

SDFSFA Newsletter – April 2022

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SCUBA DIVERS FEDERATION OF SA, Inc.

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Single use face masks: more waste in our oceans



Photo credit: Cleanup Australia

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RAISING AWARENESS ABOUT PROPER DISPOSAL OF SINGLE USE FACE MASKS

The Covid 19 pandemic has necessitated wide scale use of protective masks and gloves. Although mask mandates may change in the coming weeks and months, many people will continue to wear masks in public areas. However, improper disposal of masks and gloves is contributing to the pollution of our waterways and coastlines. Marine life can be seriously harmed through entanglement in mask ties and ingestion of mask and glove materials. Human life is also affected: masks and gloves with polypropylene and vinyl content will, with sun exposure and sand abrasion, break down into micro- and nano- plastics and enter our drinking water and the food chain.

The challenge is huge. SDFSAs review of the problem has found that globally, 129 billion facemasks are entering landfills every month (that's 3 million a minute, according to sciencedaily.com) and it could take 450 years for that waste to break down completely. Cloth masks may seem like a great, reusable alternative, but don't necessarily provide the same level of protection from Covid 19 that medical grade masks do. Longer term solutions such as the invention of biodegradable materials for single use masks may address the landfill problem, but in the immediate future, we can work to keep mask waste out of our oceans and waterways.

Some simple steps that we as divers can take include:

- Snip those ties and dispose of your masks securely in a bin so they don't blow away.
- Alert the local council if you notice a significant accumulation of mask and glove litter.
- Participate in group clean-ups that have safe collection and disposal guidelines, such as:
 - [The Australian Marine Debris Initiative of the Tangaroa Blue Foundation](#)
 - [Clean Up Australia](#)
 - [Project Aware's Dive against Debris](#)
- Lobby your local council for more waste disposal bins at popular beaches, jetties and dive locations.
- Become more informed: **Read the SDFSAs report prepared by Merv Brash and Kerry Cook**, which provides a short overview of the scientific research into this emerging problem. You can find it on our website at <https://sdfs.net/wp-content/uploads/2022/03/Face-mask-disposal-SDF-Report-2022.pdf>.

IMPORTANT NOTICES

ISOLATED DANGER MARKER ON THE WAVE GENERATOR IN YANKALILLA BAY

According to Notice to Mariners No 43 of 2021 at <https://marinesafety.sa.gov.au/news?a=984356>, an isolated danger marker has now been placed on the wave generator in Yankalilla Bay at Carrickalinga. "Mariners are advised that the abandoned wave energy generator off the coast of Carrickalinga has now been partially removed. The remaining submerged structure in position 35° 25' 13.59" S, 138° 18' 19.49" E has been marked with a lit isolated danger marker, Fl(2)W 6s, range 2 nautical miles. The water depth over the remaining submerged structure is approximately 0.2 metres (measured to Lowest Astronomical Tide). The remaining structure is approximately 30 metres square. Mariners are reminded that an exclusion zone applies around the structure and unauthorised vessels are not permitted to enter the exclusion zone which extends approximately 100 metres from the structure.

The exclusion zone is bounded by the following coordinates:

35° 25.154' S 138° 18.279' E

35° 25.174' S 138° 18.417' E

35° 25.319' S 138° 18.389' E

35° 25.286' S 138° 18.262' E"

JJ Jenner posted a photo of the marker on Facebook at <https://www.facebook.com/photo/?fbid=10160033961649534&set=gm.4792091310916783> .

PORT STANVAC JETTY AREA EXCLUSION ZONE STILL APPLIES

The old Port Stanvac jetty area exclusion zone still applies. SDFSa has investigated what the status of the exclusion zone is. The Dept of Infrastructure and Transport Marine Safety has advised that the marine exclusion is still in place and has not provided any further information on whether and when it might be lifted. As far as the land surrounding the old jetty area: The Minister for Transport has the responsibility up to the high tide mark. Beyond that it still belongs to Mobil. DIT is going to undertake foreshore construction works to make the breakwater and old slipway safe for public access this year. Public access will not be reinstated until that work is done. So no access in the immediate future.

SDFSa COMMITTEE BUSINESS

Introducing our newest Committee member, Andy Burnell

The ocean has always been my thing, apparently since I was old enough to hold a crayon and draw scenes of fish, sharks and divers. I snorkelled and fished from a very young age and was OW certified at age 15 at Conshelf Marine, North Haven in 1980.

From there it was off to study Marine Biology at James Cook University, Townsville, and explore the Great Barrier Reef working as a reef guide and diving instructor. I became a NAUI Instructor and then crossed over to PADI and later IANTD for technical diving. Have been fortunate to do some great diving over the years with trimix black coral surveys at 70m listening to humpback whales and watching tiger sharks for 90 minute deco off Maui being some of the most memorable. Stepping off a boat, knees buckling, loaded with multiple tanks then free falling weightless 70m into the blue. Euphoric!

I've worked in diving, research, fisheries management and been back in SA since 2008 when I came back to work on setting up our Marine Parks.

I enjoy freediving as much as I do SCUBA. I own a speargun and have spearfished a fair bit in the past, mostly in Hawaii. Haven't shot a fish for a while now but not opposed and do catch crabs and abs on occasion.

As my recent buddies, my kids, don't need me as much now I am looking to be more active in diving in other ways. I'm delighted to be a new member of the SDFSa Committee and hope I can contribute beneficially to diving and to the conservation and enjoyment of our unique southern marine environment.



Note from the Editor:

We should also point out that Andy is the genius behind the latest Internet sensation, Crab.e.cam!!

You can find the crab action in Adelaide's metro waters on Facebook at

<https://m.facebook.com/Crabecam-100496939184740/> and on YouTube,

<https://www.youtube.com/watch?v=HXFmFznPwzA>.

The next SDFSA Committee meeting is 27 April, 7pm, at the Arab Steed Hotel, Gilles St., Adelaide.

CONGRATULATIONS TO...

- Prof. Mehdi Doroudi on becoming the new Chief Executive for PIRSA following years of service as Director for the Australian Maritime & Fisheries Academy.
- Dr Mike Bossley, who is well known in South Australia and abroad for his work studying the dolphins that live in Adelaide's Port River, on the recent release of his book "Dolphins, Whales & Me". Visit https://moonglowpublishing.com.au/dolphins-whales--me---mike-bossley.html?fbclid=IwAR38H2NB2O9_5pPzB-Zqh93IKBgRih5RfR_ZI-eKphgEo5TALrCPEMdR9E#/ for details.
- Matty Smith on being named British Underwater Photographer of the Year for his portrait of a great white shark in the Neptune Islands, South Australia. All category winners are listed at https://www.bbc.com/news/in-pictures-60334402?fbclid=IwAR1lWl54mjcaUwXUFxgQS10_1YFCKmDAn4wPfzpAEpWavNIU_FxtfJcl2ol
- Dr Wendy van Duivenvoorde from Flinders University's Maritime Archaeology on being made the new face of the Uni's Fearless campaign. Wendy can be heard speaking at the WA Maritime Museum, for the Netherlands Embassy and Consulate General in Australia, about the *Batavia* wreck at <https://www.facebook.com/NLinAustralia/videos/726047778778620> .)
- Christabel Mitchell and the team from Save Our Marine Life on having the Christmas and Cocos (Keeling) Islands Marine Parks declared by the Australian Government. It is said to be one of the largest marine sanctuary areas in the world. They say that "These sanctuaries will provide a critical safe haven for a wealth of Indian Ocean marine life under huge pressure from industrial fishing, climate change and mining."
- Andy Burnell, for the recent coverage of Crab.e.cam in the Advertiser and on the ABC and Channel 9 news.

NOTES FROM DIVE SHOPS AND CLUBS

Peter & Ilona Corrigan of **Second Valley Air Fills and Tank Hire** have completed their accommodation for divers / snorkelers. They are now offering affordable accommodation with cooking facilities, a large choice of local eateries and food deliveries, air fills, tanks, weights, trolley hire, a place to wash your gear and a studio to sit and chill or check out your photographs and re-charge batteries. They can assist with vast local dive site knowledge/dive briefings and a locally experienced dive guide. Phone them on 0499229053 or 0402418855 for bookings and more information.

The Seawolves Dive Club celebrated the 20th anniversary of the scuttling of the MV Seawolf last month by diving the wreck before returning to their club rooms at Morphett Vale for a sausage sizzle.

IN MEMORIUM

PETER CLARKSON

February 2022 was the 11th anniversary of Peter Clarkson apparently being taken by sharks whilst abalone diving in the waters off lower Eyre Peninsula in February 2011. Peter had co-authored "Australia's Spectacular Cowries: A Review and Field Study of Two Endemic Genera--Zoilæ and Umbilicæ" with Barry Wilson. Peter also featured in some of the "Abalone Wars" episodes that were shown on TV for 5 seasons from 2012 to 2016.

LLOYD BRIDGES

10th March 10 was the 24th anniversary of the passing of actor Lloyd Bridges, who is famous as the character Mike Nelson in Sea Hunt which featured on Adelaide's Ch.9 in the 1960s. Lloyd was 85 when he died in Los Angeles on 10th March 1998.

STEVE'S SCIENCE STORIES for the month

By Steve Reynolds

Interest in a 'Kissing' Fish Study by MLSSA

Divers have been witnessing fish seemingly kissing each other during Autumn. Moonlighters and Blue Devils have both been seen performing 'kisses' on each other. The very season may suggest that it's not courting behaviour. My thought is that it's aggressive behaviour. I explain this in <http://mlssa.org.au/2022/03/22/fish-behaviour-observed-during-autumn>. Further investigation is warranted though. I invite all divers witnessing similar behaviour (between fish only) to report back to me. Photos or videos would be extremely helpful.

Teeth-like structures on the tentacles of Squid

David Riddell reports that the suckers on some squid are modified into hooks <https://www.quora.com/Do-squids-and-octopuses-have-barbed-tentacles#:~:text=There%20are%20NO%20teeth%20in,But%20no%2C%20there%20no%20teeth>. He says that the family Enoploteuthids have lots of hooks on their arms and tentacles. He points out that squid and octopus have eight arms, but most squid also have two longer appendages which are tentacles. There is a picture that he drew of the club on the end of a tentacle of an Enoploteuthid, *Abraliopsis tui*. The hooks are quite obvious, the larger ones sitting within soft hoods.

According to the web page found at <https://www.acs.org/content/acs/en/pressroom/presspacs/2014/acs-presspac-july-2-2014/squid-sucker-ring-teeth-material-could-aid-reconstructive-surgery-serve-as-eco-packaging.html#:~:text=Squid%20tentacles%20are%20loaded%20with,onto%20and%20take%20down%20prey>, "Squid tentacles are loaded with hundreds of suction cups, or suckers, and each sucker has a ring of razor-sharp "teeth" that help these mighty predators latch onto and take down prey." Squid ring teeth can be seen in a YouTube video at <https://www.youtube.com/watch?v=fKggcn8ngUk>. More information and video footage can be found at <https://www.insidescience.org/video/squid-parts-help-make-self-healing-materials>. (My thanks go to the Malacological Society of S.A.'s General Meeting minutes for these details.)

Study on fish densities and sex change in fishes in Marine Protected Areas

According to a paper titled "Links between sex change and fish densities in marine protected areas" written by Philip P. Molloy, John D. Reynolds, Matthew J.G. Gage, Iago Mosqueira & Isabelle M. Côté, "Sex change among marine fishes is thought to be of conservation concern under some circumstances". The paper can be found at <https://www.sciencedirect.com/science/article/abs/pii/S0006320707003709>.

According to the Introduction for the paper, “There is evidence that the behaviour, ecology and life histories of species can affect the extent to which they benefit from protection from exploitation.” The paper goes on to ask whether or not the implementation of marine protected areas (MPAs) works as effectively for sex-changers as for non-sex-changers. To address this issue, the authors used meta-analyses of the ratio of fish abundances inside vs. outside MPAs to determine whether sex change affects the extent to which fish densities respond to protection.

Although they found that “When all data were considered, there were similar responses to protection irrespective of reproductive mode”, “when analyses were restricted to older reserves (at least 10 years’ protection), female-first sex-changers consistently benefited from protection. Non-sex-changers and male-first sex-changers showed more variable responses to protection and, as a result, there were no significant differences between fish with different reproductive modes in their overall response to protection. The same results were observed when the effects of fisheries status (targeted vs. not targeted) were controlled.”

The authors suggest that their results support the use of MPAs as important components of conservation and demonstrate that old reserves are most consistently beneficial to female-first sex-changing species. They also stated that their results “highlight the fact that some effects of protection are only detectable after several generations.”

Sleep Studies on Sharks

Although it's long been thought that sharks don't sleep at all, according to “Biologists Just Totally Proved Wrong a Long-Standing Rumour About Sharks”, a new study confirms that sharks do sleep. This research was published in the paper titled “Energy conservation characterizes sleep in sharks”, which can be found at <https://royalsocietypublishing.org/doi/10.1098/rsbl.2021.0259>. According to the web page found at <https://www.msn.com/en-au/news/techandscience/biologists-just-totally-proved-wrong-a-long-standing-rumor-about-sharks/ar-AAUPaGK?ocid=msedgntp>, the team led by ecophysiological Michael Kelly from the University of Western Australia, says "We have provided the first physiological evidence of sleep in sharks".

The team investigated signs of sleep in the draughtsboard shark (*Cephaloscyllium isabellum*), a nocturnal species. A previous study had shown that “it took greater electric stimulation for a shark to respond when the animal appeared to be resting”, but they weren’t able to confirm that this resting state was actually sleep.

By monitoring the sharks across 24 hours, they revealed that “their oxygen levels consistently decreased during these periods of restfulness” and confirmed that those sharks whose periods of restfulness extended beyond five minutes really are asleep. The team says, "Not only do sleeping sharks have reduced responsiveness to stimulation, they also have lower metabolic rate."

It was found that the sharks closed their eyes while asleep more commonly during the day. This suggested that “eye closure is more likely associated with external factors like the presence of light, rather than the sleep state itself. During the night, 38% of sharks kept their eyes open, even while other indicators suggested they were sound asleep.”

The team found that a shark’s posture is a better indicator of sleep. The draughtsboard sharks kept their bodies flat while sleeping. They say that this species of shark is “able to remain motionless for extended periods of time, thanks to their buccal (face muscle) pumps which keep oxygenated water flowing across their gills while they're still”.

They say that other species of sharks, such as great whites (*Carcharodon carcharias*), “don't have this pump and rely on forward swimming to push oxygenated water into their mouth and over their gills. This is known as ram-ventilation.” The question is, “How do those sharks that must keep swimming get to sleep?” Some researchers suspect that it may have something “to do with the way these sharks control their swimming motion. A study in the 1970s found the mechanisms that oversee swimming movements in the small spiny dogfish shark (*Squalus acanthias*) are located in the animal's spinal cord and not the brain, so it may be possible for sharks to keep swimming while not being conscious.”

They say that there is “still a lot about sleep in general that remains mysterious, so understanding how this process works in sharks could provide clues on how our own ability to sleep evolved. As the earliest group of jawed vertebrates, sharks represent an ancestral group to many animals known to rely on sleep for energy conservation and other important physiological processes.” The team concluded that “Future research should focus on other physiological indicators of sleep, such as changes in brain activity, for a more complete portrait of sleep in these vertebrates.”

Adhesive Film That Mimics Shark Skin Used On Aircraft

The idea of sharks flying is not such an impossibility! According to OceanX on LinkedIn at <https://www.linkedin.com/feed/update/urn:li:activity:6911746576713445376/> , sharks have skin-teeth. “Their skin is covered in microscopic tooth-shaped scales called dermal denticles, with a hard enamel-like coating. These skin-teeth are protective, but they also help sharks swim really fast, by reducing drag as they glide through the water.” Perhaps you did know, but “This inspired engineers at Lufthansa to develop an adhesive film for their aircraft that mimics shark skin. The film reduces drag on airplanes, which in turn reduces fuel consumption. It's being rolled out this year on SWISS Air's 12 Boeing 777s. This will reduce carbon emissions by an estimated 15,200 tons per year, which is the same amount emitted by 87 long-haul flights between Zurich and Mumbai. The same idea could also be applied to turbine blades, air conditioners, and cargo ships, just to name a few.” There is some short video footage to view.

More Taxon Changes

Taxon changes seem to be occurring regularly now. I don't want to get too involved in keeping up with all of the changes occurring, but I will try to report any that I hear about, especially regarding fish ones. Here are some recent ones announced via iNaturalist: -

1. Banded Morwong, *Cheilodactylus spectabilis* has now been replaced with *Chirodactylus spectabilis*.
2. (Butterfly) Dragonet, *Eocallionymus papilio* has been replaced with *Synchiropus papilio*.
3. Pencil Weed Whiting, *Siphonognathus beddomei* has been replaced with *Sheardichthys beddomei*.
4. Australian Herring (Tommy Rough/Ruff), *Arripis georgianus* has now been replaced with *Arripis georgiana*

Meanwhile, Gary Cobb announced via Facebook group Nudibranch Central that some species of nudibranchs previously misidentified as Goniodoridella have now been named as *Murphydoris cobbi*, *Murphydoris adjusta*, *Murphydoris puncticulata* and *Murphydoris maracabbranchia*. See <https://www.facebook.com/photo/?fbid=10160130591564727&set=gm.3101430040115719> for more details. Neville Coleman's “Nudibranch Encyclopedia” features many Family Goniodorididae nudibranchs, but only one of them is listed as a Goniodoridella (*Goniodoridella savignyi*). Some of the others are Goniodoris. There are a couple of Murphydoris. There may be another Goniodoridella, but it is listed as Goniodoriella. It seems that it actually is a Goniodoridella. All of these seem to be tropical (or sub-tropical) species.

Correction from the Editor

Last month, I published a photo of a fish next to Steve's story about The South Australian cobbler (*Gymnapistes marmoratus*), often called "Cobbler", "Estuary cobbler" or "Soldier". My thanks to David Muirhead for pointing out that the photo featured an Estuary catfish (also sometimes called a Cobbler). This was not the fish being discussed (*Gymnapistes marmoratus*). Just goes to show the challenge of fish identification, and the confusion that exists with all the variations of common names!

FOR YOUR CALENDAR: FORTHCOMING EVENTS

South Australia

April Public Holidays galore, what with Easter & Anzac Day all falling in April. Easter starts off with Good Friday on **15th April**. The extra long weekend finishes with Easter Monday on **18th April**. Anzac Day falls the following Monday **25th April**, making it two long weekends in a row. More time for diving!

8 June 2022: World Oceans Day: South Australia Events. Now's the time to start preparing your celebrations for World Oceans Day! Go to Worldoceanday.org for information on planning, listing and promoting your event. So far, there are no ocean events listed for Adelaide or South Australia, although several are planned in Victoria, New South Wales and Queensland. **SDFSa will be discussing how we can help to promote World Oceans Day.**

Streaming 8th June 2022 8:30am - 5:00pm: 2nd Blue Water Summit 2022 - The Great Southern Ocean. The Blue Water Summit is designed to encourage our global family to think broadly about the ongoing effects of population and climate change affecting our oceans, and how changes within the Southern Ocean have far reaching impacts worldwide. Our oceans operate as a single interconnected organism and what impacts locally effects globally. The Summit will stream up to eight hours of content gathering from environmental thought leaders, ocean advocates, and storytellers and with a focus on the Great Southern Oceans. <https://www.facebook.com/events/blue-water-institute/blue-watersummit/23406172695716>

21-23 September: Australasian Institute for Maritime Archaeology (AIMA) Conference, Adelaide. The theme for the conference is 'Decolonising Maritime'. It is the 40th anniversary of AIMA and the 20th anniversary of the Maritime Archaeology Program at Flinders. There will be speakers at the conference discussing topics such as the SUHR and the *City of Adelaide*.

Interstate/International

27th-29th May 2022: The Malaysia International Dive Expo (MIDE) 2022 will be held at Hall 3, World Trade Centre, Kuala Lumpur. Visit <http://www.mide.com.my/> or <https://www.facebook.com/mideexpo>.

13th – 21st August 2022: NATIONAL SCIENCE WEEK 2022. See www.scienceweek.net.au.

19th to 21st August 2022: 15th Australian National Shell Show - Sydney

1-2 October 2022: OZTEK Conference and OZDIVE Expo. Held at the Melbourne Conference and Exhibition Centre. Visit <https://OZTek.com.au> and <https://OZDive.net.au> for more details.

November 2022: The next Australian Society for Fish Biology conference www.asfb.org.au

Australian International Dive Expo - AIDE 2021—postponed to 2022. See www.australiadiveexpo.com.

ABOUT THE SDFSA...

SDFSA is a non-profit, incorporated membership association dedicated to the preservation and enjoyment of our unique underwater world.

JOIN US FOR FREE!

<https://sdfsa.net/membership-categories/>

The more members we have, the stronger our influence. We serve as a peak body representing the interests of South Australian recreational scuba divers and the related sports of freediving and snorkelling, including the provision of information to government and the general public. Together we can have real impact on the issues affecting the South Australian diving community.

If you wish to be added to the mailing list for this Newsletter, join the SDFSA!

You can also read about the Federation's work in monthly issues of DiveLog Australasia, Scubadiver ANZ and on our website at <https://sdfsa.net>. Stay up to date with the latest news through our Facebook page, <https://www.facebook.com/scubadivesa/>. And follow our FB group, SA Dive Sites Vlz and Conditions for current diving conditions shared by the group members.

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