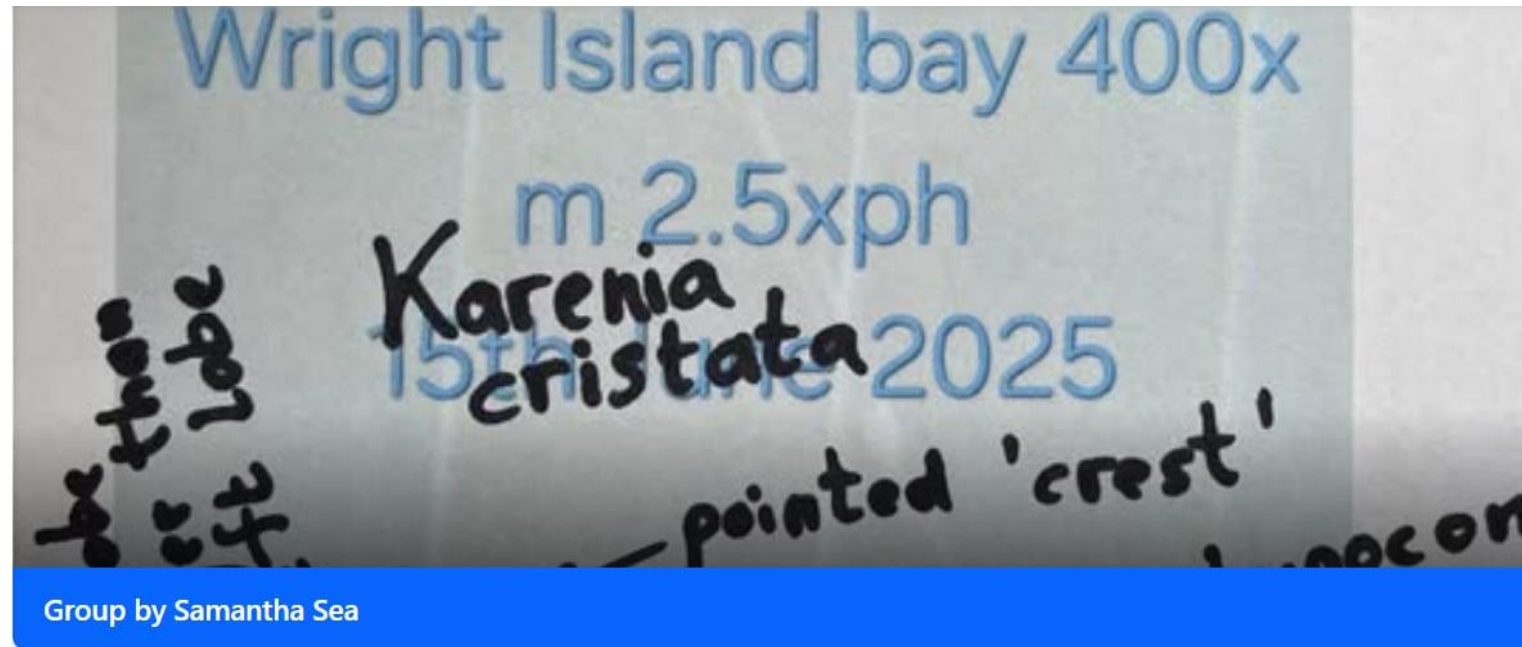


Phytoplankton of South Australia – Recovery

Find us on Facebook



Phytoplankton of South Australia -
Recovery

Citizen Science and The Bloom

For the HAB Symposium, SARDI, 2nd June 2026

The Microscopic Story

Samantha Sea

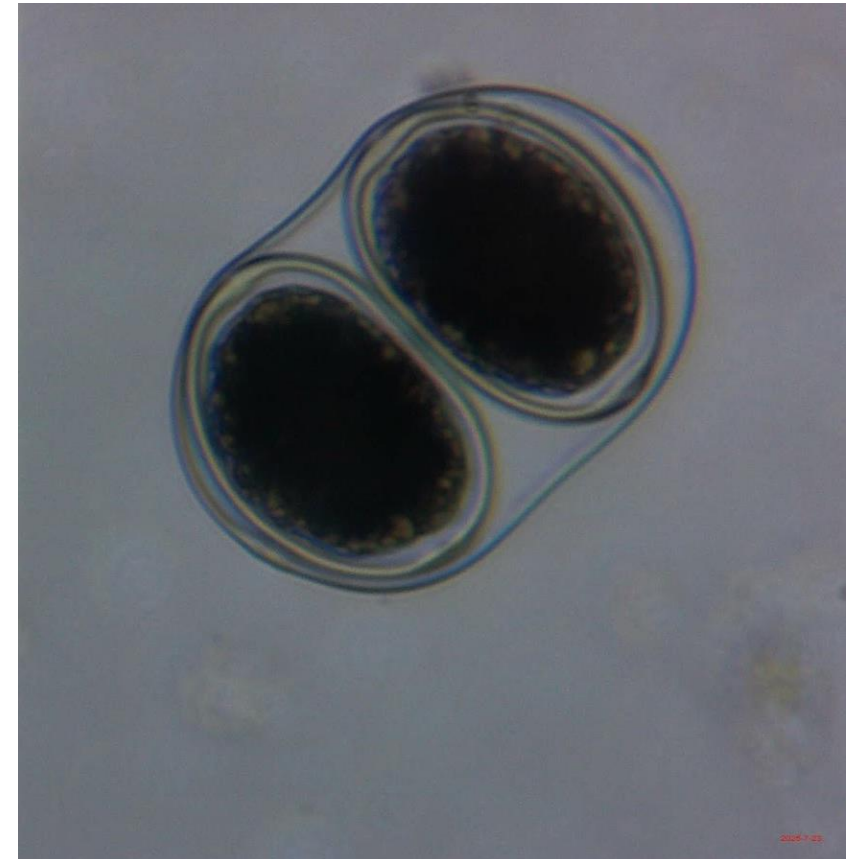
Phytoplankton of South Australia - Recovery

I acknowledge the Traditional Owners, Past, Present and Future of the Lands, Sea and Sky.

THANK YOU FOR INVITING US!!

We have so many questions :)

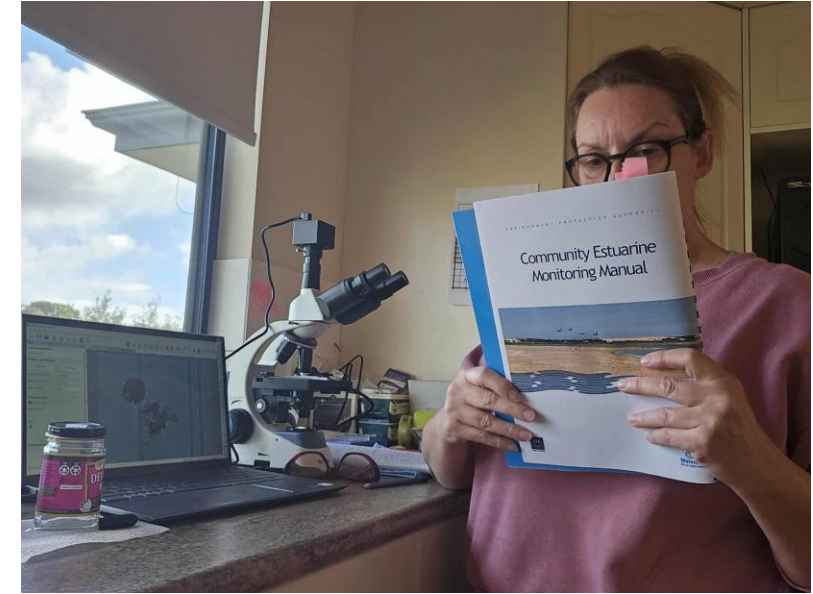
- Let's start with explaining our group:
- How we started – one microscope, Facebook, an expert
- What we do – method / sampling / reporting
- Where we're going – build a state wide volunteer network to monitor phytoplankton. Build science alliances to make sense of it.
- What we want to achieve – a greater understanding of phytoplankton and its effects in the ocean environment. Find out how they "work". Not just HABs. We're looking long term – 5 to 10 years at least.
- We're like Swiss cheese! Full of rich, creamy goodness, but there's holes in our knowledge. Please feel free to fill them. :)



Yes we know that's a Chroococcus and it's fresh water but this is from the Coorong and it looks like googly eyes. Citizen science is FUN!

DISCLAIMER:

- **We are NOT SARDI or SA Health**
- **We CANNOT tell you if it's safe to go into the water**
- **We CAN tell you what we see in the water.**



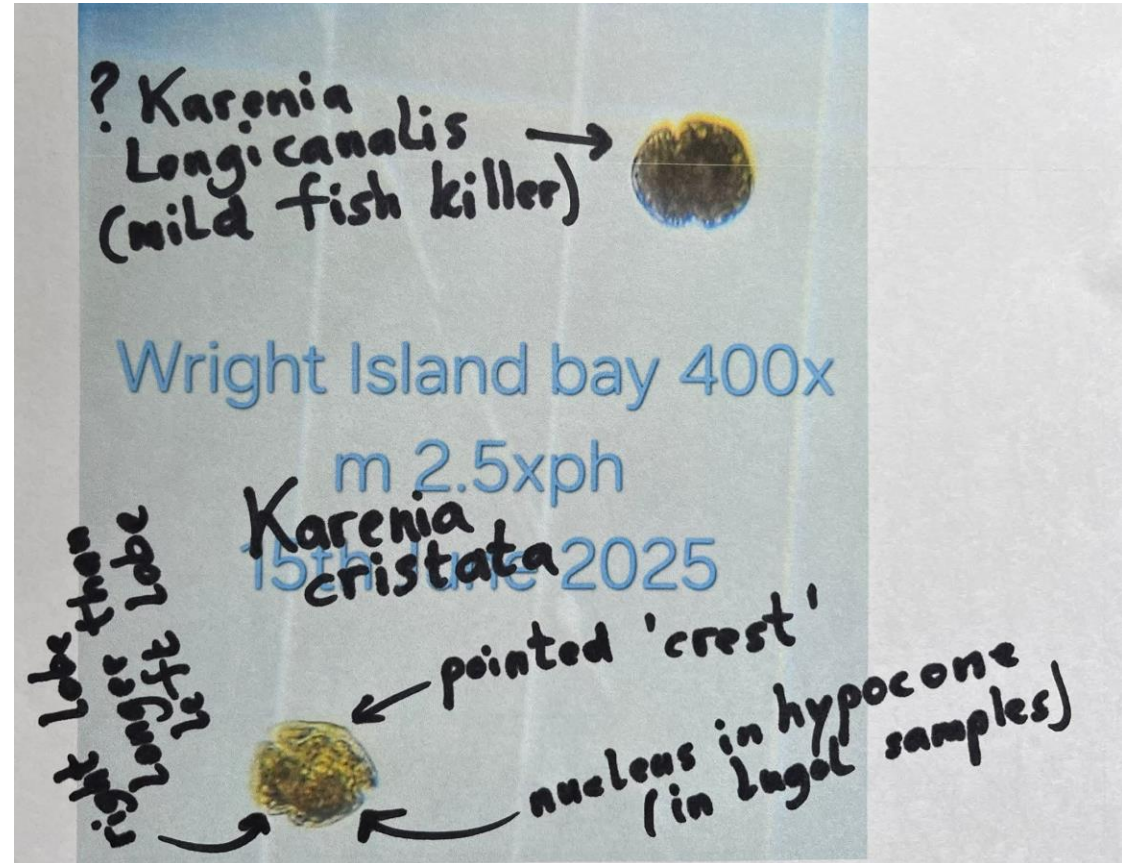
How it started

(How did it get from this <- to this ->

We weren't getting information. Faith Coleman told me we needed microscopes to get data.
I wrote a simplified handbook of what she told me and made a Facebook group

Photo by rank
amateur,
(me!)
ID by
international
expert, Prof
Gustaaf
Hallegraeff

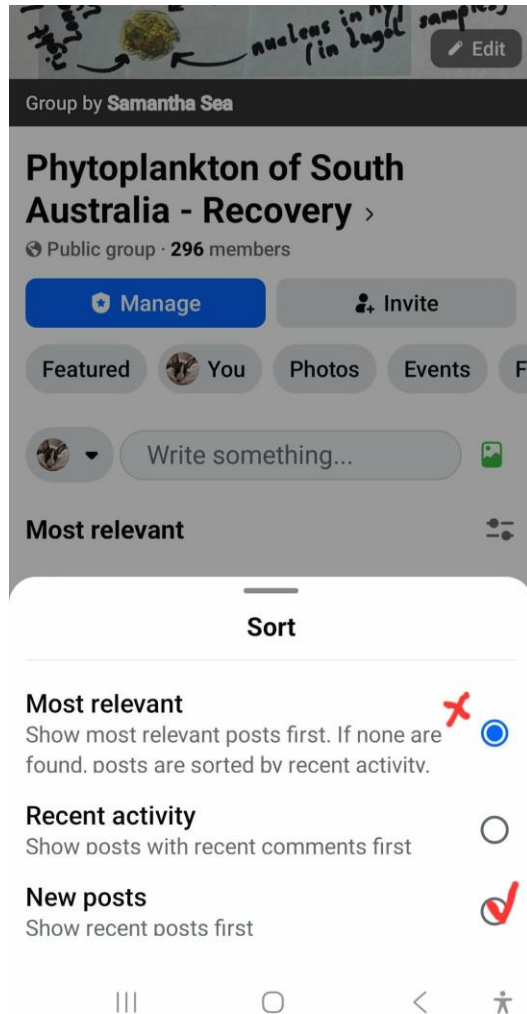
And people jumped in to help



Facebook and Citizen Science

- We needed to show pictures and get feedback, as quickly as possible.
- We have no budget – we're self funded
- We needed taxonomy skills
- We needed more people
- We needed to record pictures and information
- Facebook provided all these things.
- And live chat!
- We now cover Port Lincoln to the Coorong, and growing

Helpful hints for Facebook – finding things



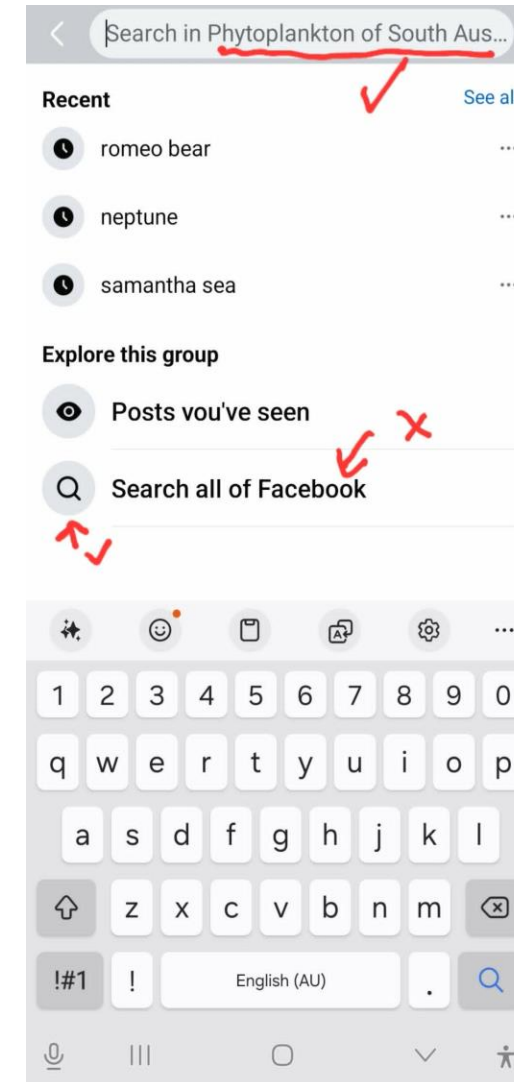
Select "New Posts" to see members posts.

"Most relevant" will show you the contents of the posts that have comments.

To "search" find the magnifying glass, it's different on the computer to the phone.

We have #reference on the good stuff, look for that too.

We welcome "Anonymous" :) Admins can see you, but we understand some people are shy.



What we do:

Method: Sampling

From shore/ beach/ jettys/
surfboards/ divers/ everywhere

Travel cups on rope/ bottles/
ziplock bags from surfers/ divers

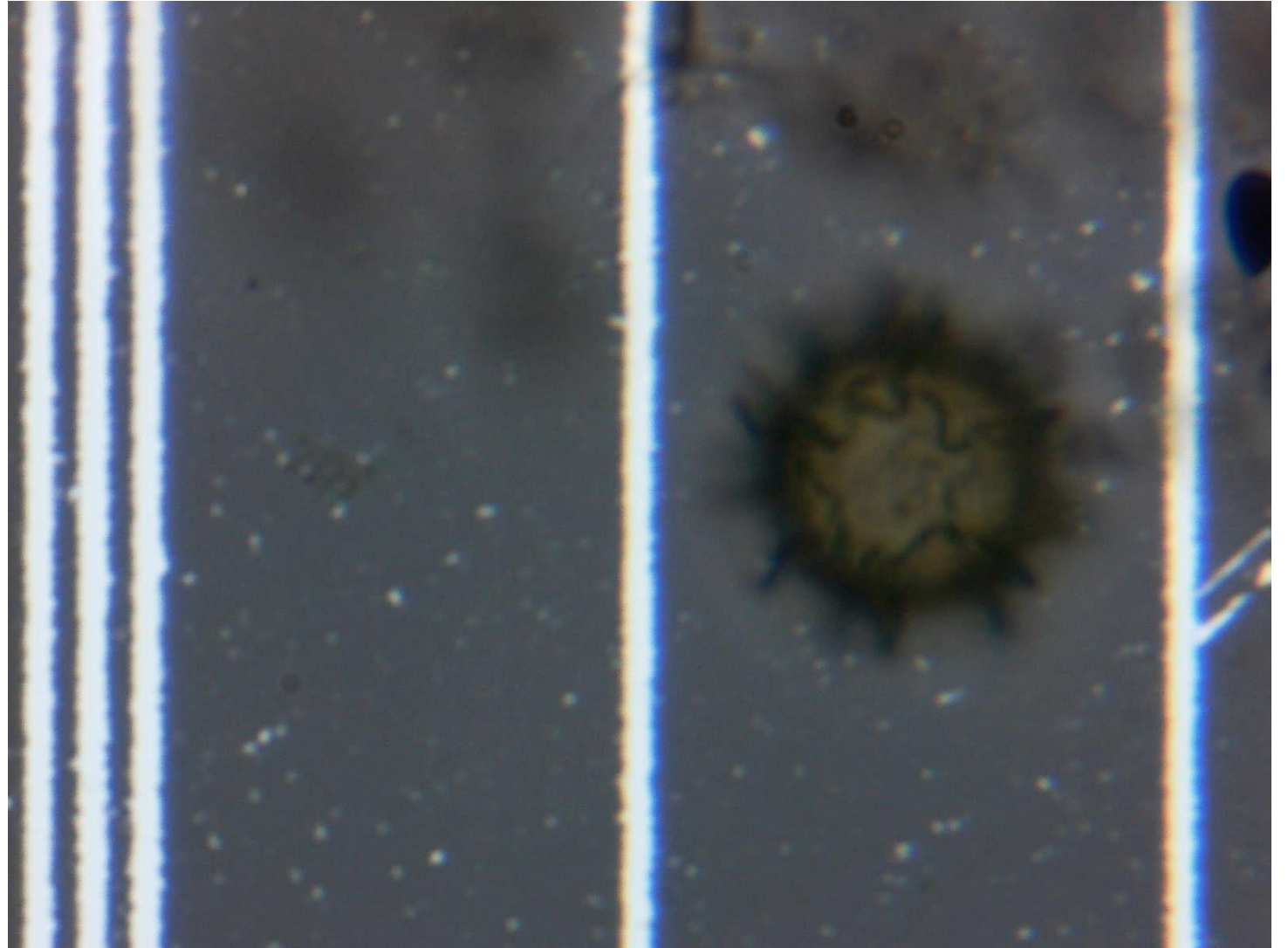
Typically 10 – 50cm
Double ziplock on right, 28.4m
Stanvac Barges, water temp 22C
thanks Romeo for bag and pic!
Other dives from Nerissa, 6 - 10m

The Warning: Remember,
be safe.
Let someone know where
you are.
This is all in the
HANDBOOK on the
Facebook page.

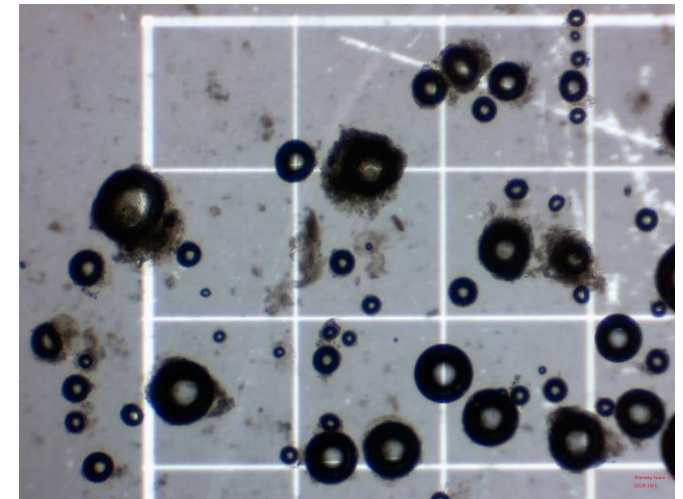
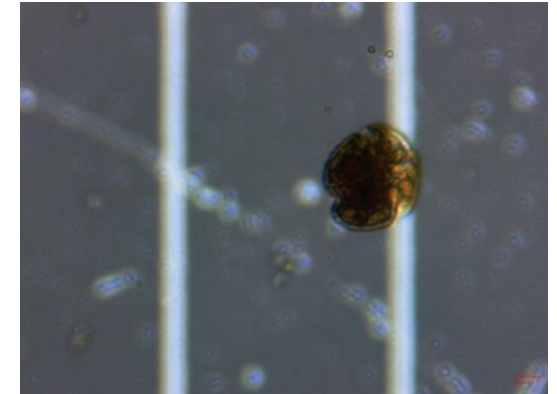


Why we like our sampling:
New Things!
Dinoflagellate Cyst ? Or
Pterosperma?

- Middleton Beach foam mixed with water
- 17th October, 2025
- Sample from my neighbour Tony :D



K. cristata foam, collected by Johanna Williams. Glenelg beach 1st October 2025 - smoking gun



Photos by Johanna Williams, micrographs by Samantha Sea

DNA, qPCR sampling and toxicology

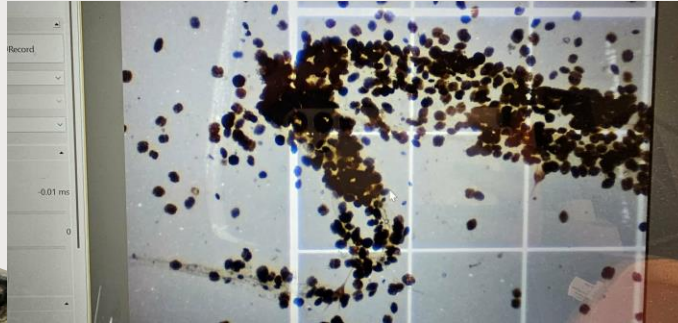
MASSIVE THANKS TO

PROFESSOR SHAUNA MURRAY OF UTS

**Who sent a water sampling kit within a week of finding
out we existed.**

**Now they're in Adelaide Metro, and on the Fleurieu,
Yorke and Eyre Peninsulas. Having access to this is
beyond our wildest dreams.**

Hunting and Collecting method



This enables us to get long term seasonal and communal data as well as respond to potential break outs.

Collecting:

- regular samples, eg. Every month from the Dolphin Watch Survey off the Big Duck Boat tour
- Weekly/ fortnightly for Prof. Shauna Murray from West Island and the Bluff Jetty

Hunting:

- see something weird, have someone deliver something "off"
- Samples from the Rodney Fox Shark Expeditions to remote islands eg Greenly Islands.

Port Adelaide Sailing Club, 4 Sept 2025,
Karenia, Gymnodinium and sea snot

Really looking forward to
the Sampling Panel later!!

Please Know We Welcome Your Input!!
You can always contact us
on the Facebook Group too!

But now... Processing

Processing samples: Lugols or live (and filter)

Where possible, we look at live.

But this is different for different environments!

My offshore examples don't show what inshore samples do in live samples. So I use lugols. We also use it for counts

- We concentrate down the sample by 10x, then put a drop on each side of a Haemocytometer - they're usually used to count blood cells, but blood cells are about the same size as Karenia!! They have an upper and lower grid, then we identify and count the things we see.

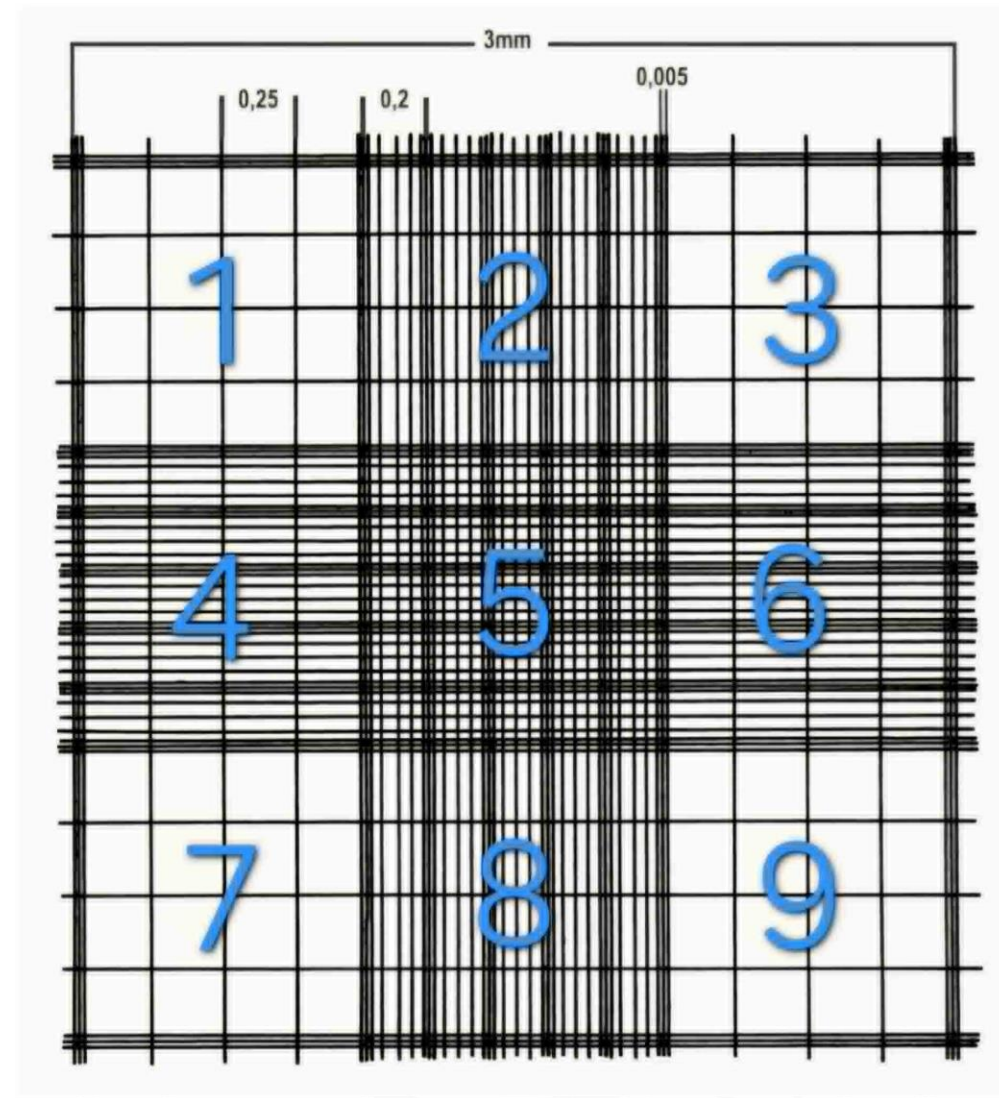


Hemocytometer

Scale: how it works

The white lines you see on the photos are 3 microns wide

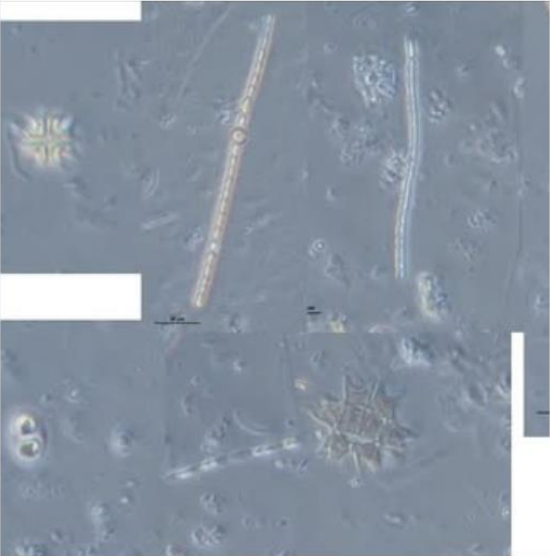
We use the grid to count and as a scale. There are 2 of these squares.



We have a variety of microscopes

 **Carey Hannaford**
16h · 🌐

Had a lovely visit with [Samantha Sea](#) and Pixie on Sunday. I was meant to be helping with the sample backlog but I think I spent more time chatting! Anyway interesting pair of samples from the Coorong. Unfortunately had degraded a bit so counts only rough.
A fun pair of samples to look at. I need to do more microscope parties, I miss that now I work remotely!



Coorong Side

	Cells/mL
Total Bacillariophytes	200
Total Chlorophytes	53
Total Cryptophytes	14
Total Cyanophytes	3445
Total Dinophytes	1

Beach Side

Category	cells/mL
Euglenophytes & Prasinophytes	6
Cryptophytes	2
Total Dinoflagellates	7
Total Diatoms	543
Cyanoprokaryota	17
Total Cells/mL	575

Nikon Eclips 50i pro scope
with phase contrast

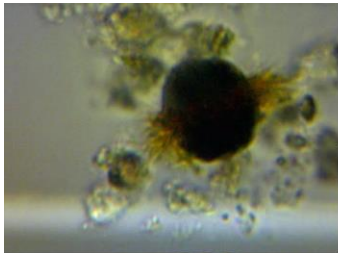
 **Samantha Sea** 
22 April at 20:39 · 🌐

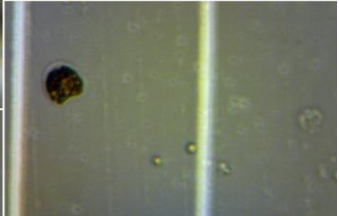
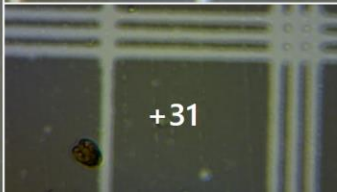
Water sample: Cattle Point, Coorong

15 April, 2026 2.29pm from Laurie!! Thank You!!
There was a lot in this sample! Only counted 9 square but I feel it gave enough result, check the numbers!!

EDIT BROWN THINGS are Prorocentrum cf Cocavum (not my id but verified)
Doesn't carry DST see page from Hallegraeff 2024 at end

Dinoflagellate = 333/mL
No Karenia observed
Diatom (total) = 9000/mL
Thalassionema (Chain) ~ = 6000/mL (difficult to count some)
Nitschia = 111/mL
Cylindrotheca = 222/mL
Prasinophyte = 1000/mL
Cryptophyte = 444/mL
Picoplankton = 1889/mL
Other = 9111/mL Total = 19444/mL
Brown things = 10333/mL
Ciliate = 1222/mL
Offgird: Scripsiella? 111/mL
[#slideofmyday](#)

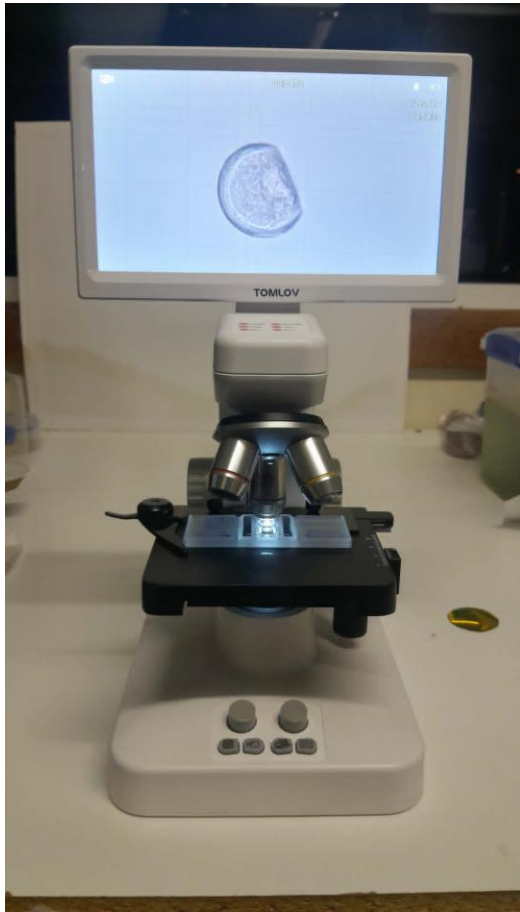


2nd hand loan
scope – ex uni

+31

The Tomlov vs. "Smart" Microscopes



Tomlov

The Tomlov microscope retails for about \$300 online. The "Smart" microscope is around \$800-1200 from a local supplier.

The Tomlov has a diaphragm that doesn't move. This can result in fringing effects at some magnifications.

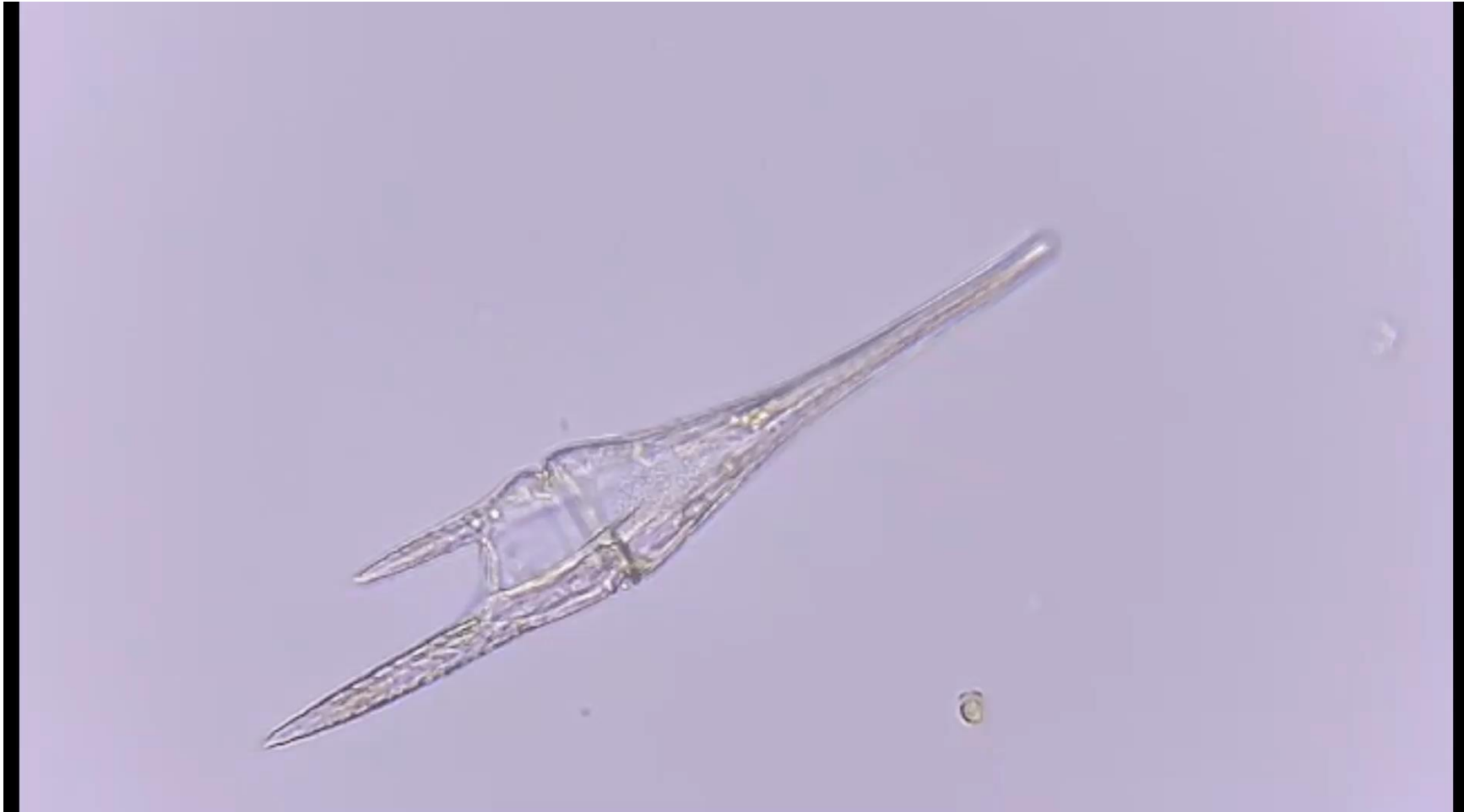
The Smart Scope appears clearer, but there's not much in it.

As cheap microscopes go, they punch above their weight. **CHECK stage height fits hemocytometer! Some of these are shorter and they don't fit.



Smart Scope

Triplos furca video from Phil and Cylus Bamford,
Stansbury, 27th April, 2026 taken on their Tomlov



Identification!! Taxonomy, Dinoflagellates, Diatoms, Downton Abbey and Cutlery – how to understand it!

This is confusing!



Picture: Julia Forster, Pinterest

But if we know what a knife and a fork looks like...

*Everything else is a spoon ;)

We start there. :) Questions go on Facebook!



Reporting:
How to show the
data?
This was the first
map.
First samples from
the Big Duck Tour
Boat
15th June 2025

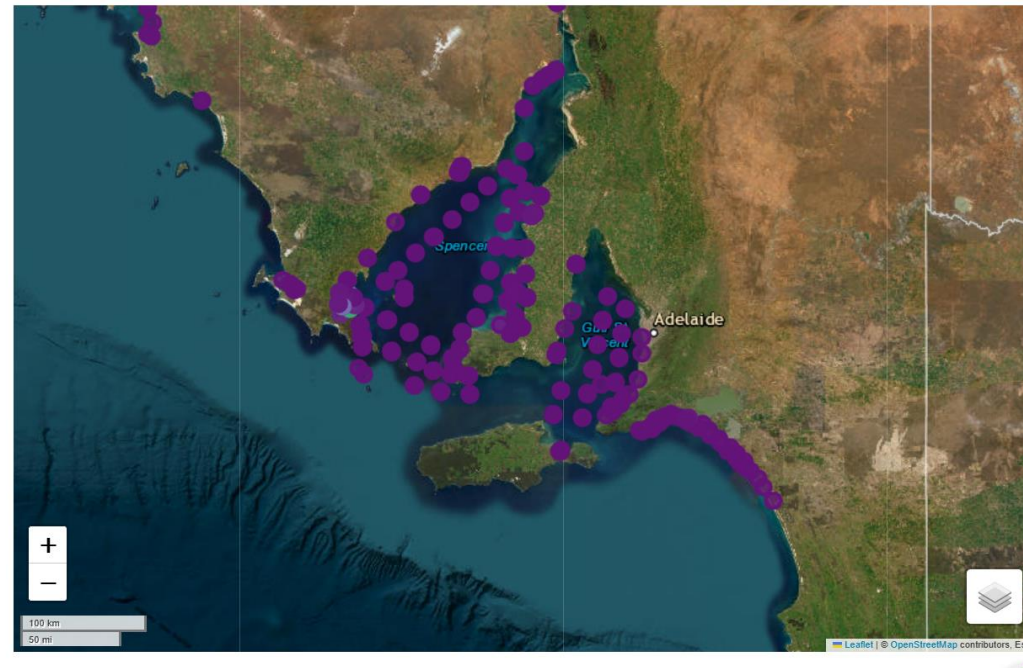
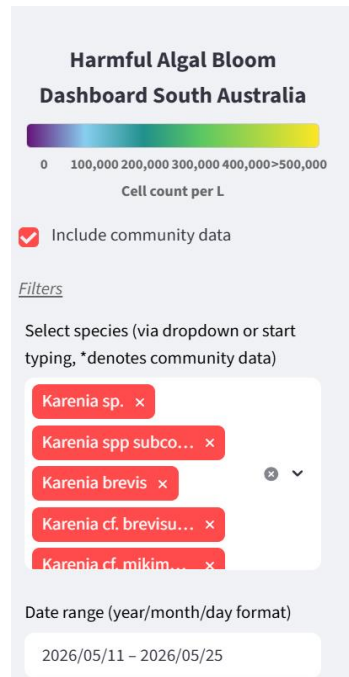
Yes I did this late at night on
my phone! Yes it was before
the Gov dashboard version ;).



Now our data is loaded onto Facebook, with pictures and counts/observations, identifications down to genus and species in some cases. We have an iNaturalist project.

Also, our data contributes to APrf Luke Mosleys App, which shows government data alongside. However, it only captures basic indentifications, such as group.

- <https://sa-algal-bloom.streamlit.app/>



Example: Point Turton, mid
Feb 2026. Same day
samples, SARDI and
Phytoplankton SA
Different results
THIS is why working together
is so important

This is from Lukes
App. You can find it under
Featured on the
Phytoplankton SA group



The Grand Plan

Understand the phytoplankton world, not just HABs but the community they live in and how it changes seasonally. What it looks like "normally" - if there is a normal. What precedes a bloom? What rehabilitates it?

To do this:

4 Research grade microscopes to be allocated to Phytoplankton Group Custodians, in strategic areas, INCLUDING REGIONAL:

Eyre Peninsula – Pt Lincoln

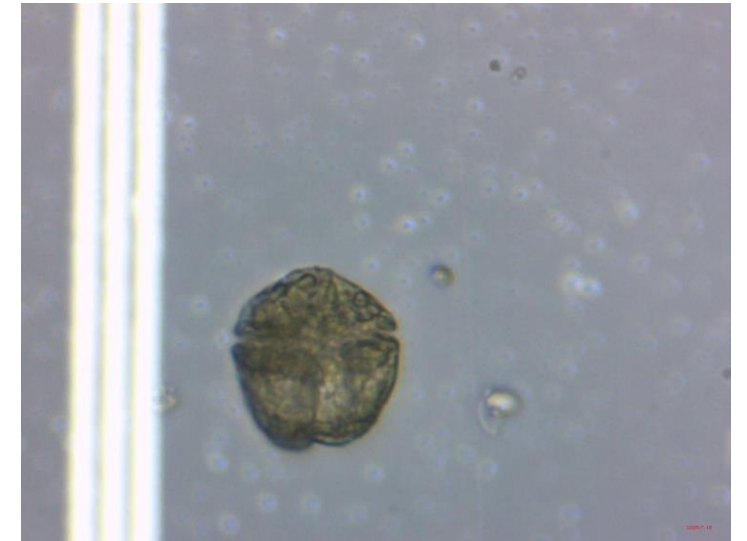
Yorke Peninsula – Edithburgh

Adelaide Metro

Fleurieu Peninsula – Victor Harbor

These will act as Region leaders, who will provide the interface to SARDI.

More Tomlov microscopes will be deployed around the communities for additional coverage by group community members.



Karenia, Largs North Boatramp
17th July, 2025

- Regional area leaders will have advanced knowledge of phytoplankton genus – especially HABs.
- Community members will also recognise some phytoplankton classes, genus.
- Between the two, the range of monitoring areas can be increased.
- A group community member can refer to the Regional lead, who can check with one of our experts, then forward to SARDI as necessary
- In this way, the community regains a sense of control by providing support, and extended coverage – especially in regional areas, while reducing overheads of sampling. This is a benefit to SARDI and everyone.

Asterionellopsis,
Middleton 10th Aug 2025



BIG THANK YOU TO SARDI and PROFESSOR MIKE STEER and THE ALGAL BLOOM COORD UNIT

We're teaming up with SARDI who will provide microscopes and standardised training – including HAB identification

We're volunteers – like the CFS or Ambos – though with a lot less experience. We're creating something new.

We look forward to working with even more.

While the news reports that Bloom monitoring is rolling back, we're rolling forward. (oh wait... Wendy says "no" from Port Lincoln ;) Caro in Whyalla is checking water this week)

We're ready to do more

We're developing our own guide of "observed" local specimens – to help community group members with identification so they can enter that into reports.

We're making a "matching" reporting spreadsheet that will capture more data, such as salinity, water temperature etc. and allow genus and species identification – including confidence levels of reporter.

We're compiling a website, to put these together and provide analysis tools such as when and where the species were seen, where they move over time/location/ and with other species.

BIG THANKS TO AMY McLENNAN of The Algal Bloom Shed for helping with the website .



Coscinodiscus, Olivers Reef,
13 Aug 2025

We LOVE YOUR INPUT!!

You don't even have to be a member!

See something you know but we've missed?

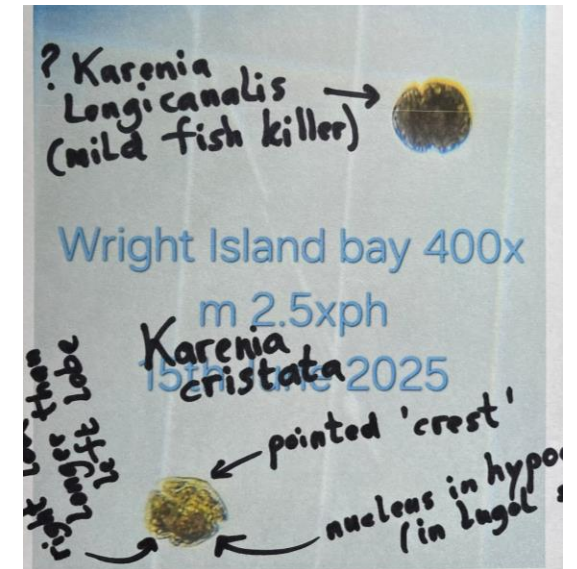
Please feel free to comment! Anonymous is fine :)

We also love expert's videos on your favourite phytoplankton, microscopes, or related topics! Shoot them on your phone! We love it! <3

< Your valuable knowledge goes here >

Phytoplankton of South Australia – Recovery

Facebook <https://www.facebook.com/share/g/18kpXQWVNv/>



Big Thanks to Our
Special Group
Friends:



- Emeritus Professor Gustaff Hallegraef, UTas
- Professor Shauna Murray, UTS
- Emeritus Professor Ian Gibbins, Flinders Uni
- Assoc Prof. Luke Mosley, Adelaide Uni
- Assoc Prof. Craig Styan, Adelaide Uni
- Dr Ruth Eriksen, CSIRO
- Letitia Dahl-helm, Yorke Peninsula Council
- Tammy Franks
- The Big Duck Boat Tours, KI and VH Dolphin Watch
- Pirate Sea Charters
- Rodney Fox Shark Expeditions
- And so many more. <3 W

Finalist SA Volunteers Award

(also Finalist for
SA Environment
Award this Friday)

