinions and thinks if he can inspire just one person to challenge a bureaucrat, then he's lived a good life.



The council decided to give the dogs a four-week trial. Oddball, an experienced chicken guardian, was the first chosen for penguin duty. Initially, Williams camped on the island and supervised Oddball. On the first night 'A couple of penguins came up and saw the dog and just snuck back down again but then one confident one just strolled

straight up and old Oddball went to give it a sneaky sniff on the backside and the penguin gave it a squawk and went for her nose.' He left the dog alone at night to do her work after a week.

Instead of living a life of isolation on Middle Island, 'Oddball' preferred the company of the people she could see on the beach just 150 meters

away. Then an older bitch called 'Missy' was put out on the island. She was not happy living alone there either. However, the presence of these two initial dogs proved that foxes reacted by abandoning Middle Island. The Little Penguin colony began to increase.

Realizing that one dog was not happy to live alone on the island, two puppies were purchased especially for the project. They were not correctly 'bonded' with the Island and played too roughly with the penguins "causing some damage". A new pair of pure-breed Maremma puppies and were introduced to the wildlife as their 'flock' from a very young age under volunteer supervision.

As 'Eudy' and 'Tula' matured, they were happy to stay alone, even overnight. Now they spend a few days at a time on the island. Every day someone comes to feed them and make certain all is well. They are given 'respite' every few days when they are taken to the mainland and given a larger area on which to relax and roam with some chickens.

Today there is no fox predation on Middle Island. Unauthorized human presence has also decreased. But the most pleasing aspect of all is that the Little Penguin population over the last five breeding seasons since the Maremma's were first introduced, has increased from less than 10 to over 180.

OK, so we have cute dogs, cute wildlife and it all feels good (except for the odd bit of penguin mauling which we can politely not mention), what happens next? You make a movie.

Actor Shane Jacobson his brother/director Clayton (of "Kenny" fame), got on to it and have just finished filming a family comedy about it. It is called "Oddball" but it should be called "Red Dog on Water".

Intricate filming of interaction between penguins and dogs were shot in a Docklands film studio, where a set will resemble sections of Middle Island, which is too environmentally sensitive for the crew to be tramping on. A Dandenongs set was created resembling the property of Marsh's Warrnambool chook farm. The 70-plus crew then travelled to



Warrnambool for a fortnight of filming on location. Little blue penguins were recruited from Sea World for the Docklands studio scenes.

If the movie takes off, the suburbs and the pound are bound to fill up with maremmas. Don't even think about it, THEY JUST AREN'T SUITED TO URBAN AREAS.

Sea Pansies

Previously we talked about sea pens, the most unusual sea pen is the "sea pansy," Renilla.

It has a primary polyp that is broad and flattened. It can crawl along the bottom. It soon becomes covered with a thin film of silty sand while lying there, and tries to hide from its main predator, striped sea slugs. A cluster of other polyps form an outlet valve. When under threat they can release water to deflate the colony. The sea pansy is also full of bioluminescent bacteria and can light up when disturbed. This substance has been synthesised and is used by scientists to measure cell activity during medical experiments.



Queensland Farmers Cautious

Cane farmers hope a new taskforce to improve runoff into the Great Barrier Reef does not introduce red tape and spoil goodwill.



Source ABC

The reef now had its own portfolio in the Queensland Labor Government, and its minister is committing \$100 million to improving water quality.

A taskforce representing the farming, resources, tourism, conservation and science sectors will

review existing programs and advise the State Government on where to direct the funding. A key aim is to reduce nitrogen levels in runoff by 80 per cent by 2025. But some are concerned the taskforce will not work.

Queensland Canegrowers chair Paul Schembri said "he welcomed the concept, but said he did not want it to destroy the momentum and goodwill built-up by farmers towards positive environmental outcomes. I'm wary of a mega-committee with mega-interests," he said.

Mr Schembri said the aim to reduce nitrogen levels by 80 per cent by 2025 was overly ambitious and warned unrealistic targets could harm the relationship between government and industry.

He said he hoped to secure more funding for the industry's voluntary best management practice program, which focused on soil, plant, drainage, and harvest across 100,000 hectares of farmland.

Over the years, he said, many farms had adopted practices like green trash blanketing to reduce runoff, precision farming to better target chemicals, and low tillage to keep soil intact, as well as taking up Reef Rescue projects.

Gosford Council's sea change

The Gosford Council released data suggesting the ocean will rise 40cm by 2050, and 90cm by the end of the century - figures much higher than other coastal councils. The residents hit the roof.

If Gosford Council pushed ahead with its proposed contingency plans to protect homes and businesses from flooding, based on its data, it was claimed that the future of more than 4000 residential and business owners on the Central Coast was in doubt. Residents were concerned at a potential slump in property prices and hike in insurance premiums.

According to Pat Aitken, Secretary of the Coastal Residents Group, "It's a complete shambles.

"We've got high levels of uncertainty in these areas that contribute significantly to our prosperity. This is the action on the coast where a lot of our Gross Domestic Product comes from," he said.

The Council's consultants had merely adopted the standards used by the NSW Government. In 2009, the Sea Level Rise Policy Statement was adopted advocating sea-level rise planning benchmarks of 0.4 and 0.9m above 1990 mean sea levels by 2050 and 2100 respectively.

Shoalhaven Council had used a more conservative international framework for their projections in conjunction with local data, which has the sea level rising by just 20cm by 2050.

After a strong public backlash the Council fast-tracked an independent review and quickly halved the targets. Against that kind of pressure, what science or council can hold out.

Not all councillors were in favour of the move, with councillors Vicki Scott and Hillary Morris holding out for a higher benchmark. "I was in favour of using the highest level scientists were recommending but others felt we didn't need to be so cautious," Cr Scott said.

Fish stock increasing around Whitsundays MPA

The good news is, despite increasing pressures from fishing and greater stresses on the reef, fish numbers in the Whitsundays have doubled since the 1980s

Source: Catalyst Dr David Williamson



In 1999, about five percent of the Whitsundays marine park area was within no-take zones. In 2004, the reef was rezoned, and now about a third of the marine park, is now protected. The rezoning was highly controversial at the time. There were concerns green reserves would cause remaining

areas to be overfished and degraded, but those populations have remained stable.

The Whitsundays are high-use tourism places, they're also very high-use recreational fishing areas. The main target species are coral trout and snapper.

Despite heavy fishing pressure, recent research has shown a large increase in coral trout populations, it's at least doubled within the reserves in the first three to five years. This isn't that unusual and often happens when you declare a reserve. The surprise was that it also increased fish stocks outside the reserve and appeared to provide a protected breeding population.



Scientists are able to sample tissues from adult fish within reserves, compare DNA and find linkages between where the fish end up and where it came from. About 28% of the reef area within the reserves, is contributing about 50% of all the baby fish that are arriving in the

sampled island group. It's a benefit to the genetic and biodiversity of coral reefs, and it restocks areas that are currently fished.

One of the other unexpected things that was found with green zones on these inshore reefs is a lower incidents of coral diseases within the areas that are closed to fishing. It is thought that the physical act of fishing and dropping lines on the reef and causing little minute scars on corals, breaking off branches of corals, is causing a site where infections can get in and start to take over the coral. There is up to a sevenfold higher incidents of disease in places that are open to fishing, relative to places that are closed to fishing.

The reserve fish are repopulating surrounding areas partly because the big fish in reserves produce more eggs. However, 99% of those are eaten, and rest are swept out to sea where they shouldn't be making any difference to local stocks. However, it appears that they find their way back 'home'. Juvenile fish, just a few millimetres long, make a conscious decision on which direction to travel. Some little fish can swim for 120km even without food.

Close to the reef they can then smell and hear the reef from about 4km away. There is a whole range of chemistry that comes off reefs. Like, for example, mucus from corals - fish can differentiate between different species of corals, and even their own species.

By no means can green (no take) reserves solve all the complex problems ahead for the Great Barrier Reef, but they may give at least some tropical reef species a fighting chance.



Tourism Development for wilderness in Tasmania



Details of a number of luxury commercial projects proposed for Tasmania's parks and reserves have been released.

They include a proposal for five huts along the South Coast Track in the South-West National Park and a plan for boat trips in the Port Davey and Bathurst Harbour areas.

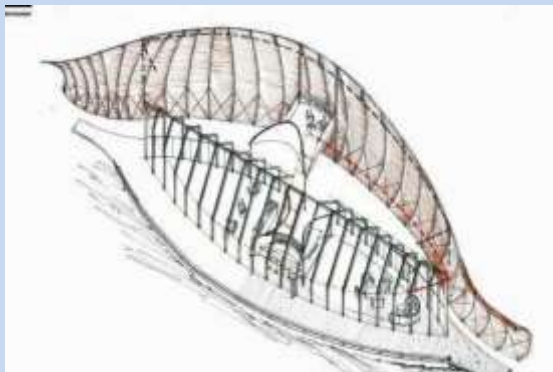
A three-day mountain bike experience, including accommodation pods in the north-east, an adventure precinct at Narawntapu National Park and a five-day walk on Flinders Island have also been proposed.

Robert Morriss-Nunn, the developer behind some of Tasmania's most successful luxury ventures has proposed a floating "eco-resort" in Tasmania's far south. The resort would consist of seven interlocked pontoons, each bearing two-storey accommodation, moored in Recherche Bay.

Environment Minister Matthew Groom said projects such as those proposed would "transform Tasmania into the environmental tourism capital of the world and create jobs".

The projects are among 24 which will now be assessed by an expert panel.

The move has been opposed by conservation and Aboriginal groups.



Orange Roughy Fishery Reopens

Orange roughy will be fished again after a ten year break following Australia's worst fishery population crash



A decision has been taken to set a commercial quota in a key fishing ground for the first time in a decade.

Orange Roughy was heavily targeted in the 1980s by trawlers around seamounts in the Tasman Sea. They also scoured channels through ancient forests

of corals. "What happened then was awful," said Simon Boag, chief executive of the South East Trawl Fishing Industry Association. "Literally tens of thousands of tonnes were taken off one of those hills," Mr Boag said. "Orange roughy has been used as an example of disaster in Australian fisheries management by anti-industry activists for some time," he said.

Fishers claim the new quota is a reward for careful management, but conservationists warning against renewed fishing. The orange roughy matures at about 30 years, and can live to 120 years.

Since the closure of these hills to fishing, stocks have been monitored by CSIRO scientists using acoustic and optical sonar equipment to estimate aggregation sizes. An estimated 24,000 tonnes of fish, around 26 per cent of the original stock, now gathers there, the CSIRO says. The Australian Fisheries Management Authority says this is enough to set a "very conservative" 500-tonne quota [*this is only a very small quota in the scheme of things*].

"What we would like to see is a much more precautionary approach, that should allow it to recover a lot more," AMCS spokesperson Ms Mahto said. "It also remains on our red list because we still have outstanding concerns about the significant impact of trawling on its sensitive deep-sea habitat."