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*Shark Spotters is a South African registered Non Profit Organisation (NPO-060-390) and Public Benefit Organisation (PBO-930037421) funded by the City of Cape Town and the Save Our Seas Foundation.*



## INTRODUCTION

Although rare, shark attacks are traumatic events that have far reaching social and economic effects on local communities. Tourism and local businesses suffer as people no longer wish to partake in recreational water activities and so visitor numbers to beaches drop. Recent studies have shown a significant reduction in the number of water users at two popular Cape Town beaches for up to three months following a shark bite (Engelbrecht 2017).

To mitigate these effects, governments often respond to shark bite incidents with knee-jerk reactions, implementing extreme measures, such as banning all bathing/surfing (Reunion), catch and kill orders (Australia), or culling programs (Australia and South Africa). These measures are not sustainable and can have serious detrimental environmental effects, especially those which impact threatened or vulnerable species, such as great white sharks. These environmentally destructive mitigation measures could lead to further negative impacts on the eco-tourism sector if charismatic species are killed (either intentionally or as bycatch).

Shark Spotters is a pioneering shark-safety program that has attracted local and international attention because of the novel way it seeks to reduce conflicts between people and sharks in Cape Town. Shark Spotters finds a balance between recreational water-user safety and white shark conservation through pro-actively reducing negative shark-human interactions, by using spotters and an exclusion barrier. We also conduct applied research on shark ecology and behaviour, raise awareness about shark conservation issues, conduct proactive and reactive coastal conservation interventions and provide employment opportunities and skills development for previously-disadvantaged individuals. Since 2004, Shark Spotters has significantly reduced the risk of shark bite at its operating beaches and made a tangible positive contribution to marine conservation in our area.

Shark Spotters is a unique, socially and environmentally responsible initiative that protects beach tourism, the local economy and the environment from the negative repercussions of shark bite incidents as well as actively conserving and rehabilitating our marine environment from human-induced impacts.



(c) Sean Geer

## ORGANISATION OBJECTIVES AND ACTIVITIES

***Shark Spotters vision is the sustainable coexistence of people and sharks in our oceans***

After a spate of shark bites in 2004 and an increase in shark sightings close to popular beaches, Shark Spotters developed out of a need driven at the community level to increase beach safety in order to protect local business and tourism activities. Shark Spotters has provided effective and environmentally responsible shark safety services to water users in Cape Town ever since. Since its inception, its activities have expanded to address multiple marine conservation issues in our area.

### KEY OBJECTIVES:

- Reduce the risk of shark bite using effective non-lethal, environmentally responsible methods.
- Conduct applied research on great white sharks to inform public safety policy, management and education.
- Promote education and awareness of shark and ocean related issues (safety and conservation) by providing fact-based, objective and informed information to the public in a non-sensational way.
- Conserve and protect marine resources.
- Provide employment and skills development opportunities for previously disadvantaged South Africans.

### ACTIVITIES:

#### ***Shark Spotting:***

Shark spotting is a proactive, early-warning shark-safety service provided at 8 strategic beaches around Cape Town where there is a high spatial overlap between people and sharks. It uses continuous visual surveillance by trained observers (spotters) to detect sharks and prevent negative interactions between sharks and recreational water-users.

Spotters scan the water looking for sharks using polarized sunglasses and binoculars. When a shark is seen a siren is sounded and flag is raised, signaling to water users to leave the water and only return when the appropriate all clear signal is given. Shark Spotters uses a system of four informative flags on every beach to communicate the current shark status and spotting conditions to the public.



With over 3,000 shark sightings recorded by the program since its inception, Shark Spotters has significantly reduced the risk of shark bite at our operating beaches, providing safer swimming and surfing areas for visitors and locals alike.

### ***Shark Exclusion Barrier***

Shark Spotters operates a one-of-a-kind shark exclusion barrier net in an area of Fish Hoek beach.



The exclusion net forms a complete barrier from the sea surface to the sea floor that completely encloses an area (the size of three soccer fields) and prevents sharks and other marine animals from entering the “exclusion zone”. It is a unique design of shark exclusion barrier, specifically designed to have minimal environmental impact and be adaptable to changing weather conditions. Unlike traditional shark barriers, which are rigid structures permanently fixed in position, this barrier is deployed and retrieved on a daily basis – the only one of its kind in the world.

The net has been operating since March 2013 and since that time it has proved to be a cost-effective, environmentally and socially responsible, non-lethal shark bite mitigation measure with strong public support.

### ***Research:***

Our ground-breaking applied research is focused on inshore shark presence and behavioural ecology in Cape Town to inform public safety policy, conservation and management strategies and education and awareness. We drive an adaptive management approach to human-shark conflict which is responsive to conflict and proactive in using research and best practices. Shark Spotters also collates shark bite information and respond to all local incidents to collect factual and objective information.



We have published our results in multiple peer-reviewed journals and technical reports and presented at numerous scientific conferences.

**Education:**

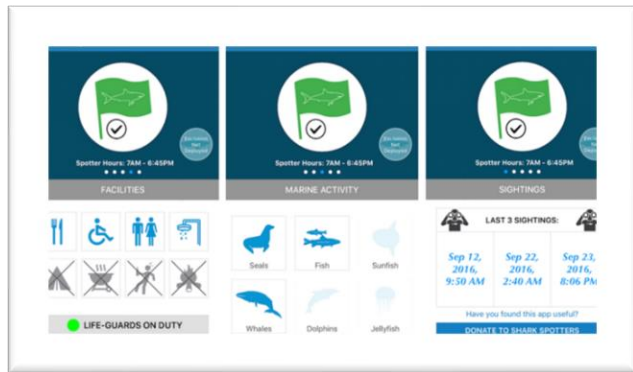
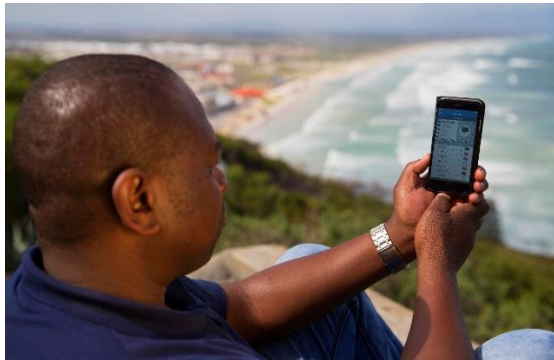
Education and awareness is key to a successful shark-safety strategy and we work hard to provide factual, non-sensational information about sharks and shark-safety to visitors to our beaches so that they can make informed decisions about risk when entering the water. We also aim to foster a greater understanding of sharks and their important role in the ecosystem in order to change people's perspective of sharks, from fear to acceptance.



Our Information Centre on Muizenberg beach serves as an interactive space for members of the public to connect with the program and access information about sharks and all aspects of marine conservation, seeing thousands of local and international visitors every year. We also perform numerous educational outreach activities in our surrounding communities, reaching +/- 3,000 participants directly and many thousands more through festivals and exhibitions we participate in. We have developed a marine safety and conservation education program for all ages, from pre-primary to University level, with many aspects aligned with the South African CAPS curriculum.

In 2016 we launched our unique Shark Spotters mobile application, the only app in the world that provides real time shark-safety information and other beach conditions for all our operating beaches. This is an invaluable tool for visitors to the area to ensure they have the most up to date

information about shark risk before visiting the coast. We have had over 19,000 downloads of the app to date.



### ***Coastal Rehabilitation:***

In 2019, Shark Spotters identified the need for more practical interventions to conserve our coastline from human impacts, and therefore started a “Coastal Conservation Team”, working in partnership with the City of Cape Town to conduct proactive and reactive conservation activities that make a significant positive impact on our fragile coastal environment. These activities include sand dune stabilisation, rehabilitation and planting, removal of ghost fishing gear, vessel waste and other pollution from the coastal zone, management of stormwater outlets at the beach interface to reduce land-based pollution entering the sea, repair and removal of damaged coastal infrastructure after swell/storm damage, ocean water quality testing, responding to stranded animals and more. Their presence helps ensure our coastal habitat is protected from human degradation as well as the effects of climate change, and that our oceans remain healthy for sharks and other marine creatures.



### **JOB CREATION AND SKILLS DEVELOPMENT**

We employ 25 spotters, 10 exclusion net crew and 6 coastal conservation crew, all of whom come from previously-disadvantaged communities in our operating areas. Our focus on job creation and skills development has led to significant personal growth and development of our spotters. With a low staff turnover and high investment in the individual we have empowered the spotters, increasing their self-worth and fostering a passion for sharks and the ocean which they share with their own communities as well as local and international visitors they engage with on the beaches.

Furthermore, the vast majority of our staff are the primary breadwinners in their households, meaning that the Shark Spotters program directly supports over 120 individuals. We strive to pay a decent living wage to our staff to ensure their unique skills are adequately recognised and they are able to support those that depend on them.



## **SERVING COMMUNITIES**

The steering committee of our NGO comprises representatives from the beach and water user communities in which we operate, who provide guidance and oversight for the organization. This ensures that our aims and objectives are always aligned with the needs of the communities we serve, and that we can receive regular feedback from the direct beneficiaries of our program, ensuring community participation at all levels.

## **PARTNERS**

Shark Spotters is an independent, formally registered Non Profit Organisation (NPO-060-390) and Public Benefit Organisation (PBO-930037421) in South Africa. It is primarily funded by the City of Cape Town and Save Our Seas Foundation, who provide 70% and 20% of the operating funds for the program, respectively. The remaining 10% is raised through public and corporate donations, as well as fundraising events and sales of merchandise.

Shark Spotters works amongst a network of organisations locally to ensure beach safety and conservation including the National Sea Rescue Institute, Lifesaving South Africa, City of Cape Town Disaster Risk Management, Emergency Medical Services, Two Oceans Aquarium Education Foundation, South African National Parks and others. Collaboration is key to the success of our programme

Our academic partners involved in our research program includes the University of Cape Town, South African Institute of Aquatic Biodiversity, Two Oceans Aquarium, South African National Parks and others.

## ACHIEVEMENTS

Shark Spotters has been successfully reducing the spatial overlap between people and sharks in the waters around Cape Town for over 17 years. This has been achieved through our spotting program and the deployment of the Fish Hoek shark exclusion barrier. Since 2004 we have recorded over 3,000 shark sightings, of which 53% resulted in temporary beach closures, immediately reducing the spatial overlap between people and sharks, thereby mitigating the risk of a shark bite. Our environmentally responsible shark exclusion barrier has been deployed over 1,000 times and is well supported by the local community. The success of the programme has been corroborated by a study by Engelbrecht et al (2017), which showed that Shark Spotters is achieving its objective of mitigating shark risk by getting people out of the water using visual and auditory warnings following a high-risk shark sighting.

Over the years we have focused heavily on engagement with the public, fostering support and appreciation for shark conservation and coexistence through interactions with people of all ages and backgrounds at our Info Centre, as well as through social media campaigns, blog posts, the Shark Spotters app, and finally through our education programme, which engages learners and students across a range of age groups from pre-primary school to tertiary and post-graduate levels. We reach thousands of local youths annually, educating them on the importance of shark safety and conservation, how to be ambassadors for responsible ocean use, and the importance of conserving our natural marine biodiversity.

We have now taken the next step in conserving the integrity of our marine environment through the development of our Coastal Conservation Team, actively rehabilitating and protecting the coastal ecosystem from human induced damage. This is critical to marine conservation as ecosystems are all connected, and the impact that humans have on our coastal zone compromise the health and resilience of our ocean ecosystems.

Our programme is strengthened by the strong partnerships formed with other safety and conservation bodies, as well as schools and academic institutions, allowing us to share resources and consolidate efforts in order to have a greater impact. Our research programme has developed from initially focusing on the behavioural ecology of white sharks in False Bay, to a multi-species, multi-disciplinary programme that has recruited multiple Honours, Masters and PhD students who have successfully investigated a range of research questions; from shark behaviour and ecology to the human dimension of shark safety and co-existence. This has resulted in the successful submission of several theses, as well as the publication of multiple scientific papers and popular science articles. These important research findings all feed back into education and awareness campaigns, adaptive management, and guiding future research priorities and directions.

We have also formed collaborations with local and international academic organisations that allow us to engage with other scientists cooperatively towards shared solutions to human-wildlife conflicts and conservation challenges. This is especially important during this period of unusually low shark activity as collaboration with white shark scientists along the whole South African coastline is vital to truly understand any changes in white shark population numbers and the possibility of anthropogenic impacts on their distribution and abundance.



In addition to our core mandate activities, Shark Spotters has now become a household name in Cape Town as the go-to people for beach related issues. As the only organisation operational on the beaches 365 days a year, from sunrise to sunset, we have become the first responders for a multitude of coastal emergencies, from being official rescue points for turtles (in collaboration with Two Oceans Aquarium) and seabirds (with SANCCOB), to coordinating marine mammal rescues or carcass removal, to nurdle spills, sewerage leaks, major pollution events and more. We even provide non-conservation related services to the public such as first aid, lost property, lost children, law enforcement issues and more. By contributing to the natural and social upliftment of the coast and its users we believe we are acting as role models to the wider community, ensuring people have safe and enjoyable interactions with the coastal zone, in the hope that this will inspire them to protect it themselves.

Shark Spotters has also been internationally recognised as a pioneer and leader in non-lethal shark mitigation, and continues to provide consulting and advisory services to a number of different stakeholders in high shark conflict areas in South Africa around the world, including Reunion Island, Australia and the United States. Many of our recommendations and templates for public awareness and education have been implemented in these areas. Shark Spotters remains involved in a number of advisory panels and working groups locally and internationally, towards finding solutions to human-shark conflict and achieving coexistence between sharks and people.

Through many years of hard work we have changed peoples perceptions of sharks, from fear to understanding, and were instrumental in the global shift to move away from traditional lethal control towards more sustainable shark safety solutions. On a local scale, we have seen a big change in the public and the media's response to shark sightings and shark bite incidents thanks to the education and awareness campaigns of our organisation.

We believe that to achieve sustainable conservation, humans and the environment need to be considered together. Shark Spotters is the only initiative of its kind in the world and a world-leader in sustainable shark-bite mitigation. It combines cutting-edge non-lethal shark-bite mitigation measures, public education and ground-breaking applied research to improve beach safety, conserve our fragile marine environment and protect communities and beach tourism.

The programme's philosophy of a holistic non-lethal approach to finding a balance between people and sharks and conserving our oceans has proved to be very effective is one that we believe should be emulated in other areas currently using unsustainable and environmentally destructive lethal shark-control measures and dealing with human-induced coastal degradation.

## **SUPPORTING REFERENCES**

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## SUPPORTING ARTICLES

- New Yorker: <http://www.newyorker.com/tech/elements/sharing-the-sea-with-sharks>  
“Many cite Cape Town’s Shark Spotters program as a **gold standard** because of its emphasis on observation and education: community members on beachside cliffs use flags and alerts to keep the public informed of shark sightings.”
- South African Mail & Guardian: <http://mgafrica.com/article/2015-01-25-south-africas-sharks>  
“South Africa's 'shark spotters' help secure country's position as **leader** in big fish's conservation”