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Conservation Council of South Australia Inc

Reef WATCH South Australia

Reef Watcher Production Team

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All contributions are subject to editing.

Deadline for next issue: 15th May, 2008

Marathon Dive 2008
Sunday, 6th April

WE NEED YOU!

If you are a diver, then on Sunday 6th April, the only place to be is at Noarlunga Reef with us. Most importantly, we need divers who have been trained in Reef Watch survey techniques. It is very important that participating divers have done some training in our survey techniques so that we know our data is consistent.

If you have not yet done some Reef Watch training, look up on our website to find out the next available training times:
http://www.reefwatch.asn.au/inwater.shtml

The Marathon Dive database is becoming more and more valuable as time goes by with annual data accumulating each year, creating an invaluable resource for marine scientists.

Make sure your dive club has the Marathon Dive in its calendar of activities and bring along as many Reef Watch divers from your club as you can. Of course, we will have our usual BBQ on the day for all those hungry volunteers!

Please register that you are coming and at what time, so that we can create a roster of divers for the day and to ensure enough food!

Contact our Project Officer, Steve, if you want more information, or if you want to register for the day: info@reefwatch.asn.au

Don't knock Noarlunga!

Story by Alex Suslin

Amazing, some of the things you hear in dive shops. The following quote is from a conversation that took place between a customer and his dive buddy, whilst they were waiting for air fills:

"Noarlunga? Are you kidding? I've spent x thousand dollars on dive gear and I'm a *REAL* diver. Don't expect me to waste my time there - Noarlunga's only for learners."

Perhaps, as a former dive instructor, I'm biased, but seemed like Macho Scuba Man may have missed a thing or two during his Open Water dive course.

OK, it doesn't compare with shaking hands with Geoff Skinner at 66 metres under the razor-edge bow of the *Aaron Ward* in the Solomons, or a crazy 10 knot drift dive in the picturesque Chamisso Channel in New Guinea, but you may be pleasantly surprised by what you can find on Noarlunga Reef, if you take the time to look.

I could rave for ages about rays, wobbegongs and Port Jacksons, crays, blue ring occies, a pair of big catfish that zeroed in on my dive light one night. Not to mention the famous *Trachinops noarlungae*, (yellow-headed hula fish) and the little cleaner shrimp, that will happily nip off any dry skin from the base of your finger nails, provided you have the patience to hold your hand still for long enough. Or that midnight dive one New Year, when a full moon meant we could turn off our torches and see two pylons ahead, whilst watching the phosphorescence roll off the lead diver's fins.

Other than teaching Adelaide-born, New York-based fashion model Tania Deighton to dive there, I'd have to say, my most memorable dive at Noarlunga was a couple of years ago, on the inner reef, heading south, when I noticed an eleven-arm starfish swiftly slithering (by starfish standards) across the sand towards a vertical rock with an abalone anchored about half way up it.

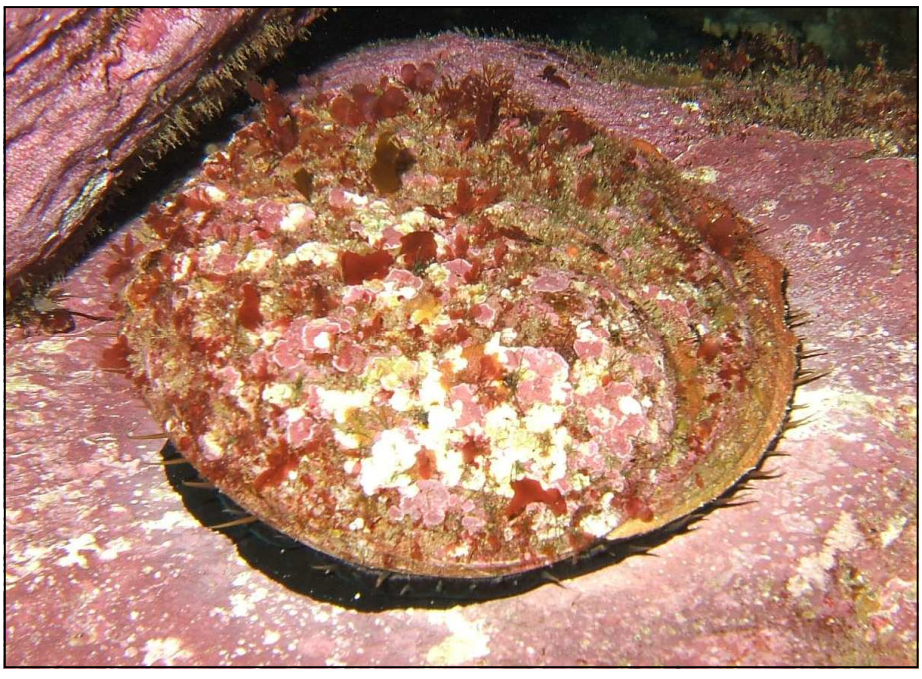
11-armed sea star © David Muirhead

Sure enough, the starfish had figured the ab would make easy and delicious lunch so it cautiously moved a long, knobbly arm along both sides of the shell. The abalone had other ideas and being a free meal wasn't one of them. Raising itself aggressively on its foot to its full 2 or 3 cm height, it swung its shell around hard left, then hard right, whacking both of the starfish's arms in the process, then moved further away, straight up the rock.

The starfish, obviously shocked by such a display of unsportingly violent table manners, withdrew its arms to reconsider its options. This did take several minutes, but hey, if you don't have a brain, there's no need to rush. Finally, figuring the best form of attack was attack, it tentatively repeated the same tactic.

But this abalone, despite also being (dis) credited as being totally brainless, was not one to bury its head in the sand – nor to clam up inside its shell. Those little deep blue eyes around the mantle were keeping a sharp lookout and as soon as the starfish began its advance, the abalone raised itself and shifted again, but this time, it was both upwards and around the side of the rock – a dimension the starfish couldn't seem to fathom. After groping around fruitlessly, it gave up and returned to the sand, sulking.

There you have it. Real under water life-or-death drama unfolding before your very eyes. Perhaps if Macho Scuba Man had been able to witness this scene, he would have realised, that we're all here to learn and that the sea, even in the humble guise of Noarlunga, is a great teacher, regardless of how much we spend on our dive gear.



Abalone © Vicki Billings

Intertidal Program Update

As we are coming to the end of another monitoring season I would like to take this opportunity to say a huge THANK YOU to all the volunteers that are making this program a success. Many people have spent many Saturday and Sunday mornings in various weather conditions counting, measuring and finding life on various reefs.

The Aldinga group have been very busy on Snapper Point, and Lady Bay and Victor Harbor have gained much momentum this season. But it's not quite over yet, so here are the dates for the remainder of the season:

Aldinga:
Sunday March 16th, meeting at 11 am
Saturday April 19th, meeting at 9 am

Lady Bay
Saturday March 15th, meeting at 11 am
Sunday April 20th, meeting at 9 am

Victor Harbor
Sunday March 2nd, meeting at 8.30 am

Please register if you would like to attend, or contact me, Agnès Cantin, for more information: 0427 183 734 intertidal@ccsa.asn.au

A very prestigious information night was held in the Victor Harbor council chambers for the Natural Resource Centre. Thank you to Tim Parkinson for organising and promoting the night and for all those that attended. This was followed by a productive training session at Yilki Beach.

Reef Watch Rangers for schools

To cater for a growing interest from many schools we are in the process of developing an intertidal monitoring program for both primary and secondary schools. The program will include a variety of sessions such as teacher professional development, indoor sessions for winter terms, and class and reef sessions for terms 1 & 4.

The aim of the program is to gather long-term data but also to educate students about life on rocky shores and caring for their coast. We hope to instil a sense of awareness about the ocean environment throughout the community, starting with the schools. Students will get great experience in environmental survey techniques using equipment such as quadrats, tape measures and callipers. The schools can collect their own data over time and use it to practice some maths such as graphs, ratios and statistics, giving the surveys and the maths a 'real life' context. The data will also contribute to the growing intertidal database.

We will initially be working with one school to help trial these sessions and then hope to be able to service schools across South Australia.

Look out for a new page on the Reef Watch website especially for schools.

We welcome on board the team, Judith Giraldo, who will be involved in developing and delivering the school program. Judith is an experienced marine scientist and educator with experience in developing Kangaroo Island's award-winning marine education program.

If you are a teacher with an interest in this program, please feel free to contact us: intertidal@ccsa.asn.au

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If you are a teacher or a parent, you may want to pick up on this exciting topic during March. Each year Seaweek is run by the Marine Education Society of Australasia.

There are lots of online resources such as teaching units, information sheets and a photo gallery. If you are planning a Seaweek event, be sure to register online and you can see other events being held around Australia - get inspired!

The most interactive events happening during Seaweek are some live online talks about the biology of saw fish. This uses a fantastic piece of software called Centra, developed for long distance education.

For teachers there are a number of teaching units for the arts, English, physical education and health, science and technology, and SOSE. The sheets go from preschool to year 10.

You may not be aware that saw fish are only found in the tropical north of Australia, so if you live in the southern temperate part of Australia you may want to check out the information for threatened species in your area.

Saw fish are an unusual group of rays that have some significance for some northern Aboriginal peoples. Their long, toothed rostrum makes them particularly vulnerable to becoming entangled in nets and this has threatened their survival. With the introduction of better practices and fishing gear, there are some success stories. Education helps to raise awareness and care for these amazing animals.

Feral or In Peril 'negative reporting'

© Vicki Billings

© David Muirhead

© Mark Norman

Reef Watch has recently been advised that so called 'negative reporting' is as important as positive reporting. But what is it and what does it mean for you?

Say you go for a dive somewhere in South Australia and see **none** of the native species listed on the 'In Peril' slate. This is important information in helping to define the distributions of these species.

So, you get home, jump on the internet, go to the Reef Watch Feral or In Peril (FIP) reporting page and you will find a link to be able to report the details of your dive as a 'negative' report. You need to be able to tell us some detail about the type of habitat (e.g. algae, sand, mud, rubble, etc.) and extra information such as the deepest part of your dive and the weather conditions would be useful.

Many divers dive around shipwrecks or other man-made objects where they may not see any of the native species on the FIP list—this information is as important as if you do see the FIP species.

Get into the habit of taking your FIP slates with you every time you dive, even if you do not intend to specifically look for FIP species. But the more eyes are in or around the sea looking for these species the better the information we can pass on to marine scientists to help them build a better picture of these species.

Report, report, report!

Fish names standardised - at last!

Have you ever noticed that when you go interstate, or if you are from interstate, you will have noticed, that trying to identify seafood between states was very difficult due to different common names in each state? It has been a good example of why scientists use scientific names unique to each species.

Believe it or not, but even as far back as 1920 the Sydney Fish Market held meetings to try to standardise fish names!

But finally all that is changing. Thanks to a long project funded by the Fisheries Research and Development Corporation, a new website allows anyone to access information about the common names for all Australian seafood species.

The Australian Fish Names Standard (Australian Standard® AS SSA 5300-2007) is a searchable database of standard fish names that are to be adopted by Australian fishing industries all they way through the processing chain from fisher to wholesaler to processor.

For example, southern rocklobster is now the standard name for *Jasus edwardsii*, instead of its other common names such as crayfish, southern spinylobster, or Tasmanian crayfish. The website is: www.fishnames.com.au

Visit it to find out all the alternate names for your favourite seafood species. Information provided includes the scientific name and when you click on this you get taken to another website (www.fish.gov.au) with lots more information about the species including links to research, recipes and related species.

Not only this, but last year a new ruling came into effect that all seafood vendors must display the country of origin of all seafood for sale. This enables conscientious consumers to buy ethical seafood - your first preference should be to buy Australian seafood. (See the Australian Marine Conservation Society website for sustainable seafood choices: www.amcs.org.au)

On top of all of these new developments, consumers can now report retailers that mis-label seafood. Consumers are asked to report lapses to the Australian Government Seafood Consumer Hotline on (freecall) 1800 737 147 - the line is open 24 hours a day. Or you can report incidents online at www.seafoodhotline.com

Source: Seafood Services Australia newsletter, Dec. 2007

Southern rocklobster © Vicki Billings.

Sea change for temperate fish

Some new research from CSIRO has found that not only are sea surface temperatures and other oceanographic conditions already changing as climate change kicks in, but that these changes are beginning to affect temperate fish distributions.

Alistair Hobday, of CSIRO and the University of Tasmania, has predicted a rate of southwards movement at about 50 km per decade, with some species already moving south. For example, the giant rock barnacle, once found in NSW, Victoria and in southern WA, is now found in Tasmania. Sea urchin species native to NSW are now found in kelp forests off eastern Tasmania. Phytoplankton blooms off Tasmania are changing composition, and changes to the rocklobster catch and its distribution can apparently be correlated with regional sea surface temperature changes around the Tasman Sea.

"In the past decade, 34 fish species have exhibited major distributional changes: they either become newly established south of Bass Strait, or they show significant range extensions" said Mr. Hobday at a fishing industry conference last year.

Mr. Hobday is one of several CSIRO researchers who contributed to the Intergovernmental Panel on Climate Change report. Some of the predicted oceanographic changes, by 2030, due to climate change include:

- Sea surface temperatures rise by 1-2°C
- An increase in solar radiation on Australian waters between 2-7 watts per square metre (increasing UV radiation could potentially affect numerous marine organisms)
- Greater layering and shallowing of the mixed layer by about 1 m—reducing nutrient inputs from deep waters
- An increase in surface winds of 0-1 m/second
- A decline in the strength of surface currents of between 0-1.2 m/second

Modelling shows that across Australia the sensitivity of fish species to these climatic changes will vary. In a study of 23 commercially fished species, only four were not vulnerable to climate change, nine were vulnerable and the rest were uncertain.

A recent scientific paper written by a number of prominent climate researchers discusses in detail some of the expected and observed impacts of climate change on Australian marine life from both experimental evidence and field observations. (See ref at end of article.)

The effects are summarised as:

- Increasing temperature
- Alteration of winds
- Alteration of currents
- Decline in mixed-layer depth
- Increased CO_2 and decrease in pH
- Possible increase in UV
- Increase in frequency or intensity of severe storms and extreme rainfall events
- Rise in sea level

For each of these expected changes, there is a list of expected and observed impacts for each of a number of habitats and major marine life groups.

So for increasing temperature, the expected impacts on rocky shore fauna and macroalgae include:

1. A poleward shift in species ranges and a shift in abundance toward species tolerant of warmer waters.
2. Increased frequency and intensity of large-scale diebacks with increase in frequency and intensity of extreme temperatures.

Polewards shifts in species ranges (1) have been observed in Europe, USA and South America over the last 50 years. An increase in large-scale diebacks (2) has been observed in Tasmania, South Australia, Europe and Japan.

For coastal rocky reef fish their reproductive success might be linked to wind strength (bringing juveniles back to the correct part of the coast to join the adult population) and therefore, any alteration in winds may impact on the reproductive success of coastal fish.

Alteration of currents (including strengthening of the Eastern Australian Current) can expect to impact rocky shore organisms by potentially producing local extinctions of cold-water species in southeastern Australia, and the appearance of tropical species further south on the east coast. Indeed, tropical species have already been found at temperate latitudes on the east coast.

With a potential increase in ultra violet light the expected impact on rocky shore organisms is an increase in the mortality of early life stages and a reduction of growth rates in UV-sensitive species. For open ocean fish there could potentially be damage to the eyes and skin, as well as an increase in the mortality of both eggs and larvae in the upper layers of the ocean. Although this has not yet been observed, there is quite a lot of experimental evidence for these impacts.

An increase in the frequency or intensity of storms and extreme rainfall events may produce a shift in subtidal macroalgae communities and potentially increase local mass mortality events associated with storms and flood events. In South Australia it was observed that a change in communities from canopy-forming macroalgae to turf-forming algae was linked to an increase in nutrient supply from coastal runoff.

References for this article:

- Thyer, R. 2007. Fish. (FRDC newsletter) December issue: 34-35.
- Poloczanska, E.S., Babcock, R.C., Butler, A., Hobday, A.J., Hoegh-Guldberg, O., Kunz, T.J., Matear, R., Milton, D.A., Okey, T.A. & Richardson, A.J. 2007. Climate change and Australian marine life. *Oceanography and Marine Biology: An Annual Review.* **45:** 407-478.

Fish, Sharks and Rays in South Australia

The Marine Team at CCSA has been working for over 18 months on the development of a series of documents to inform and educate all sectors of the community about South Australia's fish, sharks and rays. The work has been kindly funded by the Threatened Species Network. The documents are available for downloading as pdf files at: www.ccsa.asn.au/fsr

There are 12 fish fact sheets about fish of conservation concern, most of which are not currently protected:

- Great white shark
- Wobbegongs (ornate and spotted)
- Harlequin fish
- Coastal stingaree
- Blue groper
- Blue devil
- Congolli
- White-nosed pigfish
- Gobies
- Rock ling
- Syngnathids
- Golden roughy and little pineapple fish

The fact sheets include information about life history and biology, as well as the characteristics of their lives that make them vulnerable to various threats.

Other sheets include:

- Introduction
- Threats overview
- Legislative response options
- State and federal responses (non-legislative)
- Responses for NRM boards, local governments, community groups and individuals
- References

Please feel free to access these documents and use the information to guide your activities and actions at an individual and community level. What could your dive club or local community group do to contribute to the welfare of South Australian fish?

The work upon which these documents is based is that of marine ecologist, Janine Baker. Not only is Janine a marine scientist, but she is one of several on the Reef Watch Steering Committee and regularly contributes her time, skills and knowledge to the program. During the past decade she has collected and summarised a vast quantity of information about South Australian fish species of conservation concern to assist education, conservation and management.

Her e-book will be available on a new Reef Watch website very soon. Information for each species will include:

- Current conservation status
- Distribution
  - ⇒ Southern Australia and New Zealand
  - ⇒ South Australia
- Habitat
- Notes on the biology
  - ⇒ Age and growth
  - ⇒ Diet and feeding behaviour
  - ⇒ Migration/aggregation
  - ⇒ Reproduction
- Fisheries information
  - ⇒ Commercial - South Australia
  - ⇒ Commercial – southern Australia and New Zealand
  - ⇒ Recreational
- Vulnerable characteristics of the species, and threatening processes
- Research requirements
- Management requirements

Janine will continue to collect and publish information on bony and cartilaginous fishes. Then she intends to do a similar volume on selected groups of South Australian marine invertebrates.

Illegal spearfishing reports from Rapid Bay Jetty

Illegal spearfishing has recently been observed at Rapid Bay Jetty on several occasions. Two concrete incidents have been observed on Sunday, 30/12/07 and another on Saturday, 05/01/08.

On the 30/12, one spearfisher killed a large boarfish at the T-section of the jetty. These boarfish, together with many other fish, make up the beautiful fish life that is so characteristic of the T-section. That was just a chance observation and it is not known how many other fish were killed. On the 05/01/08, the spearfishers were approached and became very aggressive; they claimed they were acting within the law because they had not caught anything at that point.

The law is very clear and specific: no spearfishing is allowed within 100 metres from any jetty. It is also illegal to carry a speargun within this distance from a jetty, unless it is unloaded and carried specifically to and from a boat.

It is necessary that we as divers become involved. The reason is not just that this is illegal: (1) it depletes our dive sites of their most beautiful and visible fish; (2) the blood and struggling of the fish have a higher chance of attracting predators than line fishing'; and (3) it is dangerous around jetties, because there may be divers and swimmers in the area and spearguns may accidentally discharge and cause serious injury.

Illegal fishing incidents can and should be reported to Fishwatch SA (freecall) on 1800 065 522. If possible, car licence plate numbers or photographic evidence of the offenders should be obtained. If a telephone call is made quickly, there may be a chance that Fisheries have a boat or vehicle in the area that they can send.

This report came from a Reef Watch member.

Boaters can help prevent spread of marine pests

If you are a boat owner, then read on to learn how you can help prevent spreading introduced marine pests around Australia.

Many long-term Reef Watch volunteers already know about marine pests, but just in case you are new to this topic and you may be wondering what a marine 'pest' is - a marine pest is any species of plant or animal that lives outside its natural range, and negatively impacts on the native fauna and flora. Some well known examples are the European fan worm, northern pacific sea star and Japanese kelp.

Many of these species have arrived in Australia either attached to the hull of a ship, or in the ballast water of ships that have travelled through international waters bringing all sorts of larvae into our waters.

Not only are they damaging to the environment, but they can damage your boat, increase fuel consumption and maintenance costs. The damage they can do to the environment can be so severe that they can sometimes result in boating, anchoring and fishing restrictions.

Once established in a new port, these introduced pests can easily hitch a ride between ports and marinas by much smaller domestic craft such as yachts, powerboats, fishing boats, even jet skis and canoes. Many of these species can attach themselves to most surfaces and get transported via the hull, tangles on anchors, nets or other gear, or carried in plumbing systems, buckets and bilge water.

Here are some top tips to help prevent the spread of these pest species:

- Check and clean your boat and gear before and after every trip. Remove any weeds, sediment, water or animals and put them in a bin.
- Rinse your boat and gear with freshwater, and make sure everything is dry before you go on your next trip.
- Choose the correct anti-fouling paint.

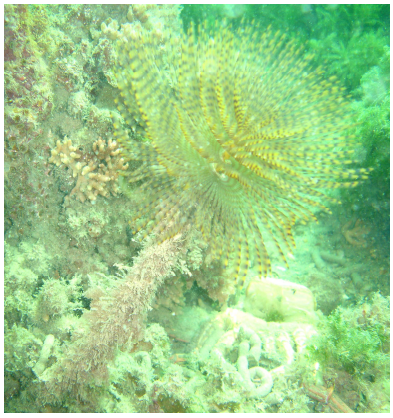
Early detection and monitoring by the community is vital in controlling the spread and minimising the impacts of marine pests. Reef Watch manages the 'Feral or In Peril' program. Part of which is to train volunteers to identify and report on introduced marine pests. Anyone can have our free waterproof identification cards and learn to recognise the differences between native and introduced pest species. You can report sightings on the Reef Watch website. However, if you see one of the '**Red Alert***' species you can make a free call to Fishwatch: 1800 065 522.

If you own a boat or if you are a member of a boating club, why not ask us to come and give you a talk. Call or email for a free set of waterproof identification cards: info@reefwatch.asn.au or 8223 5155

Watch out for these pests on your boat!

Asian date mussel
Musculista senhousia

Japanese kelp*
Undaria pinnatifida



European fan worm
Sabella spallanzanii

European sea squirt
Ciona intestinalis

*Caulerpa taxifolia**

*Caulerpa taxifolia** with a European fan worm

Northern pacific sea star*
Asterias amurensis

Many thanks to our generous sponsors and supporters

CCSA acknowledges that Reef Watch currently receives most of its funding from the Adelaide and Mount Lofty Ranges Natural Resources Management Board through the Natural Heritage Trust.

Additional support is provided by the Eyre Peninsula, and Northern and Yorke NRM Boards.

Other supporting organisations include:

- Primary Industries and Resources SA via SARDI Aquatic Sciences
- Department for Environment and Heritage

Reef Watch also acknowledges the generous support of the diving industry for Reef Watch events.

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Australian sea lions in SA increasing in numbers

Australian sea lion numbers are increasing on the west coast of South Australia, defying a trend elsewhere in Australian waters.

The Dangerous Reef colony, off Port Lincoln, is the largest population of the threatened species.

The reef's pups will be studied in a new government funded program.

Researcher Simon Goldsworthy says there is good reason for optimism about the future of the colony.

"We have fairly limited information about trends and abundance for most of the populations, but this is the only population that is actually increasing at this point in time" he said.

"The increase has been most pronounced since about 2000 and since then the pup production has been increasing by about 6% per year."

Mr Goldsworthy says the population of the sea lions is a positive sign for the marine ecosystem.

"Large predator populations in marine ecosystems sit at the top of the food web, so if their populations are doing well and are sustainable then that indicates the complex food webs that support those species are also in reasonable shape" he said.

Source: http://www.abc.net.au/news/stories/2008/01/29/2148597.htm

Australian sea lion © David Muirhead.