



Sharky Shores



A surfer's worst nightmare or a species worth saving? Despite capturing the imaginations of millions of people, the dreaded Great White shark remains a mystery to us all, report THESSA BOS and ANDY BRANDY CASAGRANDE IV

With temperatures topping 30 degrees Celsius on a hot summer's day, the rolling ocean beckons surfers into the sea. While paddling out into the deep blue, a group of surfers notice a dangerous-looking grey fin slicing through the water. You'd be forgiven for thinking this was a scene taken from the movie *Jaws* but it is in fact a common occurrence at several Western Cape beaches.

As shark 'attacks' make the headlines on a regular basis, experts are baffled as to why these creatures are coming so close to the shore. Researcher Michael Scholl and his colleagues Alison Kock and Ryan Johnson study Great Whites full time and have a few ideas of their own.

Seated on his research boat *Lamnidae*, armed with a camera and notepad, Scholl explains: "A couple of years ago, in the beginning of summer, we observed several Great Whites within 50 metres of Shark Bay's beach. After returning, we sighted many sharks close to shore on a daily basis throughout summer. Aerial photographs of shallow water close to the Cape Peninsula taken after a fatal shark attack in Fish Hoek in November 2004, showed us that what we were observing was not confined to Gansbaai's Shark Bay."

Using his data on the size and sex of the sharks, and combining it with his knowledge of the Great White, Scholl has identified three possible explanations: hunting, birthing or mating.

Hunting – This theory was quashed when sharks in the shallow end of the bay showed absolutely no interest in feeding or scavenging – swimming straight through the chum slicks of cage-diving boats without responding to them.

Birthing – The Great Whites' unwillingness to feed lent credibility to his second theory. In some shark species, appetite suppression occurs during pregnancy and immediately after giving birth, in a bid to prevent mothers from eating their newborns. Moreover, many shark species make use of shallow waters to give juveniles protection from predators. The disproportionately high number of very small sharks in the bay also suggested it may be a pupping ground.

Mating – The presence of large mature sharks swimming among the young led to Scholl's third theory – their breeding. No one has ever seen Great Whites mating, but if it is similar to other sharks, it is a violent process. This would account for the high number of females with fresh bite marks visible in the bay.

But these theories remain conjecture because sharks are shrouded in mystery. A form so perfectly built that evolution has not changed its structural design for millions of years, it is the apex predator of the planet's largest domain – the ocean. It swims at the top of the food chain – the perfect monster, the perfect nightmare – but really, just the perfect shark.

According to Scholl, its nightmarish reputation is bred from a fear of the unknown. Fact is, not much is known about sharks and, true to human nature, people fear the unknown. Shark encounters draw more sensationalistic media attention than both Aids and axe murderers, yet, statistically, less than one person per year is killed by Great White sharks. One thing you can be sure of is that sharks are not deliberately targeting bony humans, but, if you happen to read the newspapers, you'd probably think otherwise. It's amazing the creative thought that goes into headlines these days, yet equally amazing is our inability to see the realities of shark-human encounters.

A spear-fisherman carrying his bloodied catch on his hip is eaten by a Great White. A woman who has been swimming every day for the past 15 years in shark-infested waters is eaten at the ripe old age of 77. How about a poacher swimming in the Great White shark capital of the world with a catch-bag full of bleeding perlemoen? And surfers and bodyboarders 'seal-ouetted' in black wetsuits and fins, ripping up the sharky swells? Is it really so strange these people encountered sharks and lost their lives? Do the laws of probability and logic not also apply to sharks?

The three most popular shark encounter theories are:

Mistaken identity – some scientists believe diver and surfer silhouettes, when viewed from below, resemble those of seals and other potential prey items. Unfortunately for us, sharks only have their teeth to taste test.

Investigative curiosity – Great Whites often investigate inanimate objects of a variety of shapes, colours and sizes – from kelp to kayaks, these sharks are curious creatures.

Lastly, there's the **hungry shark** theory – you just so happen to splash unluckily on to the menu of a famished predator. The key to preventing future incidents lies not in shark nets and culling, but in genuine research on a greater scale.

Alison Kock and Save Our Seas Foundation are currently involved in tracking the massive Great White sharks of False Bay. Acoustic tags and receivers help Alison map the seasonal swim patterns of these ambush hunters. The waters often run red around Seal Island in the winter time, when Great Whites seem to think they can fly and seals wish they could. Alison has seen her fair share of kills and thrills and continues to study the predatory and anti-predatory tactics of both sharks and seals. She also helps with the National Geographic's "Cittercam" project, attaching cameras to these aquatic acrobats to see what they see when hunting Cape Fur seals.

Scholl, founder of White Shark Trust, a non-profit organisation for research, education and conservation projects dedicated to the endangered Great White shark (*Carcharodon Carcharias*) has also been instrumental in efforts to learn more about Great White sharks. Michael has profiled over 1,000 different Great Whites around the treacherous waters of Dyer Island, just off the Gansbaai coastline and is currently pioneering long-term dorsal fin photographic identification to profile of the country's Great Whites.

This involves photographing the dorsal fin of each shark he sights from his research boat. The posterior edge of a shark's dorsal fin is cut jagged with notches that display unique patterns that serve as the shark's "fingerprint". Just as no two fingerprints are the same, no two finprints are identical. Size and sex as well as any visible scars, bite marks and tags are also recorded. Distinctive pigmentation on the dorsal fin and body are also useful in identifying individuals. The primary significance of Scholl's project is to map the population, structure and dynamics of the Great White sharks; to promote global conservation and protection of the species.

As far as Great White fans are concerned, it wasn't Hollywood actress Nicole Kidman who deserved a spot on the front pages in October, but the shark named after her. Scholl has documented many sharks in his career but was astounded when Nicole reap-



Left page: In order to gain deeper insight into South Africa's "Sharky Shores," researchers utilise somewhat daring tactics to better understand these powerful apex predators. *Bottom left:* Michael C. Scholl examines a surfboard with a Great White shark bite. Luckily, the surfer suffered no major injuries during this investigative encounter. *Bottom right:* White Shark Trust has "fingerprinted" over 1,000 individual Great White sharks in South Africa since 1997. The bottom dorsal fin on the right is Nicole's, the fastest swimming, deepest diving Great White Shark to date, who just returned from a swim to Australia.

peared at his boat nine months after she left – having swum from Africa to Australia and back, a journey of more than 20,000 kilometres. This gave the 3,8 metre shark the remarkable achievement of having completed the fastest known transoceanic return migration of any marine animal. During her lengthy swim she broke speed records, depth records – diving 980 metres – and braved icy waters as cold as 3,4 degrees Celsius. Satellite tag technology and photographic finprinting allowed scientists to record the detailed data of her pioneering journey.

This amazing discovery shows that Great White sharks are global and thus need international protection. Despite making history in April 1991 for being the first country to legally protect Great White sharks, South Africa plays a part in the growing market for shark fins. Shark fin soup is a much sought after delicacy in the East and a single bowl can fetch up to R800 on the foreign market. In January last year, seven metric tonnes of dried shark fins were confiscated in Cape Town harbour – one of the biggest recovered shipments in the world. That haul alone accounts for tens of thousands of sharks mutilated and thrown back into the sea. Money is the blade that slices this trade. Hacked, dried and packed, this gives a whole new meaning to the phrase “shark attack”.

Below: Every Great White shark has its own unique and intricate personality. Some are shy and cautious, while others are brave and inquisitive. This Great White seems to like Andy's camera – or maybe she likes Andy? *Above right:* a Great White shark breaches in False Bay



According to Dr Leonard Compagno, a shark specialist at the South African Museum in Cape Town, sharks are not as resilient to over-exploitation as other fish species are, as they have a very slow reproductive rate and produce few young. “Admittedly they nearly became extinct along with a lot of other things before the Triassic period, but now they face something that beats everything – the total predator – ourselves, and we’re hitting them very hard.”

As so little is known about the Great White ghost, it is imperative that all parties concerned redouble their efforts to promote a broader understanding of the Witdoodshaai (as it is known in Afrikaans). Astrophysicists can explore and analyse the molecular biology of invisible elements billions of miles into the universe; teenagers can speak in real time to anyone anywhere in the world with nothing more than a whisper; geneticists can map the DNA of microscopic life forms thousands of fathoms deep and we can even breath air and burn fire underwater. Yet, strangely enough, we know more about the complex ecosystems of the entire ocean than we do about this single amazing species... the Great White shark. **TE**

Andy Brandy Casagrande IV is a shark photographer/videographer and field research assistant who has contributed to several Great White shark research projects in South Africa. Even though Thessa Bos is the author of this article, she has made substantial use of Casagrande's notes and experiences.

Please Support Great White Research

To learn more about Great White shark research and conservation, please visit www.whitesharktrust.org. and www.saveourseas.com And for more Great White Shark photographs and video, as well as *The Great White Shark Song* please visit www.abc4explore.com

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