

An underwater photograph featuring a vibrant green plant with long, thin leaves and a central stalk, growing from a dark, textured rock. The plant is surrounded by bright red, branching coral structures. The background is dark blue, with other coral and marine life visible in the distance.

# MARINE *Life*

**December/January 2013-14**

**ISSUE 28**

# Marine Life magazine

## Our Goal

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

## The Editorial Staff

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NT Correspondent – Grant Treloar  
SA Correspondent – Peter Day

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**Disclaimer:** The views expressed in this publication are not necessarily the views of the editorial staff or associates of this publication. We make no promise that any of this will make sense.

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*Cover Photo;* Filter feeding animals at home on a Bren Gun carrier. Wreck of the *Mauna Loa*, Darwin Harbour – Mike Jacques

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## News

<i>Marine Life</i> has a new home!	1
National News roundup – public comments on seabird deaths	1
The topical stuff – CSIRO job cuts, MIA carbon tax	5

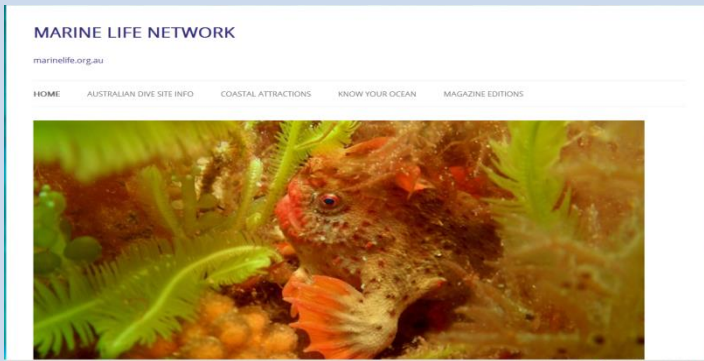
## Bits & Pieces

Feedback Corner	7
Climate Change – a showbag of delights for fishers	8
Independent ways to fish NSW marine park sanctuary zones	9
Critter Files – terrifying marine leeches	10
Close & personal with Nev's thesis – sexually deviant wrasse	16
Tasmanian Abalone stocks decline	20

## Feature Stories

Coins, Treasure Maps, and Pirates the Wessel Islands (NT)	11
Eaglehawk Octopus graveyards (TAS)	14
The life of Using Daen Rangka (NT heritage)	15

## New Marine Life website



As a small little Tasmanian publication, not wanting to invest much hobby time in setting up our own website, we took up a kind offer from the Tas Uni Dive Club to

host the magazine on their site. Having now grown into an equally unnoticed national publication, it is probably way past time we did our own web presence. We very much appreciate the TUDC's help to date, as well as acknowledging Emma's work in keeping that presence tidy and up to date.

The magazine can now be downloaded from [www.marinelife.org.au](http://www.marinelife.org.au) where we also have some other half-baked material including a dive site guide for WA, Tas, SA and NT. Eventually we hope to have a full 'where to visit' guide for all travelling marine freaks, not just divers, with information on fun critters to see along the way, as well as some general education information. At the moment it's still very rough and incomplete, but hitch up the caravan and keep checking...one day.

## NATIONAL News Roundup

### Great Barrier Reef World Heritage Area strategic assessment plan

Federal Environment Minister Greg Hunt has released the draft plan for public comment. The Great Barrier Reef Marine Park Authority (GBRMPA) undertook the marine component of the assessment to consider the impact of activities on the water of the park. The Queensland Government carried out an assessment of the coastal zone component. Queensland Deputy Premier Jeff Seeney said it was important for decisions about the reef to be based on scientific facts, not "alarmist claims" by environmental groups that can't be verified. Mr Hunt says the most significant challenge facing the reef is reducing sediment, nitrogen and nutrient flows. The Minister also made no apologies for desiring "tough" new standards [*I'd prefer some independent scrutiny before deciding they are 'tough'- Ed*].

According to the Australian Institute of Marine Science, the Great Barrier Reef has lost half of its coral cover in the last 28 years, mainly to cyclones, the Crown of Thorns starfish and coral bleaching. The report found that while corals were in good condition at the northern end of the reef, both inshore and offshore corals in southern areas were in decline.

WWF Australia spokesman Nick Heath said the report confirmed large sections of the reef were in "dire straits". Australian Marine Conservation Society called for Mr Hunt to reject a proposal to expand the Abbot Point coal port near Bowen if he was serious about improving water quality.





The GBRMPA has come under fire in recent days with claims that two of its board member have conflicts of interest and were involved in decisions related to port developments in the region. The Great Barrier Reef World Heritage Area Strategic Assessment and the program

reports can be downloaded at: [www.reefhaveyoursay.com.au](http://www.reefhaveyoursay.com.au).

Consultation closes on 31 January 2014. You can also do an on-line survey, but I'd recommend you have a go at some of the report summaries first, and search the web for other opinions too.

## Antarctic Marine Park stalls

Russia and China are being blamed for a failure of plans to protect almost 3 million square kilometres of Antarctic Ocean. The impasse occurred after two weeks of discussions between 200 marine scientists in Hobart. A Russian delegate would not say why they did not support the protected areas, but it is believed to arise from the perception that it would be a threat to fishing interests. Campaigners have vowed to keep on lobbying.

## Update on turtles and cyclone losses

In our recent "extreme weather supplement" we highlighted the impacts of the 2013 Bundaberg cyclones on the nature of the area. At that time no-one knew the full impact on the largest loggerhead turtle rookery in the South Pacific, at Mon Repos Sanctuary. January's record floods swept away 60 per cent of the eggs and closed the tourist visitation season before its usual finish in March. Rangers are now working hard

to protect the endangered loggerheads from a worsening fox problem, injuries from boats, and confusion from artificial light glow. "We have been very seriously running our baiting program. In some places, we use protectors over the nests, but at Mon Repos, the concentration of nesting is too dense," the ranger said.



The "extreme weather supplement" also noted lots of green turtles washing up dead after the storms. Concerns had been raised that damage to seagrass beds from the 2011 and 2013 floods would impact turtle activity. The green turtles at Lady Elliot Island appear to have responded to the cyclone losses with vigour, observers reporting lots of green turtles mating early and often. Other animals have also been arriving ahead of schedule with many species of birds breeding early. Manta rays have also been appearing in record numbers.

## Great Australian Bight oil exploration

Around \$600 million worth of more oil exploration is underway in the Great Australian Bight. South Australian Energy Minister Tom



Koutsantonis said, "The delta that is off the Great Australian Bight is one of the most-prospective unexplored basins anywhere in the world. It has the potential for vast reserves of oil and gas."

Permits have been granted for two exploration areas. The Ceduna sub-basin permits cover areas from about 200 - 360 kilometres off the coast from 150 metres deep to 3,700 metres depth.

The oil companies described the basin as "about the size of the Gulf of Mexico", perhaps an unfortunate comparison. SA Greens leader Mark Parnell has said that it is the Gulf of Mexico spill that highlights the "misguided risk" the Government is taking with the Great Australian Bight. Conservation SA is concerned that the oil exploration wells proposed in the GAB are in even deeper water than the Deepwater Horizon Incident in the Gulf of Mexico, "We don't think BP can safely drill in this ultra deepwater location...We don't believe that BP can adequately manage an incident if something serious does go wrong". There have also been concerns about seismic testing, an issue we have covered in more detail in a previous issue. If successful BP hopes to establish 4 wells that would offload directly into tankers rather than piping oil onshore.

## Seaweed harvest



A Chinese seaweed processing company plans to spend \$21 million over three years to acquire and expand a seaweed company based at Beachport, S.A. Australian Kelp Products has the only commercial seaweed licence in South Australia and produces liquid kelp fertilisers and dry seaweed products for livestock

supplements. The deal could create about 200 jobs in the south-east. The seaweed industry is worth \$2 billion annually in the Asia-Pacific. Australian Kelp Products harvests seaweeds from the beaches of the south-east coast of S.A.

One of our Tasmanian readers, Dr J. Craig Sanderson, has also teamed up with a local wholesaler, "Ashmores", to sell seaweed products. Kai Ho Sea Vegetables Tasmania is a new business marketing locally harvested Tasmanian edible seaweeds. These algae are mostly, wakame and mekabu based on the introduced pest species *Undaria pinnatifida*.

## Irukandji jellyfish migrating further south

*Reader Jane Elek alerted us to this feature - thanks Jane.*



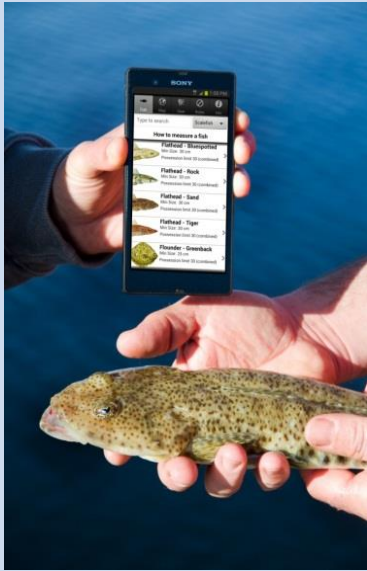
The Irukandji jellyfish is venomous and its stinging cells inflict excruciating pain that sometimes leads to death. They are relatively common in the tropical north and their arrival inshore during the 'wet' is a big risk for water users.

Marine researchers say climate change could be altering the migration patterns of the dangerous Irukandji jellyfish and it is moving further south along the Queensland's coast. The progress of the Irukandji jellyfish is part of a worldwide trend, where tropical marine species are moving towards the world's poles as oceans warm. There have been sightings of the species as far south as Hervey Bay. Odd sightings of Irukandji have also been made in Sydney and Fraser Island in the last few years.

In the future, Irukandji jellyfish are unlikely to establish populations in south-east Queensland waters in the long-term. "Although they will survive, they won't thrive." A likely drop in ocean acidity will restrict long-term breeding.

"There's a number of factors like rainfall, current strength, temperature and the PH of the ocean that will influence how far they get."

## Smartfishing is here!



Rod and Sally wanted us to let you know that the app "Tas Fish Guide" is here. This is a new FREE recreational fishing app just released by the Wild Fisheries Management Branch of DPIPW. It is an interactive version of the popular printed Recreational Sea Fishing Guide. This app is an essential guide to rules and species for anyone fishing in Tasmania and contains . Bag and size limits, fishing rules, fishing tips, fishing area maps, Species descriptions, boat ramp locations, Latest marine weather and tide information, cooking tips and a full colour guide to 115 Tassie fish. Four thousand fishermen have already downloaded it.

Tas Fish Guide is free to download for iPhone, iPad, Android phones and tablets. More information at [www.fishing.tas.gov.au/phoneapp](http://www.fishing.tas.gov.au/phoneapp)

## Corals – what a steaming STINK!



*A recent study has found that coral animals produce a chemical that could account for that distinctive 'smell of the ocean' in the bottom of your ocean sports gear bag.*

The coral animal makes a sulphur-based molecule that has a role as complicated as its name, dimethylsulphoniopropionate (DMSP) [try that after 3 beers]. The researchers have shown that the coral animal

makes, "The characteristic 'smell of the ocean'". Absolutely heaps of it is produced by a coral reef, "In fact we could smell it in a single baby coral," says AIMS chemist Cherie Motti. Production of DMSP increases when corals are put under heat stress. DMSP acts as an antioxidant protecting coral tissues from environmental stress, basically like a refreshing cup of tea after a trying day. This might help to make coral reefs more resilient than first thought. This sulphur-based molecule also floats up into the atmosphere and attracts water droplets. Because the GBR is 2600 km long that could be enough droplets to make it cloudier on the reef than 'normal'.

## Report anything fishy on the new Redmap smartphone app!



Redmap has launched a free phone application. Now Australian fishers and divers can report sightings of unusual fish and marine species with just a few clicks on their phone. Community observations help scientists track which fish and marine species are shifting their usual home range south in response to warming seas. Some seas along the coast of Australia are warming at three to four times the global average. Already divers, fishers and the public have shared hundreds of sightings on Redmap including fish, turtles, sharks, rays, lobsters and even sea slugs. You can download the free app at the iTunes App Store or Google Play.

# Bits & Pieces

## CSIRO staff cuts

- commentary by Mike Jacques

There has been a bit of frenzied media reporting about the federal government's goal of shedding 12,000 public service jobs over two years, which has resulted in a hiring ban in the federal bureaucracy. CSIRO will be among the agencies hardest hit as basically no scientist gets an employment contract that lasts longer than a snowflake, or a political promise. Alarmist media releases suggested the jobs of up to 1400 scientists and researchers were under threat, but that is merely the total number of employees on short-term contracts at the CSIRO, not the current savings targets. Prime Minister Tony Abbott added to the slightly unreal character of the reporting by saying, "We haven't made any cutbacks to the CSIRO...the employment of staff inside the CSIRO...is a matter for the CSIRO itself." The CSIRO's HR department didn't appear to know about it either, and advertised on their "careers" website page, "CSIRO has recently withdrawn some advertised roles which are no longer available. If you have already applied for one of these positions, you will be advised shortly of the status of your application".

The agency's deputy chief executive for science, strategy and people [*I love those Orwellian departmental names*], insisted the decision was not prompted by the government, but also said "Clearly we have an eye in the broader public sector space ... and that's one of the inputs in our decision." The Coalition did seem to be uncannily well-informed about those independent decisions though, with the Treasurer publicly confirming that the CSIRO's target was 600 job losses this year, although hastening to add that "...staffing matters, are an issue for the

CSIRO". Over the last couple of years the CSIRO have already been making do with less, with staff cuts of 200 positions announced in April when private funding (which makes up 40% of the CSIRO's more than \$1 billion budget) started drying up. Research will be reviewed to see if a role is "mission critical" with permanent staff being given extra work, rather than renewing the tenure of contracted staff. We are yet to see how this will impact on research projects.

I'm waiting to see if this is a precursor to direct research program cuts on leftie "crap" programs, such as climate change research. I have a suspicion that the National Party and industry have enough clout to protect agricultural programs and industrial R&D, so the marine stuff isn't looking so safe. However, it's too early to tell really. The current funding arrangements come up for review in 2015. I could ask the Government how they were planning to spend taxpayer's research funds, but as that is a potentially unpopular decision, I expect the public announcement of those policies will also be, 'an issue for the CSIRO, looking carefully at wider inputs in the broader public policy space'.

### Mum's water safety tips



*It might look 'cool' but it's still an entanglement hazard  
[Inspiration via Rich Mason]*



## “Direct Action” – a new way forward?

- commentary by Mike Jacques

On 12<sup>th</sup> October 2011, Tony Abbott, made a “pledge in blood” to repeal the carbon tax and related legislation. We were given the distinct impression there would be some kind of quick action on a replacement, “On day one, the Environment Minister will instruct the Department to commence the implementation of the Coalition’s Direct Action Plan on climate change and carbon emissions”.

The Coalition Government has released legislation to repeal the Carbon Scheme, but it seems like there is no new policy waiting in the wings ready to take its place. The Government has merely sought submissions on the operation of their “Emission Reduction Fund”, the centrepiece of the Coalition strategy. The Emissions Reduction Fund will pay industry to implement changes to their processes, but the cost of the program will be capped at \$10.5 billion to 2020. That money will come from “normal budget processes”, not a tax. That has to mean big government spending cuts.

The programs being suggested include a proposal to pay farmers \$8-10 for each tonne of carbon they can lock up in their soil. While this idea is promising, it relies on unproven processes. Many farmers also claim the price is too low for them to be bothered with it. The second-biggest source of the Coalition's planned carbon abatement is green building standards, meaning compensating developers at \$15 per tonne for saved carbon emissions. Many scientists doubt any of this will get us to the targets.

The Government will also be keeping large parts of the former Government’s legislation, including the ‘green tape’ that it railed against prior to the election. The *National Greenhouse and Energy Reporting Act 2007*, the national register for carbon and emission units will remain.

Unchanged are the commitments to spend billions on retiring worn-out brown coal power plants in the La Trobe valley. They will continue to invest in clean technology and renewables. It sets the same emissions reduction targets.

This isn’t much activity really, considering that the carbon tax was only an interim measure and was going in July 2015 anyway. The big change that bites hard is that it won’t then evolve into an emissions trading system, based on a floating price pegged to an international carbon market. The Government has said that it will not allow carbon credit trading. Most analysts are saying that carbon trading is the way to go. These include Treasury, who described it as “... the only realistic way of achieving the deep cuts in emissions that are required.” In 2010, even John Howard said a carbon trading scheme was needed.

It seems like the focus has been on getting rid of a ‘leftie’ tax, rather than on developing viable alternatives. A lack of apparent commitment to a workable reform is a problem for a leader who has previously described climate change as “crap” and recently described the former policy as “whacko”. It’s feeding the impression that he isn’t personally committed to the reforms, but polls are still suggesting this is an issue Australians want the government to address.

The Government is at least in no rush and perhaps wants to wait until minor parties control the Senate. Maybe they are assuming reform will get easier. I doubt Clive Palmer shares that view and already hates a raft of other conventional coalition ideas, like the paid parental leave scheme. He certainly sounds like a climate change sceptic, but he currently does a good job of not sounding too clear on any policy. Clive has recently backtracked slightly from fully supporting the repeal of the carbon tax. I anticipate his demands in return for voting support will be long, slightly strange and perhaps humiliating for the Government. Our greenhouse politics could well get very tangled, and may yet be far from decided.





## Feedback Corner

*We asked and you delivered!*

### Link to Cuttlefish News

*"Hi guys, I see you've written about a few of my interests in the recent edition... I thought you might like to take a look at the latest from Northern Spencer Gulf to consider for your next edition. Keep up the fine work!" [Dan Monceaux](#)*



<http://cuttlefishcountry.com/2013/10/10/consider-the-plight-of-northern-spencer-gulfs-sepia-apama-on-cuttlefish-day/>

*Thanks Dan, I might refer this to the readers with a note that some more research money has recently been granted. Your site might be a good spot for them to keep up with this and other breaking news.*

### Miley twerks for climate change

*This article raised some hackles with our source getting a third hand report that, "Complaints related to it being sexist, joked about Syrian children dying and being totally offensive". Most of you didn't seem too worried and responded sensibly by skipping through it, or around it, and getting on with more important things. One of you appreciated Miley's effort and commented, "what a committed young woman". Too true. Miley, now described as a "marketing genius", is a known supporter of environmental causes of this kind. However, the idea wasn't to highlight her behaviour, but how easily we are distracted from genuinely important things by some suggested bump and grind. We'll have to keep working on that until we get it right.*

### Swan River bed ruined by sharks

*One of our southern readers corrected Mick Lee's dredging article and solved the climate change issue in one short passage, "I am concerned at Western Australian logic. "However, this dredging can releases trapped toxins into the river and has been previously attributed to fish deaths". So ... fish deaths causes dredging? This is in line with an ABC announcement earlier in the year that " climate change linked to shark attacks" Makes me think direct action of shooting all the sharks would solve the problem!" Good on you Adrian, you'll soon be the Environment Minister at this rate.*

## Climate Change – join in, the water is warm and the fishing is great!



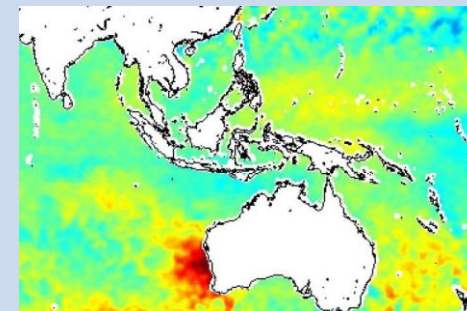
*Roundfaced batfish in the south, photo Redmap*

As ocean temperatures rise off Western Australia, sub-tropical fish are swimming south and many are staying there to the delight of local anglers. Some pretty unusual fish have been occurring south of Geraldton, off Perth and as far around as the Capes on the south coast. The southern migration of fish and marine creatures is driven by two main factors; a gradual increase in ocean temperatures and the effects of the Leeuwin Current a type of "fish highway."

Dr Ming Feng is a physical oceanographer at the CSIRO and says that over the last 60 years, ocean temperatures off the west coast of Australia have warmed by up to one degree. As well as this slow-warming trend, in 2010/2011, ocean temperatures between Kalbarri and Jurien Bay rose by up to five degrees, resulting in coral bleaching, fish and invertebrate kills in an area considered to be a global biodiversity hotspot.

Dr Feng says ocean temperatures off the state's coast are expected to continue to rise which means the frequency and severity of ocean heatwaves are likely to intensify.

However, you can always find a silver lining in any situation. Craig White runs a charter boat business out of Jurien Bay, since a marine heatwave moved through the area in late 2010 and into early 2011, "After that happened we could get red throat snapper in a few very isolated areas and quite a random catch whereas up in Leeman you could get quite a lot of them and in Jurien Bay very few," he said. "Now we can get them from the back of the reef all the way out. "They've actually become prolific, they're absolutely everywhere, there's been a massive influx of them. I personally think it's a good thing, we're getting a lot more species of fish, a lot more variety, and it doesn't appear to be bothering the local stocks...That's coming from a typical fisherman's point of view. There's a saying going around that 'global warming means rising sea levels...more fishing spots.'" he said. If you've seen any unusual fish or marine life in your area, scientists are asking you to take a photo and upload it to Redmap <http://www.redmap.org.au>.



*CSIRO map of the heat wave at its peak*

## Independent ways to fish NSW Marine Park sanctuary zones

- commentary by Mike Jacques

In August, the NSW Government lifted a moratorium on reviewing zoning plans and altering sanctuary zones. The moratorium on declaration of new marine parks remained in place. They then basically said they would stop enforcing the law on line fishing from the shore in MPAs. According to some reports Marine Estate Management Authority (MEMA) is currently considering whether to permanently allow recreational shoreline fishing in marine sanctuaries.

Apparently, a major criticism of the former way things were managed was a lack of independence in the advice given to governments. Chairwoman Wendy Craik has said *"I think there were some concerns about some of the ways evidence had been used. I think that the Government felt it was very important to have independent expert advice"* Ms Craik said. That would explain why Ms Craik has no conservation reserve management experience and was formerly an executive in the Australian Fisheries Management Authority. To that extent, MEMA is now well and truly independent of any primary focus on biodiversity values.

So far, despite this 'independence', MEMA has been pretty diligently singing from the NSW Government's policy songbook. Chairwoman Wendy Craik has said, *"I think there were concerns from the community that some of the management of marine parks had focused more on ecological, and not so much including economic and social issues,"* she said. Does that mean MPAs aren't primarily for ecological purposes then? Doesn't that also mean we don't need any 'no-take' MPAs anywhere as recreational fishing groups don't want them and all the

fisheries managers I know think that marine parks have little place in a well-managed marine estate?

The Minister announced that there will be a proper assessment process as they redraw sanctuary zones, *"The new consultative, evidence based approach is underpinned by a threat and risk assessment that will allow us to better identify and address risks to the many values that our marine parks hold."* No fisheries manager I know says 'hey, I am responsible for a really badly run fishery'. They, fervently believe that any fishery they are involved in managing is either sustainable, or could be, if only all the dilettantes like the public or the Minister left them alone. In that psychological environment there is an automatic tendency to classify fishing as not being a significant ecological risk to any location. To my mind this MPA process is too dominated by that mindset to be truly classified as 'independent'.

The Marine Estate Management Authority have produced a paper which *"outlines a vision for the NSW marine estate and the underpinning principles that will be used to guide management"*. [Managing the NSW Marine Estate: Purpose, Underpinning Principles and Priority Setting](#). Let me guess, it is going to talk about 'balance' without any meaningful detail, *"Careful and effective management of the NSW Marine Estate is therefore required to align private incentives with broader community preferences and outcomes, to ameliorate threats and balance competing uses"*.

Actually 'balance' is only used 4 times, pretty good for a government policy paper. There is also enough detail to see where we are going with this if you can read between the lines. People trained in the fisheries management paradigm have a 'pet hate' with the way that the hemp t-shirt wearing biodiversity spoilsports use the concept of the 'precautionary principle', *"In response to uncertainty and information*



gaps, the **precautionary principle** will be applied and measures will be taken to avoid threats of unacceptable environmental damage.

However, lack of full scientific certainty will not be sufficient reason for postponing action. This does not equate to a 'no risk' approach, but will involve careful evaluation to avoid serious and irreversible damage to the environmental values of the Estate and an assessment of the risk associated with alternative management options". To me that says pretty clearly that we will get MPAs managed with a predominant fisheries management focus, rather than a biodiversity conservation focus. If you would like to add your credentials to the management of this brave new world, the closing date for nominations for membership to the MPA management committees for each park has been extended to **6 December 2013**. Couldn't you get anyone who cared enough to nominate, or did the spoilsports boycott it again?

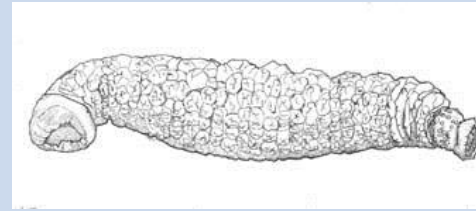


We have to at least give everyone credit for making their intentions reasonably clear. What we have here is a conservation zone that is being managed by hunters, very clever and rational hunters, but hunters nonetheless. This is hardly surprising in a State where the political balance of power is held by, you guessed it...hunters. That doesn't sound like "independence" to me and it can't produce any sort of meaningful community consensus on the management of the marine estate.

## Critter Files

### Icky Marine Leeches

- by Mike Jacques



Leeches are segmented worms with short thick muscular bodies with suckers at either end. Most leeches are terrestrial and live in damp environments. However, a few species are

marine, and apparently most of these are associated with elasmobranch hosts (sharks and rays), although they also occur on bony fishes. Marine leeches feed on body fluids from fishes. Blood-feeding leeches have anaesthetic, anticoagulant saliva. The anaesthetic stops the prey from feeling the bite and the anticoagulant stops the blood from clotting. Some species can live for more than two years between meals.

Leeches are hermaphroditic and generally cross fertilise with another leech. They leave their hosts only to attach cocoons to rocks, shells and other hard surfaces. Leeches breathe through their skin by diffusion, although some species have gills. They have a complex system of heart tubes that enable blood to be pumped all over the body. Marine leeches have not been systematically studied in Australian waters.



Marine leech attached to the back of a stingray. Green water courtesy of algal bloom.

# FEATURE - NT

## Coins, Treasure Maps, and the Wessel Islands



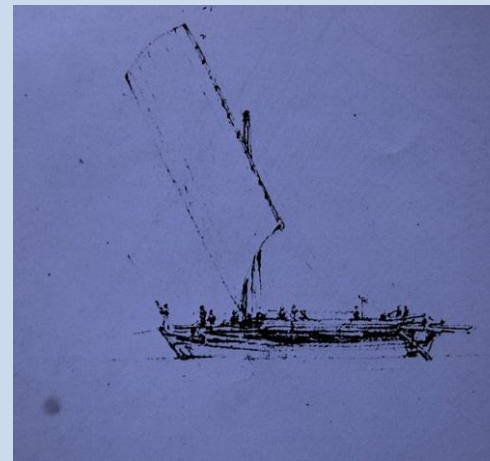
*These remote islands have been in the news lately as some old relics have reignited a debate about just who 'discovered' Australia and when.*

### **About the Wessels and their people**

The Wessel Islands are a group of islands northeast of Arnhem Land. The island chains stretch for up to 100 km from the mainland and represent remnants of a prehistoric land bridge between Australia and New Guinea. Marchinbar Island is the largest of the group. Other islands include Elcho Island. Elcho Island is the largest Aboriginal community in northeast Arnhem Land, with approximately 2,000 residents. Eighteen connected clan groups within the Elcho Island area have close cultural ties with mainland Arnhem Land clans and language groups. There are at least twelve languages in use in the region. English can be anywhere from a third to a tenth language for Yolngu people. The Yolngu have been described as "deep thinking philosophical people" and have provided many nationally prominent, artists and activists. Elcho Island is the home of the Aboriginal folk musician Gurrumul Yunupingu.

The island have restricted access; permission to visit is required by law and can be made through the Northern Land Council directly or via the Galiwin'ku Council. Total alcohol restrictions apply.

The island group is dominated by rugged sandstone plateaus and hills which contrasts sharply with the adjacent mainland. Most of the islands have extensive areas of native vegetation, including grasslands, heathlands, coastal thickets and eucalypt woodlands, with smaller areas of paperback forest and mangroves. The environments of these island groups are in good to near-pristine condition. The islands harbour ten threatened species, including the only known recent occurrence in the Northern Territory of the Golden Bandicoot. They also provide an important refuge area for local threatened species, including translocated populations of the Northern Quoll. Island beaches support nesting activity of four species of marine turtle, but are especially significant for the threatened Hawksbill Turtle. Large flocks of seabirds also use islands for nesting. The only significant invasive species are wild dogs on Wigram and Marchinbar Islands and they are currently being eradicated by Aboriginal rangers.



### **History of Visitation**

Yolngu folklore refers to the first visitors to their coast as "Baijini". They caught trepang, built houses and grew crops. They planted tamarind trees and came with their families. They could be the Bajau Sea Gypsies from Sulawesi but the reference is unclear.

Later arrivals were fishermen from Macassar, the capital of South Sulawesi in Indonesia, one of the most powerful empires in the archipelago from the 13<sup>th</sup> century. Macassans got rich trading spices with India and Arabia until the Dutch invasion after 1667. Macassan fishermen visited Arnhem Land probably from the 1600s or 1700s. In February 1803, Matthew Flinders in H.M.S. "Investigator" met six prahus off Arnhem Land with 20–25 men each on board and was told that there were 60 prahus with 1000 men then on the nearby Australian coast. He also saw a wrecked prahu on Marchinbar Island that was being broken up for firewood.

The Indonesians named Arnhem Land *Marege'*, meaning "Wild Country". Early failed European attempts to settle northern Australia may have been prompted by fears about these invading Macassan 'boat people'. Each December the fishermen came and camped on the beach, traded trinkets with the locals and generally tried to avoid conflict. Macassans harvested trepang (sea cucumbers) and pearl oysters. Loaded with their catch, they returned home with the South-east Trade winds in April. They told the Yolgnu about the encroaching Europeans, which they called *Balanda* (derived from "Hollander" /Dutch person) and this is still the Yolgnu and Indonesian word for a white person.

In 1883 the European settlers of the NT imposed large trepang licence fees, an impost that made the trade less viable. The trade continued to dwindle toward the end of the 19th century, due to rising fees and probably also overfishing. In 1906 the government did not renew the Macassan's permit to harvest and they left our shores permanently. The Yolgnu then had periodic and sometimes violent contact with European and Japanese seamen and settlers, but no-one stayed for long. Europeans didn't often visit the area and the main interactions occurred during World War II. In 1942 the Galiwin'ku settlement on the Wessel Islands was established as a Methodist mission (The island then

remained under Church direction until 1974). The next major interaction with the outside world came the following year when a couple of ships were sunk in the area by Japanese planes. The RAAF established air bases nearby. This led to 312 Radar Unit setting up on the Wessel Islands to provide early warning of Japanese movements. Apart from a few radar blips of interest it was a pretty quiet war, with plenty of time for exploring the islands. In 1944, Private Maurie Isenberg, was fishing alone on a long sandy beach when he noticed 9 coins lying on the sand. He kept the coins in a tobacco tin and forgot them. A year later the war ended and everything went back to normal.

### ***The Coin Mystery***

Maurie kept the coins his Bondi house until he rediscovered them in 1979 and took them to a museum, along with an old map with an "X"



marking the spot where he had found them.

Four coins were European from the 1600's. The remaining five were a mystery until a group of British experts traced the copper coins to East

Africa where the Sultan of Kilwa once controlled a coastal trading post from about 950 AD to 1505. The Kilwa sultanate is now only remembered as a World Heritage ruin on an island off Tanzania. Only one other Kilwan coin has been found outside east Africa, in relatively nearby Oman.

There are several theories as to how medieval African coins got to Australia. They could be from a medieval Middle-eastern trading ship



plying an old spice route to the Indies (Indonesia). The wreck of a Persian dhow trading vessel was found off Sumatra in 1998.

Alternatively, the Portuguese conquered the African Kilwa kingdom and regularly traded with islands north of Darwin. Indonesian trepang fishermen could have brought over old disused coins as trading trinkets. In July, Australian Geographic sponsored an expedition to the remote Wessel Islands to find out more about the coins. They also wanted to check out Aboriginal songs that suggested some early visitors to their coast had packed a local cave full of items including mysterious weapons. The WWII treasure map was confusing but they soon found the old radar station, now a dump of rusty petrol drums and spent shell casings.

The expedition was soon able to track down the location where Isenberg had found the coins, the creek at Djinjan. The coins were clearly not from an old Aboriginal settlement, but were most likely part of the detritus washed into the mangroves from the sea. They didn't find any coins, but took samples of washed up shipping timbers and metalwork.



As for the coins, "There can be only two conclusions, we think: One that they were a product of a storm surge from a shipwreck, and two, alternatively, they were in the possession of one person who just happened to lose them there for whatever reason." They plan to return to the area next year to explore for wrecks. "There are a number of reefs along that section

of coast that look very suspicious to us, and that's one of our follow-ups, to check these out for the possibility of wrecks," Mr McIntosh said.

Nearby the team found rock art pictures of sailing vessels and unusual men. While as yet undated, the images show scenes of whales and local wildlife - along with white men wearing hats and trousers and possibly carrying guns. There were also about 10 pictures of ships of different shapes and sizes.

## Snack Time

*This prize winning photo comes via "Yellowthroat" magazine. Keith Martin-Smith, a member of BirdLife Tasmania, won first prize in the Ferntree Photographic competition with this wonderful shot of sea eagles returning to their young.*



## FEATURE - TAS



### Eaglehawk Bay – an octopus graveyard?

With an arm-span of up to 3m, the Maori octopus is the largest octopus in the Southern Hemisphere and is common in southern Australia and New Zealand. Their strength and resourcefulness is legendary. In New Zealand they have an important place in Maori culture. A battle between a giant net-robbing octopus and a great warrior is said to have carved out the Cook Strait area.

They inhabit shallow rocky reefs and kelp forests down to 550 m, but also move out onto exposed sandy sediments and seagrass beds. Basically they can thrive anywhere. All octopus are highly intelligent and excellent predators with good vision but are deaf. They snare their prey with tiny suction cups on the arms. The mouth has a sharp and hard beak, like a parrot, and it can crush even hard-shelled molluscs. Octopus may change colour to provide camouflage against any backdrop, and for protection they eject ink to distract their attackers.

The adults can attain a size of 6-10 kg, and their lifespan is estimated to be 2-3 years. Many female Maori octopus undergo a long fast during breeding, as they do not eat until their eggs hatch, which takes around

50 days. Females breed only once and then die as is common with most other octopus.

Mostly octopus caught in Tasmania are landed as commercial bycatch. In 1980 an old lady from Eaglehawk Bay in south east Tasmania, discovered that the waters near her house were alive with Maori octopus. She developed a niche artisan fishery by selling smoked and pickled octopus. It was quite a sight to see her out in waist deep water, beating a huge octopus to death on a rock. These days two local fishermen continue the trade, still catching octopus with hand spears. This doesn't appear to dent the numbers as Maori octopus can produce thousands of eggs and they seem to congregate around Eaglehawk Bay.

Recent studies of octopus behaviour in the area have been a bit confusing. In an eight month study no spawning was observed despite the octopus being close to maturity. Another project found that many of the octopus had empty stomachs. This could have been due to the advanced age of many of the octopus. Prey items consisted of small fish and crabs, an unusually narrow diet.

Recently a BBC documentary team joined together these pretty broadly spaced dots, to come up with the idea that the octopus are trapped in the bay by the unusual topography. *"It seems that the octopuses try to follow the moon on their migration route to the open sea to spawn on hard rocky surfaces. However, the end of Eaglehawk Bay is landlocked by a stretch of land that is just 100m thick. But, having reached the end of their life cycle, the octopuses are not able to cross it and get out of the bay. Inevitably all of them die before they can spawn"*.

The 'octopus graveyard' idea might have some merit for these older animals, but I don't know about the "following the moon" bit, the 'too old to cross land bit', nor does it explain why for the fertile ones, why they don't just lay their eggs on the nearby reefs instead. Like a lot of things, it will just have to remain a mystery.



## The life of Using Daen Rangka

Using Daeng Rangka (c.1845-1927), was an Indonesian fisherman in the Macassan trepanging industry. He was born at Labbakang in the south Celebes. Using first came to Australia by sea as a small boy. He continued in the annual trade and eventually became the commander of a prahu. In December 1883 he appeared in the public record when licensing was introduced. His signature in Macassarese script shows that he was literate and he was described as an honest man. He was very reluctantly, the first captain to purchase a trepanging licence, a huge fee of nearly £50. In the 1886-87 season, he was working in the *Erang Poleang*, when the vessel was wrecked on Melville Island. The locals attacked the survivors and Using kept then at a distance with an old carbine until they managed to get to sea in four old dug-out canoes. Three weeks later three of the surviving canoes turned up the worse for wear at Bowen Strait revenue station.

From 1887 Using commanded the new and larger *Bondeng Patola*. In March 1895, she was one of two prahus wrecked on the western coast of the Gulf of Carpentaria. In three weeks the survivors made a 400-mile (644 km) trip in canoes to Bowen Strait. In 1899 Using was discovered in Melville Bay without a licence by a



government party. He insisted that the loss of his mainmast had kept him from going to Bowen Strait to pay.

From the late 1890s, Using seems to have regularly commanded the *Bunga Ejaya*. In 1906 the sudden decision to prohibit the Macassans in favour of local enterprise prompted the entrepreneur Puddu Daeng Tompo to choose him to check the truth of the report. Using thus was the last of the trepanging captains from Macassar to visit Australia. The loss of two vessels and the final problems of the industry make it unlikely that he earned much money from his voyages. After his return from Australia in 1907 he completed one further voyage to the Lesser Sunda Islands and then retired to Kampong Maluku in Macassar.

Using's first marriage to a Macassarese woman named Basse' was childless; his second wife Daeng Tanang, also Macassarese, bore him eleven children. Using is also said to have had two daughters and a son by an Aboriginal woman in eastern Arnhem Land. According to local reports it seems like he had at least 4 local wives. His name is still remembered by Aboriginals in that area. He died at Kampong Maluku in 1927.



In 1996, an NT artist led a group of Macassans to Elcho Island, where they participated in an exchange of performances. Late in 1997, the Macassans then invited performers to Sulawesi. They were led by Charlie Mattjuwi Burrawanga, a Gumatj ritual leader. Burrawanga is the grandchild of the last trepang fisherman.



## Nev's Thesis on temperate reef fish

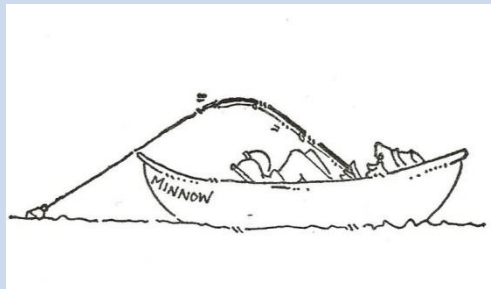
*"Watching sex in fish as a substitute for the real thing"*



A fish's life is dominated by sex, or at least the lives of the people who watch them are. This must have been the case with Dr Nev Barrett. We found his old PhD thesis secreted away in the digital equivalent of a dusty drawer. You can see immediately that young Nev was obsessed with sex, because

everywhere there is discussion about breeding behaviour. It must be something about youth and university.

In an effort to get Austudy to pay for his fishing and diving, young Nev set off for Arch Rock on the pretext of studying the movements of Wrasse and leatherjackets. Over 2 1/2 years of fishing, Nev caught and tagged 1294 fish. As he only had unfinished homework to go back to, he fished them again and 2601 were recaptured, nearly all recaptures were found in roughly the same place. Only two toothbrush leatherjackets bothered to cross the sand to move to Nine Pin Point and Charlotte Cove (1.5 and 4.5km away). The reef wrasses and leatherjackets were all homebodies who didn't move very far away from their 'home turf'.



Despite all this hard trapping work (for the fish I mean), Nev also did some diving and made visual observations (possibly another homework avoidance technique). There were plenty of other interesting things happening worthy of a voyeuristic eye.

The majority of individual wrasse and leatherjackets had home ranges of less than 100m x 25m, although quite a few of the Purple wrasse (kelpies) tended to wander around a bit more widely. The brown-striped leatherjackets were also a bit more mobile than the other fish in the study.

Before long the study seemed to come back to sex. Now Nev could compile a veritable manual of weird sexual behaviour in these common reef fish. Wrasses really do have some complex and odd ways.

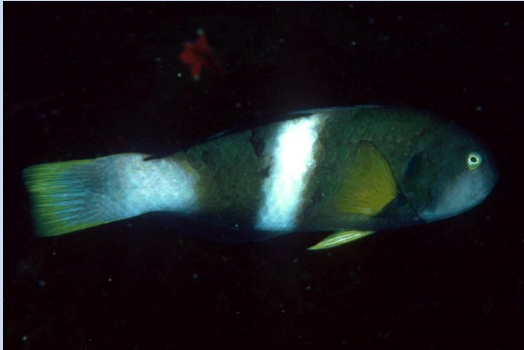
Courting behaviour in all six studies fish species was observed from mid to late August through to late January. Spawning of most temperate species happens in spring and summer, probably because that's when the plankton blooms increase the food available to fish larvae. By spawning over a long period, reef species maximise the chance that at least some of their offspring are in the water column when the food is at its best.

Both gonochoristic (separate male and female sexes) and hermaphroditic sexual systems (animals of both sex or able to change sex) were found amongst the fishes examined. The Leatherjackets are the 'conventional' male/female arrangement. The wrasses, are more complex, with variations of sexual systems being found.

As for Nev, he decided he would like to be a sequential monogamist by the end of the study. Raising a cardboard caudal fin in order to attract attention at Zoology socials did work, but not with the anticipated final results.

## Some common reef fish and their sexy behaviour

### Bluethroated wrasse *Notolabrus tetricus*:



Blue-throated wrasse are found from Sydney to Spencer Gulf (S.A.), on both sheltered and exposed reefs from 0 to 40 m. In Tasmanian waters this species grows to 500 mm, and their diet is predominantly molluscs (shellfish), echinoids (like sea urchins) and particularly small shrimp-like

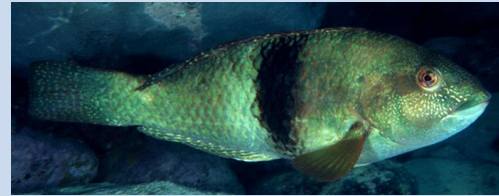
crustaceans. These wrasse are easy to identify as the females are Collingwood supporters and wear a crooked black and white stripe down the side. The males are very big and multi-coloured.

Nev noticed that these wrasses seem to spend a lot of the day patrolling their 'turf' and socialising with other wrasse. Females swim almost continuously over their territory which usually overlaps with many other females and two or three males. They bump into other fish and might get a bit aggro, especially with other females, but they don't really fight. The males have a bigger and better defined territory and will chase off any intruding male. During the breeding season (mid-August to January) males continuously court the females within their territory. They show off by a raising a caudal fin as they swim past each female. The females generally pretend not to notice them (or this could just be Nev projecting his university social life).

These wrasse are "protogynous hermaphrodites", meaning that a single fish can change from female to male. You can usually tell whether they are currently males or females based on their size and colour. When a male is removed, say by fishing, another female (one of a few that have already partly changed in preparation) will change sex to take his place. Too much fishing of males and the females that have changed to part-

male, could seriously damage the sex ratio on the reef. One day you are fishing lots of blue throat wrasse, the next year there are none. This is important as wrasse are now a target species for a large live export trade.

### Purple wrasse/ kelpie *Notolabrus fucicola*



Can't tell one wrasse from another? Call it a Purple wrasse (or "kelpie") and there is probably a better than even chance you are right as they are very common from southern

New South Wales to Kangaroo Is. (S.A.), and it is usually found on exposed reefs in 0 to 15 m of water. This species grows to at least 450 mm in Tasmanian waters, and has a diet of little crustaceans and molluscs. I identify them by the little row of yellowy 'half-diamonds' they tend to have on the top and bottom of the body as sometimes their stripes aren't that visible except in this area. The fish varies a lot in colour and tends to darken with age, with males and females looking the same.



Studying these fish was a bit easier as Nev could easily recognise a few individuals that were unusually marked. Some fish will wander over up to one hectare of the reef. There was no evidence of territorial behaviour,

with males and females occupying overlapping home-ranges. Males constantly followed females during the breeding season, occasionally displaying to them with raised dorsal and anal fins, until being either chased off by another male, or swapping to follow another female (a bit like a drunk at a Zoology faculty barrel). Males were frequently involved in chasing each other off during the breeding season (mid-August to

January). Studies indicate that this species may not be hermaphroditic but a "secondary gonochorist". They start off as hermaphroditic male/female youngsters and then change to one sex later.

### **Senator wrasse *Pictilabrus laticlavus***



Its distribution is from Seal Rocks (N.S.W.) to the Houtman Abrolhos Islands (W.A.), and is usually found in 0 to 20 m of water on sheltered to moderately exposed reefs. This species grows to 300 mm in Tasmanian waters, with a diet of molluscs and small crustaceans, particularly amphipods. They are

a vivid mix of colours, lots of green, yellow and purple, especially the males. The juveniles are a uniform khaki with small iridescent spots.

They love hiding in weed, making it harder for Nev to play 'Peeping Tom'. Observations of males in the breeding season (Late August to January) indicated that they may be territorial and frequent chases were observed. One very highly strung male was observed for 60 min actively patrolled a home-range of 175 m<sup>2</sup>, chasing off all male intruders and courting any females that came near. Like blue-throated wrasse they can change from females to males.

### **Rosy wrasse *Pseudolabrus psittaculus***



This species is found from Sydney (N.S.W.) to King George's Sound (W.A.), and is found on reefs of all exposures, in 10 to 220 m of water.



In Tasmanian waters, this species grows to 250 mm, and has a diet of small invertebrates, which are predominantly tiny crustaceans, echinoderms, and molluscs. Nev also saw them cleaning parasites from other reef species, a bit like a tropical cleaner wrasse.

In this species, females actively swam within overlapping home-ranges of approximately 325-375 m<sup>2</sup>, which were restricted to the deeper parts of the reef (5-10 m). Males were territorial with estimated ranges of 280- 330 m<sup>2</sup>, and chased off any male intruders. During the breeding season (Late August to January) males regularly displayed to the females within their territory with a raised caudal fin. According to Nev they may actually be a protogynous hermaphrodites just like Blue-throated wrasse, meaning that they can change sex from female to male if they need to.

### **Toothbrush leatherjacket *Penicipelta vittiger***



These leatherjackets are found from Coffs Harbour (N.S.W.) to Jurien Bay (W.A.), on exposed to semi-exposed coastal reefs of 0 to 55 m depth, although it is most commonly found in shallow water from 0 to 10 m. This species has a diet of small invertebrates, particularly

amphipods and hydrozoans living and growing on seaweed (they also love biting Phil White's fingers). Feeding on algal animals means that



they also bite into the weed and up to 40% of their stomach contents are algae, some of this might also give them nutrition.

These guys were more like lazy first year undergrads and didn't move about much. They could spend an hour in one spot before moving off to a different strand of seaweed (I bet Nev was cold after those dives). They didn't seem to have a home patch and would move about all over the reef. During the breeding season (September to January) males constantly followed females until either swapping to another female or being involved in a chase with another male. They were so absorbed in fighting off the opposition that they usually forgot about the prize and would lose contact with the female by the time they ran out of puff.

#### **Brownstriped, or southern leatherjacket *Meuschenia australis*:**



The distribution of this species is from Wilsons Promontory (Vic.) to Robe (S.A.) and it is found on coastal reefs of all exposures, from 0 to 30 m. While quite common in Tasmanian waters, it is less common elsewhere. This species grows to 320 mm in

Tasmanian waters, and feeds on bottom dwelling invertebrates, including molluscs, echinoids, hydrozoans and sponges.

There weren't so many of these species about, making them hard to follow. There was no evidence of site-attachment or territorial behaviour and males and females shared overlapping home-ranges. During the breeding season (September to January) males basically got into the fishy equivalent of 'stalking' and were often seen following females for extended periods.

#### **Wrasse Spawning Spectacle**



*Spawning snapper*

Well after all this effort you think Nev would be bored with his voyeurism, but as you may know it can be addictive. Nev recently admitted, " I'm still out there watching spawning behaviour in wrasse."

*"...while at Arch Rock it looks like that individual males court individual females and chase off other males, on the open coast it is quite different. At the Nuggets from September to*

*roughly December, you can see large gatherings of purple wrasse that clearly are aggregating for spawning. I first clued to this by finding some of them unusually deep at 30 m. Here large groups of males (up to 20), court females that are giving clear chemical signals that they are ripe to spawn. After a few minutes as the group moves about the reef they do the typical wrasse spawning fun, with the female rushing vertically up about 2-4 m, before releasing her eggs and giving sharply down again. The males following closely behind release a great cloud of sperm to fertilise the eggs. It is all carried out on the outer ends of the reef so the eggs are quickly carried off in the currents and not eaten by the reef associated planktivores. It is well worth watching out for on a dive in the area and is pretty easy to see once you are clued into it. Numbers vary from week to week, presumably depending on time of day, moon phase, current strength etc, but I've yet to work out the driver of that. Would suggest it's a good Honours project or study for some keen naturalists to sort out?"*

## The Nuggets, Freycinet Peninsula

*Hopefully, the last article might have you asking "where are the Nuggets and is there anything special about them?"*



The Nuggets are a group of 4 granite rocks off Cape Tourville and are a part of the Freycinet National Park. The Nuggets have a combined area of 6.76 hectares (16.7 acres). When you go to the lighthouse lookout, they are the rocks

you can see just below. The most remarkable feature of the Nuggets is their location, on one of the most scenic sections of the Tasmanian coast.

They are also an important seal haulout and seabird roost. Recorded breeding seabird species are Pacific Gulls, Little Penguin, Short-tailed Shearwater, Fairy Prion, Common Diving-Petrel, White-faced Storm-Petrel, Pacific Gull, Silver Gull, Black-faced Cormorant and Caspian Tern. This is why the Nuggets are restricted access areas between 1 October and 31 March each year.

Divers report swim-throughs and small caves on the adjacent Cape Tourville coast. The SW side of the islands has a large black urchin barren in 20+ Metres, recently discovered and mapped by Launceston-based Ocean Divers Plus dive club. Black urchins, or *Centrostephanus Rogersii*, have been devastating many areas on the East Coast as warming waters and overfishing of crays have allowed this invasive NSW species to gain a foothold. Fortunately, other areas of the Nuggets are still an inspiring underwater wilderness.

## Tasmanian abalone stocks decline

There is concern Tasmania's abalone industry won't be able to support 50 of its 120 divers, after another cut to the sector's total allowable catch. It has been cut for the third year in a row and is reported as "due to declining stocks on the Tasmanian West Coast". Flicking through the 2012 IMAS stock assessment it seems more likely a cascading effect of poor recruitment in the East causing reductions in catch, leading to a shift in effort and then declining stocks on the West Coast. In some areas the stock is at a 15 year low.

These days, investors largely hold the rights to fish for abalone and contract with divers who actually extract the catch on low margins. It is possible that some kind of 'tipping point' has been reached in the viability of that model if such a large percentage of participants have to

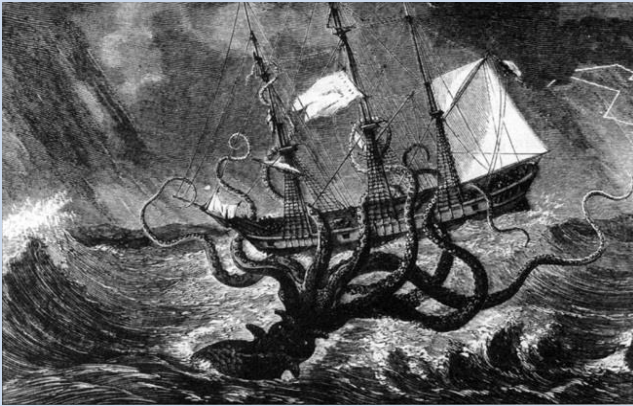


go, and suggests that all was not well before the catch reduction. The previous catch reductions may actually have caused the price to go up but prices have been stagnant for a long time before that due to rising competition from aquaculture.

We can only speculate about the reasons for this low abalone recruitment in Tasmania, as high variability is the 'norm' for marine systems. I suspect a few people will be checking the climate change modelling to see if we have a trend starting.

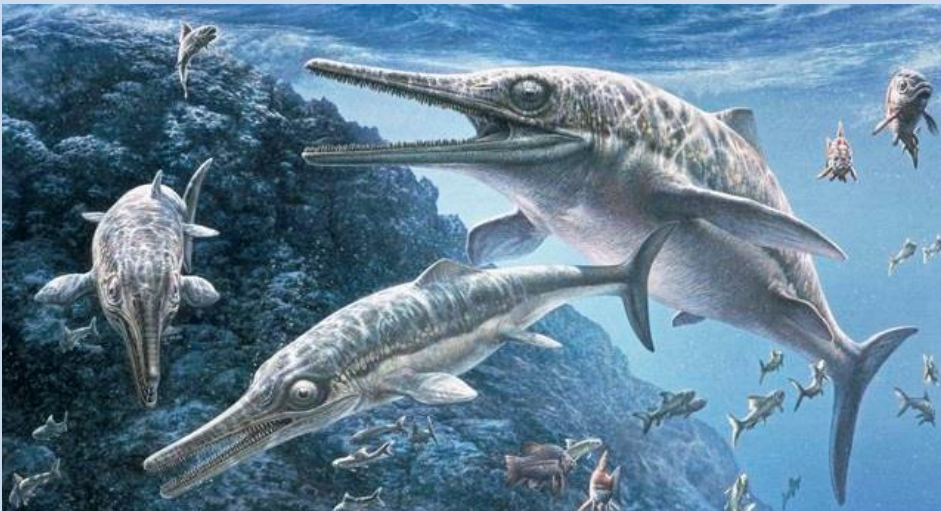


## The Kraken wakes?



The Kraken, a creature of seamen's legends, may well have existed 250 million to 200 million years ago. New fossil evidence suggests a huge squid may have existed and preyed on prehistoric oceanic dinosaurs.

Ichthyosaurs were a school-bus-sized, flipped marine reptile that was once common in the world's oceans. The fossilised bones of one of these were found in a strange linear pattern. American scientists have argued that they were arranged there by a giant cephalopod (an octopus or squid) playing with its food. Modern octopuses are known do this at the entrances to their dens.



This is controversial, with some saying its only "circumstantial evidence". Dr Fastovsky has said, there's a simpler explanation. Ichthyosaurs die. They sink to the bottom, where scavengers get to work stripping their skeletons of flesh. The tendons and ligaments that held the vertebrae together rot away or are eaten. The weird tiled position actually appears to be the most stable position for those falling vertebrae to rest. If proven, the arrangement would represent the earliest know display of cephalod intelligence.



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