

# Chapter 17: Shark Safety

## 1. Introduction

White sharks (*Carcharodon carcharias*) occur naturally along Cape Town's coastline and aggregate seasonally at select coastal sites, some of which are human recreational areas. This overlap and the predatory nature of white sharks, results in some sharks biting humans. The global number of white shark attacks has increased gradually, as it has in Cape waters and this increase is largely attributed to increasing human use of the ocean for recreation, as well as improved reporting.

False Bay, in particular has been identified as a critical feeding habitat for large, maturing white sharks, which are present year-round. Research has shown that white sharks aggregate around Seal Island from autumn until spring (March/April to September/October) which corresponds with the time the seal pups spend prolonged periods in the water, learning to catch their own prey. The pups are weaned by August/September, and then disperse and become increasingly difficult to catch, after which the sharks leave the vicinity of the island and move closer inshore, often swimming parallel to the coastline where they predate on seasonally abundant summer gamefish and smaller sharks. It is therefore in the spring and summer months (October–March) that sharks are most likely to be seen off beaches in False Bay.

Records indicate that over the last six years, the highest number of interactions between white sharks and recreational beach users has occurred between mid-August and the end of March. This seasonal presence inshore is not a recent phenomenon, nor is it unique to False Bay. Similar behaviour has also been recorded in Gansbaai, Mossel Bay and abroad in California, Mexico and Australia.

## 2. General Principles

The City of Cape Town adopts the following general principles as part of its shark safety approach

- 2.1. Risk Reduction:** The City recognises that it is not possible to completely eliminate the risk of human-shark encounters; accordingly, a risk reduction approach has been adopted. This approach focuses on providing an early warning system that alerts beach users to the presence, or potential presence, of sharks in the vicinity, and allows beach users to make informed choices about their water use.
- 2.2. Shark Conservation:** The City of Cape Town is committed to the conservation of shark species found along its coastline as part of the City's coastal biodiversity approach. Accordingly, the City has committed to only using shark safety measures that will not have a negative impact on marine life or marine ecosystems, including sharks.
- 2.3. Research:** Research into shark movement and behaviour along Cape Town's coastline forms a fundamental part of risk reduction activities. By gaining a greater understanding of shark behaviour, the City is able to implement more targeted programmes.

### **3. Shark Spotting programme**

#### **3.1. History**

The Shark Spotting Programme was initiated in 2004 in response to an increase in shark sightings close to popular beaches, as well as a series of high profile shark attacks. The programme was started by members of the water using community in Muizenberg and Fish Hoek and remains a community driven program.

Subsequently, in 2005, the City of Cape Town assisted in the formalisation of the Shark Spotters as a registered Non-Profit Organisation. In 2006 the City entered into a Memorandum of Agreement with the Shark Spotting Programme providing annual funding, establishing a formal relationship and formalising the Shark Spotters as Cape Town's primary shark safety measure. A number of other organisations, including corporate sponsors, contribute to the programme on an annual basis. The Save Our Seas Foundation provides annual funding to the programme and its research needs.

#### **3.2. Methodology**

The Shark Spotting programme aims to balance the needs of both people and white shark conservation by pro-actively reducing the opportunity for interaction and conflict between recreational water users and sharks. The programme has attracted international and local attention because of the novel way it seeks to find a non-lethal solution to potential conflicts between sharks and people.

Shark spotters are positioned at strategic points along the Cape Peninsula, primarily along the False Bay coastline. A spotter is positioned on the mountain with polarised sunglasses and binoculars. This spotter is in radio contact with another spotter on the beach. If a shark is seen, the beach spotter sounds a siren and raises a white flag with a black shark. When the siren sounds, the water users are directed to leave the water and only return when the appropriate 'all clear' signal is given. Shark spotters use colour-coded flags to communicate with the public regarding shark conditions on the day.

Since the programme began in 2004 more than 1600 shark sightings have been recorded at spotter beaches, with over 60% of these sightings resulting in temporary beach closures. The program has therefore been successful in reducing the spatial overlap between people and sharks, and the assumption is that reducing spatial overlap will reduce the probability of a shark attack.

In addition to improving beach safety through shark warnings, the Shark Spotting programme also provides emergency assistance in the event of a shark incident. It also provides employment opportunities and skills development for its staff that are recruited from previously disadvantaged communities.

#### **3.3. Research**

Shark Spotters conducts applied research focused on inshore white shark presence and behavioural ecology in Cape Town to inform public safety policy, management strategies and education and awareness. Shark Spotters drives an adaptive management approach to human-shark conflict which is responsive to conflict and proactive in using research and best practices.

Key objectives of the research are to:

1. describe spatial and temporal movements of sharks in Cape waters;
2. determine the influence of environmental variables on movement and behaviour;
3. determine the influence of prey availability and distribution on movement and behaviour;
4. identify population trends; and
5. actively engage with, and test where possible, shark safety technology and developments.

Shark attack information is collated and all local incidents are responded to in order to collect factual and objective information. Fact-based information is used to lead a communication strategy that aims to provide objective and informed information to the public and media around shark-human conflict issues.

The Shark Spotting programme involves close partnerships with the NSRI and SA Lifesaving and has distributed several shark attack kits to Cape Town beaches, trained spotters in emergency first aid and provides regular reports on shark presence to a range of organisations.

### **3.4. Management**

Shark Spotters is a registered Non-Profit Organisation, Public Benefit Organisation and has Section 18A registration. The core management team consists of a Project Manager, Field Manager and Research Manager. Their work is overseen by a management committee from the City of Cape Town Environmental Resource Management Department and the steering committee of the Non-Profit Organisation. The steering committee comprises representatives from the local communities that the Shark Spotting program serves, including the founding members of the organisation.

### **3.5. Locations and operating times**

Shark spotters are operational at the following coastal locations:

#### **Permanent Beaches (365 days a year):**

- Muizenberg: 8am – 6pm
- St James/Kalk Bay: 8am – 6pm
- Fish Hoek: 8am – 6pm (7am – 6.45pm in summer)
- The Hoek, Noordhoek: 8am – 6pm
- Caves, Kogel Bay - 8am to 6pm

#### **Temporary Beaches (Oct – April: Weekends, Public Holidays and School Holidays)**

- Clovelly: 10am – 5pm
- Glencairn: 8am – 6pm
- Monwabisi: 8am to 6pm

## **4. Protocol for Shark Spotters flag system**

### **4.1. SUMMARY**

- No flag = no spotter on duty
- White Flag (with a solid black shark) = shark in vicinity of water users (siren sounded) or after serious incident when beach is closed.
- Red Flag (with solid white shark) = 1 hours after a sighting or if a shark is spotted but not near water users or if there is an increased risk of shark activity.
- Black Flag (with shark outline) = poor spotting conditions in area where majority of water users are. No shark seen.
- Green Flag (with shark outline) = good spotting conditions in area where majority of water users are. No shark seen

## **4.2. FLAG SYSTEM PROTOCOL**

If there are no flags flying associated with the Shark Spotting Programme it means that there are no shark spotters on duty. At Shark Spotter beaches the mountain spotter (lookout) will upon the start of his / her shift first assess the spotting conditions before raising any flags. The spotter will take into account the glare, cloud cover, water clarity; swell and wind chop (all which affect the ability to detect sharks). Once the spotter has assessed his / her ability to spot for sharks they will request the spotter on the beach to raise the appropriate flag.

### **GREEN FLAG**

The green flag signifies good spotting conditions. This will be raised when the spotters can see clearly in the area where the majority of water users are. Please note that if for example, it is low tide and the water is clear for the first 50 metres, but there are 60 surfers at approx. 100m where the water is milky or patchy, this will not qualify for a green flag.

### **BLACK FLAG**

The black flag signifies poor spotting conditions. This flag will be raised by the spotters if they are not able to clearly see what is happening in the area used by the majority of water users. Factors affecting water visibility include: glare, cloud cover, water clarity; swell and wind chop. Please note that glare plays a significant role in reducing the spotters' ability to see clearly, particularly in early morning and late afternoon.

### **WHITE FLAG AND SIREN**

The white flag (with a solid black shark) along with the sounding of a siren will be raised when a shark is seen in the vicinity of water users and is assessed to pose a potential threat to water users. The spotter will take into account the shark's distance from the water users, its swimming speed and direction of travel. The shark siren will also be sounded at this time.

The white flag will remain raised for as long as the spotter has a visual of the shark in the area, whether this is a few minutes or a few hours.

Once the shark has left the area used by water users the white flag will remain raised for a short time while the spotter scans the area to ensure another shark has not entered and that the original shark does not return to the area.

Once the spotter is satisfied that the shark no longer poses a threat and there are no other visible potential dangers, the white flag will be removed and the red flag will be raised.

The white flag will also be raised after a serious incident such as a shark attack, when the beach is closed.

### **RED FLAG**

The red flag is used as a warning that a shark has recently been seen, that there is higher than usual shark activity or that there are known conditions for high shark activity.

The red flag will be flown every time after a shark has been seen, for one hour. Provided no other sighting is recorded during that time, after one hour the red flag will be taken down and either the green or black flag will be raised depending upon spotting conditions. If a second shark is seen within the hour following the first sighting, the red flag will remain flying for a further hour from the time the second shark left the area.

If a shark is spotted that is far from the area used by water users, and poses no potential threat to water users, instead of clearing the beach and putting up the white flag, the spotters will raise the red flag for one hour, but not clear the beach.

The shark sightings are monitored daily and trends and patterns can be identified. This allows for the early detection of sudden increases in shark activity. In the event that more than five shark sightings are made at a specific beach on one day, the red flag will be flown as a warning to water users that there is increased shark activity in the area. If shark activity at adjacent beaches is even higher than five shark sightings and the sharks are observed in hunting behavioural modes i.e. chasing schools of fish or seals, then the red flag will be strongly considered for adjacent beaches, especially if there is poor visibility. It's important to remember that this is a dynamic system and therefore each situation will be assessed in conjunction with managers, scientists and local authorities with the public's safety as the top priority.

Furthermore, the red flag will be flown when the conditions are conducive to increased shark activity, such as (but not limited to) cetacean strandings which are proven to attract sharks to the area, the presence of large schools of migratory fish e.g. yellowtail or white steenbras which attract large sharks.

## **5. Shark Exclusion Net**

The City is currently in the process of piloting a shark exclusion net at Fish Hoek beach. If deemed successful, the use of an exclusion net at Fish Hoek beach could become a permanent safety measure. It should be clearly noted that the deployment of an exclusion net at Fish Hoek Beach would at no time replace the existing Shark Spotting Programme.

The exclusion net is 350 m long, made out of HDPE twine and has a small mesh (45 x 45 mm), hung on the flag (i.e. square as opposed to a "diamond" profile, to reduce the risk of entanglement of marine animals such as whales, dolphins, sharks etc. It forms a complete barrier from the seafloor to the surface, and encloses an area of ~0.023 km<sup>2</sup>. Unlike traditional shark barriers, which are permanently fixed in position, the Fish Hoek exclusion net is deployed and retrieved daily to further minimise the risk of entanglement of marine animals and reduce any potential negative physical impacts on the environment. This means that the Fish Hoek exclusion net is globally unique.

The deployment of the exclusion net is dependent on:

- The weather and sea conditions being suitable
- The presence of whales and dolphins in the bay
- Trek fishing activities

A research permit was granted by DAFF and DEA in February 2013 for the trial operation of the exclusion net. The City of Cape Town, in conjunction with the Shark Spotters, was able to start trials towards the end of March 2013. These trials have been largely successful, and have been a critical learning experience for the City of Cape Town and the Shark Spotters. The research permit expires at the end of April 2014.

In mid-2014, the City will be entering into a review process to determine whether or not exclusion nets will be adopted as permanent shark safety measures in Cape Town. This determination will be made by the Department of Agriculture, Forestry and Fisheries, and Department of Environmental Affairs.

### **5.1. Exclusion Net Operating protocols**

The following exclusion net operating protocols are in place:

- 1) Prior to deployment each morning the spotters will confirm with the trek net fisherman whether yellow tail are in the bay or have been sighted in close proximity to the bay.

- 2) When yellow tail are in the bay or in close proximity to the bay, the net will NOT be deployed so as to minimise impacts on fishing success
- 3) If the net has already been deployed and yellow tail move into the bay, the net will remain in position and not be removed
- 4) Any presence of whales or dolphins in the bay or in close proximity to the bay will delay the deployment of the net until such time as the animals have moved off on their own will
- 5) If whales or dolphins move into the bay after deployment, the net will remain in place. In this situation the rubber duck will be launched and will gently herd the animals away from the net
- 6) In the event of an entanglement, the Whale Disentanglement Network will be notified and they will assume full control and authority of the rescue and disentanglement

## **6. Beach Closures**

The City will close beaches and swimming to the public under the following circumstances. Where a beach is closed the White Shark Flag will be flown:

- In the event of a shark attack, the beach and surrounding beaches will be closed until such time as the City deems it safe to reopen beaches
- In the event of whale strandings or the presence of a whale carcass.
- In any circumstance where the shark risk is considered high

The City will issue a general shark caution and warning:

- High presence of white sharks on the inshore
- The Red Flag will be flown as a caution to all users

## **7. Shark Attack Emergency Response**

In the event of a shark attack the following emergency response will take place:

- City's Disaster Risk Management to notify and alert:
  - o Environmental Resource Management (ERMD)
  - o Safety and Security
  - o Sport, Recreation and Amenities
- NSRI, Western Province Lifesaving and Shark Spotters to coordinate rescue/retrieval of the victim and medical response
- The beach where the attack occurred as well as surrounding beaches as determined by ERMD to be closed to the public. Law Enforcement to ensure and assist
- City to release press statement informing the public and indicating beach closures
- ERMD to lead the completion of a detailed Shark Attack Report compiled after collection of all relevant data and information
- Shark Attack report to be released by the City (once approved) for public information
- Shark Attack form for the international database to be completed by the Shark Spotting Programme
- Beaches re-opened once immediate risk has passed

## **8. Communication**

General public awareness and information is key to:

- Reducing shark attack risk

- Ensuring a reasonable and objective public response to shark issues
- Empowering individuals to make informed decisions for themselves
- Reducing risk behaviour

In this regard the City and the Shark Spotters will communicate on an ongoing basis on all shark related issues in the following way:

- 1) Shark Smart Sign Boards at all beaches (Annexure A)
- 2) High Risk Shark Sign Boards (Annexure B)
- 3) Shark Spotting Information Boards (Annexure C)
- 4) Public press releases when required to issue a general shark caution
- 5) An annual press release in August to remind beach goers of the inshore movement of white sharks during the summer period
- 6) Daily updates on shark spotting via Twitter and Facebook through the Shark Spotting Programme – <https://www.facebook.com/SharkSpotters> and @SharkSpotters
- 7) Daily notification by Twitter and Facebook indicating when the exclusion net has been deployed

## **9. Roles and Responsibilities**

The City of Cape Town's Environmental Resource Management Department manages and directs the City's shark safety programmes. The City of Cape Town is additionally responsible for providing primary funding for the Shark Spotting programme.

## Annexure A

# BE SHARK SMART

## INFORMATION

- Great White Sharks naturally occur in these waters all year round
- Great White Sharks are predators, and are dangerous animals
- Encounters with sharks are rare, but please remain alert
- Great White Sharks are known to use the inshore area
- Great White Sharks are an important part of the natural marine environment

## INLIGTING

- Witdoodhaaie kom regdeur die jaar natuurlik in hierdie water voor
- Witdoodhaaie is roofvisse en dus gevaarlik
- Haaivoorvalle is skaars maar wees asseblief versigtig
- Witdoodhaaie kom van tyd tot tyd naby die kus voor
- Witdoodhaaie vorm 'n belangrike deel van die natuurlike see-omgewing

## INGCACISO

- Kukho ooKrebe abaNkhulu abaNhlophe kule ndawo unyaka wonke
- OoKrebe abaNkhulu abaNhlophe ngawona marhamncwa aqwengayo yaye zizilwanyana eziyingozi
- Anqabile amathuba okudibana nooKrebe kodwa ncedani nihlale nilumkile
- OoKrebe abaNkhulu abaNhlophe bayaziwa ngokuthanda ukudada kwindawo ekufuphi nonxweme
- OoKrebe abaNkhulu abaNhlophe bayinxalenye ebalulekileyo kwimeko-bume esingqongileyo yendalo yaselwandle



## SAFETY TIPS

### DO

- Swim, surf, surfski, or kayak in groups
- Swim close to shore / in waist deep water
- Consider using a personal shark shield for surfing or kayaking

## VEILIGHEIDSWENKE

### MOETS

- Swem, branderplankry, branderski of kajakroei in groepe
- Swem naby aan die kus of in middeltyf-deep water
- Oorweeg dit om 'n persoonlike haaiskild te gebruik wanneer jy kajakroei of branderplankry

## INGCEBISO ZOKHUSELEKO

### OMA UKWENZE

- Dadani, nityibilize ngamaplanga, okanye ngekayak ningamaqela
- Dadelani kufuphi nonxweme / emanzini ama esinqeni
- Kungaluncedo ukusebenzisa ikhakha lokuzikhusela kookrebe xa nisiya kutyibiliza ngamaplanga emanzini okanye ngekayak

## DO NOT

- Swim at night or if bleeding
- Swim, surf, surfski or kayak where birds, dolphins or seals are feeding, or where people are fishing

## MOENIE

- Moenie saans swem of wanneer jy bloei nie
- Moenie swem, branderplankry, branderski of kajakroei indien voëls, dolfyne of robbe daar naby vreet of mense daar naby visvang nie

## OMA UNGAKWENZI

- Ukudada ebusuku okanye xa usopha
- Ukudada, ukutyibiliza ngamaplanga, ukudlala emanzini okanye ngekayak kufuphi nendawo ekutya kuyo iintaka, amahlengesi okanye iintini zolwandle, okanye kufuphi nendawo ekulotywayo kuyo

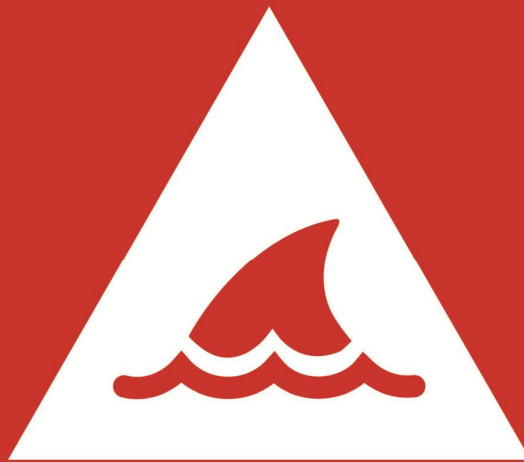
**EMERGENCY NUMBERS / NOODNOMMERS / IINOMBOLO ZEXESHA LIKAXAKEKA**

**☎ 107 📞 021 480-7700 / 080 911-4357 🇿🇦 021 449-3500**



# SHARK WARNING

**HAAIWAARSKUWING / ISILUMKISO SOOKREBE**



**HIGH RISK AREA**

**HOËRISIKOGEBIED / INDAWO YOKUDADA EYINGOZI**

**SWIM AT OWN RISK**

**SWEM OP EIE RISIKO / UDADA NGOBAKHO UBUTYALA**

## EMERGENCY NUMBERS

**NOODNOMMERS / IINOMBOLO ZEXESHA LIKAXAKEKA**

**☎ 107 📠 021 480-7700 / 080 911-4357 🚓 021 449-3500**



CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

THIS CITY WORKS FOR YOU

## Annexure C

# SHARK SPOTTING PROGRAMME

## HAAIKYKPROGRAM / INKQUBO YOKUJONGWA KOOKREBE

The Shark Spotting Programme is an early warning initiative provided as a service to communities. Although effective, shark spotting can never guarantee your safety 100%. Sharks spotters are not responsible for your safety.

As 'n vroeëwaarskuwingsinisiatief lewer die haaiykprogram 'n diens aan gemeenskappe. Hoewel doeltreffend, kan haaiyk nooit jou veiligheid 100% waarborg nie. Haaiykers is nie vir u veiligheid verantwoordelik nie.

Inkqubo yokujongwa kookrebe tiphulo lokulunkisa abantu kwangeresha nebonelelwa njengenkono ehuntwini. Nangona isebenza, ukujongwa kookrebe akunakho ukugciniseka ukuba ukhuseleke ngokugqibeleleyo (100%). Amagosa ajonga ookrebe awanaxanduva lokhuseleko lwakho.

### FLAG WARNING SYSTEM

#### VLAWAARSKUWINGSTELSEL / INKQUBO YOKULUMKISA NGEFLEGI

| GREEN FLAG                                                                                                                                              | BLACK FLAG                                                                                                                                                   | RED FLAG                                                                                                                                    | WHITE FLAG                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                         |                                                                                                                                                              |                                                                                                                                             |                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"> <li>Spotting conditions good</li> <li>Haaiyktoestande goed</li> <li>Iimeko ezingelungele ukujonga ookrebe</li> </ul> | <ul style="list-style-type: none"> <li>Spotting conditions poor</li> <li>Haaiyktoestande swak</li> <li>Iimeko ezingakulungelanga ukujonga ookrebe</li> </ul> | <ul style="list-style-type: none"> <li>High shark alert</li> <li>Ernstige haaiwaarskuwing</li> <li>Isi tumkiso sooKrebe abaNinzi</li> </ul> | <ul style="list-style-type: none"> <li>A shark has been spotted - siren will sound. Leave the water immediately</li> <li>'n Haai is gesien - sirene sal loei. Verlaat die water onmiddellik</li> <li>Kubonwe ukrebe - kuza kukhaliswa ibilongo lokulunkisa. Phumani ngokukhawuleza emanzini</li> </ul> |

**USE OF OCEAN AT OWN RISK**  
**GEBRUIK DIE OSEAAN OP EIE RISIKO**  
**ULWANDLE ULUSEBENZISA NGOBAKHO UBUTYALA**

**EMERGENCY NUMBERS / NOODNOMMERS / IINOMBOLO ZEXESHA LIKAXAKEKA**  
**C 107 ☎ 021 480-7700 / 080 911-4357 🇿🇦 021 449-3500**

### DUTY INFORMATION

#### DIENSINLIGTING / IINKCUKACHA ZOKUSEBENZA KOLU LWANDLE

SHIFT TIMES / SKOFTYE / AMAXESHA OMSEBENZI

SPOTTING CONDITIONS/ HAAIKYKTOESTANDE / IMIQATHANGO YOKUBONA OOKREBE

WATER TEMPERATURE / WATERTEMPERATUUR / IQONDO LOBUSHUSHU BAMANZI

LAST SHARK SIGHTING / LAASTE HAAI WAARGENEEM / UKREBE WOKUGQIBELA UBONWE NGOWE

FOR FURTHER INFORMATION CALL 078 174 4244 OR VISIT [WWW.SHARKSPOTTERS.ORG.ZA](http://WWW.SHARKSPOTTERS.ORG.ZA)