



THE BITE

Annual Report 2013



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Contents



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For more information on topics discussed in this report, go to www.supportoursharks.com

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Overview

In 2013, we continued to support our sharks through science-based conservation, research and education. To achieve our mission, we started two new major shark conservation campaigns, published 5 scientific peer-reviewed research papers, appeared in 2 international documentaries and over 100 media articles. We also continued to be proactive in communicating science and conservation to the world through free events, such as the inaugural SOS film festival. This document reports the progress and achievements of SOS during 2013. Here you will find a description of SOS programs, objectives, activities and results that were generated with your support. We hope you continue to support our work in 2014.



Mission: To Support Healthy Oceans By Promoting Better Protection For Sharks And Rays



Engaging with the public is a huge part of our work and providing the most current science-based information is our goal. In 2013, we travelled throughout Western Australia giving talks and hosting events to share our latest research findings and explain the importance of protecting sharks. We gave presentations to thousands of people at our various events, including the inaugural SOS film festival, *Sharks, Camera, Action!*. In addition, we reached many thousands of people globally with the release of our shark research and conservation films.

We are committed to promoting science-based conservation programs that encourage better protection for sharks and rays. In 2013, we started two major campaigns to promote shark conservation. Our *Go Mercury Free* campaign discourages consumption of sharks and other large predatory fish due to the high levels of toxins contained in their tissue. Secondly, our *Stop The Cull* campaign encourages nations to adopt non-lethal shark mitigation strategies and discourages the use of lethal measures, such as shark nets.



Scientific research is at the core of the SOS mission, as we believe that it is essential for the successful conservation of sharks and rays. This year, we continued to publish our research findings in internationally recognised peer-reviewed scientific journals and shared our expert knowledge in a number of mainstream publications. Our research revealed new insights into the sensory biology of sharks and rays, which we are now using to develop effective non-lethal shark repellents that may be used to protect both people and sharks.

WEBSITE

64,290+
Website Visitors

2
Documentaries

185+
Countries

35%
USA

4
Radio
Interviews

480,000+
Page Views

100+
Media Spots

1
Magazine

MEDIA

3

4

Education

This year, we worked closely with Western Australian high schools to share the shark conservation message with the next generation of ocean advocates. We also participated in a number of community outreach events, released a number of short conservation films and developed fun and engaging online awareness tools. Engaging with the public online and in person has enabled us to further the international reputation of SOS and has exponentially increased our reach through 2013.



1000+

People attended SOS presentations in 2013



ONLINE AWARENESS

Through the SOS website, we are able to connect with an international audience and share our latest research. To increase interaction, we have developed a range of fun and engaging online educational tools to inspire people to protect sharks, including quizzes, cartoons, teaching guides, films and much more.



SCHOOL VISITS

Our shark scientist, Dr. Ryan Kempster, visited schools throughout Western Australia to talk with kids and share his experiences as a shark biologist. We also participated in a number of programs that gave students the opportunity to come and join us in the lab to get hands-on research experience with sharks.



SOS FILM FESTIVAL

The inaugural SOS film festival, *Sharks, Camera, Action!*, took place in 2013 and screened a range of shark science and conservation films from around the world. The event also included a shark expert panel discussion and attracted an audience of over 300 people.



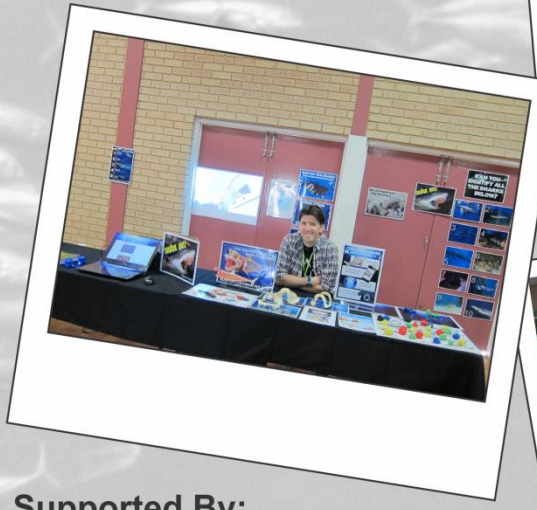
PUBLIC LECTURES

SOS is a science-based shark conservation organisation, and as such, we regularly speak at public events to share our expert knowledge and latest research findings. We believe in sharing our science with the public to foster a better understanding of the importance of research.

Outreach

SHARKS, CAMERA, ACTION!

Film Festival



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Achieving International Excellence

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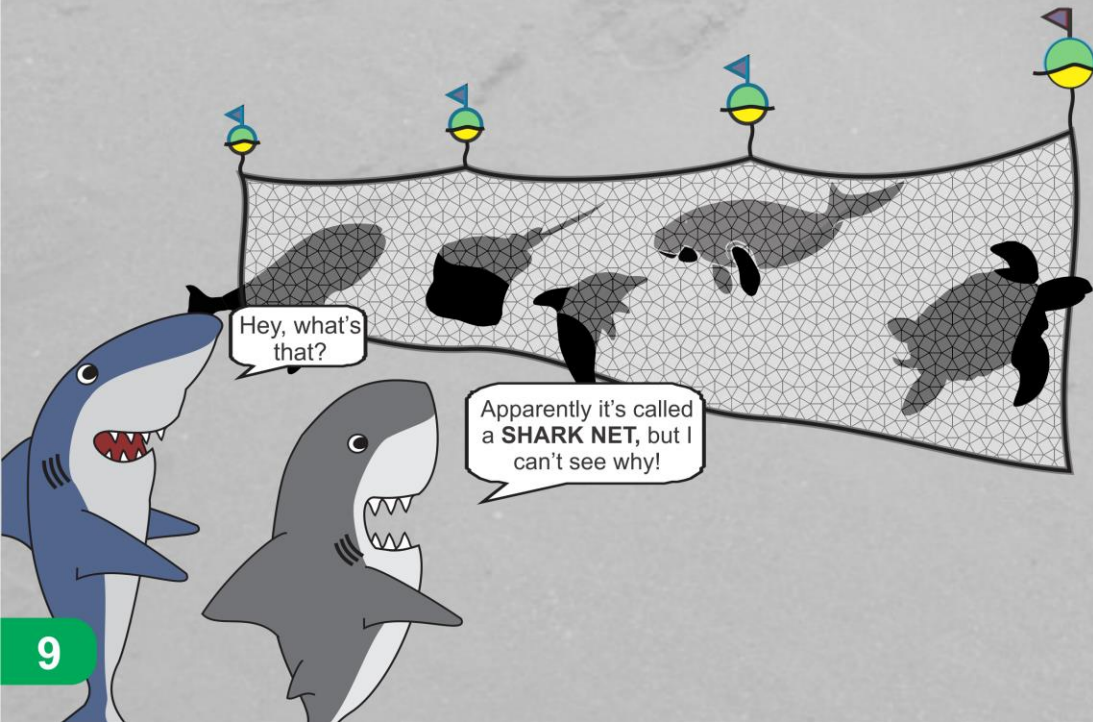


THE UNIVERSITY OF WESTERN AUSTRALIA
Achieving International Excellence
Institute of Advanced Studies



Conservation

Shark species around the world are being overfished at levels never before seen in human history. A lack of proper management is pushing many species to the brink of extinction. As apex predators, sharks fulfill a key role in maintaining balance in the ocean by keeping other populations in check. SOS actively promotes shark conservation around the world and encourages others to get involved and protect these incredibly important animals.



STOP THE CULL

In 2013, we continued our *Stop The Cull* campaign to encourage governments around the world to adopt non-lethal shark mitigation policies. We rallied the support of scientists, politicians and the public to encourage the use of scientifically proven methods to mitigate the risk of shark 'attacks', instead of ineffective culling programs.



The number of shark bite incidents occurring each year is directly related to the amount of time people spend in the ocean. With increasingly more people venturing out into the oceans every year, the likelihood of someone encountering a shark increases, with which there is very likely to be a corresponding increase in shark bite incidents. Therefore, an increase in the number of shark bites should not automatically be inferred as an increase in the local population of sharks, or an increase in the aggressive behaviour of these sharks.

GO MERCURY FREE

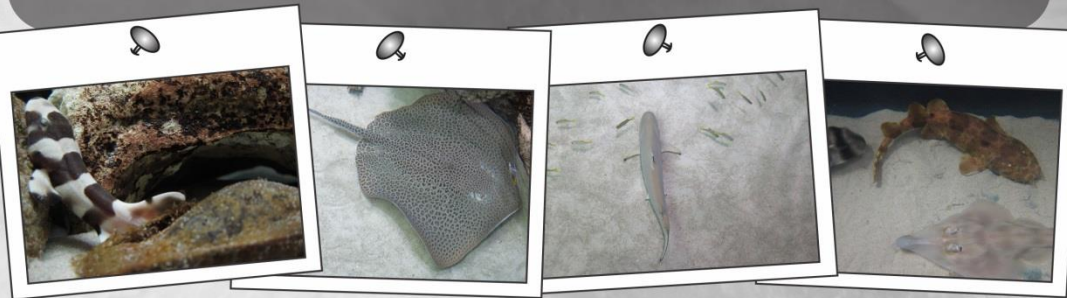
In 2013, we began our latest campaign to get people to *Go Mercury Free* by not eating sharks and other large predatory fish, because of the deadly toxins found in their tissue. Studies show that shark meat has among the highest levels of mercury and other dangerous toxins found in any fish. It is a common myth that the consumption of shark fin soup has positive health benefits. There is, however, no accepted scientific evidence that shark fin provides any medicinal or health benefit. Marine organisms absorb toxins and heavy metals that enter the oceans from natural sources, such as volcanoes and the erosion of soils; more worryingly though, many of these toxins today originate from manmade sources, such as the burning of fossil fuels. These toxins accumulate through the food chain as one animal eats another. As many sharks are positioned at the top of the food chain, they are the final stop for many poisons in our oceans.

Thank you to Anna Gardiner, Kelly Fitzsimons, Shana Thompson and Sherrie Wilson for their help on this campaign.



Research

Advances in scientific research are essential to the conservation of any animal. We are committed to doing our part to engage with the public, political figures, and the media to share our scientific work and help improve the reputation of sharks. Better understanding will inevitably lead to better protection for sharks as people begin to realise the important role they play in keeping our oceans healthy.



PUBLICATIONS

Camileri-Asch V., **Kempster R. M.**, Collin S. P., Johnstone R., Theiss S. M. (2013) A comparison of the electrosensory morphology of a euryhaline and a marine stingray. *Zoology*

Kempster R. M., Garza-Gisholt E., **Egeberg C. A.**, Hart N. S., O'Shea O. R., Collin S.P. (2013) Sexual dimorphism of the electrosensory system: A quantitative analysis of nerve axons in the dorsal anterior lateral line nerve of the blue spotted fantail stingray (*taeniura lymna*). *Brain, Behavior and Evolution*

O'Shea, O. R., Thums, M., van Keulen, M., **Kempster, R. M.** and Meekan, M. G. (2013) Dietary partitioning by five sympatric species of stingray (*Dasyatidae*) on coral reefs. *Journal of Fish Biology*

Kempster, R. M., Hunt, D. M., Human, B. A., **Egeberg, C. A.** and Collin, S. P. (2013) First record of the mandarin dogfish *Cirrhigaleus barbifer* (Chondrichthyes: Squalidae) from Western Australia. *Marine Biodiversity Records*.

Kempster, R. M., Hart, N. S. and Collin, S. P. (2013) Survival of the stillest: Predator avoidance in shark embryos. *PLoS One*

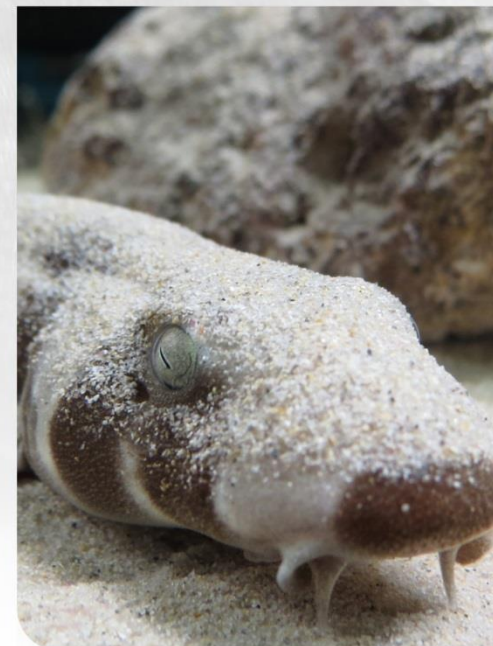
Kempster, R. M. and Collin, S. P. (2013) How to prevent shark attacks. *The Conversation Website*. November 29, 2013.

Survival of the Stillest

Sharks use highly sensitive electroreceptors to detect the electric fields emitted by potential prey. However, it is not known whether prey animals are able to modulate their own bioelectrical signals to reduce predation risk. Here, we show that some shark embryos (*Chiloscyllium punctatum*) can detect predator-mimicking electric fields and respond by ceasing their respiratory gill movements. Despite being confined to the small space within the egg case where they are vulnerable to predators, embryonic sharks are able to recognise dangerous stimuli and react with an innate avoidance response. Knowledge of such behaviours, may inform the development of effective shark repellents.

Kempster, R. M., Hart, N. S. and Collin, S. P. (2013) Survival of the stillest: Predator avoidance in shark embryos. PLoS One

RESEARCH SPOTLIGHT



Electric Stingrays

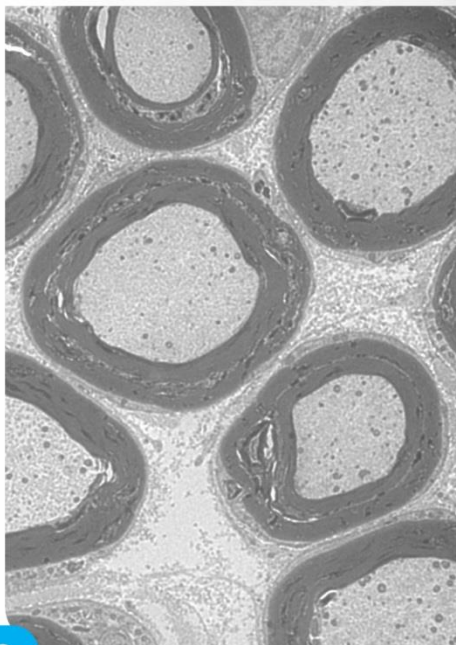
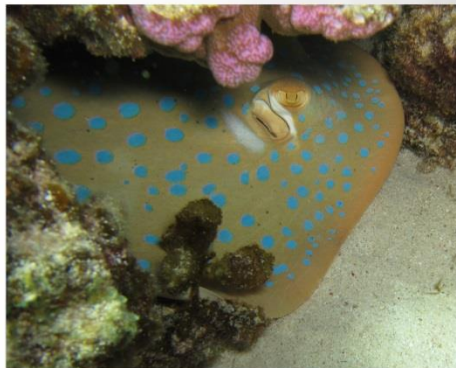
By studying the electrosensory cranial nerves of stingrays, we found that female blue spotted stingrays had more electrosensory nerve axons entering their brains than their male counterparts. Despite the important role that electroreception plays in the behaviour of stingrays (and sharks), this is the first study to assess the variation in electrosensory nervous input to the brain. This information can tell us how important a particular sensory system is to an animal and what role it plays in their behaviour.

"We found that female stingrays have far more nerve axons than males, which may allow for improved electrosensitivity and help females identify suitable mates".

Because it's the males that usually approach the females for mating, the extra electrosensory cues that females receive may allow them to distinguish mates from predators. Female stingrays may make a calculated decision about whether they should stay and wait for an approaching mate or make an escape before they're spotted by a would-be predator.

Knowing more about the electrosensory system, not just between species but between males and females of the same species, may help to ensure that electronic shark mitigation devices work effectively for as many species as possible and even for each sex.

Kempster R. M., Garza-Gisholt E., Egeberg C. A., Hart N. S., OShea O. R., Collin S.P. (2013) Sexual dimorphism of the electrosensory system: A quantitative analysis of nerve axons in the dorsal anterior lateral line nerve of the blue spotted fantail stingray (*Taeniura lymma*). *Brain, Behavior and Evolution*



Rare Species Discovery

The mandarin dogfish, *Cirrhigaleus barbifer*, is the only species in this genus found in Western Australia, and represents a significant range extension and first record in Australia. Most *Cirrhigaleus* sharks are clearly separable from other squalid sharks by the presence of conspicuous barbels on the anterior nasal flaps. *Cirrhigaleus barbifer* may be distinguished from its close relative *C. australis* by the structure of the CO1 gene and key measurements. In addition, this is only the second record of a pregnant female of *C. barbifer*, with pups in an advanced stage of development. New data on the reproductive biology and range of *C. barbifer* are revealed.

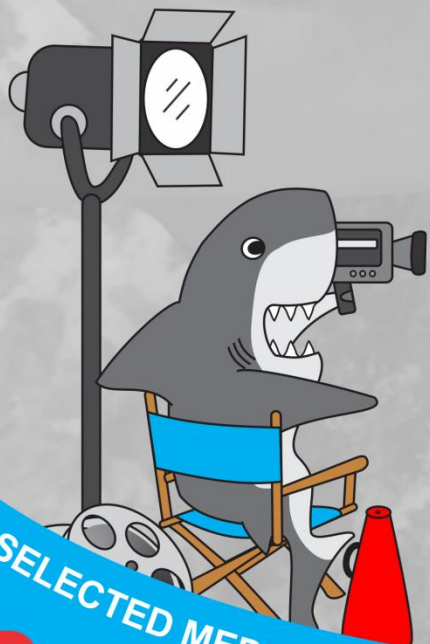
Kempster, R. M., Hunt, D. M., Human, B. A., Egeberg, C. A. and Collin, S. P. (2013) First record of the mandarin dogfish *Cirrhigaleus barbifer* (Chondrichthyes: Squalidae) from Western Australia. *Marine Biodiversity Records*.



1 cm

Media Coverage

As scientists, we believe it is important for us to facilitate good communication of our research findings to ensure the effectiveness of future conservation and management plans. We regularly speak out for the protection of sharks and rays in the international media to spread awareness and share our expert knowledge with the public. In 2013, we appeared in two international documentaries, a number of major newspapers and magazines, and took every available opportunity to speak out for the protection of sharks and rays.



BBC Nature
Discovery Channel
National Geographic
New Scientist
Wired
Channel 4 (UK)
ABC News
The Huffington Post
Live Science
Science Alert
NBC News
New York Times
Australian Geographic
PLoS One
(90+ other articles)



How To Prevent Shark Attacks

“There have been renewed calls for a cull of large sharks to protect ocean users (in Western Australia). Environment minister Greg Hunt has said he wants to reduce the risk of attacks. So what is the best way to reduce that risk?”

There is no denying that each of these events is a tragedy and our sympathy is, of course, with the family and friends of the victims. However, based on statistical data, the number of shark related fatalities is negligible when you consider the vast and increasing number of swimmers entering our coastal waters every year.

Research has shown the number of shark bite incidents occurring each year appears to be directly related to the amount of time people spend in the sea. Given that Western Australia has the fastest population growth of any Australian state, there is likely to be an increasing number of people venturing out into our coastal waters every year. Thus, the likelihood of someone encountering a shark increases and with it a corresponding increase in shark bite incidents.”

“How to prevent shark attacks” *The Conversation*. November, 2013. www.theconversation.com





Shark Repellent Progress

"In 2013, we met with the WA Premier, Collin Barnett, and the WA Chief Scientist, Lyn Beazley, to share with them our research progress and future directions.

Since being awarded funding from the WA State Government to investigate shark repellents we have worked tirelessly to better understand the sensory biology of sharks to find the most effective (non-lethal) solution to protect people in the water.

As part of our commitment to the WA Government, we released video footage of our research progress showing a couple of potential shark repellent solutions including bubble curtains and electric fields.

We still have a long way to go before we finish our research and when we do, all of our results (effective or not) will be made available to the WA Government and published in peer reviewed journals."

"The shark repellent solution". October, 2013. Support Our Sharks Blog. www.supportoursharks.com



Shark Experts Oppose WA Shark Cull Policy

"In 2013, the Western Australian Government announced new measures to reduce the risk of shark attacks. The measures proposed go significantly beyond that employed anywhere else in the world. The proposal includes the establishment of monitored areas of the WA coastline where any shark larger than 3m will be killed if they enter, including endangered species and species not even considered to be dangerous to humans.

Given the lack of consultation with shark experts, Dr. Ryan Kempster, shark biologist and Founder of Support Our Sharks, drafted an open letter to the WA Government calling on them to reconsider this policy in favour of a non-lethal approach to shark management. The letter has since gathered the support of over 100 shark scientists and professionals who work with sharks, all of whom are opposed to the WA Government's shark cull policy. In addition, a public petition, started by shark biologist Dr. Barbara Wueringer, gathered the support of over 75,000 people opposed to the new policy.

In the open letter, Dr. Kempster highlights an alternative approach that the WA Government can take, which involves capturing, transporting and releasing large sharks offshore and away from popular beaches and surf breaks, an approach recently trialled in Recife, Brazil. This approach has been extremely effective in reducing the incidence of shark bites in protected areas, but without the indiscriminate killing of sharks and other marine life."

"100+ Shark Experts Oppose WA Shark Cull Policy in Open Letter". December, 2013. Support Our Sharks Blog. www.supportoursharks.com



Online Impact

SOS has built an international reputation as a leading source of science-based advocacy for sharks. In 2013, we had our biggest year so far, with over 64,000 visitors to the SOS website, more than double than the previous year. We also gained more than 1,200 new members to the SOS email list, and over 24,000 views of SOS films. With the help of many passionate volunteers, we have been able to share our work with people across the world in more than 180 countries.



- 35% USA
- 30% Australia
- 9% UK
- 5% Canada
- 21% 181 Other Countries

SOS MEMBERS

1,249

New members of the SOS email list in 2013
(1,809 total members)

SOS FILMS

24,948

Views of SOS films in 2013
(60,459 total views)

SOCIAL MEDIA

23,703

Facebook likes in 2013
(31,902 total likes)

Meet the Team

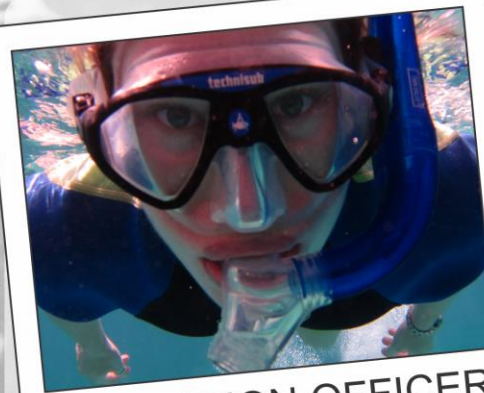
Shark biologist, Dr. Ryan Kempster, founded SOS to share his knowledge and expertise about sharks and to inspire others to protect these ecologically and economically important species. With his partner, marine biologist Channing Egeberg, they are continuing to reveal new insights into the secret world of sharks and rays through innovative research projects. They work hard to inspire the next generation of scientists and conservationists through science-based advocacy.



FOUNDER

Dr. Ryan Kempster
Shark Biologist & Founder of SOS

Ryan is a sensory biologist specialising in the function of the electrosensory system of sharks and rays. His ultimate goal is to refine and improve shark repellent devices to keep us, and them, safe in the water. Sharks have always been Ryan's passion and protecting them his goal. To do this, Ryan has embarked on a career in research to better understand sharks and communicate his findings with the general public. He hopes to inspire others to follow in his passion for protecting these ecologically and economically important animals.



EDUCATION OFFICER

Channing Egeberg
Marine Biologist & SOS Education Officer

Channing has worked all over the world supporting our marine life, from protecting sea turtles in Costa Rica and Australia to rehabilitating marine mammals in California. She enjoys working with children to ensure that they understand the importance of the world's oceans and appreciate its inhabitants. Channing is passionate about conserving our marine environment to ensure the survival of our oceans and the health of our planet.

Katherine Reed
Featured SOS Volunteer

Katherine Reed has been with SOS since 2011, when she joined the team as one of our social media administrators. Katherine is a dedicated marine advocate with a particular passion for sharks. Since she joined us, Katherine has been extremely active in her shark conservation outreach activities. Along with her work with a number of other conservation groups, Katherine is inspiring a whole new generation of ocean advocates.



© Katherine Reed
FEATURED VOLUNTEER



VOLUNTEERS

Support Our Sharks has been extremely active through social media, but this has only been possible thanks to the many people who have contributed their time and incredible passion for supporting our work to protect sharks. These people truly are the unsung heroes of shark conservation and everyday continue to fight for sharks in all corners of the globe. Thank you to all of our social media admins that have, and still to this day, contributed their time, for free, to Support Our Sharks.

Our Supporters

We would like to thank all of the organisations and individuals that supported our work in 2013. Only with your help and support can we achieve our mission to promote better protection for sharks and rays. We have achieved so much over the past 12 months, but we have even bigger plans for 2014. We hope that we can continue to rely on your vital support in the future.

Oceans Downunder

www.oceansdownunder.com

Oceans Downunder provides people with inspiring and unforgettable experiences with sharks and other marine life. Their aim is to show people the other side of sharks, without all the fear. They are very passionate about sharks and aim to educate and share their passion with you. We really appreciate their support and thoroughly encourage you to take the plunge on one of their many diving trips to experience, first hand, the beauty and awesomeness of our ocean's top predators.



OCEANS
DOWNUNDER

ONEILL Art

www.nickoneillart.co.uk

Nick is a British artist who specialises in contemporary marine art. Growing up among a family of divers, his passion for the sea grew during holidays to destinations by the Red Sea, Caribbean Sea, Atlantic and Indian Oceans. Nick's artwork is helping to inspire a whole new generation of marine advocates by capturing the beauty and power of some of the ocean's most captivating marine species. Thank you so much for your support Nick, we love what you do and hope to work with you again in the future.



Amok Island

www.amokisland.com

Amok Island is an artist living in Perth, Western Australia. On land, you can find his super-sized murals painted on public walls. If you search below sea level, you could come across one of his large concrete letter sculptures, slowly being covered by sea life. From his studio in Inglewood, Amok Island paints large colourful canvases depicting fish, landscapes and food. We would like to thank Amok Island for creating such awesome art work and we hope you continue to inspire people for many years to come.

Shark References

www.shark-references.com

Shark-References is an online database that contains a scientific bibliography of recent and fossil sharks, skates, rays and chimaeras (cartilaginous fishes). The database started in June 2009 with a collection of about 1,000 scientific quotations. Since then, it has continued to expand, and now holds more than 19,000 references. In the beginning, the concept was intended as a scientific bibliography only, but has since expanded greatly. We would like to thank Shark-References for their help and support throughout 2013 and wish them every success in the future.

Shark
References.com

shark-references
2009-161616062

Literaturdatenbank

Individual Supporters

Ali Gholami

Andrew Peirce

Angela Pellegrini

Bryn Warnock

Christopher Catalano

Claire Sutherland

Claudia Stamenkovic

Daniel Rees

Danielle Miecznik

Derek Lea

Elena Brand

Elizabeth Duke

Ellyse Quelch

Erica Kopf

Gavin Jack

Haxley Gomez Vigil

James Brown

Jason Unger

Javier Romero Checa

Jess Ew

John Wood

Jonny Miller

K Wilson

Karen Lagalla

Karsten Hilbich

Kathleen Patterson

Kayla Ellis

Leslie Sims

Liam Jensz

Maria MacPherson

Mark Clapham

Maureen Schiener

Michael Green

Michelle Howarth

Nick Greally

Patrick Schniegeler

Paul Stillwaggon

Petr Smilauer

Rebekah Brown

Renae Donnelly

Renato Soppelsa

Rickard Lundgren

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Tanya Chiplin

Tracy Boyer

Zaneta Havelkova

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