

A HISTORICAL OVERVIEW OF THE ORIGINS OF
ANTI-SHARK MEASURES IN NATAL,
1940 - 1980

Melissa Joyce van Oordt

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I declare
that this thesis has not been submitted to any other university
and
that it is my entirely own work
and
that I have given due acknowledgement of all sources.



Melissa Joyce van Oordt



Dr. Julie Parle
Supervisor


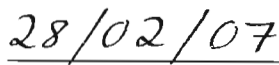


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¹ Pietermaritzburg Archives Repository (PAR), Attorney General’s Office (AGO) 1/8/47, 45A/1895, ‘Natal Water Police Point to The Attorney General: Superintendent of Water Police Reports on Danger of Sharks in Durban’, 6th February 1895.

² V. Coppleson. *Shark Attack* (Sydney: Angus and Robertson, 1988) originally published in 1958, p. 2 on “Great Whites”

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ABSTRACT

This thesis studies the origins of anti-shark measures in Natal, highlighting the relationship between beach recreation, anti-shark measures and the important influence of human perceptions of sharks. It focuses on key events such as the “Black December” when seven shark attacks occurred off the South Coast of Natal between December 1957 and April 1958; the rise of beach recreation in Natal; the role of the press (and later the electronic media) in the dissemination of the ‘man-eating’ shark myth; and the deployment of anti-shark measures off the Natal coast. The increased popularity of the beach in Natal during the 1940s and 1950s meant that the beach was frequently being used for recreational activities. However, with this increase there was an increase in shark attacks off the Natal coast. The relationship between beach recreation and shark attacks is key to this study. The first nets were deployed off the Durban beachfront in 1952. The influence of the press, the increase of popular beach recreational activities in the 1950s and the unfortunate events of “Black December” led to the deployment of the nets off the South Coast in the 1960s, and these are currently still in use. Alongside the deployment of the nets was a rise in scientific research into shark biology and anti-shark measures in the 1960s. This thesis traces shifting trends in shark research from the 1960s to the 1970s. For instance, in the 1960s, shark research focused primarily on shark biology and the ways in which the study of the behaviour of sharks could prevent shark attacks. In the 1970s, shark research shifted towards the study of anti-shark measures. Both beach recreation and shark research have influenced human perceptions of sharks. This thesis covers a period when the human perception of sharks was more hostile than it would become after the rise of marine conservation and the commercial regard for the preservation of sharks from the 1980s. It also analyses the human fear of sharks and how this fear has developed over time.

ACKNOWLEDGEMENTS:

“Whether the sea is in our blood or not, it is certain that even a smell of it does inexplicable things to us.”³

Thomas Craig, at the beginning of his thesis, stated, “this thesis topic is born from a world-wide insensitivity to the uncontrolled utilization of one of earth’s rarest and most coveted spaces, coastal space.”⁴ Although Craig’s thesis was about the creation of urban construction on the beach in 1977, I humbly agree with him that South African coastlines have fast become the centre of “urban getaways” and that human use of the ocean, until recently, has been insensitive and reckless. It is perhaps my love for the ocean that gave birth to this thesis topic. The writing of this thesis has produced the same hardship on me as the ocean has suffered at the hand of man. Yet, with passion, have I written. The sea is as much a cradle to me as the terrestrial environment is to the average person. My greatest concern and reason for embarking on this Trojan project, was for the conservation and preservation of the ocean and, in particular, sharks. Confronting problems such as limited historical written sources and merging these sources with the contemporary boom in written material on this almost magical environment frequently left me despondent.

My inspiration stems from my tertiary background at the University of Cape Town (UCT). In particular, the greatest source of my inspiration came from, Associate Professor Nigel Penn and Secretary Brenda Benneke. Without their constant support in my undergraduate years and honours year at UCT, I most certainly would not be as accomplished and as happy as I am today. A mere thank you does not emphasize the important and valuable roles that they have played within my academic career. There are no words to express my gratitude and affection.

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³ Kenneth Lindley in Thomas Craig, “Brighton Beach Complex” (B.Arch, University of Natal, Durban, 1977).

⁴ Craig, “Brighton Beach Complex”, p. 1.

probably the most stubborn student she has ever taken under her wing. I would like to thank her for nurturing both me and my project. She has taught me a great deal. I have questioned and I have grown. I am eternally grateful for both the assistance and knowledge with which she has provided me over the past two years.

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My mother, Moira, has been an angel throughout this project and patiently stood by me. Support was also received from my brother, Christopher. His endless sarcasm and cynical humour eased me through the more difficult periods of this project.

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To my lifeline, the University of KwaZulu-Natal Underwater Club and to everyone/thing affiliated with that, I breathe because of your existence. I would like to say a special thank you to Duncan Clausen.

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ABBREVIATIONS:

Anti-shark Research Association	ARA
Beach and Entertainment Committee	BEC
Cape Town Archives Repository	CTAR
Council for Scientific and Industrial Research	CSIR
Durban Archives Repository	DAR
Division of Sea Fisheries	DSF
Durban Beach Committee	DBC
KwaZulu-Natal	KZN
Natal Sharks Board	NSB
National Physical Research Laboratory	NPRL
National Archives of South Africa	NASA
Natal Sharks Board Library/Archives	NSBL/A
Oceanographic Research Institute	ORI
Pietermaritzburg Archives Repository	PAR
South African Anti-shark Research Association	SAARA
South Africa Association for Marine and Biological Research	SAAMBR
Surf Life-saving Association of South Africa	SLASA
South African Journal of Marine Science	SAJMS
South African Shark Attack File	SASA

Prologue

The emergence of beach recreation and anti-shark

measures in Natal

1900s – 1957

“Caution”¹

The history of South Africa and its seas...indicates how this country has come of recent years to take renewed interest in its marine highway and its resources. It may, therefore, be opportune to review briefly the history of the exploration of the South African seas, to state what is already known, and, above all, to indicate in what direction, and by what means, a fuller knowledge may be obtained, with a view to increase this knowledge and utilise it to the best advantage...²

These words were written by marine scientist J.D.F. Gilchrist in his article “The South African Seas”, published in 1923. In this article, which calls for a “history of the exploration of the South African seas”, Gilchrist focused largely on the fishing industry. This thesis is also concerned with a history of the South African seas, but has, as its focus, the history of the development of anti-shark measures for which South Africa, and KwaZulu-Natal in particular, has become well known. Illustrations 1 and 2 on pages 10 and 11, provide visual demographics of the area under study, namely, the Natal coastline (Durban and the South Coast). This section aims to environmentally, geographically and historically set the scene for this thesis.

This history begins with the development of the recreational use of beaches in the early twentieth century. The beach recreation industry regards sharks as its main adversary, believing that possible shark attacks threaten the financial benefits of beach recreation. In Natal, the perceived threat that sharks posed to these activities, led directly to the deployment of anti-shark measures. Reports, as early as 1915, indicated that visitors from the Johannesburg area were regularly visiting the Durban beachfront. From this time, a regular train service from Johannesburg to Durban led to an increase in

¹ Pietermaritzburg Archives Repository (PAR), Attorney General's Office (AGO) 1/8/47, 45A/1895, “Natal Water Police Point to The Attorney General: Superintendent of Water Police Reports on Danger of Sharks in Durban”, 6 February 1895.

² J.D.F. Gilchrist, “The South African Seas” in *The South African Journal of Marine Science* (hereafter *SAJMS*): XX, 1 (October) 1923, p 4.

holidaymakers to the Natal coast, particularly to the Durban beachfront.³ It was after World War II, however, that the use of the Natal coast as a recreational resource increased exponentially and became widely used by local white middle-class families, white holidaymakers from elsewhere in South Africa and white tourists from neighbouring countries.⁴

During the 1940s, several shark attacks occurred along the Durban beachfront. Figure 2 on page 16, a table presented by D.H. Davies, shows the increase in shark attacks during the 1940s. This table also indicates that attacks before this decade were rare. In 1947, the April report of the Durban City and Water Engineer's beach advisory committee indicated that an increase "of bathing booths and a shark-proof bathing enclosure..." was needed and essential to cater for the increasing demands of holidaymakers.⁵ The report noted that "the bathing enclosure was most essential in view of the recent shark menace."⁶ This perceived "shark menace" threatened beach recreationalists and thus indirectly jeopardized the fledgling beach recreational tourist industry. In turn, this later led to scientific studies on the implementation of permanent anti-shark measures along the Natal coast.

Thus, a crucial aspect in the development of anti-shark measures in Natal was the increased use of the beach as a recreational resource. This connection was first made, in 1963, by South African shark scientist, D.H. Davies.⁷ Concern for the protection of beach users, swimmers and other beach recreationalists has continued to play a major role in South African anti-shark measures research.⁸ This thesis primarily looks at the growth, development and implementation of anti-shark measures in Natal in the period between 1950 and 1980. The attached table (Figure 1 on page 12) of shark attacks off the Natal coast indicates an exponential increase in attacks after the 1940s. In addition, the South Coast experienced a drastic increase in attacks in 1957 and 1958.

³ DAR 3/DBN 5/2/6/6/1 Committee Report: Beach and Entertainment Committee 1/8/1914 – 31/1/1915, 12 July 1915.

⁴ When referring to the Natal public, the predominantly white middle-class tourist is implied, as it is this group that plays a particular role within this thesis, constituting the majority of the first beach recreational users.

⁵ DAR 3/DBN 1/3/14/1/1 Beach Development Advisory Committee: 1947 – 1952, 28 April 1947.

⁶ DAR 3/DBN 1/3/14/1/1 Beach Development Advisory Committee: 1947 – 1952, 28 April 1947.

⁷ D.H. Davies' work has been highly influential in shark research worldwide and has played a huge role in both inspiring this thesis and being a primary resource for my research.

⁸ D.H. Davies, "Shark Attack and its relationship to temperature, beach patronage and the seasonal abundance of dangerous sharks", *South African Association for Marine Biological Research (SAAMBR), Oceanographic Research Institute (ORI)*, Investigational Report 6, 1963. pp. 1 – 37.

As this thesis will show, however, most of the original so-called scientific material on sharks was based on speculation about shark behaviour. Indeed, it can be argued that both internationally and nationally, the public has misinterpreted and misunderstood sharks as a species. Misguided views of sharks have led to an exaggerated and undeserved fear of sharks and ultimately to the deployment of anti-shark measures in Natal. This thesis, then, begins by looking at beach recreational activities' influence that led to the deployment of physical barriers along the Natal coastline and explores the first foundational decades of the history of anti-shark research in Natal.

Human and shark contact has long been a concern in Natal. From early times, this sea predator was marked as a threat to humans and their recreational activities. In 1895, for instance, the Superintendent of the Water Police stated in a letter to the Attorney General, that "recently sharks had been frequently spotted in the Durban Harbour".⁹ In a second letter, he expressed the following sentiment: "I have often thought of the danger [to] people bathing...a shark in quest of prey, I think the time has arrived when notices should be placed in conspicuous places warning bathers in the general risks they incur, before we have an example of what a shark can do to anyone."¹⁰ During the early twentieth century, the threat that sharks posed to humans changed from being primarily a municipal concern, to becoming a press focus as well, thus entering the public eye, as can be seen in this 1905 excerpt from *The Natal Mercury*.

September 1905: WARNING TO BATHERS

Bathers have been frequently warned of the danger of bathing in the bay, but, perhaps the fact that a maneater is prowling about may put them on their guard. Last Thursday a gentleman who frequently takes a run across to the island for his dip, was very much surprised to see a very large shark, fully 12' [feet]. Quietly floating about seeking for prey. It was a very ugly brute and one whose distance would lend enchantment to the view. The many porpoises about chase the fish, take their bite and let the rest go and the sharks, following for the stray bits, enter the bay and there remain. Now that there is such deep water all

⁹ PAR AGO 1/8/47 45A/1895 "Superintendent of Water Police Reports on Danger of Sharks in Durban", 6 February 1895.

¹⁰ PAR AGO 1/8/47 45A/1895 "Natal Water Police Point to Mr H. Escombe Attorney General Durban", in Superintendent of Water Police Reports on Danger of Sharks in Durban, 4 Feb 1895.

over the place, bathers should [be] particularly careful where they roam.¹¹

The letters written to the Attorney General illustrated a concern about the increasing contact between humans and sharks. Furthermore, they also anticipated that sharks were soon to pose a threat to the general swimming public of Durban. The newspaper article created a distorted image of sharks. It was this caricature that directed the white recreational public's view of sharks towards an initial deep-seated fear of sharks. If the original apprehension about sharks had not already stimulated concern and fear, reports of brutal physical contact between humans and sharks certainly created a public stirring. For instance, in 1905 along Durban's Back Beach, it was reported that a "bather was seized by a shark ... [The report added] ... it will be well for bather to take warning from this terrible occurrence, as, in accordance with habit, the shark is sure to linger about the beach looking for further prey."¹² This attack marked both the birth of anti-shark measures in Natal, as well as the development of public concern about the threat that sharks posed to humans using the beach recreationally.

In 1907, an unusual bathing enclosure was erected on the beach outside the Kenilworth Tea Room in Durban to protect bathers from shark attack.¹³ Illustration 3 on page 14, depicts the bathing enclosure a year after its establishment. The erection of this physical enclosure emphasized the initial concern about shark attack and R14, 000 was dedicated to the development of the structure by the Durban Municipality. However, in 1928 the structure had to be removed due to the high maintenance cost.¹⁴

There is no substantial proof to indicate that the Natal coast experienced any major shark attack from 1928 to 1939. The absence of shark attack during this decade did not halt the desire to write about the infamous sharks. In 1938, Cawston wrote an article for

¹¹ "Warning to Bathers" in *The Natal Mercury*, 27 September 1905 p. 7 The island, I believe is the outcrop of the harbour parallel to South Beach, on the Durban coast.

¹² "Back Beach Fatality" in *The Natal Mercury*, 7 April 1905.

¹³ D.H. Davies, "The Problem of Shark Attack in South Africa" in *About Sharks and Shark Attack* (Pietermaritzburg: Shuter and Shooter, 1964), pp. 68 – 69. Davies uses the old records of the Durban City Engineer to substantiate this point – the enclosure was constructed with vertical steel grids in a semi-circular shape.

¹⁴ D.H. Davies, "The Problem of Shark Attack in South Africa" in *About Sharks and Shark Attack* 1964, p. 70.

the *South African Journal of Science*, saying “the exposed teeth of sharks can sever the stoutest lines and nets and readily cut through human flesh and bone.”¹⁵

In the 1940s there was a drastic increase in reported shark attack along the Natal coast, particularly in Durban, and shark teeth were mentioned in all the scientific reports.¹⁶ Shark teeth were, and are still, the primary biological material used in early and current shark research to identify sharks responsible for attacks on humans. Concurrent with attack was the increasing desire to implement anti-shark measures in Natal. This was reflected in, and influenced by, many reports in the Natal newspapers. These reports will be explored later in this thesis. During the 1940s, the increase in shark attack in Natal marked the beginning of detailed reports about human and shark contact.¹⁷ This contact was typified as being inevitably dangerous and threatening to human life. During this period, the human usage of the sea increased dramatically, due to local and tourist beach recreational activities, as well as the presence of the South African Naval Forces off the Natal coast during World War II.

In 1942 a British steamship, the *Nova Scotia*, was torpedoed by a German U-boat just off the coast of St. Lucia. The steamship had 134 South Africans and 765 Italian prisoners on board. There were further casualties as a result of shark attack, after abandoning ship.¹⁸ The psychological effect of this incident on the Defence Force was tremendous, so much so that the military offered to assist in the “war against sharks”. The South African Navy offered their services in depth-charging¹⁹ which resulted in the death of several sharks, but, ironically, the remains of several other dead fish attracted further sharks to the area.²⁰ It was originally debated and hailed its first trial in 1944. In the 21 January 1944 edition of *The Natal Mercury* an article entitled “Navy Aids Hunt for Sharks” was published. It reported on depth charging and the availability of naval

¹⁵ F.G. Cawston, “Succession of Teeth in Sharks, *selachii*” in *South African Journal of Science*, XXXV (December) 1938, p. 11.

¹⁶ *South African Association for Marine Biological Research Oceanographic Research Institute Investigational Report 1 – 3. 1961 – 1963.*

¹⁷ This would be over-shadowed by the incidents during “Black December” of 1957-1958, which will be explained in Chapters 1 and 2.

¹⁸ D.H. Davies, “Shark Attack in Time of War”, *About Sharks and Shark Attack*, 1964, pp 77 - 78.

¹⁹ The removal of shark, via explosives.

²⁰ “Natal Sharks Board” in *Quickies – Africa Deluxe Tours*

http://www.afrilux.co.za/quickies/natal_sharks_board.htm (accessed 22/12/2004).

vessels in aid of the shark menace.²¹ It should be noted that depth charging was only acknowledged as a form of anti-shark measures in January 1958.²²

The increasing demand for bathing safety and control over shark attack is highlighted in many press reports of the time, with captions such as “Where Control Breaks Down: Bounty on Sharks” and “Plans to Make Beach Safe.”²³ Numerous reports on sharks appeared at the time and ²⁴ the press even speculated that there was “talk about” the South African Navy laying sub-marine nets.²⁵ In the 1943 City of Durban Post-War Development Report the importance of industrial and commercial growth was highlighted, with special reference to the “development of Durban as holiday resort”, and provisions for “extensive facilities for sports and games” that were to be made available.²⁶

The economic importance of beach recreational activities not only focused on how to protect bathers, but also gave rise to research into anti-shark measures. Figure 2, taken from D.H. Davies, provides data on the number of sharks captured in the Durban nets from 1952 to 1961 and shows that the majority of the species caught are harmless, for example Zambezi shark catches are not even included. The exponential increase in shark attack in Durban in the 1940s resulted in the deployment of the nets. In 1951, *The Natal Daily News* questioned Durban’s reaction to the increased number of shark attack saying that “little” was being done “unless it is thought that sharks will be intimidated by talk.”²⁷ *The Natal Daily News* continued to report that the “stinking sharks” were “to the detriment of the city’s £5,000,000-a-year holiday trade.”²⁸ Ichthyologist J.L.B.

²¹ “Navy Aids Hunt for Sharks” in *The Natal Mercury*, 22 January 1944, p. 7.

²² “8 Sharks Blasted by Depth Charges” in *The Natal Mercury*, 7 January 1958, pp 1 – 2; “Crowd watched Shark Hunt: Experts Opposed to Shark Bombing” in *The Natal Mercury*, 7 January 1958, p. 3; “South African Navy to Depth Charge sharks off Natal Coast” in *The Natal Witness*, 1 January 1958, p. 1; “Seven Sharks killed in First Depth Charge Attack” in *The Natal Witness*, 7 January 1958, p. 1 and in a letter to the editor “Bombardment of sharks proved unsuccessful” in *The Natal Witness*, 8 January 1958, p. 2.

²³ “Where control Breaks Down: Bounty on Sharks” in *The Natal Mercury*, 31 March 1944, p. 4 and “Plans to make Beach safer” in *The Natal Mercury*, 21 January 1944, p. 8.

²⁴ “Where control Breaks Down: Bounty on Sharks” in *The Natal Mercury*, 31 March 1944, p. 4 and “Plans to make Beach safer” in *The Natal Mercury*, 21 January 1944, p. 8.

²⁵ “Talk up-country about sharks is doing Durban damage: And what are we doing?” *The Natal Daily News*, 24 January 1951.

²⁶ DAR 3/DBN 5/2/7/4/1 Post-war Development: ‘City of Durban: Post-War Development: Report of Special Committee 12 April 1943’, p. 1.

²⁷ “Talk up-country about sharks is doing Durban damage: And what are we doing?” *The Natal Daily News*, 24 January 1951.

²⁸ “Talk up-country about sharks is doing Durban damage: And what are we doing?” *The Natal Daily News*, 24 January 1951.

Smith was quoted thus: “while man-eaters are not abundant in our waters they are present, and anyone who ventures even thigh-deep in the open-sea does so at risk of a horrible...” incident.²⁹

In May 1951, Durban undertook the first shark-netting experiment in South Africa. The press reported: “City councillors must decide if this method of destroying sharks is to be applied locally as a bathing guard.”³⁰ These methods were similar to those applied earlier in the century in New South Wales, Australia (1937), and the report further commented that, in “comparison with Australia this shows good results: shark-netting experiment off Durban appears to have been a success.”³¹ In 1952 the Durban City Engineer’s Department decided to take a more physical approach to anti-shark measures and installed the first official set-nets³² off local beaches. Illustration 4 on page 15, presents visual images of the nets. This “off-shore meshing” consisted of a set of nets placed parallel to the coastline at approximately 150m offshore.³³ Initially, £3,000 was allocated to the project, but within the first five months the amount was increased to £4,680. This increase reflected the economic concerns of the Council as well as the concerns of the local public within the Durban area. Soon thereafter tenders were approved for one- to three-year contracts to erect shark nets. This resulted in further financial expenditure.³⁴ In addition, in the terms of Financial Regulation No.9 of the Beach Committee, a further amount of £2,332 was allocated for contractual tenders in December 1953. This additional amount ensured the continuation of the project.³⁵ Protecting bathers from shark attack was proving to be a costly project. Nevertheless, funding continued to be supplemented.

Municipal records show that in January 1954 the Beach Committee requested “that suitable provision be made on the 1954/1955 [financial] estimates to enable experiments to be carried out in connection with Shark Netting.”³⁶ In 1956 the Town

²⁹ J.L.B. Smith quoted in “Talk up-country about sharks is doing Durban damage: And what are we doing?” *The Natal Daily News*, 24 January 1951.

³⁰ “Durban shark-netting experiment” *The Natal Daily News*, 10 May 1951.

³¹ “Durban shark-netting experiment” *The Natal Daily News*, 10 May 1951.

³² These are also referred to as gill nets, meshing nets and shark nets.

³³ D.H. Davies, “Anti-shark measures in South Africa” *About Sharks and Shark Attack*, 1964, pp. 85 – 86.

³⁴ DAR 3/DBN 1/2/48/1/2 Beach Committee Minutes (BCM) October 1953 – September 1957, 3 December 1953, p. 23.

³⁵ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 3 December 1953, p. 23.

³⁶ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 28 January 1954, p. 29 [] my insert

Clerk advised the Durban Beach Committee that they should attempt to communicate with the Australian government and scientists about a possible shark repellent, which was at that time being researched by the Australian Scientific and Industrial Research Institute. Both the Town Clerk and the Beach Committee believed that this project may have resulted in “huge financial savings”.³⁷ Later that year, concerns about financial pressure were reflected again by the Committee as they reviewed the financial cost of anti-shark measures and alternative and possibly less costly measures were discussed. The Report noted:

In view of the high cost involved in the present method of shark meshing the question of the construction of permanent protective measures against shark attacks and also against drowning, by means of a series of small enclosures on the bathing beach to be investigated.³⁸

It was concluded that these shark-proof bathing enclosures were to be constructed by suspending wire/metal meshing between concrete pillars at the estimated cost of £23, 000 per enclosure.³⁹ The project appeared to be somewhat beyond the financial reach of the council, although the Committee gained some hope from the attempts of Colonel Paterson. He assisted the Beach Committee to obtain international information (from America) about various forms of anti-shark measures which was to be used in conjunction with local information.⁴⁰ However, after many debates, the project was abandoned in July 1957 and the minutes reflect “that the item ‘Shark-proof Enclosure’ was to be deleted from the memorandum of outstanding matters, as Colonel Paterson was no longer the Council’s Beach Reclamation Consultant and in view of the fact that no information can be obtained from the United States.”⁴¹

Early anti-shark research was restricted by a lack of financial support for scientific research. Notwithstanding these restraints, several authorities in Natal attempted to explore various shark protection options, such as shark-proof enclosures and shark repellents, as well as showing an interest in exploring other aspects of shark research, locally and internationally.

³⁷ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 3 May 1956, p. 156.

³⁸ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 21 August 1956, p. 175.

³⁹ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 22 November 1956, p. 11.

⁴⁰ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 22 November 1956, pp. 11 – 12 and 6 December 1956, p. 22.

⁴¹ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 3 July 1957, p. 85.

The 1950s certainly saw a growing interest in sharks. During this decade the emphasis was on the human fascination with sharks, but this fascination also contained a fundamental human fear of the predator. For instance, in May 1956 the Director of Parks, Recreation and Beaches reported to the Beach Committee that they had received an application to exhibit a shark caught at Durban Harbour.⁴² The exhibition was allowed temporarily, but at the request of the Director, was later closed. Furthermore, the Beach Committee stated that it would not allow any further displays of sharks on the beachfront.⁴³ In my view, this exhibition of this shark displayed the paradoxical relationship between humans and sharks. This relationship reflected on the one hand, the threat that sharks posed to humans and, on the other, the desire for human control over sharks.

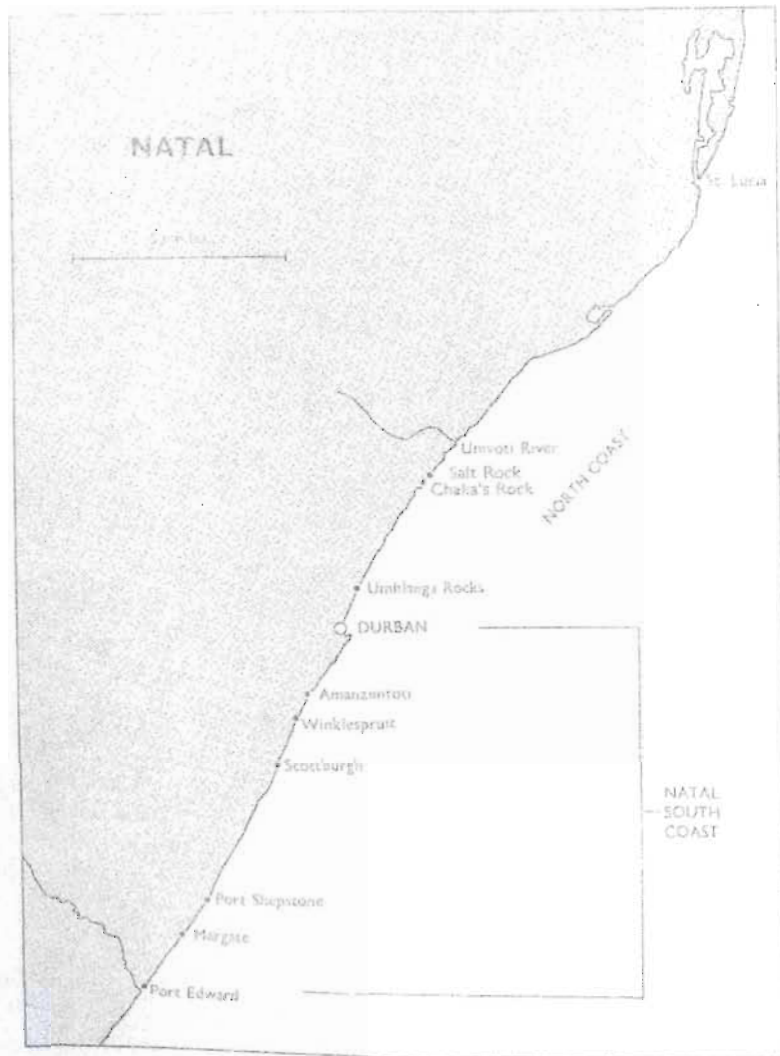
The anticipated threat of sharks soon appeared to become a reality when, between December 1957 and April 1958, seven attacks occurred along the Natal coast. This was the beginning of a new era of contact, one of interaction between shark and human. It took place in the context of increased beach recreational activities and led to the more active deployment of anti-shark measures along the Natal coastline. The use of nets along the entire Natal coast has continued to the present, though new methods have been explored. The same kind of thinking about anti-shark measures still exists in Natal today, although it was challenged by the rising conservation movement of the late 1980s. The 1980s saw a shift in consciousness, or thinking, about sharks towards conservation and preservation. This, therefore, frames my project period from 1950 (the introduction of permanent anti-shark measures in Natal) to 1980 (the era of shark conservation).

Thus I have chartered the development of recreational beach usage in Natal, as well as, highlighting the increase of shark attack off the Natal coast, after this development. Chapter One, will disclose the structures and chronology this thesis will follow.

⁴² DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 3 May 1956, p. 152.

⁴³ DAR 3/DBN 1/2/48/1/2 BCM October 1953 – September 1957, 3 May 1956, p. 153.

Illustration 1: Map of the Natal coast ⁴⁴



The area marked Durban to Port Edward is considered the South Coast. During the 1940s to 1960s there was an alarmingly high incidence of shark attack in this area.

⁴⁴ D.H. Davies, *About Sharks and Shark Attack*, 1964, p. 69.

Illustration 2: Map of the Durban Beachfront⁴⁵

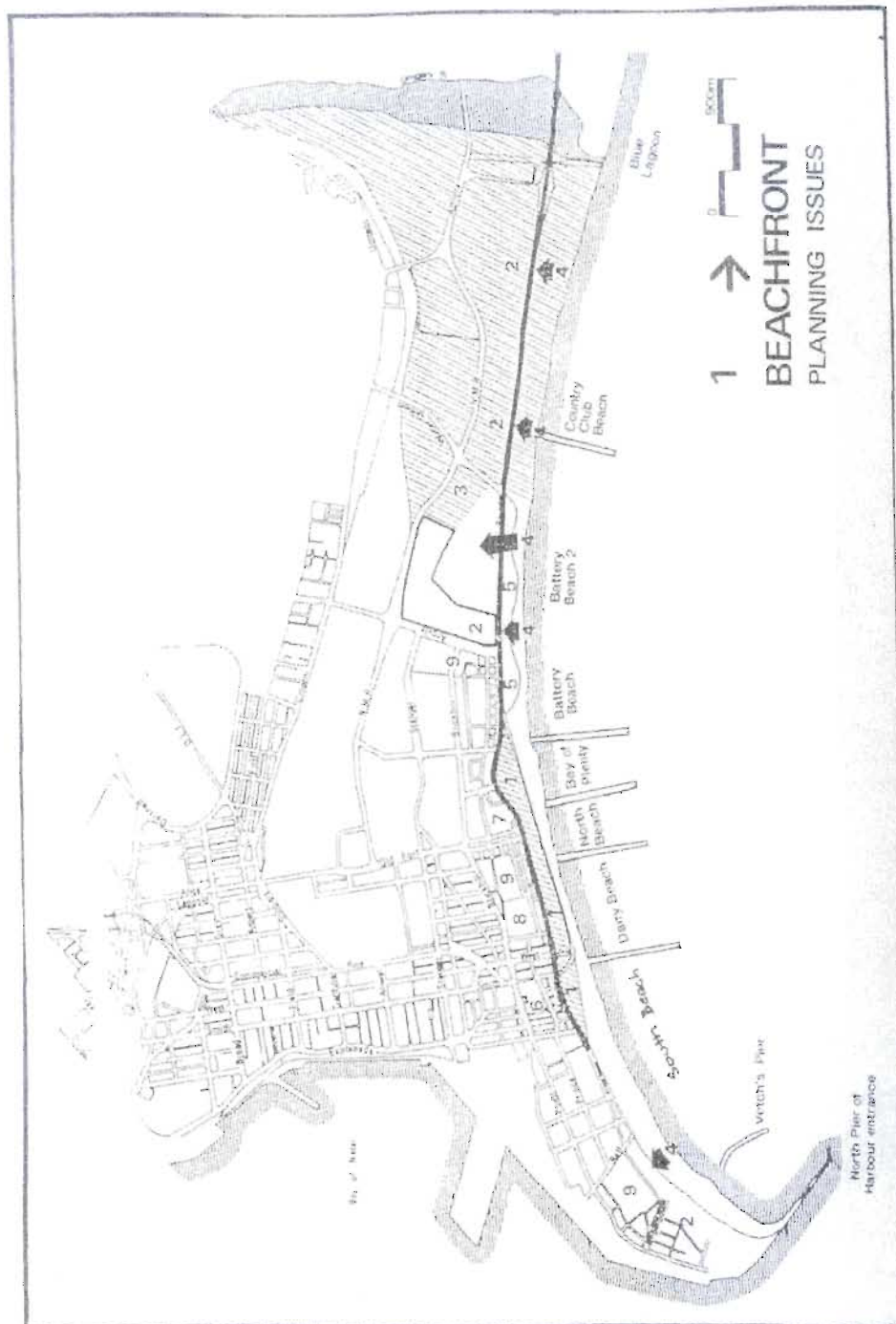


Figure 1.1 The Durban beachfront with names of various beaches
(After Durban City Engineers, 1983)

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⁴⁵ L.J. Grant, "An historical geography of the Durban Beachfront", 1992, p. 37.

Figure 1: Recorded Shark Attacks in Natal (1906 – 1950) ⁴⁶

TABLE II RECORDS OF SHARK ATTACK FOR NATAL

NO.	DATE	NAME	LOCALITY	FATAL	EXTENT OF INJURIES	REMARKS	TIME
1	-6.1906	Visiting sailor	Durban (South Beach)	F	Unknown.		
2	-6.06	European male	Durban (North Beach)	F	Unknown.		
3	-6.06	Indian male	Durban	F		Standing in water 3 ft. deep with a racehorse. A shark caught 2 days later with his costume in its teeth. The shark was 5 ft. in length and weighed 200 lbs.	
4	-4.34	Alan D. McArthur 12 yrs.	Winklespruit		Injury to right thigh.	Water murky after heavy rains.	noon
5	-4.34 (same day as No. 4)	African boy	Winklespruit	F	Body not recovered.		
6	1940	Indian girl	Winklespruit	F	Body not recovered.		
7	7.1.40	Frederick Hooper 18 yrs.	Warner Beach	F	Flesh torn on leg and thigh.	Swimming ¼ mile from shore. Taken to shore on raft. Died later in hospital. Water clear.	1600
8	22.2.40	Leslie Lund 17 yrs.	Amnuzintoti (Inyoni Rocks)	F	Bitten twice — below knee and on thigh.	Water clear, 10 ft. from shore. Depth 3 ft.	1630
9	31.3.40	Joe Lees 17 yrs.	Winklespruit (3 miles south Warner Beach)	F	Flesh torn from calf of right leg. Artery severed at back of leg and shin exposed.	30 yards from shore. Water clear.	1530
10	20.12.40	Desmond Chantler 17 yrs.	Amnuzintoti (Inyoni Rocks)	F	Multiple injuries to legs and buttocks.	Attacked at least 3 times 50 yds. from shore. Sea rough.	1000

⁴⁶ D.H. Davies, *About Sharks and Shark Attack*, 1964, pp. 95 – 97.

NO.	DATE	NAME	LOCALITY	FATAL	EXTENT OF INJURIES	REMARKS	TIME
11	25.11.42	E. W. Bihan 38 yrs.	Umkomaas		Lower left leg badly bitten and later amputated.	Water murky, victim in water 2 ft. deep.	
12	21.3.43	E. Ridley	Durban	F	Leg injuries.		Noon
13	12.12.43	James Matthews 17 yrs.	Amanzimtoti (Ivayeni Rocks)	F	Lacerations to body and thigh.		Early After-noon
14	4.1.44	Ronald Selby 26 yrs.	Durban (North Beach)	F	Left leg mauled and later amputated.	60 yds. from shore. Water murky after heavy rains. Died 2 days later.	1750
15	20.1.44	Anthony Bunn 22 yrs.	Durban (North Beach)	F	Injuries to thigh.	25 yds. from shore, depth 10 ft. Water discoloured, sea choppy. Died soon after admission to hospital.	1315
16	15.3.44	Richard Field 16 yrs.	Durban (Country Club Beach)		Ankle and heel lacerated.	Water shallow.	1730
17	26.3.44	Geoffrey Best 23 yrs.	Durban (Country Club Beach)	F	Calf of left leg torn away.	25 yds. from shore in deep channel.	1000
18	26.3.44	Gabriel Botha 19 yrs.	Durban (Country Club Beach)		Lacerations to left thigh.	25 yds. from shore in deep channel.	1730
19	20.8.44	Dennis Nissen 19 yrs.	Margate	F			1400
20	6/7.3.45	David Drummond 36 yrs.	Scottburgh		Injuries to left leg — later amputated.	Water murky after floods.	Noon
21	24.1.46	Manduray (Indian male)	Durban (North Beach)		Injuries to right foot, above and below.	Shallow discoloured water.	

NO.	DATE	NAME	LOCALITY	FATAL	EXTENT OF INJURIES	REMARKS	TIME
22	24.1.46	Brian Gibson 15 yrs.	Durban (North Beach)		Lacerations to back and front of right leg.	Water discoloured.	Noon
23	11.2.46	A. Varmu (Indian male) 25 yrs.	Durban (Battery Beach)		Six deep lacerations due to teeth around left knee cap.	Engaged in life saving practice 25 yds. from shore, shoulder deep, in water rough and discoloured after floods.	a.m.
24	16.2.46	Ernest Thomson 21 yrs.	Durban (South Beach)		Right upper arm badly lacerated.	Calm sea. 50 yds. from shore in water 10 ft. deep.	1600
25	8.1.47	Peter Knoop 18 yrs.	Durban (Country Club Beach)		2 gashees 6" long on calf and thigh.	Water murky.	
26	8.3.47	Gabriel Botha 22 yrs.	Durban (Country Club Beach)		Injuries to right foot and both buttocks.	70 yds. from shore. On sand bank in water 3 ft. deep.	
27	12.3.47	A. J. Kriel (male) 18 yrs.	Durban (Country Club Beach)		Lacerations on thigh.	15 yds. from shore in water 3 ft. deep.	late p.m.
28	11.4.47	Robert Douglas 14 yrs.	Durban (near Umgeni river mouth)		Leg injuries.	15 yds. from shore. Tied on shark. Water murky after recent rains.	noon
29	20.4.47	A. Nielson (male) 21 yrs.	Durban (Country Club Beach)		Injuries to left leg above the ankle.	100 yds. from shore, water clear. With companions when they saw shark's fin approaching. Nielson identified it as a "Blackfin" shark 6 ft. in length.	noon
30	15.7.47	K. W. Dalldorf 20 yrs.	Durban (North Beach)		Lacerations to right thigh.	10-15 ft. from shore in water 4-5 ft. deep. Saw shark's tail.	morning
31	11.2.50	Oliver Dumayne 14 yrs.	Durban (South Beach)	F	Body not recovered.	50 yds. from shore in water 12 ft. deep. Sea rough and water murky. Companions saw shark attacking.	1430

Illustration 3: The Kenilworth Tea Room Bathing Enclosure⁴⁷



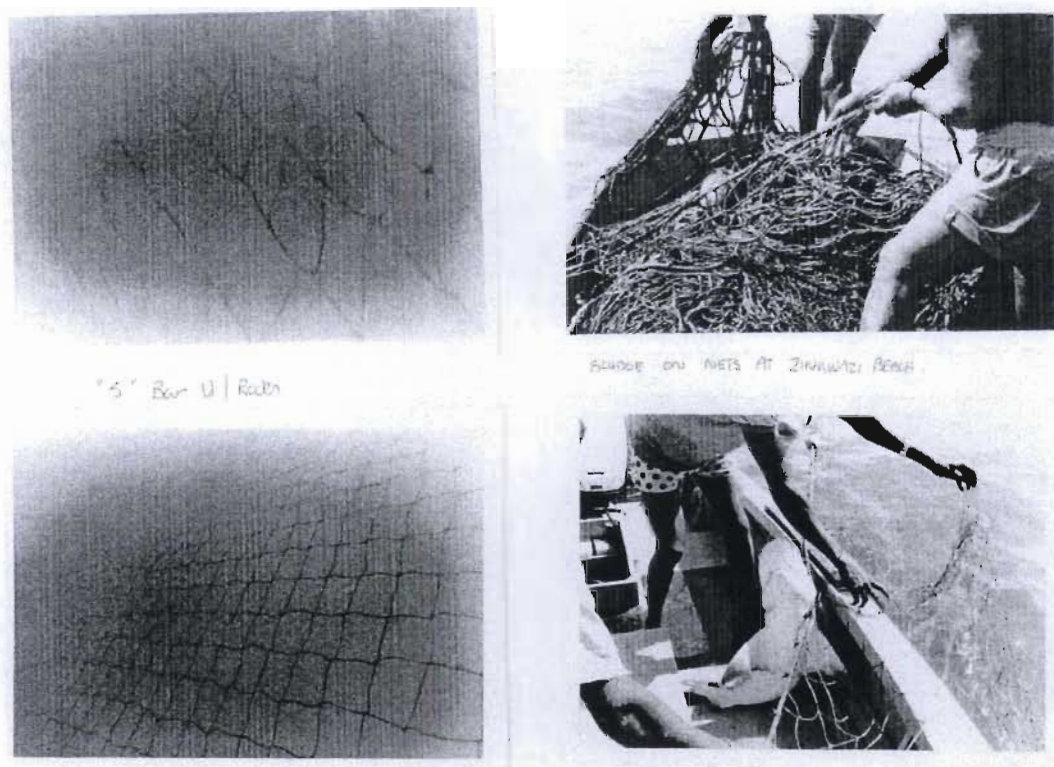
33. View of the old bathing enclosure Durban, showing construction.

34. The old bathing enclosure, Durban 1908.



⁴⁷ D.H. Davies, *About Sharks and Shark Attack*, 1964, p. 80/81.

Illustration 4: Visuals of the Nets (kindly provided by the Natal Sharks Board) ⁴⁸



⁴⁸ Natal Sharks Board Library: Photograph File (n.d.) Courtesy of the Natal Sharks Board.

Figure 2: Sharks caught in Durban nets (1952 – 1961) ⁴⁹

More dangerous sharks such as Tiger sharks or Blue Pointers (Great Whites) total catches are less than harmless species such as Ragged Tooth sharks.

TABLE 5
SHARKS CAUGHT IN MESHING OPERATIONS OFF DURBAN, 1952-61

Year	Mako <i>Isurus glaucaus</i>	Tiger <i>Galeocerdo cuvieri</i>	Ragged Tooth <i>Carcharias taurus</i>	Blue Pointer <i>Carcharodon carcharias</i>	Hammerhead <i>Sphyrna</i> spp.	Blackfin <i>Carcharhinus sp.</i>	Lazy Grey <i>Carcharhinus sp.</i>	Grey <i>Carcharhinus spp.</i>
1952	—	2	69	15	141	170	20	135
1953	—	1	11	15	63	46	5	43
1954	—	—	22	8	79	48	7	31
1955	2	2	39	10	40	27	—	38
1956	—	1	9	7	29	46	—	50
1957	—	—	13	6	34	30	—	57
1958	—	4	32	22	31	69	3	64
1959	—	1	31	8	20	48	4	53
1960	—	—	9	7	22	36	6	37
1961	1	1	12	12	30	35	6	34
Total	3	12	247	110	489	555	51	542

⁴⁹ D.H. Davies, "Shark Attack and its relationship to temperature, beach patronage and the seasonal abundance of dangerous sharks", *South African Association for Marine Biological Research (SAAMBR) Oceanographic Research Institute (ORI) Investigational Report 6*, 1963. Table 5. Please note that this figure does not show shark species that inhabit the coast, but records some of the species caught in the nets.

Chapter One

“Black December”, Myths, Fear and Sharks

“Undoubtedly it is a man-killer.”¹

“For God’s sake, HELP me”²

(M)oments before the attack a shark patrol plane passed overhead. The shark went straight for the victims [sic] buttocks and wheeled for a second attack when Mr. Brokensha grabbed the shark’s tail. The animal threw him off and returned to attack...the shark severed the victim’s left arm and then swam off.³

(An) unprecedented reign of terror which virtually put an end to sea-bathing along the South Coast and sent thousands of visitors streaming to net-protected beaches, the marauding sharks have cast a shadow of death over Southern Africa’s premier holiday playground...⁴

The “Black December” shark attacks: December 1957 – April 1958

In the month of December 1957, four shark attacks occurred off the Natal South Coast.⁵ Then, between January and April 1958 there were three more attacks along the same stretch of Natal coastline. Five of these seven attacks were fatal. Thereafter, this period was, aptly, dubbed “Black December”.⁶ The attack described above has become central to defining both scientific and popular responses which followed the “Black December”. Although the attack of 30 December 1957 occurred in the same location as three prior attacks and the injured person’s injuries were just as severe, this attack became especially infamous for several reasons, firstly, because there was now awareness of an increased frequency of shark attack, and secondly, since the age and sex of the victim lent her particular sympathy, adding to the public’s negative perception of sharks. The attack on the young woman was vividly recorded in the Natal press in 1957: “...the murderous scavenger let go, but not until it had bitten off the

¹ V. Coppleson, *Shark Attack* (Sydney: Angus and Robertson, 1988) originally published in 1958, p. 2 on “Great Whites”.

² The last words record from the 5th shark attack victim: “Killer Shark was furthest inshore yet”, *The Natal Mercury*, 10 January 1958.

³ Natal Shark Board Archives (NSBA) South African Shark Attack File (SASA) KwaZulu-Natal (KZN) File N57/4, ' J.P. 30 December 1957 (Shark Attack File Custodian Jeremy Cliff).

⁴ “South Coast Shark Attacks Now Total Five” *The Natal Mercury*, 10 January 1958.

⁵ For the historical context of this thesis, KwaZulu-Natal will be referred to as Natal, until chronologically the name-change has occurred. From here onwards, “attack” shall refer to shark attack, unless specified.

⁶ It is not clear exactly when this name was adopted; however, the name is frequently used in the 1970s.

young girl's arm at the shoulder, and severely mauled her body.”⁷ Directly after the attack intravenous fluids were administered. This was recorded as a “medical first” in South Africa. The life threatening physical injuries of the young girl and her survival of this traumatic experience were recorded in the press.⁸ As will be illustrated in this chapter, “Black December” was instrumental in heightening human fears of sharks and in defining many of what we now know to have been misguided attitudes towards sharks. These responses on the part of 1950s beach recreationalists, who were predominantly white middle-class Natal citizens or visiting tourists, ultimately fuelled new myths about sharks. It is my contention that these myths would become one of the driving forces behind anti-shark measures in Natal.

Although statistics of shark attack were scant, by 1957 it was clear that the incidence of attacks had increased and it became apparent that the supervision and policies that had hitherto been employed by the lifeguards for the prevention of shark attack were ineffective. Such measures had included, for instance, the banning of certain costumes because it had been established that light-coloured objects were perceived as prey or bait by sharks.⁹ In addition, swimming had been restricted to knee-deep paddling.¹⁰

After 1959, scientific studies on the causes of attacks and on anti-shark measures gained more prominence. One of the reasons why this new wave of scientific research occurred was because shark attacks became acknowledged as a national problem and not just a local concern.

Local concern about threat of attack was noted as early as in mid-December 1957, after the second attack of that month. *The Natal Mercury* recorded the following statement: “Confidence that some means of combating the shark menace on the South Coast would be evolved “through experience and research” was expressed by the Administrator of Natal, Mr. D. G. Shepstone.”¹¹

⁷ “How it happened: Eyewitness Accounts Doctors fight for shark victim’s life” *The Natal Mercury*, 31 December 1957.

⁸ NSBL SASA KZN File N57/4, 30 December 1957 – The use IV fluids marks the growth in South Africa of medical treatment of shark attack victims, which was internationally recognised in the 1960s (Chapter 4).

⁹ NSBL Council of Scientific and Industrial Research (CSIR) File “Memorandum on Anti-shark measures” *CSIR National Physical Research Laboratory (NPRL)* May 1958, Pretoria. p. 9.

¹⁰ NSBL SASA KZN N57/4 File J.P. 30 December 1957.

¹¹ “Shepstone Confident in Shark War”, *The Natal Mercury*, 18 January 1958.

A month after this statement was published a report in the local press by the Natal Angling Board stated that: “[there is a] possible relationship between inshore whaling and the recent shark attacks...”¹² Several measures and ideas to prevent shark attack, such as the banning of inshore whaling, were posed by various local individuals and groups. However, it was only in May 1958 that the Council for Scientific and Industrial Research of South Africa became involved in shark research.¹³ Despite this scientific grounding, shark research - so I shall argue - continued to be influenced by misguided information and speculation.

In the next section the links between environmental history, culture, myths and science are discussed. The roles of scientific, municipal and government organisations - such as the Department of Tourism, the Natal Sharks Board, the Oceanographic Research Institute, the Council for Scientific and Industrial Research, the National Physical Research Laboratory and the local Beach Committee - in formulating and implementing anti-shark measures will then be discussed in Chapters 2 and 3. Chapter 4 investigates the changes in anti-shark measures, as well as the increasing concern for conservation in South Africa. This chapter also considers the media hype around the book (1974) and film (1975) *Jaws*.

Myths about sharks

Many studies have shown that humans have shifting perceptions and constructions of their surrounding environment. In turn, these interpretations, representations and attitudes - sometimes inaccurate or misguided - have contributed to the development of what may be termed as myths about the environment.¹⁴ Such myths are influenced by cultural, social and political attitudes and conceptions within societies. I will show how these aspects form an intricate web in the development of particular myths about sharks and the direct influence these myths have had on the development of anti-shark measures in Natal over the last 30 years.

¹² “Inshore whaling ban to beat sharks urged”, *The Natal Mercury*, 24 January 1958.

¹³ NSBL Council for Scientific and Industrial Research File (CSIR) “Memorandum on Anti-shark measures” in CSIR National Physical Research Laboratory (NPRL), May 1958, Pretoria.

¹⁴ This argument is based on W. Cronon’s “Wilderness Dualism” from W. Cronon, “The Trouble with Wilderness; or, Getting back to the Wrong Nature”, *Uncommon Ground: Rethinking the Human Place in Nature*, (United States of America: Harcourt Brace and Company, 1996), pp. 69 - 90.

In his work on nationhood myths, American historian W.H. McNeill writes: “Myth lies at the basis of human [culture.]” Many myths have their origins in fear.¹⁵ The similarities that unite a cultural group are the same characteristics that lead to discrimination between two groups of people. In his book *The Pursuit of History*, John Tosh defines one aspect of culture as “the belief...that seemingly bizarre and irrational features in fact reflect a coherence of thought and behaviour” that unites a group of people.¹⁶ What Tosh describes as “irrational features” can occasionally be interpreted in the form of a myth. He continues to say that “myths can be dangerous [-] they induce misguided attitudes and responses.”¹⁷ Although Tosh is referring to learning about the past and mythical versions of history, his notion, which is similar to that of McNeill, can be applied to this thesis to explain how the human construction and representation of sharks, myths about sharks, human attitudes towards sharks, and the consequent human relationship with sharks, led to the employment of anti-shark measures in Natal. The “Black December”, which fuelled misguided perceptions about sharks, was a catalyst in the development of anti-shark measures in Natal.

J.R. McNeill, and American environmental historian, wrote in his paper “Nature and Culture of Environmental History” that environmental history is “the history of the mutual relations between humankind and the rest of nature.”¹⁸ The core concern of environmental history is the interactions between nature (animals and environments) and humans. Donald Worster, author of the seminal book, *Dust Bowl*, states that both nature and culture share an inter-dependent relationship, continually undergoing change¹⁹. Similarly, William Cronon, both an environmental historian and historical geographer, argues that neither nature nor culture is static.²⁰ In agreement with these authors, is N. Rothfels, who claims that societies themselves continuously change. This leads to changing human “perceptions” about animals of both terrestrial and aquatic

¹⁵ W.H. McNeill, *Mythistory and Other Essays*, (Chicago: University of Chicago Press, 1986), p. 23. [] my insert.

¹⁶ J. Tosh, *The Pursuit of History* (London: Longman, 1991), p. 104.

¹⁷ Tosh, *The Pursuit of History*, 1991 p. 20 [] my insert.

¹⁸ J.R. McNeill, “Observations on the Nature and Culture of Environmental History”, *History and Theory*, Issue 42 (December) 2003, p. 6.

¹⁹ D. Worster, “Transformation of the Earth:”, *The Journal of American History*, 76, 4 (March) 1990, p. 1091.

²⁰ W. Cronon, “The Uses of Environmental history”, *Environmental History Review*, No. 17 (Fall) 1993, pp. 3 and 13.

environments. He writes that the problem that results from shifting perceptions of nature is that “we end up having to accept that our current scientific, heavily researched ideas about animals are in a state of constant transformation and that we do not really know what we think we know about them.”²¹ In agreement with Rothfels, I postulate that science is shaped by time and the concerns of the time. Many facets of Rothfels’ argument will be applied to this thesis, and in particular, to the understanding of the scientific background of anti-shark measures.

Most environmental historians believe that not all changes in the environment are a direct result of human action, but are also the result of ecological, biological and geographical changes. However, by acknowledging the presence of human culture within nature and the influence human actions have on the natural environment, historians can observe the inter-dependent relationship between humans and nature.²² For instance, the relationship between sharks and humans has been correlated with beach recreational activities and anti-shark measures. These interactions have been related chronologically, illustrating the formation of symbiotic relationships. D.H. Davies identified this pattern in the early 1960s in his article on the relationship between beach patronage and shark attacks²³.

In her paper on the “Kruger National Park myth” Jane Carruthers, South African environmental historian, also discusses the relation between humans and their environments and how this affects their perceptions, attitudes and ideas. She states, “South Africans generally assume that the Kruger National Park was called after Paul Kruger, the president of the Transvaal Republic, in order to commemorate his personal interest in nature conservation.”²⁴ She argues strongly, however, that Paul Kruger was neither a preservationist nor conservationist and that the Park was created to build and aid white Afrikaner nationalist political support during that period.²⁵ Interestingly and controversially, Transvaal political leaders had not been known for their preservationist and conservationist opinions and the driving forces behind the proclamation of the Park

²¹ N. Rothfels, “Introduction” *Representing Animals*, (United States of America: Indiana University Press, 2002), p. xi.

²² D. Worster, “Transformation of the Earth”, p. 1091.

²³ D.H. Davies, “Shark attack and its Relationship to Temperature, Beach Patronage and the Seasonal Abundance of Dangerous Sharks”, *SAAMBR ORI* Investigational Report 6. (1963).

²⁴ J. Carruthers, “Dissecting the Myth: Paul Kruger and the Kruger National Park” *Journal of Southern African Studies* Vol. 20 No. 2 (June) 1994, p. 263.

²⁵ Carruthers, “Dissecting the Myth: Paul Kruger and the Kruger National Park”, p. 263.

were the public officials and elected Volksraad members, together with the political agendas and ideologies of the public.²⁶ The myth that the Kruger National Park was created under conservationist ideologies was adopted in agreement with nationalist motives and hence the myth's development was in order to unite the Afrikaner Nationalists in order to create a republic, promote Afrikaner scientists, and to exclude Britain from South Africa.

Similar to Carruthers's paradigm of the national park myth, shark myths were also easily absorbed by and created by the public via misguided popular views. Congruent with the creation of the Kruger National Park being driven by local and small Afrikaner political forces with the state ultimately succumbing to these forces, in the late 1950s, municipal and local pressures pushed the South African state into responding to the apparent increase in shark attack along the Natal coast. However, and in contrast to the National Park that was largely influenced by political thought; anti-shark measures were largely spurred by economic and financial factors.

D.W. Mienig argues that “(e)very mature nation has its symbolic landscapes. They are part of the iconography of the nationhood, part of the shared set of ideas and memories and feelings and that bind a people together.”²⁷ Both the beach recreationalists and the Afrikaners - the first a developing social cultural group and the second as a developing nation - developed ideologies and idealisms that appeared to be under threat.²⁸ This led to the development of a myth, or what Tosh refers to as “irrational features”, that allowed both the beach recreationalists and Afrikaners to become “part of the shared set of ideas and memories and feelings”²⁹ that bound them together - one as a nation and the other as a social group. The false sense of security placed in the nets by the beach recreationalists links back to Tosh's notions of culture. He explains that this need to form part of a group may lead to many misguided attitudes.³⁰ In both cases culture induced the creation and furthered the development of a myth in order to sustain the sanctuary of the environment or “symbolic landscape”. The beach is viewed as a place

²⁶ Carruthers, “Dissecting the Myth: Paul Kruger and the Kruger National Park”, p. 270.

²⁷ D.W. Mienig in J. Lemkin, “Archetypal Landscapes and Jaws”, *Planks of Reason: Essays on the Horror Film* (revised) (ed) B.K. Grant and C. Sharrett, (Oxford: Scarecrow Press, Inc, 2004), p. 322.

²⁸ Beach Culture will be discussed in Chapter Two.

²⁹ Tosh, *The Pursuit of History*, p. 104. and D.W. Mienig in J. Lemkin, “Archetypal Landscapes and Jaws”, p. 322.

³⁰ Tosh, *The Pursuit of History*, p. 20.

of entertainment, tranquillity, beauty and leisure. These features construct the beach's symbolic landscapes and sharks constitute a possible disruption to this symbolic landscape.

The redefining or representation of an animal is influenced by “ideas about animals in the light of the material interactions, relations of power and historical contexts that shape them.”³¹ For example, J. McGregor's work on crocodiles shows that the shifting perception of crocodiles is directly influenced by culture. Crocodiles were once hunted, in particular by colonial citizens, but currently crocodile parks are being constructed as a means to protect them.³² McGregor's concept of changing perceptions will be used in this thesis to explain the cultural influence in the research and employment of anti-shark measures in Natal. “Black December” certainly caused a shift in perceptions about sharks in Natal. In the late 1970s, however, different cultural and ideological convictions brought another shift in attitudes, this time in favour of conservation.

Myths about potentially dangerous animals are often stronger if the animals occur in areas where human dominated lands and the wilderness overlap. Cronon explains that “wilderness” in the English language refers to a “deserted” and “savage” landscape, an environment of “bewilderment” and “terror”, an environment or space that is separate from human interference.³³ However, the wilderness, like borderland environments, is inhabited by humans; the environment has just not been urbanized.³⁴ Sharks, like McGregor's crocodiles, often, if not always, frequent such borderland environments.³⁵ Perceptions held of borderland animals contribute to the subjugation and marginalization of these animals and their habitats within the borderland environments. These ideas are frequently influenced by myths, and the development and sustained employment of anti-shark measures in Natal are directly linked to these misguided

³¹ J. McGregor, “Crocodiles Crimes: People versus Wildlife and the Politics of Postcolonial Conservation on Lake Kariba, Zimbabwe.”, *Geoforum* Vol. 36 No. 3, (May) 2005, p. 355.

³² McGregor, “Crocodiles Crimes: People versus Wildlife and the Politics of Postcolonial Conservation on Lake Kariba, Zimbabwe.”, pp. 355 – 357.

³³ W. Cronon, “The Trouble with Wilderness; or, Getting back to the Wrong Nature”, *Uncommon Ground: Rethinking the Human Place in Nature*, (United States of America: Harcourt Brace and Company, 1996), pp. 70 – 71.

³⁴ Borderlands – “bordering ‘wild’ spaces where humans and wild animals share space” Wolch and Emel in McGregor, “Crocodiles Crimes: People versus Wildlife and the Politics of Postcolonial Conservation on Lake Kariba, Zimbabwe.”, p. 354.

³⁵ McGregor, “Crocodiles Crimes: People versus Wildlife and the Politics of Postcolonial Conservation on Lake Kariba, Zimbabwe.”, p. 354.

ideas, or myths, about sharks. As Tosh argues, “(m)yth which one society entertains about another can also be particularly enduring and harmful.”³⁶ While Tosh is referring to the 20th century British myth of colonized “lazy” Africa, I would argue that what “one society entertains about” another species, for example sharks, can also “be enduring and harmful”.

The primary myth about sharks that has been constructed and absorbed, is that all sharks are inherently man-eating rogues. This myth has dominated both popular and scientific discourses for many years. The roles that both the press and recreational activities, such as surfing and swimming, have played in the dissemination of this image cannot be disregarded.

In fact, labelling all sharks as instinctively man-eating is misguided. Currently a total number of three species of shark have been identified as being the main perpetrators of attacks on humans: *Galeocerdo curvier* (the Tiger shark), *Carcharhinus leucas* (the Zambezi shark) and *Carcharodon carcharias* (the Great White shark, formerly the Blue Pointer). Figure 3 on page 42, from the Natal Sharks Board’s *Field Guide to Sharks and Other Marine Animals* contains illustrations and descriptions of the three sharks. Although the list of sharks involved in attacks on humans is considerably longer, it is these three species that are associated with most of the nearshore incidents that result in serious injury.³⁷ Despite this, D. Quammen, in *Monsters of God*, published as recently as 2004, argues that the term man-eater “deserves preservation because it labels and commemorates an elemental experience in which, on rare occasions, members of our species are relegated to the status of edible meat.”³⁸ Quammen, in his book, studies the relationship between man-eaters and humans. The belief that sharks are both man-eating and often inclined to become rogues has influenced our fear of sharks and has directly contributed to the many misguided attitudes towards sharks.

This primary myth about sharks became prominent in 1958 after the author Victor Coppelson, who was both a shark researcher and medical surgeon, published a book on shark attack. Coppelson hypothesized that the pattern of attacks could be linked to the

³⁶ Tosh, *The Pursuit of History*, p. 20.

³⁷ Interview between S. Dudley and M. van Oordt, Durban, 30 June 2005.

³⁸ D. Quammen, *Monsters of God*, (London: Pimlico, Random House, 2005), p. 5.

behaviour of “a single shark - a rogue shark.”³⁹ Copleson based his hypothesis on cases - such as the attacks that occurred during the “Black December” - where several sporadic attacks took place in a short space of time within a certain location, although after these attacks, that area remained free of attack. Copleson’s “rogue shark” was quickly adopted by popular culture and soon adapted into films, such as *Jaws* (1975) and *Deep Blue* (1999). Spielberg’s infamous *Jaws* will be discussed in Chapter 4.

During the 1960s, several species of sharks were labelled as man-eating, hence it was thought that most sharks were harmful to people. These myths spread because of generalizations made by authors who did not distinguish between potentially dangerous sharks and harmless ones. For instance, this can be seen in the following statement by Richard Ellis, a natural scientific historian: “The word ‘shark’ has come to be synonymous with teeth, so that any shark, regardless of its species, is automatically considered harmful...”⁴⁰ Ellis argues further that “the white shark has come to represent all sharks because in a sense, it is all sharks. It is big, powerful, extremely dangerous and frightening to behold.”⁴¹ It was also widely believed that sharks had to roll over onto their sides to bite. For example, J.L.B. Smith was quoted in *The Natal Daily News* in January 1951 as saying that “(i)llustrations of sharks biting usually show the animal on its side with quite a benevolent expression.”⁴² To add to this myth, it was considered that sharks ate continuously. In his 1937 book, F.A. Mitchell-Hedges had described his encounter with a tiger shark thus: “even when glutted with food, out of sheer devilishness it will slaughter anything within reach.”⁴³ Another aspect of this myth is that sharks are not discriminating eaters and scavenge the sea.⁴⁴

Another myth that was quickly adopted, was the notion, or hypothesis that sharks have to swim continuously: “Sharks do not possess swimbladder and as a result...if a shark stops’ swimming it sinks to the bottom...”⁴⁵ It was considered that “many species of

³⁹ V. Copleson, *Shark Attack*, (Sydney: Angus and Robertson 1958 (Revised) 1988), p. 45.

⁴⁰ H. Angel. “Great White and Other Sharks” *Monsters of the Deep: Sharks, Giant Squid, Whales and Dolphins*, (London: Octopus Books Ltd., 1976), p.1.

⁴¹ R. Ellis. “Myth and Reality”, *Sharks* (New York: Checkmark Books: 1999), p.183.

⁴² “Talk up-country about sharks is doing Durban damage: And what are we doing?” *The Natal Daily News*, 24 January 1951.

⁴³ F.A. Mitchell-Hedges, “Battle with a Great Tiger Shark” *Battles with Monsters of the Sea*, (New York: d. Appleton-century Company Incorporated: 1937) p. 61.

⁴⁴ Copleson, *Shark Attack*, 1958 1988 (Revised), p. 14.

⁴⁵ Davies, *About Sharks and Shark Attack*, p. 201.

sharks are obliged to keep moving at all times for the purposes of respiration.”⁴⁶ In 1968 Smith argued: “sharks sink in water, so to keep afloat they must move all the time,” he continued, “or they die of suffocation.”⁴⁷ It has also been argued that sharks have poor vision.⁴⁸ Other myths include the perception that sharks are hard to kill,⁴⁹ shark attack only occurs in warmer water,⁵⁰ and that sharks do not frequent fresh water often. Furthermore, another myth is that sharks literally have no brains. This is shown in Valerie Taylor’s comments on the author of *Jaws*, Peter Benchley’s shark: “Benchley makes his fish completely believable, then gives it brain...” indirectly Taylor implies sharks lack intelligence.⁵¹

However, we now know that:⁵²

There are over 500 species of sharks, of which approximately 80% are harmless to man and rarely encounter humans.⁵³ Sharks are able to attack in several different positions, for example, some Great Whites off the Western Cape coast have the ability to become temporarily airborne to catch their prey, which is predominantly a Cape seal.⁵⁴ Sharks eat periodically, depending on their metabolism and the availability of food or prey. Sharks are usually attracted to fish blood and amino acids. The dietary preference of sharks varies according to each individual species, and that prey type is affected by the size and dentition of the shark.⁵⁵

Some sharks can ventilate by actively pumping water over their gills through a complex mechanism of “opening and closing” their mouths while they rest. They use their “mouths to pump water over their gills.”⁵⁶ The visual acuities of sharks vary according to individual species.

⁴⁶ Davies, *About Sharks and Shark Attack*, p. 200.

⁴⁷ J.L.B. Smith, *From Nature: Our Fishes*, (Johannesburg: Voortrekkerpers, 1968), p. 18.

⁴⁸ Davies, *About Sharks and Shark Attack*, p. 198. and Smith, *From Nature: Our Fishes*, p. 234.

⁴⁹ Copleson, *Shark Attack*, p. 12 (On big Game Fishermen) and R. Robinson and JS. Dunn, “Chapter IX “Shark Fishing on the Natal coast””, *Salt Water Angling in South Africa*, 1923. p. 88.

⁵⁰ Copleson, *Shark Attack*, (Revised) 1988, p. 124.

⁵¹ V. and R. Taylor (eds), “3. From Jaws. P Benchley”, *Shark! Truth Stranger than Fiction, and Fiction as Horrifying as Jaws*, (Great Britain: William Collins Sons and Co. Ltd, 1979), p. 39.

⁵² New-brunswick.net “Shark Myths” <http://new-brunswick.net/new-brunwicks/sharks/myths.html> (accessed 15/11/2005).

⁵³ L. Compagno, M. Dando, and S. Fowler, “S. A Field Guide to Sharks of the World.”, (London, HarperCollins: 2005), pp. 368.

⁵⁴ C. Fallows and M. Le Sueur, “Deadly Danger: the Silent Assassins of Seal Island” *Africa Environment and Wildlife* Vol. 8 Issue 10, (November 2000), pp. 32 – 37.

⁵⁵ Compagno, Dando, and Fowler, “S.A. Field Guide to Sharks of the World.”, p.34.

⁵⁶ Compagno, Dando, and Fowler, “S.A. Field Guide to Sharks of the World.”, p 28.

The visual systems of many sharks are highly developed. The abundance of low light photoreceptors (rods) in the eyes of all species points to the importance of night time and twilight...but the presence of high light photoreceptors (cones) suggests that many species are active during daylight...brightly colored objects seem to be especially attractive...⁵⁷

The capture of sharks causes them stress and often weakens them temporarily.⁵⁸ Cold-water attacks do occur, but this is because the introduction of neoprene wetsuits has allowed humans increased access to cooler waters.⁵⁹ Some sharks, such as Zambezi sharks, have the ability to move between salt water and fresh water. Hence, sharks have the ability to adapt to their environment. Moreover, “sharks are highly evolved complex predatory animals with relatively large brains.”⁶⁰

As mentioned, the first worldwide studies of sharks were based predominantly on speculation. W.H. McNeill, in a discussion about public myths and the free market, touches on the involvement of natural science and its support of myths, he argues that:

This is conspicuously the case of natural science, where myth, tested by action and revised in accordance with results, continues to achieve spectacular success. It may seem whimsical to equate scientific theories with myth, but ... scientific theories *are* statements about the world, believed to be true, and many also provide a basis for action, as our extraordinary technology attests.⁶¹

Myths about sharks have had an extremely long-lived existence within science, primarily through misguided perceptions of sharks. Scientists, such as Coppleson, have conformed or contributed to the unsubstantiated human perceptions about sharks. For instance, Coppleson states: “apart from the evidence of eye-witnesses and victims, irrefutable scientific evidence of the guilt of a shark is often provided.”⁶² Coppleson’s theory about the “guilty shark” portrays sharks as inherently man-eating and all attacks as premeditated. Coppleson’s work also reflects the importance of the relationship between culture and science.

⁵⁷ A.A. Myberg, “Shark behaviour”, *Sharks*, (New York, Checkmark Books: 1999), p.85.

⁵⁸ Davies, *About Sharks and Shark Attack*, p. 162.

⁵⁹ G. Cliff, “Shark Attacks on the South African Coast between 1960 and 1990.”, *South African Journal of Science*, 87,10. (1991), pp. 513-518.

⁶⁰ Compagno, Dando, and Fowler, “S. A Field Guide to Sharks of the World.”, p. 30.

⁶¹ W.H. McNeill, *Mythistory and Other Essays* (Chicago: University of Chicago Press, 1986), p. 26.

⁶² Coppleson, *Shark Attack*, p. 1.

McGregor, in line with McNeill's concept of the relationship between myths and science, proposes: "Scientists...[have] helped to create imaginative and physical space for the crocodile."⁶³ She argues that the "economic and political networks" of Lake Kariba assisted in this creation.⁶⁴ By extending McNeill's and McGregor's thoughts on the powerful role myths have in shaping human responses to particular animal species, they can be applied to myths about sharks and how these myths have proved to be especially long-lived and influential in the thinking behind, research into, design and implementation of speculative scientific, and ultimately scientifically founded, anti-shark measures over the last century.

Fear of sharks

In an essay in the book, *Representing Animals*, Erica Fudge states that her work is not only about the ways in which culture shapes and forms perspectives about certain aspects or features of animals, but also how culture has the ability to shift human perceptions over time.⁶⁵ The notion of being fearful of sharks, originates from these cultural "perspectives" about animals. Therefore, it is important to include cultural authors' perspectives, such as those of Fudge and A. Wilson. Wilson states that nature is constructed by culture; therefore, nature is classified through human ideas of the environment or a particular species. Wilson's view is that environmental changes are primarily affected by culture and human behaviour.⁶⁶ Wilson's view is separated from many environmental historians' perspectives of nature and humans, as it does not illustrate the value of an interdependent network between culture and the environment, but how this can illustrate a social history of humans and their interactions and impact on the environments in which they exist.

According to D. Quammen, awareness of our environment pre-dated *Homo sapiens*. He argues that one of "the earliest form of human self-awareness was the awareness of being meat."⁶⁷ This thesis will emphasize that shark myths are by no means based on the frequency of attack, but that humans' instinctive fear of sharks has become exaggerated because of the unquestionable brutality of the actual attacks. More

⁶³ McGregor, "Crocodile Crimes:", p. 354.

⁶⁴ McGregor, "Crocodile Crimes:", p. 354.

⁶⁵ E. Fudge, "A Left-handed Blow", *Representing Animals*, p. 4.

⁶⁶ A. Wilson, *The Culture of Nature: North American Landscape from Disney to Exxon Valdez* (USA, Cambridge: Blackwell Publishers: 1992) p. 1.

⁶⁷ Quammen, *Monsters of God*, p. 1.

importantly, this fear stems from a common, instinctive, primordial and universal fear of being eaten alive. Whilst it is indeed irrational to fear sharks, in terms of the statistical threat they pose, there is, perhaps, an underlying anthropological fear of being torn apart by a predator. This is an elemental fear. In other words, whilst it can rationally be pointed out that shark attack is one of the rarest forms of animal attacks on humans, humans are still fearful of this species.

The majority of studies of predators that threaten human life are concerned with terrestrial predators. An example would be H. Kruuk's *Hunter and Hunted*, which investigates terrestrial mammal predators.⁶⁸ Interestingly, however, South African scientists, G. Cliff and T.R. Mokoena, point out that humans have, by and large diminished the threat posed by land predators, such as tigers and lions.⁶⁹ For instance, in 1953 L.S.B. Leakey wrote that prior to the twentieth century humans feared lions, but by the mid-twentieth century, "(m)an-eating lions are not common nor can they be regarded as normal. They are, in the lion world, what the homicidal maniac is in ours, individuals with warped minds and abnormal behaviour."⁷⁰ Leakey went on to compare the lion to a domestic cat.⁷¹ While "wild animals" on the land may now appear to pose less of a threat to humans - as Cliff and Mokoena argue - humans have yet to minimize and control the threat posed by the sea predators, such as the shark, and the fear of aquatic predators has long out-lived the fear of terrestrial predators. The consequence of the supposedly uncontrollable threat that sharks pose to humans, has led to "an almost irrational fear of sharks."⁷²

The belief that sharks have posed a more prominent threat to humans than terrestrial predators has been widely held in South Africa, especially since the "Black December". D.H. Davies, who was a famous South African shark scientist in the 1950s and 1960s, anticipated the views of Cliff and Mokoena who wrote in the 1990s. Davies argued:

Man has long since mastered the largest and fiercest of land animals, but the general reaction to shark attack shows that sharks are among the few remaining creatures capable of instilling terror,

⁶⁸ H. Kruuk, *Hunter and Hunted: Relationships between Carnivores and People*, (Cambridge: Cambridge University Press, 2002).

⁶⁹ Cliff and Mokoena, "Injury from Bites", p. 356.

⁷⁰ L.S.B. Leakey, *Animals in Africa*, (London: Harvill Press, 1953). p. 21.

⁷¹ Leakey, *Animals in Africa*, p. 24.

⁷² Cliff and Mokoena, "Injury from Bites", p. 356.

and that man has not yet devised any satisfactory means of protecting himself from sharks.⁷³

One consequence of “Black December” was the fanning of recreationalists’ fear of sharks by the Natal press, thus causing what amounted to hysteria amongst Natal’s beach recreationalists. As mentioned, this fear was in part based in reality as these attacks did occur. As Davies put it: “the injuries sustained in shark attack are nearly always serious and fatal...”⁷⁴ However, the fear of shark attack escalated beyond the true threat that sharks posed. Another factor to consider is the psychological effect of witnessing fatal shark attack and the probability that eye-witness accounts spread rapidly by word-of-mouth through the South Coast.⁷⁵

The fear of attack fuelled by the press and a variety of other agents, such as the local public and municipal organizations, far outweighed the occurrence of attack in Natal waters. Moreover, rather than countering or limiting this hyper-reaction – which might be termed “hysterical” – some scientific research itself was in turn influenced by this “shark frenzy”.⁷⁶ This was not true of all scientific opinions, however. In 1958, Smith, in a letter to the *South African Journal of Science* commented that “(i)n South Africa the individual bather probably ran no greater risk of attack than one in a million bathers. Nevertheless, the public mind recoils in horror from shark attacks.”⁷⁷

Although scientists such as Smith, and in particular Davies, believed that attacks were gaining unwarranted attention in the press, images of rogue man-eating sharks were becoming popular within written literature. During the 1960s, for instance, several books were published on the aquatic man-eating predator. This assisted in both enhancing the fear of sharks and in the dissemination of shark myths.⁷⁸ Moreover, the

⁷³ D.H. Davies, “The Shark Problem”, *South African Journal of Science (SAS)*, Vol. 58 No.9 (September, 1962). p. 253.

⁷⁴ Davies, “The Shark Problem”, *SAS*, Vol. 58 No.9, September 1962. p. 253.

⁷⁵ Personal communications between M. van Oordt and Sheldon Dudley, Durban, 2006.

⁷⁶ The importance of the press will be discussed in chapter 2.

⁷⁷ J.L.B. Smith, “Shark Attack in South Africa” (letter) *South African Journal of Science*, vol. 54 no. 6 June 1958, p. 150.

⁷⁸ H.W. McCormick, T. Allen and W.E. Young, *Shadows in the Sea: The Sharks, Skates and Rays*, (London: Sidwick and Jackson, 1964)., V.M. Coppleson, *Shark Attack*, (Sydney: Angus and Robertson Ltd, 1958)., T. Helm, *Shark! Killer of the Sea*, (London: Robert Hale Ltd, 1962)., F.A. Mitchell-Hedges, *Battles with Monsters of the Sea*, (London: D. Appleton-Century Company, 1937)., P.W. Gilbert (ed), *Danger – Shark!*, (Boston: Little, Brown and Company, 1964).

media attention given to “Black December” played a significant role in the development of shark myths and in the ever-increasing fear of sharks.

Ironically, however, this period was also marked by further human and shark contact. Although academic material on aquatic environments does exist, it is limited, and most of the published material available is on river and lake environments, as opposed to marine environments. Books such as *The Exploited Seas* (which has an international scope) and *Waves of Change* (South Africa) explore the human use of the sea and its exploitation as a source, but both books focus on fisheries.⁷⁹ In contrast, this thesis is concerned with the sea as a recreational resource. As with the commercial fishing industries, beach recreational tourism was economically beneficial to South Africa. Linda Joan Grant’s 1992 Master’s thesis, *An Historical Geography of the Durban Beachfront*, studies the beach as an economic resource through tourism, and is a key source for this study. I have used Grant’s thesis to explain beach recreation in Durban and along the South Coast of Natal as a new form of economic activity for financial gain, both provincially and nationally.⁸⁰ Grant shows that the period 1900 – 1945 “marks the true beginnings and “take-off” of Durban’s beach front as a tourist attraction.”⁸¹ This thesis will indicate how humans used and adapted their surrounding environment according to the growing capitalist ideals of the 20th century.

Worster’s *Dust Bowl* argument, as reflected by Cronon, states that after the 1930s drought, humans in the United States of America failed to adapt to nature and therefore the failure was not nature’s, but, in fact, that of human beings.⁸² In contrast to the Great Plains of North America, it can be argued that the ocean environment is only just beginning to be adapted and controlled by humans. The notion of “adaptation” plays a powerful role in determining the use of the sea off the Natal coast and the public’s reaction to sharks. Anti-shark measures used in Natal were “adapted” to the geography and environmental conditions of the Natal Coastline. Illustration 5 on page 48, demonstrates some of the geographical consequences of the nets.

⁷⁹ P. Holm, T.D. Smith and D. Starkey (ed), *The Exploited Seas*: (Canada: Memorial University of Newfoundland, 2001) and M. Hauck and M. Sowman (ed) *Waves of Change* (Cape Town: University of Cape Town Press, 2003).

⁸⁰ L.J. Grant, “An historical geography of the Durban Beachfront”, (MA, University of Natal, Durban, 1992).

⁸¹ Grant, “An Historical Geography of the Durban Beachfront”, p. 78.

⁸² Reference to D. Worster in W. Cronon, “A Place for Stories”, *The Journal of American History* Vol.78 no.4 (March 1992), p. 1348.

Timothy Wallett, in his book on shark attack and medical treatment in South Africa, accurately described the response to “Black December” as “hysteria”.⁸³ Chapter 2 of this thesis looks at the decisions that the local municipal and national groups took after these attacks. Frequently, these decisions were irrational, such as the depth charging (bombing) of sharks off the coast by the South African Navy.⁸⁴

As mentioned above, further enhancing this “hysteria” around sharks, is the deep-seated human fear of the sea. In his analysis of the 1975 movie *Jaws*, J. Lemkin states that there are “two crucial points to be recognised in the collective perception of the sea as an unfriendly environment [...]”⁸⁵ firstly, “the sea is a place of the unknown”⁸⁶ and secondly, “(t)he sea is a place beyond the rule of man, whose influence stops at the shoreline. There are no demarcated borders to fight over, only arbitrary claims; it is beyond the subjugation of humanity.”⁸⁷ Steven Spielberg, the director of the film *Jaws*, based on Benchley’s 1974 novel, draws on this fear of the open sea. In an interview he said: “When you’re out swimming and you turn to tread water, half of your body is under the surface and you can’t keep tabs on what’s happening down there around your feet.”⁸⁸

Perhaps another interesting and influential factor that creates these fears of attack, is emphasized by Quamenn in his idea of the “alpha predators”. He maintains that an alpha predator is one that has the ability to kill and eat a human alone. Hence, the predator does not hunt in a pack. More gruesomely, the predator does not just fatally injure a human; it continues to eat the fatally injured body.⁸⁹ Although he wrote only of the Great White, I would argue that this belief has been extended to other sharks, such as Zambezi and Tiger sharks. This image works, in the popular imagination, together with that of Copleson’s hypothesized “rogue” shark. I do not find this theory

⁸³ T. Wallett, “The Impact of Shark Attack” *Shark Attack and Treatment of Victims in Southern African Waters*, (Cape Town: Purnell and Sons (SA) (Pty) Ltd, 1978), p. 3.

⁸⁴ “Depth Charges today at Margate” in *The Natal Mercury*, 6 January 1958; ”8 Sharks Blasted at Margate” in *The Natal Mercury*, 7 January 1958.

⁸⁵ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 323.

⁸⁶ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 323.

⁸⁷ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 323.

⁸⁸ Quote from: A.C. Bobrow, “An Interview with Steven Spielberg”, *Filmmakers Newsletter*, Summer, 1974. J. Lemkin, “Archetypal Landscapes and *Jaws*”, p. 323.

⁸⁹ Quamenn, *Monsters of God*, pp. 5 – 6.

convincing. This is for two reasons, firstly, after an attack, human remains are often found and secondly, fatally injured bodies have been found relatively intact.

Sharks, Geography and Attack⁹⁰

The International Shark Attack File (ISAF) is a collection of all recorded shark attacks and is controlled by the American Elasmobranch Society at the Florida Museum of Natural History. The ISAF indicates that in the past decade, 63 out of 746 recorded shark attacks worldwide occurred in South Africa, ranking South Africa the fourth highest in terms of recorded shark attacks in the world.⁹¹ In the twenty years from 1940 to 1960, there were 58 attacks in Natal, and of these 24 were fatal.⁹² In the five years from 1957 to 1962, 18 attacks occurred along the Natal coastline. This sudden increase of attacks in Natal in the 1940s and 1950s, particularly during “Black December”, directly influenced the development of myths about sharks. The increased use of the beach as a recreational source in the 1940s increased the chances of shark and human contact.⁹³ As mentioned earlier, this connection was first observed by Davies who, in 1963, advanced a theory about the link between beach patronage and the statistical increase in attack.⁹⁴ Figure 4 on page 45, from Davies’s 1963 work, shows an increase in beach recreational activities during the mid-twentieth century, while figure 5 on page 46, indicates the relationship between shark attack and beach recreational activities.

Sharks belong to the subclass of fishes known as Elasmobranchii, which in turn belong to the class Chondrichthyes, or cartilaginous fishes. Like other elasmobranchs, sharks have a heightened sense of smell and are extremely sensitive to vibrations and electrical pulses. These three physical traits have influenced scientific research into anti-shark measures in Natal and this will be discussed in the later chapters of the thesis. I will focus on *Galeocerdo cuvier* (the Tiger shark), *Carcharhinus leucas* (the Zambezi or Bull shark) and *Carcharodon carcharias* (the Great White shark or White shark). All

⁹⁰ This section uses the Natal Sharks Board’s *Field Guide to Sharks and other Marine Animals* to define and describe sharks.

⁹¹ International Shark Attack File (ISAF) Statistics for the Worldwide Locations with Highest Shark Activity since 1990. 26 January 2004. <http://www.flmnh.ufl.edu/fish/sharks/statistics/statsw.htm> (accessed 18/08/2004).

⁹² D.H. Davies, “The Shark Problem” *South African Journal of Science* Vol.58 No.9 (September) 1962, p. 254.

⁹³ This will be discussed further in chapter 2.

⁹⁴ D.H. Davies, “Shark Attack and its Relationship to Temperature, Beach Patronage and the Seasonal Abundance of Dangerous Sharks”, *SAAMBR: ORI Investigational Report* 6. (1963), pp. 12 – 17.

three inhabit the South African coastal waters. However, the Tiger and Zambezi are more common in Natal waters than the Great White shark.⁹⁵ Tiger sharks are known to occasionally enter estuaries, but mostly inhabit turbid coastal waters. Zambezi sharks frequent rivers, estuaries and lakes as often as they visit the open coastal waters. Although Zambezi sharks do frequent the estuary of St. Lucia to breed, inshore behaviour is not common in Natal. Great Whites are partial to offshore open waters. However, research indicates that they do enter the coastal surf on occasion. For instance, it has been reported that a “small number of White sharks appear resident in False Bay but seem to move away from Seal Island and closer to shore...”⁹⁶ This study’s geographical location is the Natal coastline, and therefore the primary focus will be on Tiger and Zambezi sharks.

Barbara Leibardt refers to the work of author Alfred Crosby to argue that biological and ecological processes of change in the environment are perhaps as valuable, if not more so, than shifting cultural, religious and technological processes in the relationship between humans and their surrounding environment.⁹⁷ I, however, would like to postulate that environmental factors are as significant as the cultural factors in environmental history. Even more invaluable are the interactions that occur between these two factors. This thesis uses both components to study the interaction between sharks and humans. As shown earlier in this section, there is an array of cultural factors that determines human interactions with sharks. I would also like to argue there is a variety of material (geographical and ecological) reasons why Natal has experienced greater numbers of shark attack than other coastal areas of South Africa and neighbouring countries, such as Mozambique and Namibia. Examples of material reasons are climate (tropical climates), seasons and environmental aesthetics all playing a part in making Natal statistically prone to attack.

Scientists have hypothesized that several material factors influence shark attack in a certain location. These might include time, season, location, physical features of the

⁹⁵ C. Fallows and M. Le Sueur, “Deadly Danger: the Silent Assassins of Seal Island”, *Africa Environment and Wildlife*, Vol. 8 Issue 10 (November 2000), pp. 32 – 37.

⁹⁶ R.A. Martin, N. Hammerschlag, R.S. Collier and C. Fallows, “Predatory Behaviour of White Sharks (*Carcharodon carcharias*) at Seal Island, South Africa” *Journal of Marine Biological Association of the United Kingdom*, 85, (2005), p. 1131.

⁹⁷ B. Leibardt, “Interpretation and Casual Analysis:” *Environmental Review (ER)* Vol. No.12, (1988), p. 28.

coast, temperature and climate. International scientists in the late 1940s and 1950s hypothesized that attacks were not as random or as sporadic as they appeared to be. Some of the original studies on sharks in South Africa in the late 1950s and 1960s were, however, based less on scientific and more on general knowledge. It is now apparent that the writers of many of these studies were, in fact, misled in important respects and had been influenced by popular myths about sharks. Initially these myths and speculations hindered scientific research, but later they assisted shark research as many basic studies had been done which provided a basis for further research, although almost two decades passed before studies of a more technical nature were commenced in South Africa. However, these myths also led to valuable scientific works produced by scientists such as, Davies, J. D'Aubrey and J. Bass, which were not misguided and should not be disregarded.

The speculative basis of shark research is best reflected in the works of Coppleson, who even suggested that many previous studies done on sharks were based on general speculation.⁹⁸ In 1958, Coppleson argued that warmer water was the cause of shark attacks.⁹⁹ This may appear to be a very simple observation, but in fact - as will be shown later - the factors determining shark attack are very complex and this hypothesis, which served for the grounding of much of the earlier shark research, is inadequate.

On this issue, detailed research in South Africa progressed slowly. For instance, the question of the relationship between a swimmer's body temperature and the sea temperature was only assessed in South Africa almost twenty years after Coppleson's hypothesis. While in America Coppleson's theory was disproved by David Baldrige in 1974, in South Africa, the theory was only challenged later by Wallett in his work, *Shark attacks and the medical treatment of attack in South Africa*, which re-examines Baldrige's theory on the relationship between human physiology and shark attack. Wallett points out that:

if the water is warmer than 20°C body metabolism is able to replace the heat which is being lost. When water temperature falls below 20°C the rate of heat loss from the body becomes greater than the rate of production. This means that bathers can swim for longer periods in

⁹⁸ Coppleson, *Shark Attack* (Revised), p. 124.

⁹⁹ This hypothesis was accepted by most scientists, and was not challenged till the 1990s.

water warmer than 20°C but in cooler water, it becomes physiologically uncomfortable to remain immersed for long periods.¹⁰⁰

The warm water of the Agulhas current, which runs parallel to the Natal coast, encourages beach recreational activities such as swimming, angling, surfing and diving. After World War II these activities flourished in Natal, but only became popular in the colder waters of the Cape after the introduction of neoprene wetsuits in the mid 1950s.¹⁰¹ Neoprene allowed Cape recreationalists to be active in the sea for longer periods. This indirectly challenges Coppelson's hypothesis - until recently supported by many shark scientists - that it is the warmer water that constitutes the most important factor in determining the incidence of shark attack. The hypothesis was disproved and a new focus has emerged that considers the relationship between human activities and shark attacks.

Indeed, today Coppelson's theory has proven to be a misguided idea about sharks, as current research and statistics show that many attacks have occurred in cool waters, and this pattern is becoming more prominent, especially in the Western Cape. According to the South African Shark attack file (SASA), there has been an increase in attacks in Cape waters during the last decade.¹⁰² As mentioned, the increased interaction between sharks and humans, particularly in the Cape, is due to the introduction of technological advances such as neoprene wetsuits.¹⁰³ Thus, the introduction of neoprene has directly increased human and shark contact, and inevitably increased beach recreational activities and the chances of attack.

Beach recreation - such as the activities of swimmers, surfers, anglers and divers - tends to be seasonal. Clearly, beaches are used a great deal more in summer, by a variety of beach recreationalists, than in winter. As mentioned earlier, scientists speculated about, and monitored the obvious factors related to attacks and sharks. For instance, in the 1960s Schultz, Gilbert and Springer argued that attacks were confined to certain

¹⁰⁰ Wallet, *Shark Attack in Southern African Waters*, p. 69.

¹⁰¹ G. Cliff, "Shark Attacks on the South African Coast between 1960 and 1990.", *South African Journal of Science*, 87(10), (1991), pp. 513-518.

¹⁰² J.D. Woolgar, G. Cliff, R. Nair, H. Hafez and J.V. Robbs, "Shark Attack: Review of 86 Consecutive cases" *Journal of Trauma: Injury, Infection, and Critical Care* Vol. 50, 2001. p. 889. taken from G Cliff *Statistics from the South African Shark Attack File*, Durban, South Africa: Natal Sharks Board: 1999

¹⁰³ Woolgar, Cliff, Nair, Hafez and Robbs, "Shark Attack: Review of 86 Consecutive Cases", pp. 887 and 889.

seasons/months of the year, depending on the geographic location of an area. For example, both Africa and Australia are susceptible to shark attacks from November to April, whilst tropical islands are prone to attack throughout the year.¹⁰⁴ What appeared to the scientists as the common factor during this period, was the water temperature. However, the high average water temperature of 26.67°C in the tropics can be linked to Wallett's explanation of human physiology. Therefore, when the water temperature is at 26.67°C, beach recreationalists are likely to be more active. Because scientists originally thought that the difference in water temperature influenced the movement of sharks and therefore dictated where attacks would occur, they continued to look for the origins of attack in "nature" and the sea environment. However, as indicated above, recent evidence indicates that increases in human beach and sea activity are just as, if not more, important.

The seasonal movement of sharks is also very important in the distribution of sharks; for example, Zambezi sharks are more common in the Natal nearshore waters in summer than in winter. Figure 6 on page 47, taken from a study undertaken by A.J. Bass, illustrates that there is an increase in Zambezi sharks off the Natal coast during summer. Every year, usually during July, the Natal coast experiences the Sardine Run. This benefits Natal both economically and recreationally. The Sardine Run sees an increase in the activities of a variety of predators and an array of sharks follows the sardines up the coast.¹⁰⁵ This movement draws the sharks closer in towards the coast of Natal, thus increasing the chance of human and shark interactions.

The geographic distribution of sharks also determines human and shark contact. The Sardine Run indicates that human activity is relevant to human and shark contact. Indirectly, this also challenges Coppleson's hypothesis that attacks occur primarily because of water temperature, as during the Sardine Run different species of shark travel up the coast, and it is notable that not all are threatening to humans. Examples of the latter include Copper or Bronze Whaler sharks.

¹⁰⁴ Schultz, Gilbert and Springer, "Shark Attacks", 1962. p. 88.

¹⁰⁵ A. Aitken, *Natal Sharks Board: Sardine Run: The Greatest Shoal on Earth* (Marianhill: INCE (PTY) LTD, 2004). pp. 9 – 17.

The movement of sharks is also determined by material (geography/environmental and physical) factors and not just human activities influenced by culture. As early as the 1960s Davies argued that the geomorphology of beaches and seafloors determines the movements of various sharks along the coast. Deep channels, (“passages” in the seabed), created by currents, are found in areas of gently shelving sandy beaches. It is unusual for larger sharks to penetrate shallower waters, but such “passages” provide an opening for larger sharks to infiltrate shallow coastal waters. The majority of attacks in Natal occur in water that is between 0.6m and 3.6m deep.¹⁰⁶ Later research by Wallett in the 1980s indicated that where deep channels are present along the east coast of South Africa, far more shark attacks occurred.¹⁰⁷ In his article “A Comparison of the Shark Control Programs of New South Wales and Queensland (Australia) and KwaZulu-Natal (South Africa)” Sheldon Dudley, a biologist from the Natal Sharks Board, states that the presence of deep channels off the Australian Coastline has also been linked to attacks.¹⁰⁸

In the 1960s, Davies stated that the weather determines the conditions of the sea, in particular sea currents. Other than creating deep channels, currents also create turbid waters. As mentioned before, Tiger and Zambezi sharks are particularly inclined to frequent turbid waters. Davies argues: “(t)urbid and dirty water off the coast of Natal is usually present as a result of flooding of rivers and the discharge of silt-laden water into the sea. This occurs [in Natal] mainly in the summer time as a result of the rains during the period of November to March.”¹⁰⁹

Objectives of the Study:

J.R. McNeill categorises environmental history into three types of studies, namely material, cultural and political environmental history.¹¹⁰ This thesis encompasses all three these approaches. However, it tends to be most strongly influenced by cultural environmental history. Although South African environmental historian, Carruthers,

¹⁰⁶ Davies, *About Sharks and Shark Attack*. p. 136 – 137.

¹⁰⁷ Wallett, *Shark Attack in Southern African Waters and Treatment of Victims*, pp. 62 – 63.

¹⁰⁸ S.F.J. Dudley, “A Comparison of the Shark Control Programs of New South Wales and Queensland (Australia) and KwaZulu-Natal (South Africa)”, *Ocean Coastal Management*, Vol. 34. No. 1, 1997, pp. 16 – 17.

¹⁰⁹ Davies, *About Sharks and Shark Attack*, p. 128.

¹¹⁰ W. Cronon, “Modes of Prophecy and Production: Placing Nature in History” *The Journal of American History* Vol. 76, No. 4 (March) 1990, p. 1122, in this section W. Cronon makes reference to D. Worster

has described environmental history as an almost indefinite field, she further argues that “at the core of environmental history is a deliberation of how people use, manage or interrelate with natural resources and the natural environment...”¹¹¹ The American environmental historian, J. McCann, identifies this approach as the anthropogenic character of environmental history.¹¹² This theoretical approach will be crucial to the thesis, as it touches on the human impact on sharks, looking at aspects of this history such as myths, fear, science and the media. Although this chapter has introduced concepts such as myths and fear, they will be further developed throughout the thesis.

John Tosh argues “the historian has a significant...function in undermining myths which simplify or distort popular interpretations of the past.”¹¹³ I hope to achieve this within my thesis and ultimately correct the “distort[ed] popular interpretations of” sharks. Many of the myths associated with sharks are directly related to the human trepidation of the sea. Lemkin argues: “Beyond human control, the sea takes on all the aspects of wilderness that the virgin forest or desert might possess. And it is as archetypal and immediately recognizable as any other wilderness.”¹¹⁴ He also argues: “The Sea is still a region entirely beyond the control of man, we may label it and classify it, but that is all.”¹¹⁵ Other than this fear of the open ocean, people also fear shark attack, in part because of the brutal results of an attack. This can be linked to Quammen’s argument of being reduced to “edible meat.”¹¹⁶ The combination of these features contributed to the development and employment of anti-shark measures in Natal.

This chapter has covered the theoretical background to the study and has conceptualised the increased contact between humans and sharks during the 1940s and 1950s. The following chapters will use a chronological sequence to focus on a hypothesis that identifies the use of the sea as a recreational resource. The increased contact between humans and sharks led to the acceptance and implementation of anti-

¹¹¹ J. Carruthers, “Part One: Introduction” *South Africa’s Environmental History: Cases and Comparisons*, (ed) S Dovers, R. Edgecombe and B. Guest, (Cape Town: David Philip Publishers, 2002), p. 4.

¹¹² J. McCann, *Green Land, Brown Land and Black Land*, (London: Currey Publishers, 1999), p. 1.

¹¹³ Tosh, *The pursuit of history*, p. 21.

¹¹⁴ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 323.

¹¹⁵ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 324.

¹¹⁶ Quammen, *Monsters of God*, p. 1.

shark measures in Natal, which were primarily instigated by the events of “Black December” and the increasing importance of beach tourism. Indeed, it has been noted that:

(i)t is a truism to say that without the beaches the Natal Coast would have no holiday industry but it is necessary to point this out in order to see the beaches in their true perspective. They constitute open space of enormous economic importance – in the case of Durban, at least, at a national scale.¹¹⁷

Chapter 2 studies the economic patterns of the Natal coastline, and the rise and significance of beach recreationalism and tourism. Even though shark attacks were brutal and often fatal, it is my contention that shark attack was given disproportionate attention by the media. This led to the conviction that “the shark problem” needed to be solved; in turn leading to the increased research into anti-shark measures, the deployment of shark nets in Durban in 1952, and various other physical barriers along the South Coast coastline, after “Black December”.¹¹⁸ The 1960s became a decade of shark research, and net deployment.

Chapter 3 studies the different types of shark research and the reasoning behind shark research. It also focuses on the deployment of anti-shark measures in Natal. This chapter also investigates the ambiguities in early anti-shark measures and the difficulties experienced by local and scientific authorities.

Steps by various [South Coast] local authorities and other interested bodies are, in the absence of reliable knowledge, in the direction of providing physical barriers to exclude sharks from the bathing area. The exception to this is the Durban Municipality which provides buoyed nets parallel to the shore just the breaker line.¹¹⁹

Anderson, in a 1962 Masters thesis (which I utilize as a primary source), indicated the limited extent of knowledge about sharks during the 1960s. This thesis will chart the increasing scientific knowledge about sharks in Chapters 3 and 4.

¹¹⁷ J.K.M. Cameron, “Towards a policy for the control of building height on the Natal Coast”, (MSc in Town and Regional Planning in the Department of Town and Regional Planning, University of Natal, Durban. 1976.) p. 28.

¹¹⁸ During the 1950s and 1960s shark attack occurred primarily at Durban, and the “Black December” attacks were along the South Coast.

¹¹⁹ J.B. Anderson, “Some principles governing the location and design of holiday resorts on the Natal Coast”, (Diploma in Town Planning, University of Natal, Durban. 1962.) p. 23.

The 1970s, which are covered in Chapter 4, was a diversified period that saw the combined influence of shark research, the media, tourism and the emergence of the then new concept of conservation. In the 1970s Durban's tourist industry also expanded. "The economy of Durban is somewhat different" as it utilizes a different primary economic source, other than agricultural (Western Cape) or mineral (Transvaal) economic resources.¹²⁰ The change in beach recreation is central to Chapter 4, but the introduction of conservation marked the beginning of a new era. Hence, my decision to end my study in the 1970s. Conservation caused a huge shift in beach recreation and anti-shark measures in Natal, an important topic that lies beyond the scope of this study.

¹²⁰ Cameron, "Towards a policy for the control of building height on the Natal Coast", p. 27.

Figure 3: The “Man-eating” Sharks

GREAT WHITE SHARK *Carcharodon carcharias*



CHARACTERISTIC FEATURES

A powerful, torpedo-shaped body; conical snout; large triangular and heavily serrated teeth; deep gill slits; Prominent keels on caudal peduncle and a lunate tail.

Usual tooth count: 13-13
12-12

DISTRIBUTION

This wide ranging shark is usually found in coastal and offshore regions of the continental shelf. It occurs along the entire South African coast, but favours cooler waters.

NET CAPTURE

20 to 50 specimens are caught each year, mainly on the south coast during winter. The majority of these are less than 250 cm in length.

REPRODUCTION

Very little is known. Males and females mature at 300 and 450 cm respectively. Presumably aplacental viviparous development. No pregnant females have been reported from Southern African waters. The smallest free swimming specimen was 115 cm long. Maximum size may exceed 700 cm.

FEEDING

The powerful jaws and large cutting teeth enable it to tackle large prey items such as marine mammals, sharks and rays. A variety of fish are eaten. In the Cape, seals form a large proportion of the diet.

BEHAVIOUR

This species is considered to be the most dangerous shark of all and has been implicated in more attacks on men and boats than any other species. It usually occurs singly or in pairs. This species does not survive in captivity. In the past it was known by anglers as a blue pointer.

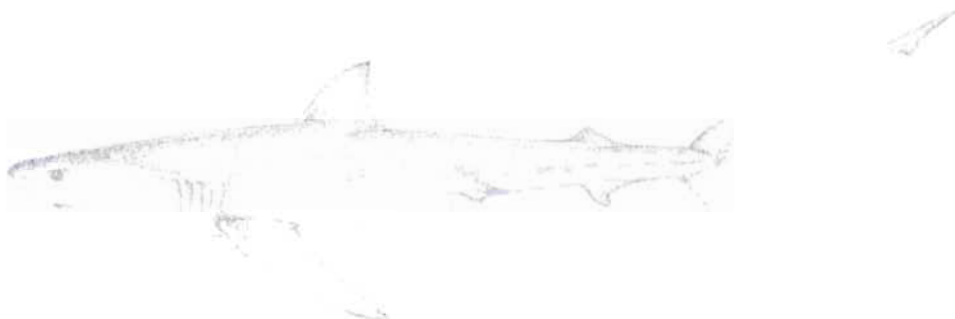
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¹²¹ Natal Sharks Board's Field Guide to Sharks and Other Marine Animals (Pinetown: Paper Print, 1994 (revised)) p. 10.

TIGER SHARK

Galeocerdo tigris



CHARACTERISTIC FEATURES

A large head with a very blunt snout and wide jaw but a slender body; large eyes. Vertical stripes fade with age and are barely visible in the adults. A distinct interdorsal ridge; the caudal peduncle has lateral keels. The cockscomb-shaped teeth are heavily serrated.

Usual tooth count $\frac{10-11-1-10-11}{11-1-11}$

DISTRIBUTION

It favours warmer waters and is rare in the Cape. Occasionally found far out at sea, but more often in turbid, coastal waters. It may enter estuaries.

NET CAPTURES

30 to 50 specimens are caught annually throughout the year, particularly on the middle south coast; the majority are immature. Only 1 pregnant female has been examined.

REPRODUCTION

Males mature at 235 cm and females at 265 cm. Breeding appears to take place well north of Natal. Aplacental viviparous development. The litter averages 35 pups which are born at 60 cm. This species may exceed 700 cm.

FEEDING

It is a most indiscriminate feeder, and is best described as a scavenger. An all-embracing diet features marine mammals, turtles, sea birds, a variety of bony and cartilaginous fish and cephalopods. An assortment of such garbage as carrion, tin cans and plastics are also ingested.

BEHAVIOUR

This species is usually solitary and more active at night. Although relatively sluggish, it is easily stimulated by food and is extremely dangerous. It is capable of pumping water over its gills when stationary. Smaller specimens may survive well in captivity.

¹²² *Natal Sharks Board's Field Guide to Sharks and Other Marine Animals* (Pinetown: Paper Print, 1994 (revised)) p. 12.

ZAMBEZI SHARK

Carcharhinus leucas



CHARACTERISTIC FEATURES

A large, robust bodied shark with a blunt snout. It is easily confused with the Java shark; the two can best be distinguished by the relative heights of the dorsal fins. The ratio of the vertical heights of the first and second dorsal fins is less than 3.2 in the Zambezi and greater than 3.2 in the Java.

Usual tooth count 13-1-13

12-1-12

DISTRIBUTION

It inhabits the warm, nearshore waters of Mozambique and Natal; rarely enters Cape waters. It may be found in many large rivers and lakes far from the sea; estuaries such as St. Lucia and Richards Bay form nursery grounds for the juveniles.

NET CAPTURES

Approximately 50 are caught each year, mainly in the summer months on the north coast. Most of the sharks are immature. Pregnant females are rare south of the Tugela River.

REPRODUCTION

Both sexes mature after 6 years at 190 cm. Breeding takes place north of the Tugela River; placental viviparous development. After a gestation period of just less than 1 year, 10 to 12 pups are born in summer at 50 cm. This species may attain a length of 240 cm.

FEEDING

Equipped with triangular cutting teeth and a wide mouth, it has a broad food spectrum. Rays, guitarfishes and small sharks are favoured prey items together with a wide variety of fish. It scavenges in the vicinity of flooding rivers.

BEHAVIOUR

It is extremely dangerous and is responsible for many shallow water attacks. It is one of the few sharks able to survive for long periods in fresh and muddy waters. This slow-moving shark adapts very well in captivity. Elsewhere in the world this species is known as the bull shark (USA) and the whaler (Australia).

¹²³ Natal Sharks Board's Field Guide to Sharks and Other Marine Animals (Pinetown: Paper Print, 1994 (revised)) p. 14.

Figure 4: Beach Recreation in Natal (1930 – 1961)¹²⁴

This graph indicates that there was a sudden boom in beach recreation in Natal between the 1940s and 1950s.

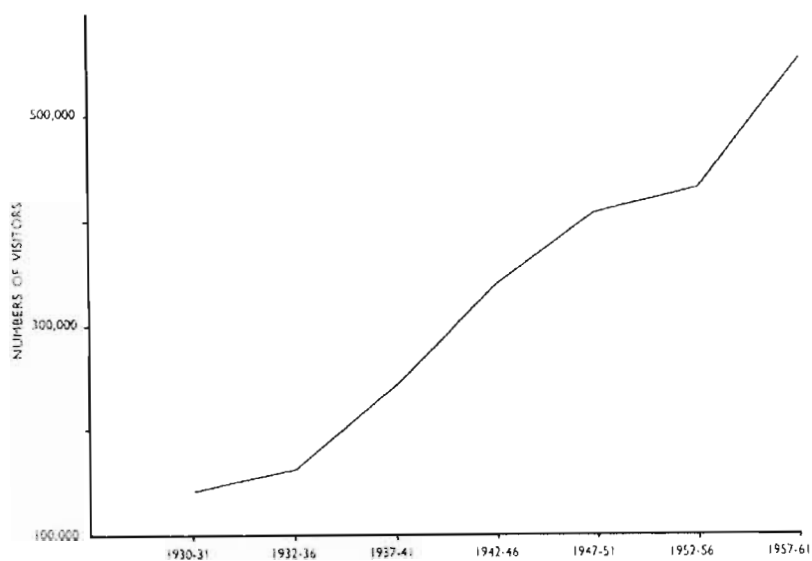
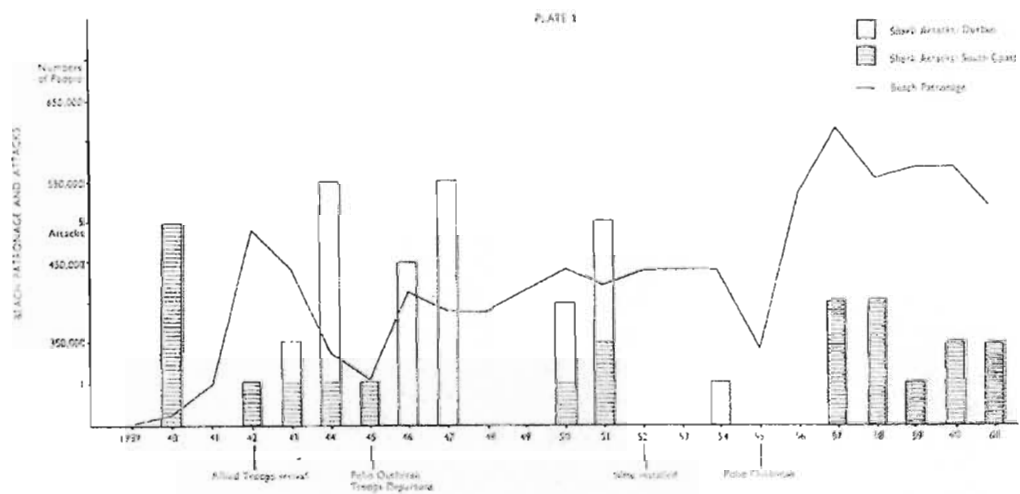


PLATE 4 MEAN BEACH PATRONAGE FOR FIVE YEAR PERIODS, 1932-61

¹²⁴ D.H. Davies, "Shark Attack and its Relationship to Temperature, Beach Patronage and the Seasonal Abundance of Dangerous Sharks", *SAAMBR: ORI Investigational Report 6*. (1963) plate 4.

Figure 5: Beach Recreation and shark attack off the Natal Coast (1939 – 1961)¹²⁵



¹²⁵ D.H. Davies, "Shark Attack and its Relationship to Temperature, Beach Patronage and the Seasonal Abundance of Dangerous Sharks", *SAAMBR: ORI Investigational Report 6*. (1963) plate 3.

Figure 6: Zambezi Shark movements off the Natal coast:

This table reveals that this shark frequents the Natal coastline in the summer months.

	No. of males	No. of females	Both sexes
January	13	7	
February	6	14	20
March	9	11	20
April	9	6	17
May	10	7	18
June	7	10	18
July	1	1	3
August	7	3	12
September	2	4	6
October	7	3	10
November	4	3	8
December	10	14	24

Table 34. Carcharhinus laevis. Seasonal distribution of sharks taken in the sea off Natal, mainly adolescent and adult specimens longer than 160cm.

¹²⁶ A.J. Bass, "The Carcharhinid and Scyliorhinid sharks of the East Coast of Southern Africa", (PhD in the Department of Animal Biology, University of Natal, Durban, 1972), Table 34.

Illustration 5: An example of environmental damage to nets: Algae

The below illustration shows natural wear and tear on the nets, which firstly adversely affected net catches and secondly called for frequent repair.



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Chapter Two

Post-War Beach Recreation off the Natal coast and the establishment of shark research institutions in Natal

The recurrent incidence of shark attacks on bathers...has emphasized the need for a better knowledge and understanding of sharks in order to develop protective measures against attack.¹

“Take a Holiday...”²: Setting the scene for the “tourist of the right kind”³

During the early part of the twentieth century, the city of Durban and its beachfront were almost separate entities, separated by swampy land (previously referred to as the Eastern Vlei) and by “the Ordinance Reserve or War Department lands”.⁴ Originally, what is now the beachfront was known as the “Back Beach”.⁵ Although there was limited access to the beach, as indicated in the Prologue, there was some public recreational use of Durban beaches and this led to the building of the Kenilworth Tea Room bathing enclosure in 1907.⁶ As early as 1914, holidaymakers (drawn locally, and from the Transvaal and neighbouring countries, such as the then Rhodesia) frequented Durban. Superintendent C.W. Newton, in his Report to the Durban Corporation Publicity Department: Beach and Entertainments Committee (hereafter BEC) of 21 September 1914 stated, “Visitors to Durban continue to arrive in fair numbers throughout the first two weeks of the month, and there was a demand for accommodation...”⁷

On 12 July 1915, the BEC included a cutting from the *Rand Daily Mail* in the agenda. The cutting was entitled “The rush to Durban Port having a record season: Money being freely spent” and the report began:

¹ J. D'Aubrey, “6. Sharks Survey off the East Coast of South Africa” *South African Association for Marine and Biological Research (SAAMBR) Bulletin* 2 (December) 1961, p. 12.

² Gidget in W. Cleary, *Surfing: All the Young Wave Hunters*, (New York: Signet Books, The New American Library, Inc., 1967), p. 14.

³ L.J. Grant, “An Historical Geography of the Durban Beachfront.”, (MA, University of Natal, Durban, 1992.) p. 165.

⁴ Grant, “An Historical Geography of the Durban Beachfront.”, p. 44.

⁵ Grant, “An Historical Geography of the Durban Beachfront.”, p. 44.

⁶ The enclosure will be discussed.

⁷ Established in 1914: Durban Archives Repository (DAR) 3/DBN 5/2/6/6/1 1914 Committee Report: Beach and Entertainments Committee 1/8/1914 – 31/7/1915. Superintendent's Report 21 September 1914.

The Durban Season has so far eclipsed all records. It is estimated by the S.A.R. that there has already been an excess of more than 1,500 visitors over last year's total, which itself has surpassed previous experience.⁸

The enchanting book, *Dear Old Durban* (published in 1985), includes pictorial images of early recreational facilities in Durban and also contains one generally unknown but, for the purposes of this study, important fact: that one of the first anti-shark constructions, internationally and nationally, was erected in Durban in 1907. "Few people realise that in the earliest days it was the Bayside that was Durban's beach, there was even a bathing enclosure there!"⁹ The importance of this little bathing enclosure is that its construction was to aid in protecting swimmers from shark attack. According to D.H. Davies, "the old records of the City Engineer, Durban, [indicate that] the reasons for the construction of this enclosure were to ensure that there was safe bathing and as a protection from shark attack."¹⁰ He continues to argue, "shark attack became a factor which had to be seriously considered by tourists in the planning of vacations in Durban."¹¹ This bathing enclosure connects the beginning of consumer recreationalism to the origins of anti-shark measures in Natal.

From these early beginnings, the association between the fledgling tourism industry, the protection of bathers and the economic fortunes of the city of Durban became firmly established. The financial benefit brought about by holidaymakers along the Natal coast was of great importance for Natal economically. Indeed, in his 1962 study of the location and design of holiday resorts in Natal, J.B. Anderson observed "(t)here can be little doubt that the shark attacks have dealt a shrewd blow at the coastal resorts."¹² Anti-shark measures and the various organisations established to conduct research into these measures and their use will be considered in this chapter, which first reviews the history of beach recreationalism in Natal after World War II.

⁸ DAR 3/DBN 5/2/6/6/1 1914 Committee Report: Beach and Entertainments Committee 1/8/1914 – 31/7/1915, "Cutting from Rand Daily Mail, 6 July 1915" 12 July 1915.

⁹ The Bathing enclosure was located at the Durban Country Club. Y. Miller and B. Stone, *Dear Old Durban*, (Pietermaritzburg, South Africa: Kendall and Strachan (Pty) Ltd, 1985), p. 60.

¹⁰ D.H. Davies, *About Sharks and Shark Attack*, (Pietermaritzburg: Shuter and Shooter, 1964), p.69.

¹¹ Davies, *About Sharks and Shark Attack*, p. 70.

¹² J.B. Anderson, "Some Principles Governing the Location and Design of Holiday Resorts on the Natal Coast", (Diploma, Town Planning, University of Natal, 1962), p. 32.

In her 1992 Master's thesis on the historical geography of recreation in Durban, Linda Grant wrote that the "industrial stimulus" prompted by World War I boosted South Africa's fledgling industrial economy. This period also saw the growing use of the Durban beachfront, even before the 1950s recreational boom. In the 1940s, South Africa's economy, and in particular, Durban, developed a new financial resource: tourism. This included the more extensive use of the Durban beachfront recreationally. The 1940s saw an exponential growth in the 'white' urban middle-class population of South Africa.¹³ This marked the name-change of Durban's "Back Beach", later called "Ocean Beach". Furthermore, Grant stated that the 1940s was the beginning of the "development of racially segregated swimming beaches" in Durban, and later elsewhere in Natal. She continues to say this reinforced the notion of "otherness",¹⁴ which thus led to the view held by the English speaking locals that 'non-whites' did not predominantly use the beach for recreation. Another element that separated recreational users was the types of beaches used for individual recreational hobbies. Anderson argues that "generally the interests of fishermen and resort visitors do not overlap."¹⁵ He points out that "The fisherman is interested in obtaining a strategic position from which to introduce his bait to the sea. Very often this is on a rock promontory [sic] from which it is impossible to swim safely."¹⁶

This further segregated beach recreational users, as the majority of 'non-white' beach recreational users were primarily subsistence fishermen.¹⁷ Although the beach was used recreationally for swimming by 'non-whites' this use was infrequent due to the unsafe conditions of the beaches allocated to 'non-whites'.¹⁸ Grant explains that "political and

¹³ Grant, "An Historical Geography of the Durban Beachfront.", pp. 85 – 87.

¹⁴ Grant, "An Historical Geography of the Durban Beachfront.", p. 146. This 'otherness' was the separation of 'whites' from 'non-whites', but it also led to the partition of 'non-white' recreational Durban beaches, which were often dangerous, with the waters both turbulent and current-ridden, from 'white' beaches, which were safe for swimming.

¹⁵ Anderson, "Some Principles Governing the Location and Design of Holiday Resorts on the Natal Coast", p. 30.

¹⁶ Anderson, "Some Principles Governing the Location and Design of Holiday Resorts on the Natal Coast", p. 30.

¹⁷ Durban's subsistence fishermen were predominantly Indian. They played a subsidiary role in the war against sharks by fishing and killing sharks.

¹⁸ The Reservation of Separate Amenities Act, No.49 of 1953. Under section 37 of the Durban Beach By-Laws and "Shark Attack Fatal: Petrus Sithole (classified as African): 24 January 1960" in T. Wallett, *Shark Attack and Treatment of Victims in Southern African Waters*, (Cape Town, South Africa: Purnell and Sons (SA) (Pty) Ltd, 1978), p. 169. and NSBL, Newspaper Clippings "Enclosure to be built: Shark protection for non-whites", 27 December 1960.

economic realities” determined “recreation patterns” and “practices” on the Durban beachfront.

From the 1930s, there was “the rise of a substantial and prosperous ‘white’, middle class, mostly of British descent.” These South African locals could afford the luxuries of the Durban beachfront.¹⁹ Thus, it was the broader South African political policy and its impact on the economy that determined the ‘white’ middle-class as the predominant recreational users of the Durban beachfront.²⁰ Grant uses Butler-Adams’ argument that the growth in the ‘white’ urban middle-class population influenced beach recreation for the following two reasons:

First, the emergence of the distinct middle-class meant that the [sic] a sizeable number of people had the means to aim at achieving the sorts of leisure practices previously common only to the very wealthy or powerful. Secondly, a large working class emerged whose daily labour was kept very distinctly apart from recreation activities, and whose lifestyle was dominated by its urbanness [sic] – a previously uncommon condition, and one which motivated people to get out of the cities and go into the countryside or down to the seaside.²¹

She adds: “a growing economy and improved railway infrastructure increased the numbers of visitors to the Durban seaside, so that by the 1930s and 1940s tourism had become a major industry and the holiday destination images dominated at the Durban beach.”²² According to Grant:

The beach had a different meaning for different people. Increasingly, for many it meant the opportunity to make money. The beach’s commercial base expanded unabated in the inter-war years of economic and urban growth.²³

Durban’s economy began to rely heavily on the development of the tourist industry. This was a significant factor in the urbanisation of a modern Durban, as the local population increased. Anderson’s graph, Figure 7 on page 75, illustrates both local population growths and local recreational use of the South Coast. World War II

¹⁹ Grant, “An Historical Geography of the Durban Beachfront.”, pp. 157 – 158.

²⁰ Grant, “An Historical Geography of the Durban Beachfront.”, p. 149.

²¹ Butler-Adam (1990) in Grant, “An Historical Geography of the Durban Beachfront.”, p. 87.

²² Grant, “An Historical Geography of the Durban Beachfront.”, pp. 148 – 149.

²³ Grant, “An Historical Geography of the Durban Beachfront.”, pp. 155 – 156.

promoted this growth, and “boosted South Africa’s economy”²⁴ and thus led to an industrialised and capitalised Durban. In 1945, P.J. Bowling, Durban Town Planning consultant, commented:

The sea front at Durban, as with any other seaside resort catering for health and pleasure seeking people, is of primary importance to the prosperity of the town and must be looked upon as one of its chief assets.²⁵

It is important to note, too, that at the same time as the physical development of the Durban beachfront and other busy beaches along the coastline took place, there was the emergence of a “contemporary popular culture” that reflected the increasing use of the beach for recreation.²⁶ Furthermore, it was also in the late 1940s and early 1950s that recreational use of the Natal coast began to expand, particularly along the South Coast. This movement was heavily influenced by the increased use of Durban beach by the ‘white’ working class, who were Afrikaans and not English – another segregating factor. “Middle-class families or persons who weren’t partial to the “razzle-dazzle” of amusement parks [predominantly used by the working class], had the alternative of “the quieter beauty spots down the Natal South”.²⁷

It should be noted that the majority of the material that follows is based on ‘white’ middle- and working-class recreationalists, unless specified otherwise, as this thesis has shown that due to political reasons many ‘non-whites’ were excluded from using the beach recreationally for numerous discriminatory reasons. The greatest shift in beach recreationalism in Durban was the marketing of the Durban beachfront as a modern entity. Modernisation emerges parallel to the urbanisation of an area.²⁸ The population of such an area, in this case Durban, is exposed to a mass increase in literacy and mass media and the results may include wider economic and political participation by that population.²⁹ During the 1930s, the people of Durban were exposed to a “vigorous and

²⁴ Grant, “An Historical Geography of the Durban Beachfront.”, p. 158.

²⁵ DAR 3/DBN 5/2/7/4/ ‘Post War Development 1943 – 1945’, Durban City Council: Post War Development Report by P.J. Bowling, Town Planning Consultant, (Durban: Hayne and Gibson (PTY.) LTD, 1945), p. 56.

²⁶ Grant, “An Historical Geography of the Durban Beachfront.”, pp. 164 – 167.

²⁷ Grant, “An Historical Geography of the Durban Beachfront.”, pp. 164 – 167.

²⁸ R. Salcedo, “What leads to Modernisation?” *The Journal of Modern African Studies (JMAS)* 1.9, 4, (December) 1971, p. 626.

²⁹ Salcedo, “What leads to Modernisation?”, p. 627. In South Africa, this was influenced by racially segregationist policies and practices.

aggressive advertising drive.”³⁰ Posters and notices were placed almost everywhere within ‘white’ locations of South Africa and neighbouring countries that marketed Durban as a “holiday attraction”.³¹ This resulted in the commodification of beach recreationalism in Durban, which in turn led to the sale of items such as surfboards and wetsuits.³² It also resulted in the increasing exposure of the Durban population to mass media advertising.

The extension of transport networks, such as railways from the Rand to Durban, led to increased mobility for many, and this contributed towards the modernisation and urbanisation of the city.³³ Physical mobility boosted the influx of foreign visitors from the Transvaal and Rhodesia into Durban. Indeed, South Africa’s most promoted tourist attraction was Durban’s beachfront and its associated recreational resources. According to Grant:

By the mid-1940’s then, the annual sea-side holiday which industrialism and urbanisation had precipitated in Europe had been transferred to South Africa, and was fast becoming the norm amongst an increasingly prosperous white urban proletariat. The creation of the Tourist Development Corporation of Southern Africa, brought into being early in 1939 by the passing of the Publicity Corporation Bill in September 1938 is proof of the up-swing in tourism and holiday-making throughout South Africa.³⁴

In his work a *Preview of Community Recreation*, published in 1942, H. Meyer states that “the use of recreation is constantly growing in importance as a factor of modern life.”³⁵ In the 1940s, then, there was a rapid increase in leisure time amongst ‘white’ middle-class families and later among the ‘white’ working class, in Natal. “The ruling United Party, concerned about losing the support of ‘white’ labour...made a number of interventions to ensure the high levels of employment for ‘white’ labour in the country’s emerging economy. Job security of this nature improved the lot of the ‘white’ working class which swelled further the number of potential up-country visitors.”³⁶

³⁰ Grant, “An Historical Geography of the Durban Beachfront.”, p. 156.

³¹ Grant, “An Historical Geography of the Durban Beachfront.”, p. 156.

³² Idea from H. Mayer, “Geography and Urbanism” *The Scientific Monthly* Vol.73 no.1, (July) 1951. p. 41.

³³ Salcedo, “What leads to Modernisation?”, p. 628.

³⁴ Grant, “An Historical Geography of the Durban Beachfront.”, p. 168.

³⁵ H. Meyer, “A preview of Community Recreation” *Social Forces*, Vol.20 No.3, (March) 1942, p. 357.

³⁶ “The ruling United Party, concerned about losing the support of white labour...made a number of interventions to ensure the high levels of employment for white labour in the country’s emerging economy. Job security of this nature improved the lot of the white working class which swelled further

Beach recreational activities - such as swimming, surfing, sun tanning and recreational fishing - also became more popular among the 'white' public. Meyer makes the important observation that "geographic setting and ecological factors are important [to recreational conditions]. Natural resources, climatic conditions, topography, and geography are [all] elements in this picture."³⁷ All of the above crucial elements needed for a successful recreational setting were prevalent along the Natal coast, as Anderson notes:

Natal beaches are fortunately composed of fine white sand [which] apart from providing excellent diversion for spade-wielding children is conducive to the comfort of the older and the more sedate. In addition to the functional aspect, the beaches are cleaner-looking and more attractive.³⁸

During the late 1950s and early 1960s, Natal experienced a beach tourist boom due to the international and local growth in beach recreational activities and Natal's ideal geographical location. In 1954 Clawson wrote that during the 1950s "in comparison to other well known economic activities in the United States, recreation rank[ed] as a major economic and social activity."³⁹ The modernisation of Durban ran parallel to the growth of beach recreationalism as an economic and social activity in South Africa.

During the 1950s, beach recreation had become a central part of the growing "contemporary popular culture" of the twentieth century. Writing about the rise of popular culture internationally, Gilbert states that while traditionalism and censorship defined the 1950s, as modernisation evolved, these features were challenged by a new "contemporary popular culture". The term contemporary popular culture refers to various subcultures of modernisation that oppose censorship and are often associated with "delinquent youths".⁴⁰ "Popular culture has long celebrated the individual pitted against society."⁴¹ However, I postulate that popular culture was not necessarily "pitted against society" but rather, that it did not conform to the contemporary standards or

the number of potential up-country visitors." Grant, "An Historical Geography of the Durban Beachfront.", p. 158.

³⁷ Meyer, "A Preview of Community Recreation". p. 358.

³⁸ Anderson, "Some Principles Governing the Location and Design of Holiday Resorts on the Natal Coast". p.27.

³⁹ M. Clawson, "Statistical Data Available for Economic Research on Certain Types of Recreation" *Journal of the American Statistical Association* Vol. 54 No. 285, (March) 1959. p. 287.

⁴⁰ J. Gilbert, "Popular Culture", *American Quarterly* Vol. 35 no. ½ Special Issue: Contemporary American (Spring/Summer 1983). p. 142.

⁴¹ Gilbert, "Popular Culture". p. 143.

norms of that society during that period, but later became more acceptable. A mainstream “contemporary popular culture” recreational activity adopted by ‘white’ middle-class Durban youth was surfing. The inspiration for surfing originated from foreign role models, often American surfers. Magazines and other sources on surfing were frequently international, with local publications only following later.

One American surfing role model was a young woman called Gidget – Kathy Kohner. Her father, Fredrick Kohner, recorded her experiences of the popular surfing beach Malibu and later published a novel about her adventures. In 1959, Columbia pictures released the movie *Gidget*. According to the authors of a history of surf culture, *Gidget* “...hit the American youth audience right where it counted.”⁴² As mentioned before, the expansion of literacy and mass media in Durban was exponential during the 1950s. Visual and written works, such as *Gidget*, spread through the Durban ‘white’ youth community, as quickly as it was adopted by the American youth. The lack of South African role models, led to Durban surfing recreation being strongly influenced by the American surf culture. “And what is happening was born with *Gidget*, a state of mind that arose in the wake of the second war...”⁴³

Ah yes, we remember. Her trinity heralded an era. Gidget spread the word. “Take a holiday,” she said. Because that’s what everybody wanted to do in the first place...only needed somebody to suggest the idea. Where? To Malibu. “Right next to the pier where the waves coming from Japan crash against the shore like some bitchen rocket bombs,” she said.⁴⁴

W. Cleary, one of the early Malibu surfers, writes in his social history of surfing: ““Let’s go surfing!”... Meaning: Let’s get away from all this. Let’s get out of this smoggy, congested city; away from all these people.”⁴⁵ Cleary accurately describes what beach recreation was, a mini break from the chaotic urban environment that had rapidly developed after the mid-twentieth century. The Natal coast became the 1940s Malibu of South Africa. By the 1970s, the incorporation of commercial activities into the tourist industry had become a way of life for some members of the local ‘white’ community, particularly the ‘white’ middle-class males.

⁴² D. Kampion and B. Brown, *A History of Surf Culture* (Los Angeles, United States of America: General Publishing group, Inc. 2003). p. 68.

⁴³ W. Cleary, Topanga Beach, California, April 1966 in W. Cleary, *Surfing: All the Young Wave Hunters*, (United States of America, New York: Signet Books, The New American Library, Inc., 1967). Preface.

⁴⁴ Cleary, *Surfing: All the Young Wave Hunters*. p. 14.

⁴⁵ Cleary, *Surfing: All the Young Wave Hunters*. p. 15.

Parallel to the popular culture of surfing-related activity was the start of skin diving in Cape Town in 1947. The year 1947 marked the early stage of “snorkel type expeditions” and hence “skin-diving was born in the Republic and the early Cape frogmen were playing their part in what was later to develop into a major national recreation and activity.”⁴⁶ Condon continues to say, “Although Cape divers had started the diving scene, Durban was soon to develop into one of the keenest centres. Natal boasted much better spearfishing...”⁴⁷ and the use of aqualung, now commonly referred to as scuba (self-controlled underwater breathing apparatus).⁴⁸ Gordon Lumley, an underwater enthusiast, founded the Durban Undersea Club and the first local fin-diving magazine.⁴⁹ Thus, training was locally available for underwater enthusiasts. The development of these recreational activities attracted both local residents and visitors to the Durban beachfront.

Due to the increase in the recreational use of the beachfront, in 1947 the Beach Development Advisory Committee noted the following:

The City and Water Engineer stated that last year the Council had made provision in the Estimates for an increase in the number of bathing booths and a shark-pooof bathing enclosure at the South Beach [of Durban]. The bathing enclosure was most essential in view of the recent shark menace.⁵⁰

In the same report, the Council expressed concerns about ‘non-white’ bathing enclosures for which ‘non-white’ public had appealed. The decision was that such enclosures be established, but that they be separated from ‘white’ enclosures and that such enclosures be kept to a minimum.⁵¹ As previously mentioned, the local municipal council limited ‘non-white’ usage of the beach and provided separate and unequal beach and entertainment facilities. As mentioned earlier, Grant stated that both local and national political economies pre-determined “patterns of usage and cultural frames

⁴⁶ T. Condon, “History of Skindiving in South Africa” *Beneath Southern Seas*, Ihlane, printed by the Natal Witness Printing and Publishing Company (Pty) Ltd. South Africa, 1990. p. 9.

⁴⁷ Condon, “Cape Founder Divers” and “Natal Pioneers” *Beneath Southern Seas*, p. 18. Illustration 6 on page 78.

⁴⁸ In the early 1960s the aqualung was used in pioneering shark research. NSBL: Natal Sharks Board Newspaper Clippings: Book 00: “Scientists with Aqualungs to study Sharks”.

⁴⁹ Condon, “Cape Founder Divers” and “Natal Pioneers” *Beneath Southern Seas*, p. 18.

⁵⁰ DAR 3/DBN 1/3/14/1/1 Beach Development Advisory Committee 1947 – 1952 Minutes of Beach Development Advisory Committee, 28 April 1947.

⁵¹ DAR 3/DBN 1/3/14/1/1 Beach Development Advisory Committee 1947 – 1952 Minutes of Beach Development Advisory Committee, 28 April 1947.

of reference at the beach”. Later, in the 1970s, these relationships became even more complex.⁵² Thus, beach recreationalists originally were primarily ‘white’ middle-class persons.

The first priority of the 1947 report, was the once again initiated concern about sharks and anti-shark measures, and a few years afterwards, in 1952, the Durban City Engineers decided to install the first set-nets off Durban.⁵³ The Durban Beach Committee deployed an arrangement of this “off-shore meshing” approximately 150m from the shore, in individual set-nets, off the Durban beachfront.⁵⁴ Figure 8 on page 79, from Davies’s work, shows a diagram of the nets originally deployed off the Durban beachfront.

Durban beach recreationalists rapidly accepted the nets as a standard safety feature shortly after they were first deployed off Durban’s beaches. In my interview with Baron Stander, a local surfing model, he remembered that in 1952 he and some of his peers used to take the “girls out for a paddle to see the shark nets.”⁵⁵ Although the deployment of nets in Durban was a success, the South Coast did not deploy nets. However, following the “Black December” of December 1957 to April 1958, the South Coast municipal authorities started to deploy nets after 1964. Several years later the Natal Regional Council noted the following: “...the tourist trade has grown from strength to strength. The only slump that was experienced was during 1957 to 1960 and [this] was mainly due to shark attacks.”⁵⁶

As indicated above, it was after “Black December” that the South African and Natal public, as well as, the scientific communities became increasingly aware that sharks posed a threat to popular beach recreational activities along the Natal South Coast, which was becoming integrated in the newly thriving tourist industry of Durban. In

⁵² Grant, “An Historical Geography of the Durban Beachfront.”, p. 159.

⁵³ Also known as gill nets, meshing nets and shark nets.

⁵⁴ D.H. Davies, “Anti-Shark Measures in South Africa”, *About Sharks and Shark Attack*, (Pietermaritzburg, South Africa: Shuter and Shooter, 1964). pp. 85 – 87.

⁵⁵ Interview between Baron Stander and M. van Oordt, Durban, November 2004. Baron Stander was one of the first South African surfers and recreational users of the sea and is a model for the local “surfing community”.

⁵⁶ “Draft Regional Plan for the South Coast” *Town and Regional Planning Commission Natal: Natal Town and Regional Planning Reports* Vol. 29 1974. p. 109.

May 1958, the Council for Scientific and Industrial Research (CSIR), National Physical Research Laboratory (NPRL) noted:

Durban and the Natal South Coast can be described as the “Riviera” of South Africa and is by far the most popular holiday resort for the more densely populated parts of the Union and Central Africa. It is estimated that approximately 200,000 foreign visitors with a spending power of £5,000,000 visit Durban annually, and that total tourist trade amounts to £7,000,000 per year for Durban and £2,000,000 per year for the South Coast.⁵⁷

Subsequent to “Black December”, the CSIR NPRL noted that due to “...the recent shark scare...many holiday facilities lie deserted and [are] facing financial collapse. This situation arises, not from the number of fatalities...but from their psychological effect...”⁵⁸ The conclusion was that the only means to secure swimmer safety, and more importantly tourist safety, was to provide them with a means of protection against sharks.⁵⁹ Beach recreationalism had become popular in Natal therefore nets were deployed (as a means of protection), even if it was largely because of their psychological safety. Kampion and Brown recorded this movement amongst beach recreational users in their book on the history of surfing in the US as follows:

By 1959, the catalytic reaction seeded by surfing’s pioneers was heading up the steep part of the growth curve. The beach, with the promise of freedom and excitement, lured more and more kids from farther and farther inland, and with the explosion of foam technology and the growing popularity of the wetsuit,⁶⁰ surfing⁶⁰ had reached critical mass.⁶¹

What was occurring off American coastlines was replicated off the Natal coastlines, and as mentioned before, local surfers originally followed the trends set by international surfers. Beach recreation was (and still is) expanding and by the 1960s beach recreationalism was becoming a way of life, a lifestyle that would become socially and culturally integrated in Natal. This change was influenced by international movements as depicted by Cleary who describes the international growth of surfing, which also initiated the growth of other beach recreational activities, such as swimming and

⁵⁷ NSBL CSIR File “State of Union Year Book for South Africa” 1957. p 356 from “Memorandum on Anti-shark Measures” in CSIR. *National Physical Research Laboratory. Pretoria*, (May) 1958. p. 2.

⁵⁸ NSBL CSIR File “Memorandum on Anti-shark Measures” *CSIR National Physical Research Laboratory (NPRL) Pretoria*, May 1958 p. 2.

⁵⁹ NSBL CSIR File “Memorandum on Anti-shark Measures” *CSIR NPRL Pretoria*, May 1958, p. 2.

⁶⁰ In addition, other recreational activities were also heavily influenced by the technological advancements of wetsuits, which played a critical role in increasing use of the beach recreationally.

⁶¹ D. Kampion and B. Brown, “The Boom Culture” *A History of Surf Culture*, p. 73.

body surfing. I postulate that one can apply Cleary's view of surfing to all international, and more importantly, local beach recreational activities:

Everywhere are waves, everywhere the waves are different. Surfing has changed. It has expanded, and too it has narrowed. There are millions where once there were few, and the few knew the sea as the millions now know only the wave at a single beach...But among the millions at all the corners of the sea are the few who are leaders – who have found their place apart. They swim and body surf; they sail and board-surf...⁶²

It has been argued that “no nation is ever rich enough to afford to launch and subsidize all necessary development programmes simultaneously. With limited resources, priorities must be set.”⁶³ The pressure of modernisation resulted in a tremendous increase in beach recreation off the Durban and South Coast of Natal. However, as this thesis shows, financial constraints always prevented the full deployment of anti-shark measures in Natal. The human fear of sharks generated enough power to ensure that sufficient funds were available for the deployment of nets off the more popular recreational areas along the Natal coast. It also influenced the ‘white’ middle-class utilisation of the beaches’ natural resources and spurred research into the development and deployment of anti-shark measures in Natal. As later chapters indicate, the primary recreational use of the beach changed, as well as the ‘white’ middle-class views of the sea. Thus, popular culture, modernisation and, later, the introduction of conservation measures, influenced the shift of the Natal public's use of the local marine resources. At all times beach recreation has played a key role in the utilisation of the Natal coast.

Reaction! The Ramifications of “Black December”:

“The horror they inspire...[was] given disproportionate prominence in the Press”⁶⁴

Rodolfo Salcedo has argued that “(m)ass media exposure was measured as the extent to which an individual was exposed to information via mass media.”⁶⁵ “[Literacy] enables... [a person] to gain direct access to messages in the mass media, which were often ‘pro-change’ in nature, thus...” making the individual amenable to change.⁶⁶ In the late 1950s, the ‘white’ Natal press was instrumental in popularising the message

⁶² Cleary, *Surfers: All the Young Wave Hunters*, p. 126.

⁶³ Salcedo, “What leads to Modernisation?”, p. 626.

⁶⁴ J.L.B. Smith, “Shark Attack in South Africa” (letter), *South African Journal of Science*, June Vol. 54 No. 6, 1958, p. 150.

⁶⁵ Salcedo, “What leads to Modernisation?”, p. 628.

⁶⁶ Salcedo, “What leads to Modernisation?”, p. 629.

that sharks were a threat to beach recreationalists. The press most certainly swayed the public, the state and scientific views of sharks, as well as determined their attitude to sharks. In May 1951, *The Daily News* published an article on the nets in Durban: “Shark-netting experiment off Durban appears to have been a success”⁶⁷, and later Davies expressed his faith in the shark nets.⁶⁸

The financial benefits beach recreational activities offered Natal (and South Africa) allowed for the symbiotic growth of anti-shark measures and tourism in Natal. This guided Natal municipal authorities to the decision to deploy anti-shark measures along the Natal coast. The press, especially *The Natal Witness* and *The Natal Mercury*, recorded the dramatic occurrence of shark attack. These newspapers were circulated in key ‘white’ areas and certainly persuaded and united the majority within the above-mentioned groups in their consensus in favour of these measures. Headings such as “...Bathers scamper from sea at cry of “Sharks””⁶⁹ became increasingly prevalent in the press and, as mentioned earlier, these articles coerced the ‘white’ middle class into believing the threat sharks posed to their leisure beach recreational activities was great.

The press portrayed sharks as man-eating rogues and claimed that the incidence of shark attack along the Natal coast in the 1940s and 1950s had not only increased, but that attacks were practically guaranteed. By the late 1950s, the image of the inherent man-eating shark had become dominant in the mind of both the press and the public:

A shark will swim straight down one of these channels and attack anyone who happens to be in his way...If he finds nobody in his path, he’ll swim out to sea, back away out to sea, back along his channel.⁷⁰

Unhappily sharks are still hitting the headlines. And when as happened on Monday, a shark attacks a girl who is bathing in knee-deep water, they won’t be very far from the thoughts of everyone who takes a dip in the Indian Ocean.⁷¹

⁶⁷ Due to the apparent decrease in shark attacks off the Durban coastline after their deployment.

⁶⁸ NSBL Newspaper Clippings “Comparison with Australia shows good results: Shark-netting in Durban appears to have been a success” *The Daily News*, 10 May 1951 and NSBL Newspaper Clippings “No completely reliable shark barrier known” *The Daily News*, 10 May 1951.

⁶⁹ “S. Coast Bathers Scamper from Sea at Cry “Sharks”” *The Natal Mercury*, 1 January 1958, p. 12 (My research covers English newspapers only, the primary reason for this being the political exclusion of ‘non-white’ people from beach recreational activities – as indicated in this chapter already.)

⁷⁰ “Sharks don’t Cruise” *The Natal Mercury*, 21 January 1958.

⁷¹ “Shark named Gandhi” *The Natal Mercury*, 1 January 1958.

In 1958 controversial South African ichthyologist, J.L.B. Smith,⁷² wrote a letter to the *South African Journal of Science* that argued: “Because of the horror they inspire, shark attacks on surf bathers are given disproportionate prominence in the Press...that not all such sharks attack at every opportunity, that it is probably not correct to regard them as true “maneaters”.[sic]”.⁷³ Although, many of Smith’s ideas may be disputable, he certainly characterises the role of the press accurately in this statement. As shown above, the press was littered with articles that portrayed the shark as a man-eating beast. Sadly, the majority in Natal was convinced by the ideas conveyed by the press and not by the factual evidence provided by scientific data and records maintained by the Oceanographic Research Institute (ORI) during the 1960s and later by the Natal Sharks Board (NSB).

The press certainly played a role in persuading and placing pressure on Natal’s ‘white’ middle class and local and national municipalities to deploy anti-shark measures along the coastline. These were primarily physical barriers. R. Williams argues: “ideas of nature...are the projected ideas of men.”⁷⁴ These “ideas” of sharks after “Black December” were varied, for example, Smith’s opinion of sharks shifted continuously: As mentioned earlier, he stated that shark attack was given disproportionate attention in the press. But, in 1961, he wrote that even though attack on swimmers was infrequent these attacks “cannot be tolerated” and that “our guiding principle should be that the only safe shark is a dead shark.”⁷⁵

Environmental historian, S.P. Hays, in *Explorations in Environmental History* argues that “for the historian, the most challenging competitor in the attempt to shape an understanding of the contemporary environmental world is the mass media.”⁷⁶ He continues to state that the media sensationalises events, whilst the historian looks for the meaning of the event. In the case of Natal, it is clear that the sensationalism of the press assisted and instigated the employment of anti-shark measures in Natal. Both the

⁷² The reason I refer to J.L.B. Smith as controversial is that Smith’s opinion of sharks was inconsistent. His fluid views will be displayed throughout this thesis.

⁷³ J.L.B. Smith, “Shark Attack in South Africa” (letter) *South African Journal of Science* Vol.54, No.6, (June) 1958. p. 150.

⁷⁴ R. Williams in W. Cronon, “The Uses of Environmental History” *Environmental History Review* no. 17 (Fall) 1993 p. 9.

⁷⁵ J.L.B. Smith, “Are We on the Right Road with Sharks?”, *Field and Tide*, March 1961.

⁷⁶ S.P. Hays, “Introduction”, *Explorations in Environmental History*, 1998. xx.

press and scientific publications followed a very similar chronological order, as the press often incorporated scientific opinion into their reports.

The propaganda about sharks produced by the Natal press moulded Natal's perception of sharks. In turn, this provoked an interest in scientific research into anti-shark measures in the 1960s. This research is pivotal to Chapter 3. As mentioned before, the press's interest in publishing articles on shark attack was triggered by "Black December", which also instigated a public fear or phobia of sharks. As these attacks did occur and the results were often fatal, it can be argued that the fear of sharks was well founded; however, the press unduly exploited this fear. I would argue that it was an exaggerated; perhaps even "irrational fear" of sharks that at least, in part, instigated the deployment of anti-shark measures in Natal. The environmental conditions along the Natal coast determined the measures employed. For instance, the measures chosen had to be appropriate for the particular beachfront surf conditions of Natal.

"Nature does not dictate but does set limits and offers infinite possibilities to people, who then, according to the limits and possibilities of their own...make choices"⁷⁷ – the case of anti-shark measures along the Natal coastline.

Cleary stated: "At the turn of the century, surfing's huge new wave was gathering, it rose high into the fifties and just yesterday crashed down to engulf the world...this wave which was ridden from Hawaii to the mainland, to Australia, New Zealand, South Africa, France, and England, and to all far-flung corners of the sea."⁷⁸ Cleary argued that by the mid twentieth century, humans had begun to find a new way to use the sea, recreationally, and therefore humans had to develop new tools to enhance their use of this newfound resource. In his case these were surfboards, however, in the case of Durban and the South Coast of Natal, it was anti-shark measures to protect the people participating in the thriving beach recreational activities.

W. Cronon believes that "tools and technology are immensely important in shaping natural environments, but their efforts are powerfully mediated by the cultures in which

⁷⁷ A. Crosby, "The Past and Present of Environmental History", *The American Historical Review*, Vol. 100 no.4, (October) 1995, p. 1183.

⁷⁸ Cleary, *Surfing: All the Young Wave Hunters*, p. 122.

they are embedded.”⁷⁹ In Natal, the emergent popular culture of beach recreationalism was continuously pressurised by the press to employ anti-shark measures. Scientific research into anti-shark measures also concentrated on the rocky geographical surroundings of the Natal coastal environment and the nature of climate. According to T. Wallett, the depth of the sea from the shore determines where the nets “will be placed from the beach. The nets are generally set in 12 metres of water.”⁸⁰ Figure 9 shows the different settings of the nets off various beaches along the Natal coast.

Environmental conditions frequently determine the tools or technology that humans develop in order to survive and utilize the environment to their advantage and to combat the environmental challenges that the environment presents.⁸¹ This notion outlines the causes for development of anti-shark measures in Natal and Cleary’s book encompasses this idea. He describes the sea as “alive, violent, powerful and beyond man.”⁸² Cleary continues to say: “But man is adaptable, and where the sea was particularly angry, he built boats to meet the challenge...”⁸³ Cleary observes the untameable nature of the sea, mentioned earlier in this thesis, drawing on Davies’ and Cliff’s scientific works. However, Cleary indicates awareness that humans have the desire to adapt and control their surrounding environments. The deployment of anti-shark measures in Natal was encouraged by the human desire to utilize the beach recreationally.

Some of the original methods, particularly those that followed directly after the “Black December”, are now discussed. In Chapter 3 the research and employment of anti-shark measures in late 1950s and 1960s will then be covered in more detail. One of the more popular, but also controversial measures, was depth charging. Depth charging was one of the first methods used after the “Black December”. The Natal press closely monitored this temporary measure. The first depth charge used by the South African Navy was during the “Black December” period and took place on 6 January 1958. Press

⁷⁹ W. Cronon, “The uses of Environmental History” *Environmental History Review*, no.17, (Fall) 1993. p. 8.

⁸⁰ T. Wallett, “Analysis of Shark Meshing Returns off the Natal Coast”, (MSc, Department of Biological Sciences, University of Natal, Durban. 1973.), p. 12.

⁸¹ Webb in B. Leibardt, “Interpretations and Causal Analysis” *Environmental Review*, Vol. 1 no. 12, 1988. p. 27.

⁸² Cleary, *Surfing: All the Young Wave Hunters*, p. 90.

⁸³ Cleary, *Surfing: All the Young Wave Hunters*, p. 107.

coverage followed on the day of the second depth charge, which was on 7 January. It was then reported that: “Aided by newspaper and radio publicity, the crowds are far larger than those which have attended any Hibiscus festival or other Margate attractions...I could see people crowded on the headland, on hotel balconies and even perched on rooftops.”⁸⁴

This report indicates a high level of active public support for what was widely called the “war against sharks”. However, there were some scientific dissenters. Immediately after this publication, in the same newspaper, an article challenging the use of depth charges was published that included two scientific opinions. Hector J. Koch, an authority on molluscs, and J.L.B. Smith stated that depth charging would be more harmful than constructive in managing the shark problem Natal was facing at the time.⁸⁵ The depth charge eliminated approximately eight sharks. According to the above scientists and others, the dead shark and other sea-life remains would attract sharks closer to the shore. Although, there was, in this instance, no immediate scavenging by the sharks, during or after the depth charges, this measure was hastily halted.⁸⁶

An issue that swayed the public away from the use of depth charging was that it destroyed a variety of other forms of sea life.⁸⁷ The issue of depth charging was highly controversial, as reflected in the press, and opinions on depth charging varied on a daily basis. However, the numerous reports and articles on depth charging emphasize the crucial point that Natal shared one mutual interest: coastal recreationalists needed to be protected from sharks, whatever the methods! A concern for sharks did not motivate the objections; rather, the objections were a reflection of the concern for human safety from these alleged predators.

Anti-shark methods and studies in the 1960s and 1970s were highly controversial and frequently contested. After “Black December”, anti-shark measures were increasingly used in Natal. The field of anti-shark research branched out during the 1960s and many

⁸⁴ “Depth Charges today at Margate” *The Natal Mercury*, 6 January 1958. and “8 Sharks Blasted at Margate” *The Natal Mercury*, 7 January 1958.

⁸⁵ “Experts opposed to Shark Bombing” *The Natal Mercury*, 7 January 1958.

⁸⁶ “8 Sharks Blasted at Margate” *The Natal Mercury*, 7 January 1958.

⁸⁷ “8 Sharks Blasted at Margate” *The Natal Mercury*, 7 January 1958.

different studies were embarked upon. Subsequent to “Black December”, the development of many measures led to debates on both the research and the deployment of these measures, which included helicopter patrols, depth charging, shark netting and the generation of vibrations/bubbles.⁸⁸ However, by early 1959 it became clear that the most common and supported method was (and remains today) shark netting. Wallett describes the pattern of netting: “Each net installation comprises two net rows laid parallel to shore in such a way that nets in the second row overlap the gaps in the front row.” He continues, “(t)hese two rows do not form an impassible [sic] barrier to sharks which swim over, under and around the sides of the nets.”⁸⁹ This allows other forms of sea life, such as dolphins, to move freely around the nets. The movement of sea life around the nets is demonstrated in Figure 10 on page 81.

The permanent employment of the nets did not prevent a variety of different forms of anti-shark research from being undertaken in Natal, nor did it curb anti-shark experimentation. In Natal, the increasing use of the sea recreationally ran parallel to the growing deployment and use of anti-shark measures. Recreation and anti-shark measures were intricately connected in Natal, a pattern that was not only present locally, but also internationally, in Australia. In his book, even Cleary highlights the link between recreation (using surfing as an example) and anti-shark measures:

Wherever there are waves, men will someday ride them. Around the world, though, conditions vary; everywhere the sea is different, as are its people. Australia and South Africa have their sharks and shark-nets and shark patrol planes and shark alarms...⁹⁰

Cleary wrote as though the shark nets are almost a natural part of the South African environment. I therefore raise the question: When were the shark nets naturalised in South Africa in both local and international popular opinion? I postulate that the municipal authorities may have deployed anti-shark measures along the Natal coastline to protect the beach as a recreational source, but popular culture adopted anti-shark measures as part of their recreational culture. Donald Worster, an American environmental historian, argues that society has “set itself [the] task of dominating and

⁸⁸ A curtain of air bubbles lay across the seabed to prevent sharks from swimming to close inland.

⁸⁹ T. Wallett, *Shark Attack and Treatment of Victims in Southern African Waters*, (Cape Town, South Africa: Purnell and sons (SA) (Pty) Ltd, 1978), pp. 13 – 14.

⁹⁰ Cleary, *Surfing: All the Young Wave Hunters*, p. 126.

exploiting the land for all its worth.”⁹¹ I question whether perhaps we have done this in South Africa. Have we attempted to dominate the sea and exploit it for all it is worth and in the process, naturalised shark netting in South Africa?

As early as 1964, Davies and other scientists were aware of different forms of anti-shark measures that perhaps were more environmentally protective. “On certain of the Australian beaches, a system of beach patrols operated by lifesavers has proved an effective method of preventing shark attack.”⁹² However, off some of the more turbid coastlines, where the waters are murky, this method may prove to be difficult. Wallett discusses Queensland in his thesis and their attempts to discover different methods of swimmer protection from shark attack, such as baited drum lines and surf-club patrols.⁹³ He continues to argue that the “geographical conditions [of the beach] will dictate which method is the most effective.”⁹⁴

Baited drum lines, similar to the nets, are a method of capturing sharks. Both are effective, but nets tend to be more harmful to the shark population. It has been argued by Davies, Wallett and Dudley “that the primary mechanism reducing the risk of shark attack is a localised depletion of sharks in the vicinity of the nets.”⁹⁵ The principal method or tool (anti-shark measure) which has been used over the last century was fishing.⁹⁶ Dudley and Simpfendorfer indicate in their introduction of their 2003 study (covering data from 1978 – 2003 on shark catches from the nets) that there has been a small decline amongst some species of sharks and that during the 1960s there was a decrease in the Zambezi shark population due to the deployment of nets.⁹⁷ Currently, Natal Sharks Board scientists, Dudley and Cliff, are monitoring shark populations and working net reduction programs, which previously had to be largely ignored.

⁹¹ W. Cronon, “A Place for Stories”, *The Journal of American History*, March Vol. 78 no.4, 1992. p. 1348.

⁹² D.H. Davies, *About Sharks and Shark Attack*, p. 90.

⁹³ Wallett, “Analysis of Shark Meshing Returns off the Natal Coast”, p. 3.

⁹⁴ Wallett, “Analysis of Shark Meshing Returns off the Natal Coast”, p. 3.

⁹⁵ S.F.J. Dudley and C.A. Simpfendorfer, “Population Status of 14 Shark Species Caught in the Protective Gillnets off KwaZulu-Natal, South Africa, 1978 - 2003” *Marine and Freshwater Research* no. 57 (2006), p. 225.

⁹⁶ Dudley and Simpfendorfer, “Population Status of 14 Shark Species Caught in the Protective Gillnets off KwaZulu-Natal, South Africa, 1978 - 2003” p. 225.

⁹⁷ Dudley and Simpfendorfer, “Population Status of 14 Shark Species Caught in the Protective Gillnets off KwaZulu-Natal, South Africa, 1978 - 2003” pp. 233 – 234.

Restraints and Organisations: “War on Sharks!”⁹⁸: Organisations involved with anti-shark measures in South Africa, Natal, after 1957

To provide Natal with the necessary measures to protect swimmers from the threat of shark attack after “Black December”, a variety of organisations were founded. This section will introduce the primary organisations involved in these measures.

One of the early participants in the deployment of anti-shark measures in Durban was the Durban Beach Committee (DBC), founded in 1952, that was primarily concerned with recreation, entertainment and the safety of beach recreationalists. In matters concerned with anti-shark measures, this municipal committee was often associated with the Durban City Council and especially with the Durban Water and City Engineer’s Department. The DBC was very hasty in adopting anti-shark measures and, as mentioned previously, adopted the shark nets (gill nets) in 1952. By 1958, they had progressed significantly, both financially and scientifically, in the development, research, and employment of anti-shark measures locally. Projects initiated by previous beach and entertainment committees had ranged from concrete bathing pools to metal barriers.⁹⁹

During the height of “Black December”, in January 1958, the DBC called a meeting “for the purpose of discussing and devising protective measures” and “to make representations to the Union Government for financial assistance in combating the shark [menace]...on the Natal coast.”¹⁰⁰ The DBC agreed to facilitate discussions and research into anti-shark measures and to continue to appeal for increased financial assistance to implement these measures.¹⁰¹ The DBC appealed several times to the state for financial assistance during the late 1950s and 1960s. However, funds received were limited and often did not cover the necessary cost of maintaining the nets, nor did they supplement research projects on anti-shark measures in Natal. As will become evident in later chapters, the financial restraints placed on the scientific and municipal boards’ research into anti-shark measures limited the choice of measures implemented along the

⁹⁸ “Special Issue for the S.A. Anti-shark Research Association”, *Scientiae*, Vol.4 no.6, Pretoria, June 1963. Front Cover.

⁹⁹ D.H. Davies, *About Sharks and Shark Attack*, (Pietermaritzburg: Brown Davis and Platt Ltd, 1964), p. 85.

¹⁰⁰ DAR: Beach Committee Minutes (BCM) (30/1/1958) 3/DBN 1/2/48/1/3 p. 123.

¹⁰¹ DAR: BCM (30/1/1958) 3/DBN 1/2/48/1/3 p. 123.

coastline. Without the financial resources, many experiments in different forms of anti-shark measures could not be attempted or completed.

In November 1961, the newly founded board of the South African Anti-shark Research Association (SAASRA) became the new facilitator of anti-shark measures in Natal, taking over from the previous facilitator, the DBC. The SAASRA was a non-profit public company and the board was “an agency for the collection of funds for research on measures for the protection of humans against shark attack and [to] ensure the co-ordination of the programme of research on anti-shark measures.”¹⁰²

The DBC had another concern: the influence of the press. As we have seen, the press had played an influential role in mobilizing public opinion in favour of the use of anti-shark measures in Natal. The press also monitored the Natal public’s reaction towards sharks. The minutes of a January 1958 DBC meeting reflect increasing municipal and scientific fears about the influence of the press on the Natal public:

References having been made to reports and photographs which had appeared recently in the press regarding the netting off Durban’s beaches, it was agreed that a communication be addressed to the Council’s Shark Netting Contractors deprecating unauthorized statements made to the press in regard to matters affecting the netting off Durban’s Beaches.¹⁰³

The press was a double-edged sword for scientific institutions. Their misinformation of shark myths provided marine scientists with a further reason to study sharks; however, the press indirectly interfered with their work and influenced public opinion. The press also assisted in the development of anti-shark measures in Natal; however, their opinion did not always conform to scientific opinion and often indirectly redirected scientific shark research. For Instance, in January 1958, *The Natal Mercury* introduced the idea of “compressed air” to produce “air bubbles” to create a barrier against sharks. However, the first scientific report on “air bubbles” in South Africa was only published in 1961.¹⁰⁴ The press also assisted in choosing supposedly more practical and financially viable anti-shark measures, for instance, reporting on the “success” of the first shark

¹⁰² Davies, *About Sharks and Shark Attack*, p. 219.

¹⁰³ DAR: BCM: (30/1/1958) 3/DBN 1/2/48/1/3 p 123 The Minutes do not mention what communication had occurred, the committee just advised against any further contact between the press and the shark netting contractors.

¹⁰⁴ “Air Bubbles seen as Shark Defence” *The Natal Mercury*, 3 January 1958, and. D.H. Davies, “Bubble Barrier for Sharks” SAAMBR Bull. 2, (December) 1961, p. 27-30. This project is discussed in further detail in Chapter 3.

nets off the Natal coast.¹⁰⁵ The press also moulded the psychology of the Natal public by fuelling the false sense of faith placed in the nets. The nets do not provide a barrier that completely separates the recreational user from the sharks, yet people believed that the nets did form a physical barrier.

The concern expressed by Durban mayor H.W. Jackson about lack of support was publicized in a letter to *The Natal Mercury* in January 1958. Jackson wrote letters to the mayors of Cape Town, Port Elizabeth, East London, Knysna and Mossel Bay. He appealed for national support for state funding by saying that “in some overseas countries, particularly in New South Wales, Australia the Government has taken over the entire responsibility for shark-netting for their holiday resorts.”¹⁰⁶ The press expressed ideas about sharks to the public through this report. For example, the idea that horror of shark attack had become a national problem. They used their reporting as an opportunity to convince scientists that national shark research was required to defend the tourist industry.¹⁰⁷ In 1958, the CSIR produced a memorandum that stated that, due to the increased use of the Natal coastline as a tourist attraction, more attention needed to be paid to the issue of shark attacks, and it proposed that science would be the best method to resolve the shark attack problem.¹⁰⁸ The local press frequently drew from the international cases, apparently to inspire local scientists.¹⁰⁹

The desire to protect oneself from the “threat” of sharks occurred not only locally, but also internationally, particularly in Australia.¹¹⁰ As indicated before, the public placed a tremendous amount of faith in physical barriers. Cleary writes about shark menace and tourism in Australia, but he might as well have been referring to South Africa, as both have followed a similar path:

With hundreds of miles of coastline still unsurfed, the surf-scene Down Under is a merry one indeed...but for the sharks. The Bureau of Tourism is quick to the defense. “Don’t worry about the sharks,” they say smiling. “Statistics prove you are three times more likely to be struck by lightning in

¹⁰⁵ “Comparison with Australia shows good results: Shark-netting in Durban appears to have been a success” *The Daily News*, 10 May 1951.

¹⁰⁶ “Jackson puts Anti-shark War in National Focus” *The Natal Mercury*, 10 January 1958.

¹⁰⁷ Natal Sharks Board Library (NSBL) Council for Scientific and Industrial Research (CSIR) File “Memorandum on Anti-shark measures” in CSIR National Physical Research Laboratory (NPRL), May 1958, Pretoria, p. 1.

¹⁰⁸ NSBL CSIR File: “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 1.

¹⁰⁹ “Shark Talks In. “Few Weeks”” *The Natal Mercury*, 1 January 1958, p. 1.

¹¹⁰ DAR BCM 3/DBN 1/2/48/1/3 p 123 (30/1/1958).

Australia than you are to be swallowed or even nibbled by a shark!" But the smile is a nervous one, fooling no one; most everyone fears the long, gray "Noahs".¹¹¹

Similarly, South African authorities punted the country's beach safety to tourists, whilst remaining reticent on the issue of shark attacks. It is clear that all institutions established to research and design methods to protect swimmers confronted the same financial restraints. Throughout the 1900s beach recreation, tourism and science were entwined around the issue of anti-shark measures in Natal. The research and implementation of anti-shark measures in Natal was limited; the economic and political concerns of Natal pre-determined the financial feasibility of projects selected. For example, in 1958, the DBC appealed to the government for more financial aid for an anti-shark project, as can be seen in this resolution¹¹²:

That the question of representation being made to Central Government and Provincial Authorities for some financial contributions towards the cost of combating the shark problem on Durban's beaches, be referred to the Natal Coast Anti-shark Measures Committee.¹¹³

The DBC also recognized the increasing necessity for national involvement in anti-shark measures. Early requests for national aid have been mentioned already, but it was really only during 1958 that the local authorities started campaigning in earnest for national government involvement. In May 1958, for instance, the CSIR's National Physical Research Laboratory (NPRL) in Pretoria filed a report regarding the implementation of anti-shark measures in Natal. It had now become a national priority. The report's introduction began as follows: "as a result of the unusually large number of shark attacks on the Natal South Coast during the past holiday season...the best approach to the shark problem was a scientific approach."¹¹⁴ This recognition was a pre-requisite to the permanent deployment of shark nets along the Natal coastline: without the national finances (even though funds were limited)¹¹⁵ that augmented the finances from provincial and municipal parties, the Natal coastline would today perhaps be almost barren of anti-shark nets, except perhaps for the occasional locally employed net. Furthermore, science is not always neutral or value-free, but as has been amply

¹¹¹ Cleary, *Surfers: All the Young Wave Hunters*, p. 124.

¹¹² DAR BCM (30/01/1958) 3/DBN 1/2/48/1/3 p. 123.

¹¹³ DAR BCM (30/01/1958) 3/DBN 1/2/48/1/3 p. 126.

¹¹⁴ NSBL CSIR File "Memorandum on Anti-shark measures" *CSIR NPL*, Pretoria (May) 1958 p 1.

¹¹⁵ This indicated that there was a national awareness of the 'shark problem' and the negative effect of shark attacks on tourism.

illustrated from numerous sources, human influences have swayed scientific opinion, particularly with regard to sharks.¹¹⁶ For example, the media, public and the scientific community quickly accepted Copleson's rogue shark hypothesis, published in *Shark Attack* in 1958.

The early committees or groups involved in practical anti-shark measures included the DBC, the Durban City Engineer's Department and the South African Association for Marine Biological Research (SAAMBR), which was responsible for the publication of some related scientific articles. The establishment of the autonomous SAAMBR in 1952, had its origins in the humanitarian concern to provide food for the underprivileged from the then "inexhaustible" sea. In the context of the increasing malnutrition of South Africa's underprivileged during the 1950s, there emerged a belief that the ocean held much potential to provide much "needed protein for human consumption."¹¹⁷ Thus, the need to research the South African seas as a potential food resource, led to the creation of this organisation. The SAAMBR is unique on two accounts: Firstly, it was the first such organisation to receive its funds from subscriptions from both private individuals and organisations.¹¹⁸ Secondly, its primary concern was to "build a public aquarium to function as an educational amenity and to use the entire profits obtained from admission to the aquarium for the building and running of a marine research institute and... the research carried out would be in some way related to the benefit of man."¹¹⁹ In 1959 SAAMBR's marine scientific bodies and their activities became more prominent. In the same year, SAAMBR created a new branch, the Oceanographic Research Institute (ORI). ORI was a small ensemble of scientists who were primarily interested in shark biology and used studies of shark attacks as means to extend their research. However, in seeking to understand the movements and biological life-cycle of these man-eating sharks, ORI would assist in developing anti-shark measures in Natal. Although the major thrust of their research was on shark biology, a number of their published articles were on shark attack and the research on anti-shark measures in South Africa.

¹¹⁶ V. Copleson. *Shark Attack* (Sydney: Angus and Robertson, 1988) originally published in 1958. p. 45 and J.L.B Smith, *From Nature: Our Fishes*, (Johannesburg: Voortrekkerpers, 1968).

¹¹⁷ Davies, *About Sharks and Shark Attack*, p. 207.

¹¹⁸ Davies, *About Sharks and Shark Attack*, p. 208.

¹¹⁹ Davies, *About Sharks and Shark Attack*, p. 208.

1959 also saw the involvement of the CSIR and in particular, its NPRL branch, which was involved in a variety of different sciences. During the 1960s, both institutions showed increased interest in shark research. This led to the establishment, in 1961, of a smaller pocket inside the NPRL known as the Anti-shark Research Association, originally headed by E.D. Smith, whose work will be touched on in later chapters. The CSIR and the NPRL also formed a strong bond with the South African Anti-shark Research Association (SAASRA) established in 1961.

The SAASRA focused on appropriating funds to the different organisations involved in anti-shark research in South Africa, particularly in Natal. SAASRA “comprised the CSIR and the S.A. Marine Biological Research Association.”¹²⁰ Four people ran the SAASRA: Dr. A Strasheim, the director of PRL; Dr JPA Lochner, head of the Acoustics Division of NPRL; Dr David H. Davies, Director of ORI and a leading South African shark researcher; and Mr J.D. Roberts, Chairman of Roberts Construction and the elected chair of SAASRA. Lochner and Davies, in particular the latter, were the key figures in shark research, particularly during the late 1950s and the 1960s. Individuals from the SAASRA started a collection of their own anti-shark experiments. Their results were published in the June 1963 issue of *Scientiae*. All of the organisations frequently debated the raising of funds during the 1950s, 1960s and the early 1970s, and this created division amongst them. Interestingly, during the 1960s, the press in Cape Town (*The Cape Argus*), Johannesburg (*The Star*), Bloemfontein (*The Friend*), Kimberley (*Diamond Fields Advertiser*) and Durban (*The Daily News*) assisted in raising funds for anti-shark research.¹²¹ This showed again how the press had pushed for anti-shark measures in Natal.

Thus, the late 1950s saw the emergence and collaboration of many different anti-shark research institutes and all of them agreed that financial assistance was essential to establish and maintain both the research boards and anti-shark measures in Natal. The last organisation to be established, in order to maintain the increasing number of shark nets employed along the Natal coast, was the Natal Sharks Board (NSB), originally founded in 1964 under the name the Anti-shark Measures Board (ASMB). This body is

¹²⁰ “Special Issue for the S.A. Anti-shark Research Association” *Scientiae* Vol.4 no.6, Pretoria, June 1963, Front Cover.

¹²¹ “Special Issue for the S.A. Anti-shark Research Association” *Scientiae* Vol.4 no.6, Pretoria, June 1963.

universally unique.¹²² “In 1964 the Natal Anti-shark Measures Board became the official statutory body responsible for bather protection. All existing net installations, except for Durban’s, went to the Board’s operation.”¹²³ Originally primarily involved with the deployment and maintenance of the shark nets in Natal, it would later become highly influential scientifically in anti-shark and shark research programmes.¹²⁴ Government Ordinance no. 10 of 1964 outlined the NSB’s duties:

A board charged with the duty of approving, controlling and initiating measures for safeguarding bathers against shark attack; to provide for the appointment of regional consultative committees; and to define their respective functions, duties and powers.¹²⁵

It is with the witty and perhaps entertaining words of the editorial article of *Scientiae* June 1963 that I would like to conclude this chapter:

The Anti-shark Research Association (on which is represented the CSIR, the SA Marine Biological Research Association, the Oceanographic Research Institute and other interested bodies) has made it an ambition to collect enough money to stamp out this menace. The Association needs help. Shark research is vital because only science, with its plodding methodology, slavish insistence on fundamentals, will cut through the jungle-barrier of our ignorance about this predator, and finally outwit him.¹²⁶

Thus, I would like to conclude that the growth of beach recreationalism in Durban ran parallel with a modernising society in the late 1950s and 1960s. A “threat” arose, that of sharks and shark attack. The income derived from the fledgling tourism industry, originating from beach recreationalism, was highly economically beneficial for Natal. Thus, to provide security for visitors and beach recreationalists and to protect this new source of income, Natal decided to use anti-shark measures along its coastline.

¹²² Wallett, *Shark Attack and Treatment of Victims in Southern African Waters*, p.13.

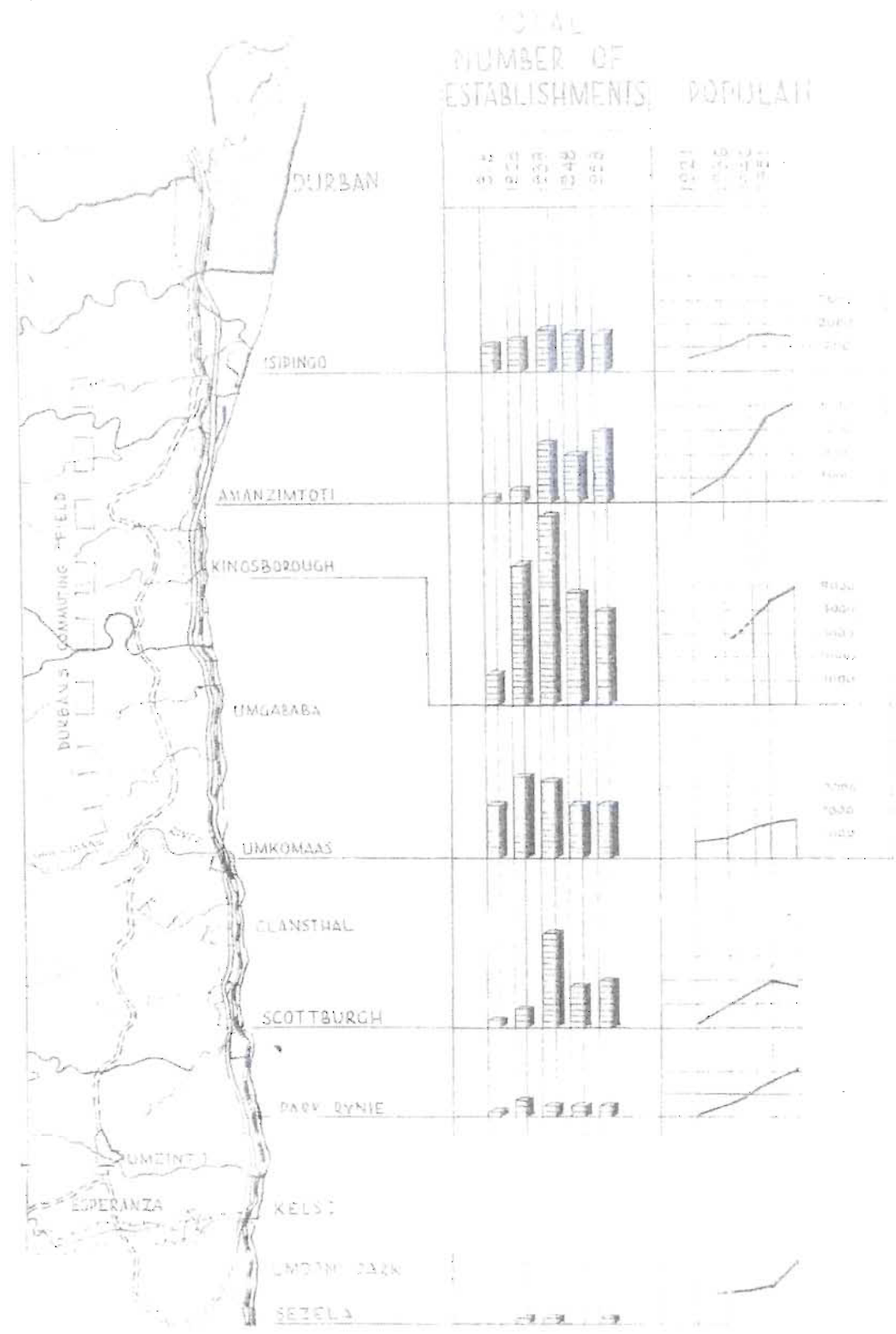
¹²³ Wallett, *Shark Attack and Treatment of Victims in Southern African Waters*, p.13.

¹²⁴ S. Dudley (2006): “Research into reducing the risk of shark attacks forms a very small part of global shark research.”

¹²⁵ NSBL “The Anti-shark Measures Control Ordinance, 1964 (No. 10) *Reproduced under Government Printer’s Copyright*, Authority 4581 of 24.9.71 Durban’s nets originally fell out of the NSB jurisdiction because the where installed in 1952 by the Durban municipality whilst the rest of the nets where installed after 1964 by the NSB.

¹²⁶ “Special Issue for the S.A. Anti-shark Research Association” *Scientiae* Vol.4 no.6, Pretoria, June 1963. pp. 3 – 4.

Figure 7: Population and Recreational Growth on the Natal South Coast (1918 – 1960)¹²⁷



¹²⁷ Anderson, "Some principles governing the location and design of holiday resorts on the Natal Coast" (Diploma in Town Planning, University of Natal, Durban, 1962).

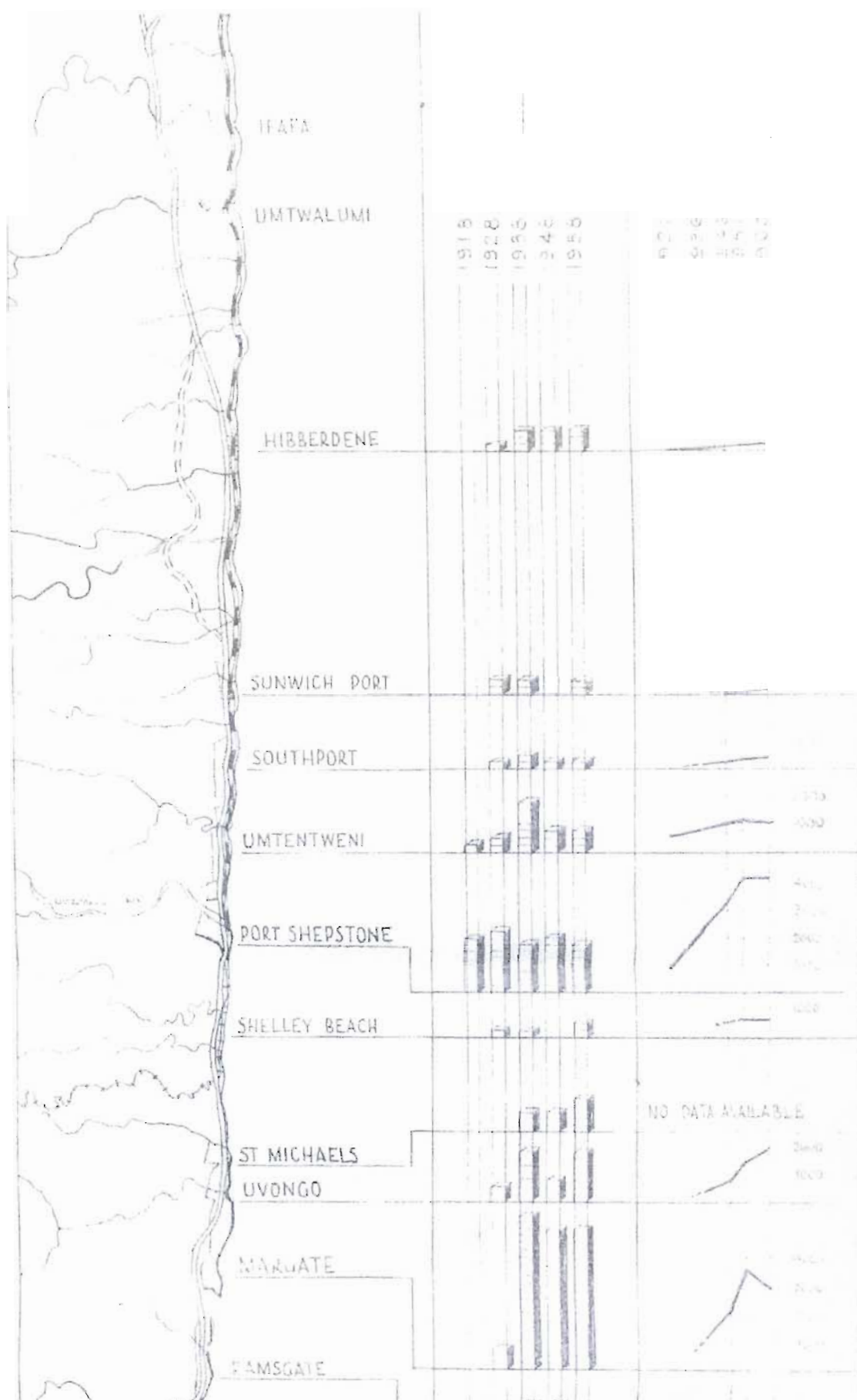




Illustration 6: The original Skin-divers of South Africa. An original, a mass-media publication, on skin-diving in South Africa. ¹²⁸



First Skindiving publication in Republic written by Cedric Wright and published by R. Beerman, as early as October, 1953.

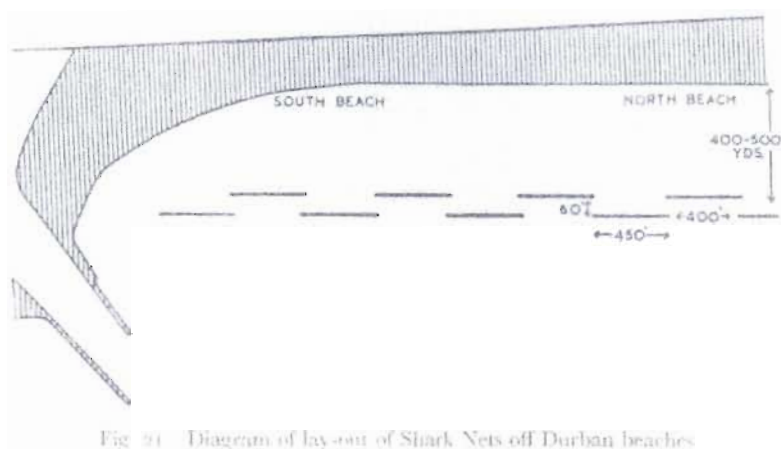
¹²⁸ Condon, "Cape Founder Divers" and "Natal Pioneers", *Beneath Southern Seas*, p. 18.

Figure 8: Diagram of the original nets (1952)



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This illustration shows how the nets where originally set up.



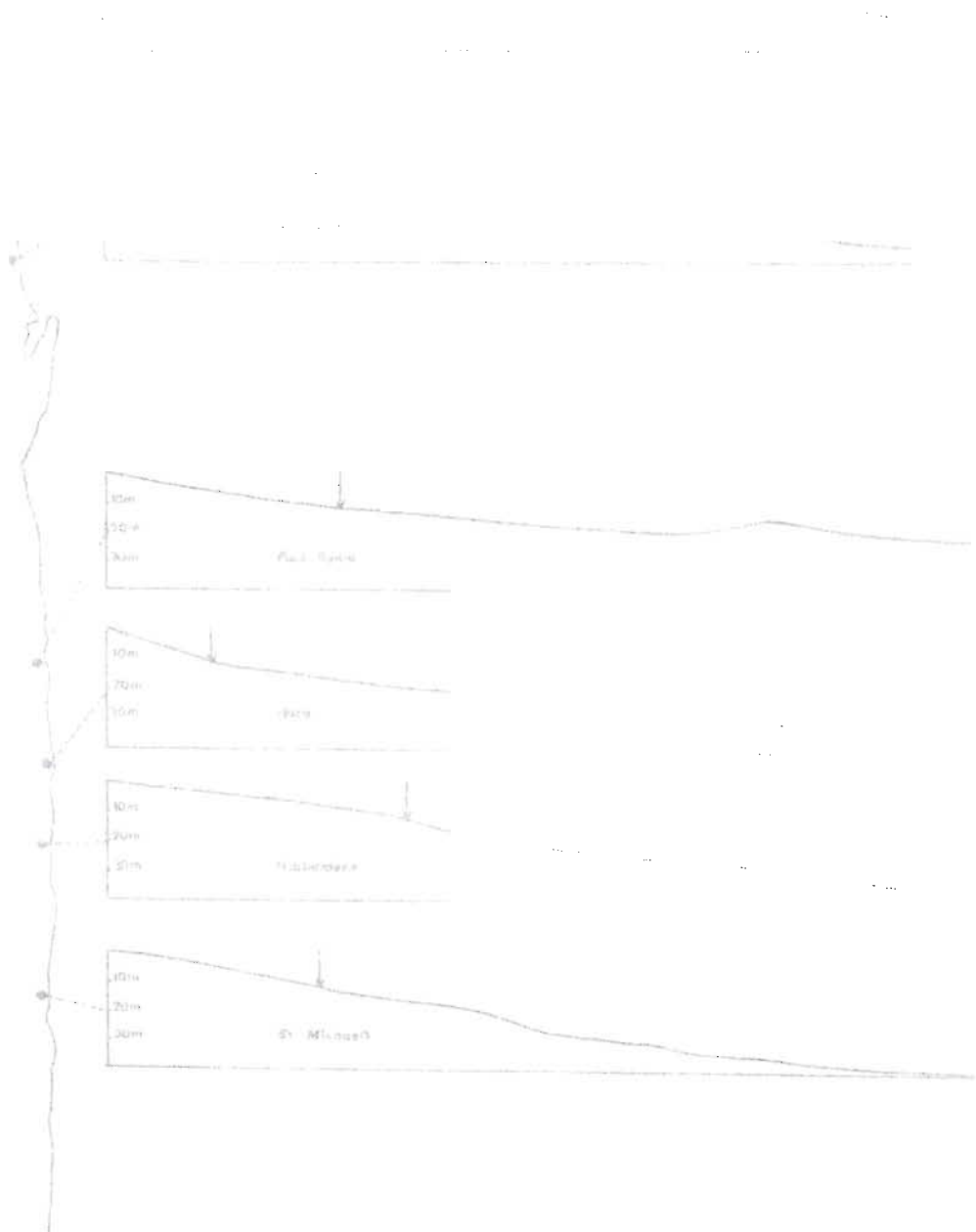
130

This illustration indicates how the nets were placed, this shows that there are several areas where sharks can enter and exit the barrier created by the nets.

¹²⁹ D.H. Davies, *About Sharks and Shark Attack*, p. 87.

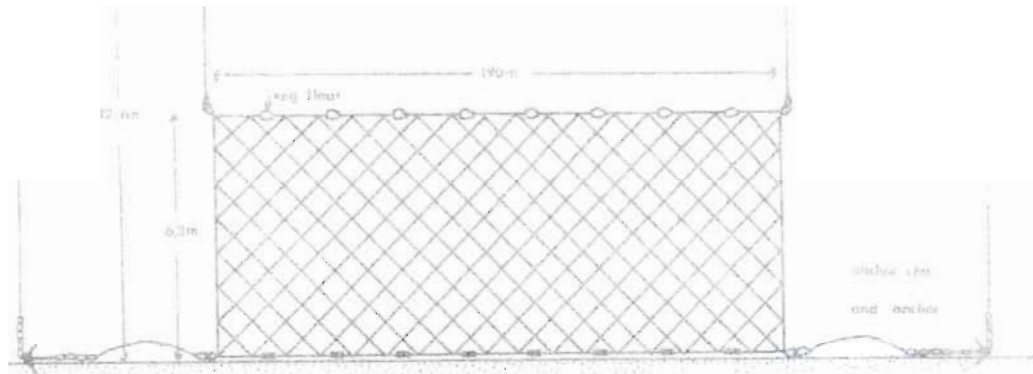
¹³⁰ D.H. Davies, *About Sharks and Shark Attack*, p. 86.

Figure 9: The deployment of the nets from a variety of shorelines off Natal.



¹³¹ Wallett, "Analysis of Shark Meshing Returns off the Natal Coast", p. 14.

Figure 10: Movement of Sea Life around the Nets ¹³²



¹³² Wallett, "Analysis of Shark Meshing Returns off the Natal Coast", p. 16.

Chapter Three:

Anti-shark measures in Natal during the 1960s

The beginnings of anti-shark research in Natal

“The shark is a primitive, elementary sort of fish...”¹

The “Black December” of 1957-1958 resulted in the dissemination of scientific reports and publications on sharks and anti-shark measures, in the 1960s. These scientific reports and publications sought to aid the holiday resorts along the South Coast of Natal by providing a “solution” to what was now being regarded as a serious problem - the threat of shark attack. Illustration 1 on page 10 (refer to Prologue) demonstrates geographically which parts of the Natal coast was a high incident area. These resorts had been threatened by the “Black December” “shark scare” and hence were “facing financial collapse.”² One consequence of this research was the employment of physical barriers to protect swimmers from shark attack, thus sustaining the Natal coast’s reputation as a “Riviera”³. The relationship between tourism and anti-shark research was reciprocal, the two aiding each other throughout the 1960s, accordingly resulting in the growth of both fields.

As early as 1952, shark nets had been installed off the coast of Durban.⁴ By 1958, the National Physical Research Laboratory (NPRL), based in Pretoria, recorded that no shark attack had occurred in Durban since the deployment of these nets. Unfortunately, this was not the case for the South Coast.⁵ In January 1958, the Durban Beach Committee (DBC) Chairman urged the committee, “that in view of the large crowds which make use of the bathing beaches, it was considered desirable to increase the coverage afforded to bathers from twelve to fifteen nets; this being the

¹ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 5.

² NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 2.

³ The “Riviera” refers to the Natal coast that was proclaimed one of the most popular holiday resorts in Africa. Taken from: NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 2.

⁴ ...from here on “nets” implies shark nets, unless specified otherwise.

⁵ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria. The CSIR is critical to beginnings of shark and anti-shark research in the 1960s, as it outlines many of the routes and experiments taken, and therefore will be explored in detail for the first few pages of this chapter.

maximum number permitted in terms of the shark meshing contract.”⁶ The NPRL reported that – with the exception of Durban - prior to 1958 no other beaches along the Natal coast had employed nets to protect swimmers. After the “Black December”, however, a few of the more frequented beaches outside of Durban, such as Brighton Beach and Margate, installed shark nets.⁷ The supposed safety provided by the nets was quickly accepted by the Durban public and municipalities and after 1964, along other areas of the coast. The reason I argue “supposed safety”, is demonstrated in Illustrations 7 on page 106, which show various shark species moving freely around the nets in different circumstances in a tank study. The NPRL report noted that the effectiveness of nets still needed to be researched, but it argued that the nets did provide “a certain feeling of security” for swimmers and thus their argument lends support to my view, that nets provided a psychological advantage - rather than an actual, or real - because they were perceived as being a physical barrier between bathers and sharks.⁸ After the shocking events of “Black December”, there was a renewed challenge: to coax swimmers into a sense of safety so that they would continue to use the beach recreationally. Instead of ad hoc measures, however, there was the emergence of a new area of the scientific study of sharks. This was originally motivated by the hope that an understanding of shark biology could assist in the understanding of the patterns of shark attack.

The 1958 NPRL report concluded that there was insufficient information about anti-shark measures in Australia (where shark attacks also appeared to threaten the safety of bathers and other sea recreationalists) and nationally and it therefore advised that various research projects be undertaken. These projects would, and did, demand extensive dedication in respect to both time and money. On several previous occasions, the DBC had been recorded as stating that “discussing and devising protective measures and [making] representations to the Union government for financial assistance in combating the shark menace on the Natal South Coast” was

⁶ Durban Archives Repository (DAR) Beach Committee Minutes (BCM) 3/DBN 1/2/48/1/3 (30/1/1958) p. 125.

⁷ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 2., DAR BCM 3/DBN 1/2/48/1/3 (20/2/1958) p. 132. and DAR BCM 3/DBN 1/2/48/1/3 (20/3/1958) p. 138.

⁸ As noted in Australia NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 3.

advised.⁹ This was finally supported by the NPRL. The NPRL further required that these projects fitted the following requirements:

- A barrier that no shark can cross, around the bathing beaches.
- A relatively low capital investment in setting up such a barrier.
- The installation must be such that it cannot be damaged by rough water.
- A relatively low cost of maintaining this barrier.
- The barrier must not endanger the lives of the bathers.
- It would be an advantage if such a barrier did not mar the natural attraction of ocean waves.¹⁰

Three important aspects of these requirements recur in my study of anti-shark measures in Natal. Firstly, there is the notion of a physical shark barrier and the psychological association between physical shark barriers and protection from shark attack, as discussed in Chapter 1. Secondly, there is the importance of finances in dictating the development of a cost effective anti-shark measure, as indicated in Chapters 1 and 2. Lastly, and as mentioned in Chapter 2, there is the importance of both the aesthetics of the Natal coast and the economic value of the beach, with regard to Natal tourism. These three aspects contributed towards the interesting and complex history of Natal anti-shark measures.

The Natal press was soon reporting that there had been “(I)mpressive results ... on shark research” and it seems that the issue of shark attack was being taken seriously, right up to the level of the Natal Provincial Council. The following quotation can be found in a newspaper clipping from an unnamed newspaper housed at the Natal Sharks Board library. It is dated 1960:

The proposed Natal Provincial Council debate on shark attacks along our coastline and the effect that this danger has had on holiday and tourist trade should be a valuable step towards a comprehensive plan for the future safeguards against this menace. As more and more attention has been paid to shark attacks the world over it has become clear that careful and expensive research is essential prerequisite to effective deterrent and safety measures. It should be recognised that Natal is in an area prone to the most

⁹ DAR BCM 3/DBN 1/2/48/1/3. (30/1/1958) p. 123.

¹⁰ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 14.

savage of attacks and on that basis this problem must be a provincial responsibility and can not be left to the inevitably diffuse action of scattered local authorities. Moreover, the Province has an active and valuable agent on its doorstep in the Marine Biological Research Station. Nothing can undermine Natal's economy more than a serious interference with its tourist trade.¹¹

The 1960s could be described as the historical “hub” of anti-shark measures research. In 1960 the Natal press stated: “Research work which might make a major contribution to the protection of surf bathers all over the world against shark attacks has been conducted...at Durban’s aquarium.”¹²

The NPRL 1958 report outlines many of the anti-shark research projects that would be adopted in the 1960s and in many ways, this report anticipates many of the measures that would be explored, such as shark-repellents, electrical barriers and mechanical barriers.¹³ As indicated in Chapter 2, the principal anti-shark measure was “fishing”, a form of shark capture. The NPRL 1958 report also indicated, in conjunction with the adoption of anti-shark measures, the idea of prevention. The report discussed preventative measures, for example ensuring that sewage was deposited away from bathing areas as this would lead to a “reduction of sharks” within the bathing area.¹⁴

The first of the measure designed to repel sharks was shark-repellents. These can be divided into three kinds: chemical, colour and sound. The NPRL report highlighted that the foremost reason for the development of chemical repellents, prior to 1958, had strictly been for naval purposes. The primary researcher into chemical repellents had been the United States Navy. The objective was to eliminate sharks by releasing a poison into the water surrounding the individual, to protect him from shark attack. The project had the following results: “The poisons killed the sharks in about ½ hour, but in the meantime they ate all the bait.”¹⁵ The project was considered futile as an attack generally occurs within less than a minute and the chemical repellants took

¹¹ NSBL Marie Levine Archives “Impressive results by Durban research on shark protection” *Cutting from Natal newspapers* File No.1 (1942 – 1961) 1960.

¹² NSBL Marine Levine Archives “Shark Control” *Cuttings from Natal Newspapers* File No. 1 (1942 – 1961) 1960.

¹³ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, pp. 7 – 13.

¹⁴ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, pp. 6 – 7.

¹⁵ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, pp. 7 – 8.

more than thirty minutes to become effective. Thus, chemical repellents were temporarily put aside.

A second strategy was the wearing of certain colours by swimmers. This use of colour “repellents” was based on the supposed “fact” that sharks were long-sighted and could only detect their food colour nearby: The NPRL 1958 report claimed that “They show a strong preference for light-coloured bait as was proved by experiments, but will devour dark-coloured bait if that is the only food available.”¹⁶ It was thus concluded that swimmers should avoid lightly coloured costumes, although the report went on to say that the use of dark-coloured costumes remained uncertain in regard to the prevention of attack.¹⁷ Although this measure was considered by the NPRL as a form of repellent, it could also be conceived as an avoidance or preventative strategy. Sound repellents, such as high and low frequency sounds, were used as shark deterrents, but were quickly dismissed in the report, which surmised that it was “doubtful whether much can be gained by experiments on sound repellents.”¹⁸ However, later in the decade sound research was initiated again.¹⁹

Mechanical barriers, more commonly known as physical barriers, had the benefit of being popularly accepted and trusted as well as being one of the most effective anti-shark measures to be used in the 1960s.²⁰ In the next chapter, the use of nets, in comparison to electrical barriers will be discussed, highlighting the effectiveness and complications of both measures. Originally, physical barriers consisted of enclosed pools, grills (grids) and nets. In 1958, the DBC, in agreement with the Durban City Engineer, decided that various experiments on netting should be embarked upon in Durban.²¹ By 1964, nets were adopted as the most beneficial, economical and effective physical barrier. The NPRL provided the following explanation: Enclosed pools were never as aesthetically pleasing as bathing in the surf and the grills were

¹⁶ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p 9.

¹⁷ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p 9.

¹⁸ Such as: D.H. Davies “Experiments on the Reaction of Sharks to Sonic and Supersonic Sound” *South African Association for Marine Biological Research (SAAMBR)*, Bull. 1, 1960, p 14 “Note on the Use of Killer Whale Sounds as a Shark repellent” *SAAMBR* Bull. 3, 1962, p. 32. and NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 10.

¹⁹ Such as: D.H. Davies “Experiments on the Reaction of Sharks to Sonic and Supersonic Sound, p 14 and “Note on the Use of Killer Whale Sounds as a Shark repellent”, p. 32.

²⁰ From herewith be referred to as physical barriers only.

²¹ DAR BCM 3/DBN 1/2/48/1/3 (30/1/1958) p. 125.

just not economically viable due to excessive corrosion of the grids.²² Even in 1958, however, the NPRL speculated about the extent to which the nets could offer protection. On the one hand, they were psychologically acceptable, but on the other, they were, as its report noted, penetrable by sharks. In 1958 it wrote: “nets do not furnish complete protection for the bathers, but they do constitute an effective means of catching sharks and thus reduce the chances of an attack in their vicinity.”²³ The NPRL explained further: Firstly, the nets did not cover the entire shoreline, thus sharks could penetrate into the bathing areas. Secondly, the nets did not stretch down to the seabed. Thirdly, sharks that were caught in them easily destroyed the nets. Furthermore, many sharks caught had been captured inland. This indicated that despite the employment of nets along the coast, sharks could still come into the recreational areas.²⁴ The DBC had noticed the same faults as the NPRL but decided, “to proceed with experimental measures with a view to improving the present shark netting system off Durban’s Beaches.”²⁵

Electrical barriers provided an interest for the NPRL, as they did for many other research institutions around the world involved in anti-shark research. This will be discussed in Chapter 4 as electrical barrier research became far more prominent in the late 1960s and 1970s. According to the NPRL, previous research revealed that, it was possible to control the movement of fish “by means of electrical potentials set up in the water.” The results of experiments using fish screens or electrical barriers to direct the movement of fish (in rivers and lakes) away from sewage excrement and to prevent the absorption of hydroelectric power stations’ intakes and exhausts had proved successful.²⁶ This provided ample hope that experiments using electrical repellents to deter sharks from recreational areas would be as successful. The NPRL was so inspired by electrical barriers that by July 1958 they had produced a report specifically on electrical barriers. The report included material on swimmer safety through electrical barriers, research experiments on fish and electrical barriers, experiments on shark hearing and even went as far as to suggest test areas on the

²² NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 10.

²³ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 11.

²⁴ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, p. 11.

²⁵ DAR BCM 3/DBN 1/2/48/1/3 (30/1/1958) p. 125.

²⁶ NSBL CSIR File “Memorandum on Anti-shark measures” CSIR NPRL, May 1958, Pretoria, pp. 11 – 12.

Natal coast.²⁷ The research into electrical barriers was adopted in 1969 and posed opposition to the already adopted nets in the 1960s.

The report's "prevention of attack" section included the following recommendations: (1) to avoid running effluents from sewage systems into the sea, particularly near recreational areas – interestingly, the sewage outlet in Durban was, in fact, and still is, near the local bathing facilities - ; (2) to abstain from using explosive devices in the sea (close to shore), as the dead fish would attract sharks inland (the depth charging incidents carried out during 1940s and January 1958); 3) the reduction in shark population via commercial, private or recreational fishing and the employment of nets along the coastline.²⁸

The report determined a distinct route for anti-shark measures. This route precluded protection for sharks and shark populations and could be classified as a means of "killing them off."²⁹ Rather, the priorities were: firstly, to protect beach recreational users; and secondly, to protect the Natal coast tourist/economic industry that, as I previously quoted was allegedly "facing financial collapse."³⁰ Although shark nets were permanently adopted along the Natal coast, they were not presumed to be the most effective measures according to the NPRL. Indeed, the NPRL recommended: "there might be other possibilities, but at present we feel that the electrical screening of bathing beaches holds the best chance."³¹ However, the DBC thought otherwise and "to lay up to a maximum of 18 nets, if it was considered necessary...", it was considered necessary.³² As will be discussed in the next section, the nets had become central to both swimmer protection and anti-shark measures in Natal.

²⁷ NSBL CSIR File J.P.A. Lochner "Memorandum detailing the physical research to be undertaken in Connection with the Shark Problem." CSIR NPRL, Pretoria, July 1958.

²⁸ NSBL CSIR File "Memorandum on Anti-shark measures" CSIR NPRL, Pretoria, May 1958, p. 7.

²⁹ NSBL CSIR File "Memorandum on Anti-shark measures" CSIR NPRL, Pretoria, May 1958, p. 7.

³⁰ NSBL CSIR File "Memorandum on Anti-shark measures" CSIR NPRL, Pretoria, May 1958, p. 2.

³¹ NSBL CSIR File "Memorandum on Anti-shark measures" CSIR NPRL, Pretoria, May 1958, p. 2.

³² DAR BCM 3/DBN 1/2/48/1/3 (19/06/1958) p. 155. this is indicated by the increase of nets installed in Durban, by 1983 Durban had a total of 22 nets along its coastline.

“It has been reported that sharks make grunting noises when they attack, but whether this is true or not we do not know...”: Shark Biology and its relation to shark attacks.³³

In 1958 the Natal Coast Safety Bathing Association (NSBA) sponsored the NPRL to find a solution to the “shark problem”.³⁴ In June, the Assistant City Engineer presented a numerical report on shark catches in the Durban nets to the DBC. Thereafter the DBC decided to keep a detailed report on shark catches.³⁵ In September, the Acting City Engineer exhibited a graph to the DBC that recorded not only the number of shark catches, but also the types of sharks caught since nets had been installed in 1952.³⁶ According to Lochner: “It has been reported that sharks make grunting noises when they attack, but whether this is true or not we do not know...”³⁷ Interestingly, the late 1950s thus saw the beginnings of shark-related research that would become more extensive in the 1960s.

In addition to the collection of statistics, in 1959 J.P.A. Lochner, a scientist at the NPRL, started his project on the effects of electric stimuli on sharks in St. Lucia, Natal. The project had some trouble, however. For example, in St. Lucia the sparse population of larger sharks in the area made it problematic to record data. In addition, there were difficulties in developing an effective electric pulse that would not induce discomfort to humans, but still competently repel sharks.³⁸ It was proclaimed that “the extensive statistics” which were recorded along the Natal coast “gave an insight into the behaviour and peculiarities of sharks...”³⁹ However, the main aim of this shark research was not on understanding sharks per se, but was heavily dedicated towards trying to develop swimmer protection policies.⁴⁰ This alliance of shark research and beach safety was determined by economic needs. Many Shark research institutions

³³ NSBL CSIR File J.P.A. Lochner “Memorandum detailing the physical research to be undertaken in Connection with the Shark Problem.” CSIR NPRL, Pretoria, July 1958, p. 4.

³⁴ Pietermaritzburg Archives Repository Pietermaritzburg Archives Repository (PAR) Anti-shark research (ASR) 3/PMB 4/5/632 Ref TC248/205 JPA Lochner “Memorandum on anti-shark investigations in South Africa” CSIRNPRL, 1961, p. 2.

³⁵ DAR BCM 3/DBN 1/2/48/1/3 (19/06/1958) p. 155.

³⁶ DAR BCM 3/DBN 1/2/48/1/3 (18/09/1958) p. 178.

³⁷ NSBL CSIR File J.P.A. Lochner “Memorandum Detailing the Physical Research to be Undertaken in Connection with the Shark Problem.” CSIR NPRL, Pretoria, July 1958, p. 4.

³⁸ PAR ASR 3/PMB 4/5/632 Ref TC248/205 JPA Lochner “Memorandum of Anti-shark Investigations in South Africa” NPRL CSIR, 1959, pp. 1 and 3.

³⁹ DAR BCM 3/DBN 1/2/48/1/3 (21/08/1958), p. 170.

⁴⁰ DAR BCM 3/DBN 1/2/48/1/3 (10/12/1958), p. 16.

studied a variety of factors that influenced shark attack, from shark biology to anti-shark measures.

ORI, a branch of SAAMBRA, commissioned a report by D.H. Davies which explored scientific knowledge on sharks' biology. He drew the following conclusions:

The widespread lack of knowledge about sharks is not peculiar to the Natal region alone and while knowledge of the bony fishes is well advanced throughout the world basic information on sharks is far from complete. In order to carry out research on sharks it is essential to be able to classify the various species concerned. The importance of accurate identification of sharks becomes more apparent when it is borne in mind that only a few species have been proved responsible for attack on man.⁴¹

D.H. Davies highlights the lack of scientific material on sharks internationally. He also emphasizes the importance of scientifically understanding shark biology in the furthering of anti-shark measure design and deployment in Natal, particularly after the increase of shark attack off the Natal coast during the 1940s and 50s. In 1960 the South African Anti-shark Research Action Committee recalled the "Black December" attacks in their published pamphlet as follows: "It began with this..."⁴² The pamphlet used *Natal Daily News* press articles to describe the attacks. The articles comprised exaggerated descriptions of the attacks, as mentioned in Chapter 1. These articles were vividly and emotively titled, for instance: "Boy aged 16 punches shark: Leg bitten off at South coast" and "Shark kills widow: four children orphaned".⁴³ Furthermore, these articles appeared alongside an appeal that ran thus: "The danger, therefore, is not merely the concern of a few private persons, the Natal province, or the research teams. The danger is the concern of all"⁴⁴. This appeal was to Natal's beach recreational public and funders of anti-shark research, for financial assistance in order to create scientific facilities to aid Natal in developing protection against shark attack. The morbid fascination with shark attack was not just based on attacks on

⁴¹ PAR ASR 3/PMB 4/5/632 Ref TC248/205 D.H. Davies "Memorandum of Anti-shark Investigations including Progress to Date and Indicating Work to be Carried out in the Future" in The *Oceanographic Research Institute* (ORI), SAAMBR and the University of Natal (UN) publication uncertain, but within 1959. p. 1

⁴² PAR ASR 3/PMB 4/5/632 Ref TC248/205 J.D. Roberts, E.J. Marias, A.O. Simpson, R.B. Archibald, J.L.B. Smith and J.P.A. Lochner, "It all began with this..." South African Anti-shark Research Action Committee, CSIR, Pretoria, 1960.

⁴³ PAR ASR 3/PMB 4/5/632 Ref TC248/205 Roberts, Marias, Simpson, Archibald, Smith and Lochner "It all began with this..." South African Anti-shark Research Action Committee, CSIR, Pretoria, 1960. [Bold print is my insert to highlight the orchestrated descriptions.]

⁴⁴ PAR ASR 3/PMB 4/5/632 Ref TC248/205 Roberts, Marias, Simpson, Archibald, Smith and Lochner "It all began with this..." South African Anti-shark Research Action Committee, CSIR, Pretoria, 1960.

humans. Shark attack on non-human objects also caused a stir. In 1961 D.H. Davies wrote an ORI report about a *Shark attack on Fishing Boat in South Africa*.⁴⁵ Shark scientists, therefore placed an emphasis on studying the idea of what causes an “attack”.

In 1959 J. D’Aubrey, a scientist based at ORI, began a project about the shark inhabitants of the east coast of South Africa. The survey was published in 1961. D’Aubrey articulated to her audience (namely other scientists and others who had an interest in anti-shark measures) that her “survey was begun in August 1959 in answer to the urgent need for a greater knowledge of sharks in general...” and that her motivation had been the sudden increase of attacks in Natal - namely during “Black December”. She continued that this had called for an increased knowledge about sharks amongst humans and for scientists, in particular, to inform themselves about sharks and thus they could assist in the development of anti-shark measures. The reasoning behind her project was to determine: firstly, the types of dangerous and potentially dangerous sharks off the east coast; and secondly, their behavioural habits and habitats. This knowledge was to be used in conjunction with anti-shark research to establish the best method of prevention against attack in Natal.⁴⁶ The project suffered some difficulty in acquiring shark specimens, but “tooth” evidence was used to identify the species of shark responsible for the “Black December” Margate attack.⁴⁷ The teeth markings on the victim could be matched to a particular species of shark, thus “tooth” evidence became useful within shark research.

During 1961, D.H. Davies and J. D’Aubrey did a study on attacks; this study included physical evidence from victims, on the circumstances of the attacks and on possible shark species that could be related to an attack.⁴⁸ Two of these investigational reports

⁴⁵ D.H. Davies, “Shark Attack on Fishing boat in South Africa” *ORI Investigational Report 1*, 1961. p. 1.

⁴⁶ J. D’Aubrey, “Shark Survey off the East Coast of South Africa.” *SAAMBR*, Bull. 2, (December) 1961, p. 12.

⁴⁷ D’Aubrey, “Shark Survey off the East Coast of South Africa.”, p. 18

⁴⁸ D.H. Davies and J. D’Aubrey, “Shark Attack off the east coast of South Africa 24 December 1960, with notes on the species of shark responsible for the attack.” *ORI Investigational Report 2*. 1961. pp 1 – 9; D.H. Davies. “Shark Attack off the East Coast of South Africa, 22 January 1961” *ORI Investigational Report 4*, 1961 pp 1 - 6; D.H. Davies and J. D’Aubrey, “Shark Attack off the East Coast of South Africa, 1 February, 1961” *ORI Investigational Report 5*. 1961 pp. 1 - 3

indicated that the Zambezi shark was responsible for the attacks.⁴⁹ Projects such as these were used to determine different methods to combat shark attack off the Natal coast.

In the same ORI publication, D.H. Davies wrote about the “shark problem” and shark attack. Both authors deduced that the economic effect of these attacks and the desire to maintain recreational beach activities⁵⁰ they played an important role in the impetus behind their work. Whilst D’Aubrey focused on understanding, or becoming familiar, with sharks to prevent attack, Davies looked directly at the problem of attacks and outlined a history for the academic reader. Davies also believed that the desire to protect humans from attack was a worldwide phenomenon.⁵¹

Davies acknowledged that the nets that had been installed in Durban, in 1952, had thus far been efficient, but he continued that the implementation of nets elsewhere along the coast would be costly.⁵² He surmised that further research needed to be done. Although Davies argued that the nets were efficient, he also argued that other, more efficient, measures should be researched. Importantly, he noted that:

There is no really satisfactory explanation for the success of the set-net system and there are a number of theories concerned with its probable function. The most likely explanation of the successful function of the system seems to be related to the already established fact that it is possible to reduce a shark population by systematic fishing.⁵³

The system Davies was referring to was the pairs of nets set parallel to the shore. The method, by which the nets were setup, was crucial. Obviously, the more nets used the higher shark capture would be. Davies’ observation that there was no scientifically logical reason why shark nets were efficacious, presented him with the occasion to embark upon new research. Directly after this article, he wrote an article entitled “Bubble Barriers for Sharks”. This article outlined an exploration into a possible

⁴⁹ D.H. Davies and J. D’Aubrey, “Shark Attack off the East Coast of South Africa 24 December 1960, with notes on the species of shark responsible for the attack.” *ORI Investigational Report 2*. 1961. pp. 1 – 9; D.H. Davies, “Shark Attack off the East Coast of South Africa, 22 January 1961” *ORI Investigational Report 4*, 1961, pp. 1 - 6; D.H. Davies and J. D’Aubrey, “Shark Attack off the East Coast of South Africa, 1 February, 1961” *ORI Investigational Report 5*. 1961, pp. 1 – 3.

⁵⁰ D.H. Davies, “The Shark Problem” *SAAMBR*, Bull. 2, (December) 1961, p. 23. and J. D’Aubrey, “Shark Survey off the East Coast of South Africa”, p. 12.

⁵¹ Davies, “The Shark Problem”, p. 25.

⁵² Davies, “The Shark Problem”, p. 24 – 25.

⁵³ Davies, “The Shark Problem”, p. 24 - 25

alternative form of anti-shark measures. Davies based this on the research of P. Gilbert, an American shark scientist/researcher on experimental shark pens.⁵⁴ Gilbert's experiments involved the installation of bubble curtains in a number of shark tanks. The bubble curtain was compressed air that was released from a pipe inside the tank to create a curtain. Davies' research, in Natal, in conjunction with Gilbert's previous experiments, showed that the bubble curtain deterred certain sharks, whilst others became extremely anxious or agitated. This determined the project as inconclusive and without the desired result.⁵⁵ Moreover, although the experiments that had taken place in tanks were at least partly successful, the use of such an experiment in the ocean was abandoned. It is an interesting fact that the bubble curtain was classified as a physical barrier, by Gilbert and Davies, as a few of the sharks penetrated the bubble barrier.

Davies' last paper in this bulletin referred to D'Aubrey, as both had used the notion of "cause and effect" to explain what causes shark attack.⁵⁶ In this article, Davies reported on research into the factors that plausibly may cause shark attack, or that were common, during an attack. He suggested that such common factors were aspects such as erratic movement in the ocean, sea temperature and the geomorphology of the Natal coastline and he concluded that, with careful analysis, some of the causes of shark attack might be identified. This led to the belief that attacks could be prevented from occurring. Therefore, recreational users could avoid using the ocean if such factors presented themselves within that area.⁵⁷

This earlier bulletin (Number 2 of 1961) reflected a desire by scientists to understand the "attack problem", not the actual biology of sharks,⁵⁸ opening the question: is the instinct of sharks to attack, not perhaps, greater than the need to select what they attack? Therefore, is the propensity to attack not part of them being biological predators. Projects such as D'Aubrey's became highly involved in shark biology through the research on shark attacks. This research was important in influencing the

⁵⁴ D.H. Davies, "Bubble Barrier for Sharks" *SAAMBR* Bull. 2, (December) 1961, p. 27-30.

⁵⁵ Davies, "Bubble Barrier for Sharks", p. 27 – 30.

⁵⁶ Meaning prevention

⁵⁷ "Material" factors such as these have been discussed in chapter 1 and 2. and D.H. Davies, "Factors affecting shark attack in South Africa" *SAAMBR*, Bull. 2, (December) 1961, pp. 30 - 32

⁵⁸ ... what I term as the "attack problem" refers to the concern with the number of shark attacks and the "supposed" threat they posed.

research of the 1980s, which was to some degree influenced by the conservation movement. As specified in Chapters 1 and 2, I am not surmising that scientists endorsed “irrational fears” of sharks, or shark myths, but rather that they seized this “fear of sharks” as an opportunity to begin a new area of scientific studies in the 1960s. This was indicated in a letter that J.D. Roberts, the Chairperson of the Anti-shark Research Committee, wrote to the Mayor of Pietermaritzburg in 1961: “There is, at the moment, a great demand for money for the erection of shark nets. Whilst I have no quarrel with such a demand, I would stress the fact that unless research is carried out at once in South Africa will be no nearer finding a solution to the shark menace.”⁵⁹ These earlier shark studies were dedicated to finding means of human protection against attack.

Whilst South African research in the 1960s focused on the “cause and effect” of attack, in the United States the invention of the Hicks “electronic device” received the scientists’ and the recreational public’s recognition in the early 1960s.⁶⁰ The inventor was John Hicks, an American skin-diver by trade who had spent four years experimenting on the device.⁶¹ This was a small device, worn by swimmers, which emitted electronic pulses into the surrounding circumference of the user, to deter sharks. The “electronic repeller” as it was dubbed was academically recognised in a letter from the Curator of the Alabama Museum of Natural History, J.M. Valentina. He said:

It can be unequivocally stated that the Hick’s shark-repeller was, under these circumstance, a most dependable deterrent agent which not only successfully prevented sharks from taking bait... but which invariably caused violent reactions in the fish. A constant reaction pattern was observed consisting in of a sudden turn and hasty retreat...Experimentation in the open sea has not been accomplished, due to inability to contact aggressive sharks...⁶²

⁵⁹ PAR ASR 3/PMB 4/5/632 Ref TC248/205 “Raising Funds for Anti-shark Research” [letter to the Mayor of Pietermaritzburg from the Chairman of the anti-shark Action Committee, JD Roberts], 1961, p. 1

⁶⁰ “John Hicks IV is the sole inventor...no other person or agency can legitimately lay claim to either this invention or its development” NSBA: Old Papers: A letter “To Whom it May Concern” from J. Manson Valentina of the Alabama Museum of Natural History, University of Alabama, October 1961.

⁶¹ NSBL Old Papers MD Bellomy “Sharks Away” Florida, June 1962.

⁶² NSBL Old Papers, A letter “To Whom it May Concern” from J. Manson Valentina of the Alabama Museum of Natural History, University of Alabama, October 1961.

The “electronic repeller” had caused quite a stir amongst American scientists and recreational users, such as skin-divers, divers and spear fishermen. Although the “electronic repeller” had become popular amongst the above recreational users, research on the competency of the “repeller” in contact with dangerous sharks was limited. In comparison to the US, where the focus was on anti-shark devices, Natal focused in this period on the actual sharks’ biology in search of means to protect recreational users of the sea from attack. However, American and South African research was hindered, as neither could apply their technology to the open ocean.

Throughout the 1960s, ORI became more cognizant of the rationalized or limited knowledge scientists had of sharks and of shark attack. In 1962, the prolific D.H. Davies published yet another paper on the “shark problem”.⁶³ Davies closely covered many different facets of shark behaviour and anti-shark measures within this work and later in his book, *About Sharks and Shark Attack*, published in 1964.⁶⁴ Davies’ article included a section that introduced sharks that were potentially responsible for attack in South Africa. Davies identified two main species responsible for attack in Natal and he identified them as the *Carcharias taurus* (Ragged-tooth Shark)⁶⁵ and *Carcharinus zambezensis* (Zambezi River Shark).

Between 1962 and 1964, the ORI branch of SAAMBR produced a substantial amount of material on “shark biology”. The Natal Press recorded, in 1962, that ORI shark research was “twofold”:

The first approach has just been in the form of a long-term programme of investigation which is considered necessary for a full understanding and a final solution of the shark attack problem. Included in this programme is the survey of the sharks of the Natal region, behaviour studies...reproductive seasons, feeding habits etc. The second approach [is] directly concerned with the problem. This had consisted of ...studies on the reaction of sharks to sound, light and electrical stimuli...⁶⁶

The main characteristic of South African shark research, then, was that scientists were predisposed to discovering “what causes shark attack” and this category of research

⁶³ D.H. Davies, “The Shark Problem” *South African Journal of Science* Vol. 58 No.9 September 1962.

⁶⁴ Book has been discussed in Chapters 1: D.H. Davies, *About Sharks and Shark Attack*, 1964

⁶⁵ The Ragged tooth shark was originally identified as a “dangerous” species later this was proved incorrect.

⁶⁶ NSBL Marie Levine Archives “An evaluation of measures to fight sharks” Cuttings of Natal Newspapers File 3 January 1962 – November 1965, 1962.

took them to the study of shark biology. For instance, this expanding enquiry into sharks' biology led D'Aubrey to publish an article on the "history of sharks".⁶⁷ Her work studied the natural history of sharks.

Between 1962 and 1964, the ORI branch of SAAMBR produced a substantial amount of material on "shark biology". In 1962, the Durban aquarium introduced the shark tank to the Natal public.⁶⁸ However, the experience was short lived, as within 24 hours, a deadly infection accosted the tank, killing the incumbents. Subsequently, the aquarium lost its great attraction – the shark tank, setting the shark research program back by six months.⁶⁹ The shark tank incident exposed the biological vulnerability of sharks and the ease with which they could be killed.

D.H. Davies had stated, in the ORI report, he had written that "extensive experimentation on the catching, transportation and keeping in captivity of "maneating" types of sharks has been carried out by the Oceanographic Research Institute."⁷⁰ He noted that "(a)lthough sharks are ferocious, wild creatures of enormous strength it is not generally realized that they are extremely difficult to keep alive and healthy in confinement."⁷¹ The difficulties experienced in maintaining large sharks in captivity certainly limited ORI shark research, even though it did, to some extent, increase their knowledge of sharks.

In 1963, the journal *Scientiae*⁷², labelled the original five species of sharks marked as being possibly responsible for attacks on humans. These were the:

- Zambezi River Shark (*Carcharinus zambezensis*)
- Blue Pointer [currently known as the Great White] (*Carcharodon carcharias*)
- Tiger Shark (*Galeocerdo curvier*)

⁶⁷ J. D'Aubrey "A Brief history of Sharks" SAAMBRA (Bull 3, December 1962) pp. 13 – 22.

⁶⁸ The tank contained six different shark species, excluding rays.

⁶⁹ D.H. Davies, "The Centenary Aquarium and Shark Research Tank" SAAMBR Bull 3, (December) 1962, pp. 5 – 13.

⁷⁰ PAR ASR 3/PMB 4/5/632 Ref TC248/205 D.H. Davies, "Memorandum of anti-shark investigations including progress to date and indicating work to be carried out in the future" ORI, SAAMBR and the UN publication uncertain, but within 1959. p. 3.

⁷¹ PAR ASR 3/PMB 4/5/632 Ref TC248/205 D.H. Davies, "Memorandum of anti-shark investigations including progress to date and indicating work to be carried out in the future" ORI, SAAMBR and the UN publication uncertain, but within 1959. p. 3.

⁷² In their "Special Issue for the S.A. Anti-shark Association" – (Comprising the CSIR and the S.A. Marine Research Association) entitled "War on Sharks" *Scientiae* Vol.4. no.6 (June) 1963 pp. 1 – 24.

- Hammerhead (*Sphyrna*)
- Ragged-tooth Shark (*Carcharias taurus*)⁷³

This publication is of significance as, later in the publication, the Ragged-tooth Shark is declared innocent of attacks on humans, thereby debunking the myth that majority of sharks were inherently man-eating rogues.⁷⁴ “The [Oceanographic research] institute is inclined to exonerate the Ragged-tooth shark ... as a dangerous species in Natal waters.”⁷⁵ Furthermore in the same article, *Scientia* reports that:

For years, the arch-killer of the Natal coast went about his gruesome business unexposed. People blamed any of a dozen species known to be man-eaters. Now, science is closing in and researchers at the Oceanographic Research Institute are convinced that they have identified the villain-in-chief ... the Zambezi River shark...The significance of this discovery is that experimental anti-shark measures can now be concentrated on this shark.⁷⁶

Scientiae within the same publication made “an appeal from the South African Research Association, for more money.”⁷⁷ The publication continued with the acknowledgment of South Africa’s, in particular Natal’s, international recognition in the shark research field. ORI was also establishing international links. For instance, it reported that two American shark research scientists, Dr. J. Garrick and Dr. P. Gilbert, had visited ORI to participate in the studies that were being undertaken by the institution. Both scientists fully acknowledged South Africa’s work and stated their intention of working with the ORI scientists.⁷⁸

As mentioned earlier in this chapter, sound repellents had been touched on. However, in 1963, D.H. Davies, J.P.A. Lochner and E.D. Smith produced a report on the hearing of sharks. Although this report was developed as a means to create anti-shark measures, it did provide a substantial amount of information on the biology of sharks.

⁷³ NSBL “Science vs. Sharks: Species off the east coast” *Scientiae* Vol. 4 no. 6 June 1963. p. 5.

⁷⁴ As mentioned earlier in this chapter, “tooth” evidence had been used to identify the attacker. There was very little evidence to convict the Ragged-Tooth shark, but rather a large amount convicting the Zambezi, page 92.

⁷⁵ NSBL “Unmasking the Killer” *Scientiae* Vol. 4 No. 6 June 1963 p. 6.

⁷⁶ NSBL “Unmasking the Killer”, p. 6.

⁷⁷ NSBL “War on Sharks” *Scientiae* Vol.4. no. 6 June 1963 p. 2.

⁷⁸ NSBL “Lok internasionale belanstelling uit” *Scientiae*, Vol.4, no.6. June 1963, pp. 19 – 20.

It was concluded that sharks responded to sound stimuli, not to frequency.⁷⁹ This indicated that sharks had exceptional auditory abilities; however, this method was inexplicably not furthered in anti-shark measures. The increase of research about shark biology, assisted in the medical treatment of the victims of shark attacks and became far more efficient and successful because of biological shark research studied in the early 1960s.

The *Scientia* reports that “One of the most unobtrusive but phenomenal successes of the anti-shark campaign thus far, has been the development of an enlightened technique for on-the-spot treatment [on the beach] of shark victims.”⁸⁰ Measures such as the use of intravenous drugs, anti-biotics, shark emergency aid kits, immediate medical help and the response of “local lifesavers have been extensively trained in beach treatment of shark attacks and in the reconstitution of plasma” assisted in medical rescue.⁸¹ In 1965, the Anti-shark Research Committee Annual General Meeting recorded that in a letter from Coppleson, it was said that Australia had adopted the South African method of treating attack victims on the beach.⁸² This letter confirms the development in South African shark research. It also emphasizes growing international networks and local cooperation in combating the “shark problem”. Furthermore, as a *Daily News* reporter stated, “Australian Surf Lifesaving authorities now accept the importance of teaching their lifesavers the principles of cardiac massage and the South African method of shark-bite therapy.”⁸³ The “South African on beach treatment” of shark bite victims was internationally accepted. Increased medical care comforted the holidaymakers who frequented the Natal coastline.

⁷⁹ D.H. Davies, J.P.A. Lochner and E.D. Smith, “Preliminary investigations on the hearing of sharks” *ORI Investigational Report* 7. 1963, pp. 1 – 9.

⁸⁰ NSBL “Emergency Treatment of Shark Victims” *Scientiae* Vol. 4 No. 6, June 1963. p. 13, similar information was printed in the Natal press in 1962. NSBL: Marie Levine Archives: “Beach treatment vital in shark attacks – experts” *Cuttings from the Natal Press* File 3 January 1962 – November 1965.

⁸¹ G.D. Campbell, “Symposium on the treatment of shark attack” *SAAMBRA* (Bull 3, December 1962) pp. 28 – 29 and NSBL: “Emergency Treatment of Shark Victims”, p. 13

⁸² PAR ASR 3/PMB 4/5/632 Ref TC248/205 “Annual General Board meeting” *The Anti-shark Research Association Limited (ARA)* 27 October 1965. p. 3.

⁸³ NSBL: Marie Levine Archives “Australians learn form S.A. rescuers” *Cuttings from Natal Newspapers* File 4 (December 1965 – December 1976), 1965.

“Shark Menace! Combating of the shark menace in the interest of tourist promotion”⁸⁴: Tourism and Shark Attack

In 1962, the DBC commented that “combating the shark menace was a national concern.”⁸⁵ It added that “(t)he Natal coastal industry is an important factor in the national economy and its [the financial benefits of the coastal tourist industry and the shark menace] effects are not purely of a local nature.”⁸⁶ In 1963, a South African Tourist Department Memorandum estimated that annually the Natal coast attracted 300,000 local and international tourists with an attractive income of about 10 million rand a year.⁸⁷ The result of the 1940s and 1950s, particularly “Black December” attacks, had an effect on the Natal tourist industry. In this Memorandum, Coppleson was quoted as saying that “(t)he south coast sharks broke all records for Natal or anywhere else in the world.”⁸⁸ The report continued:

It is conceded that the number of killings by sharks is not high when compared with the number of deaths from unnatural causes such as for instance motor accidents or even drownings. It seems though that the spasmodic behaviour of sharks has a greater effect on the human mind than any other danger to which holidaymakers are constantly prone. A further difficulty is the fact that the public press is always overkeen to give a single mauling or killing by a shark the greatest possible publicity, thereby assisting in creating a most disturbing and even terrifying effect upon the minds of visitors or potential visitors of this coastal region. Experience has shown that, within 24 hours of an attack; hundreds of cancellations of reserved accommodation have taken place, not only within the effected area, but along the whole of the Natal coastline, whilst hundreds of tourists and holidaymakers at the coast immediately packed up and left long before their intended stay was over.⁸⁹

Although the effects of attack on tourism were discussed in Chapter 2, it is important to revise the effects attack had directly on Natal’s economy during the 1960s, resulting directly in the deployment of the nets. It was in 1963 that the Natal Provincial Administration appointed a Commission of Enquiry to provide a solution

⁸⁴ National Archives of South Africa (NASA) National Archives Repository (NAR) SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” 1963 – 1965. front cover.

⁸⁵ DAR BCM 3/DBN 1/2/48/1/3 (18/10/1962) p. 3.

⁸⁶ NASA NAR SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” “Memorandum” 1963. p. 1.

⁸⁷ NASA NAR SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” “Memorandum” 1963 p. 1.

⁸⁸ NASA NAR SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” “Memorandum” 1963 p. 2.

⁸⁹ NASA NAR SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” “Memorandum” 1963 pp. 2 – 3.

to the “shark problem.” The Commission of Enquiry concluded that all areas of South Africa benefited from the tourist industry of Natal. Therefore, “the state, the Natal provincial administration and the local authorities concerned” would assist in funding for anti-shark measures along the Natal coast.⁹⁰

The concern of the Department of Tourism towards ensuring swimmer protection spurred scientific research towards anti-shark measures and away from shark biology, this characteristic is further emphasized in Chapter 4. 1963-64 was a pivotal period in shark research as, prior to 1963, research had focused on “cause and effect” of attack whilst after 1963, shark research tended to focus more on anti-shark measures.

In accordance with the desire to understand recreational usage of the sea and its connection with shark attacks, in 1963, D.H. Davies published a report entitled: “Shark attack and its relationship to temperature, beach patronage and the seasonal abundance of dangerous sharks.”⁹¹ Although this report looks at the connection between attacks and geographical features of the sea, ultimately the report was designed to apply geographical knowledge to the development of anti-shark measures. At Anstey’s Beach, for example, anti-shark measures had been damaged because of the extreme surf that occurred along the coastline. Davies discussed many geographical factors that may be involved in increasing the chance of shark attack, but more importantly, he made the vital connection between what he classified as “beach patronage” and the statistical increase in the incidence of shark attack.⁹² As indicated in Chapter 1 with figure 2, Davies’ 1963 report assisted the bond between economics, tourism and anti-shark measures.

In contrast to the elimination of sharks to benefit tourism, the economic value of sharks to the fishing industry began to draw the enquiry of scientists and in the same year, D’Aubrey wrote an article on the economic usage of sharks.⁹³ She only touches on the shark fishing industry, but did highlight the economic importance of sharks’

⁹⁰ NASA NAR SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” “Memorandum” 1963 p. 3 - 4.

⁹¹ D.H. Davies, “Shark Attack and its Relationship to Temperature, Beach Patronage and the Seasonal Abundance of Dangerous Sharks” *SAAMBR: ORI Investigational Report* 6. 1963.

⁹² D.H. Davies, “Shark Attack and its Relationship to Temperature, Beach Patronage and the Seasonal Abundance of Dangerous Sharks” *SAAMBR: ORI Investigational Report* 6. 1963. pp. 12 – 17.

⁹³ J D’Aubrey, “The Uses of Sharks” *SAAMBR Bulletin* 4. (December) 1963. p. 24 – 25.

nutritional value to humans.⁹⁴ In the 1964 edition of the *SAAMBR Bulletin* 5, a document on shark research was published. This article summarised the results of the early 1960s shark research. It also indicated an increasing biological knowledge about sharks.⁹⁵ In the same year, the DBC decided to co-ordinate the research that was produced by the SAAMBR, CSIR and NPRL.⁹⁶ The correlation of various anti-shark groups formed a formidable research group.

As discussed in Chapter 2, 1964 saw the establishment of the Natal Sharks Board (NSB), founded under the Anti-shark Measures Control Ordinance No. 10 of 1964. The Ordinance was created “to provide for the establishment of a board charged with the duty of approving, controlling and initiating measures for safeguarding bathers against shark attack.”⁹⁷ The Ordinance, as mentioned in Chapter 2, was produced by the Department of Tourism to facilitate the process of combating the shark menace in Natal.⁹⁸ The NSB quickly established research cooperation from ORI, the Anti-shark Research Association Limited (ARA) and the Division of Sea Fisheries (DSF).⁹⁹ Although the NSB was originally assigned practical tasks such as the maintenance of the nets, the NSB was updated on all forms of anti-shark research. It was determined by the Anti-shark Measures Board in 1964 that the DBC would continue to maintain the Durban measures against attack whilst, the South Coast measures became NSB territory.¹⁰⁰ The establishment of anti-shark measures was crucial to the Natal tourist industry because it provided the holidaymakers with the safety and knowledge of knowing that they were safe from shark attack.

1964 – 1968: “This shark is known for its ferocity”:

In July 1964, the DBC received a letter from the Surf Life-saving Association of South Africa (SLASA). SLASA commented on the rapidly increasing use of the sea for swimming and aqua sports and enquired about the “suggested scheme of off-shore

⁹⁴ D’Aubrey “The Uses of Sharks”, p. 24 – 25, this economical value has currently formed a new trend in modern times: D’Aubrey mentions shark fin soup – recently this has caused a stir articles such as “Swoop nets huge shark fin stash” *Cape Argus*, Tuesday, March 30, 2004 p. 3.

⁹⁵ “Shark Research” *SAAMBR Bulletin* 5. (December) 1964, pp. 14 – 19.

⁹⁶ DAR BCM 3/DBN 1/2/48/1/3 (21/8/1964) p. 133.

⁹⁷ The Anti-shark Measures control Ordinance, No 10. 1964.

⁹⁸ NASA NAR SAB Vol. 8623 Ref. F175/10 “Department of Tourism. Shark Menace: Combating of the shark menace in the interest of tourist promotion.” “Memorandum” 1963 pp. 3 – 6.

⁹⁹ NSBL Anti-shark Measure Board Annual Reports, No. 1 1964, p. 3.

¹⁰⁰ DAR BCM 3/DBN 1/2/48/1/3 (21/8/1964) p. 134.

[shark] netting, using ski-boats to cover various bathing beaches along the Natal coast.”¹⁰¹ The letter also referred to the ARA and the implementation of shark research in Natal.¹⁰² The biggest concern was finances and the NSB role was to ensure that all local municipalities received funds during the holiday seasons to maintain their protective schemes.

In February 1965, the DBC declared that

the Director of the South African Association for Marine and Biological research...has indicated that the action taken by the Natal Anti-shark Measures Board was designed to provide immediate financial aid to local authorities before the start of 1964/65 holiday season so that they would not be prevented from re-instating their various protective schemes due to lack of funds.¹⁰³

Finance was central to both the deployment of anti-shark measures and research. *Scientiae*, the CSIR news journal, aided the financial assistance that the ASA had allocated to them and, with the collaboration of ORI, reported on their current research testing into electrical barriers at St. Lucia.¹⁰⁴ The Annual General Meeting of the ASA reported that, once again, the electrical barrier testing had experienced a few difficulties. Some examples were the amount of voltage used to deter sharks and corrosion of the electrode system.¹⁰⁵ This report also referred to “the preliminary conditioning of sharks to... sound.”¹⁰⁶ However, in 1966 sound testing was abandoned, mainly due to the passing of D.H. Davies. In 1966, Joubert wrote “In May 1964, a shark tagging project was started by the Oceanographic Research Institute. The aim of this project was to learn something about the migration and the rate of growth of sharks caught off the east coast of South Africa.”¹⁰⁷ J.F.C. Morgan also reported about the research ORI had done on the “tagging of sharks”. In 1965, ORI had tagged over 2,000 sharks.¹⁰⁸ This method was used to study shark migration and habits. In the same year, D.H. Davies and L.S. Joubert published an article on “Tag

¹⁰¹ DAR Beach Committee Agenda (BCA) 3/DBN 1/2/48/6/1 – 2 (19/08/1964) pp. 3 – 4.

¹⁰² DAR BCA 3/DBN 1/2/48/6/1 – 2 (19/08/1964) p. 4.

¹⁰³ DAR BCA 3/DBN 1/2/48/6/1 – 2 (19/08/1964) p. 4.

¹⁰⁴ NSBL CSIR file “The Electrical Barrier vs Sharks” *Scientiae: CSIR News Journal*: September 1965 p. 2.

¹⁰⁵ PAR ASR 3/PMB 4/5/632 Ref TC248/205 E.D. Smith “Progress Report on Shark research” *NPRL for Annual General Meeting of ASA* October 1965 p. 14 – 16.

¹⁰⁶ PAR ASR 3/PMB: 4/5/632 Ref TC248/205 E.D. Smith “Progress Report on Shark research” *NPRL for Annual General Meeting of ASA* October 1965 p. 14.

¹⁰⁷ L. Joubert, “Tagging the Zambezi shark” *SAAMBRA Bulletin* 6. 1966. p. 38

¹⁰⁸ PAR ASR 3/PMB 4/5/632 Ref TC248/205 JFC Morgans “Report on Shark Research Carried out by the Oceanographic Institute, Durban” *Annual General Meeting of ASA* (November), 1966, p. 11

Evaluation and Shark Tagging in South African waters.”¹⁰⁹ This report was the published material of ORI’s research into tagging; the report covered the practical methods of tagging, as well as, the movements of tagged sharks along the coast.

Research thus far indicated only one shark that posed a threat to humans. “The Zambezi shark has earned itself the nasty reputation as a man-killer along the Natal coast.”¹¹⁰ Joubert determined that prior to 1965 a single Zambezi shark had been tagged. He continued that it was important to tag Zambezi sharks and to understand their movement, as this shark species was classified as a man-eater.¹¹¹ The NSB 1996 Annual Reports also indicate an interest in identifying shark species. “[NSB] shark meshing staff is being trained in the recognition of the various types of shark caught in the nets.”¹¹² The types of sharks caught indicated which sharks were present along the Natal coastline.

ORI research suffered during 1966 – 1968 due to the death of D.H. Davies. The majority of the material during this period originated from the NPRL. Although in 1967, A.E.F. Heydorn, an ORI member, reported to the ARA that ORI, with some difficulty, had continued with the “shark tagging” and shark behaviour projects.¹¹³ The NPRL continued to research the electric stimuli in sharks in St. Lucia, although the geographical conditions surrounding the area proved challenging to the project.

1967 saw something of a lull in shark research. However, it was at this time that Heydorn once again declared that ORI “is carried out on the broader basis of obtaining information by which reasons for attacks can be explained. This involves studies of the species of sharks occurring inshore... and of behavioural aspects...”¹¹⁴ He continued to say that there had been a substantial decrease in attacks along the coast and that “there is little doubt that the nets are, in fact, reducing the shark

¹⁰⁹ DH. Davies and LS. Joubert, “Tag Evaluation and Shark tagging in South African waters” *ORI* investigational report 12, 1965.

¹¹⁰ J D’Aubrey, “The Zambezi shark” *SAAMBRA* Bulletin 6. 1966. p. 34.

¹¹¹ L. Joubert, “Tagging the Zambezi shark” *SAAMBRA* Bulletin 6. 1966. p. 39.

¹¹² NSBL “The Third Annual Report of the Natal Anti-shark Measures Board” *Natal Anti-shark Measures Annual Report* January – December, 1966, p. 2.

¹¹³ PAR ASR 3/PMB: 4/5/632 Ref TC248/205 AEF Heydorn “Report on Shark Research Carried out by the Oceanographic Research Institute, Durban” *ASA Annual General Meeting* (November) 1967, pp. 9 – 17.

¹¹⁴ PAR ASR 3/PMB 4/5/632 Ref TC248/205 AEF Heydorn “Report on Shark Research Carried out by the Oceanographic Research Institute, Durban” *ASA Annual General Meeting* (November) 1968, p. 15.

population numerically, besides providing physical barriers.”¹¹⁵ The NSB also recorded the following in 1967:

Each [NSB] authority was supplied with a form and chart complete, in which provision was made to show the state of weather when the nets were being services and the approximate location in the net, of the shark meshed ... New experiments are being conducted by placing some of the nets on the sea-bed position and others in a position where the floats are at sea-level and the nets hand down.¹¹⁶

The above net projects were some of the first practical experiments to be taken by the NSB; this involvement certainly assisted the 1968 boom in which numerous scientific activities took place.

Conclusions:

This chapter has shown that shark research really originated after a noticeable increase of shark attack during the 1940s and 1950s. The impact of “Black December” – December 1957 – April 1958 - spurred this research on even more in the early 1960s. These attacks on the coastline affected the economic welfare of the Natal coast as holiday resort. As the beach increasingly became a recreational source during the 1940s and 1950s, the economic benefits of the Natal coast as a tourist destination were noted by the National government.

I would like to suggest that Natal research into shark attack was heavily influenced by the “cause and effect” methodology. This early research led South African scientists to look into shark biology, but the aim of the research was always to lead to the development of effective anti-shark measures. During the 1960s, research was preoccupied by the identification of supposedly man-eating sharks, as well as the establishing of preventative measures against them. This research led to a debate about the most effective anti-shark measures to be used and experimentation with some methods, such as electrical barriers. Despite the experiments and the expressed concerns about the nets, the continued to be the most commonly deployed measure to protect bathers from sharks off the Natal coast. The following chapter studies the

¹¹⁵ PAR ASR 3/PMB 4/5/632 Ref TC248/205 AEF Heydorn “Report on shark research carried out by the Oceanographic research institute, Durban” *ASA Annual General Meeting* (November) 1968, p. 15.

¹¹⁶ NSBL “Fourth Annual Report of the Natal Anti-shark Measures Board” *Natal Anti-shark Measures Board Annual Reports* January – December 1967 p. 2

different anti-shark measures researched in the 1970s. It also looks at the rebirth of recreation and the rise of conservation in Natal.

Illustrations 7: Demonstrations of the Zambezi shark - which is considered a species involved in attacks on humans – and its contact with the Nets

Shark swimming through a hole in the net:¹¹⁷

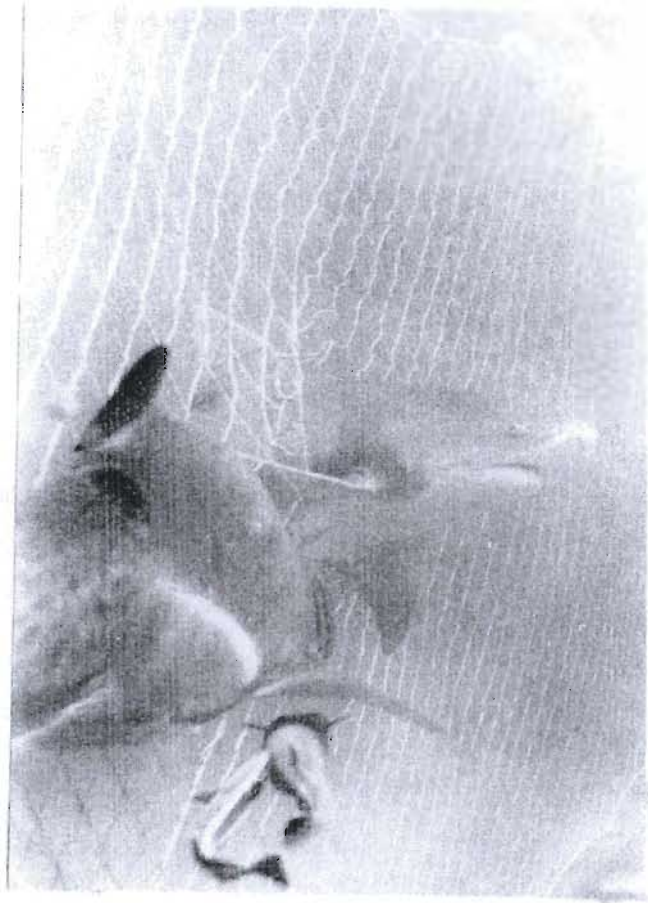


Figure 16. C. leucas C passing through small hole in net.

¹¹⁷ L. Trevorrow, "Behaviour studies in Three Species of Sharks: Behaviour studies in Three Species of Sharks: Carcharhinus Leucas, Carcharhinus Brevipinna and Odontaspis Taurus", (MSc, Department of Animal Biology, University of Natal, Natal. 1970), Figure 16.

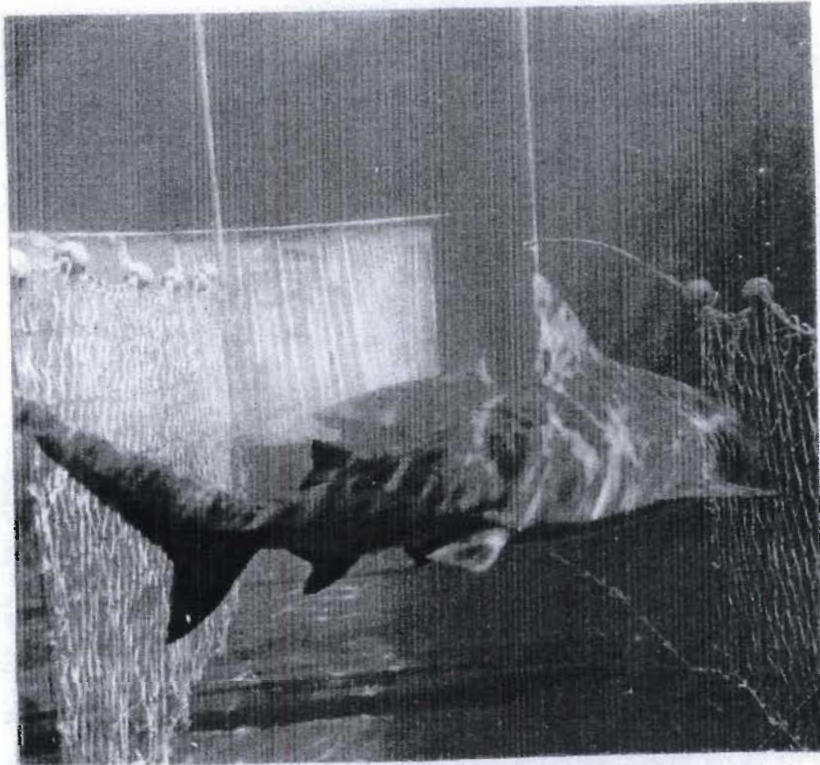


Figure 20. C. leucas swimming through gap between two half depth nets.

¹¹⁸Trevorrow, "Behaviour studies in Three Species of Sharks: Behaviour studies in Three Species of Sharks: Carcharhinus Leucas, Carcharhinus Brevipinna and Odontaspis Taurus", Figure 20.

Shark swimming freely around a net: ¹¹⁹

(b) net set on the surface of the tank (Fig. 18)



Figure 18. Net set at the water surface during the day with the sharks passing freely underneath it.

¹¹⁹Trevorrow, "Behaviour studies in Three Species of Sharks: Behaviour studies in Three Species of Sharks: *Carcharhinus Leucas*, *Carcharhinus Brevipinna* and *Odontaspis Taurus*", Figure 18.

Chapter Four

The 1970s, Anti-shark measures, Tourism, Media and Conservation

Introduction

In the initial stages of the research for, and conceptualisation of, this thesis, the decade of the 1970s - a period between the drama of the “Black December”, experimentation with various forms of anti-shark measures and early research into shark biology, and the rise of conservation during the 1980s and 1990s - appeared to be bland, almost void of any interesting or significant developments. However, this chapter resulted in the consideration of many different factors that were important in the 1970s and which would influence anti-shark measures and recreation in decades to follow. This chapter covers a number of such factors, such as trends in the funding of shark research, shifts within shark research itself, the beginnings of a shift towards the conservation in South Africa and marine life, the influence of sensationalised media images of sharks and developments in beach recreation during this time.

During the 1970s, funding dictated the nature of anti-shark research projects. In the 1960s, shark research had included the study of shark biology, but in the 1970s, shark research had almost become entirely anti-shark bound. The fledgling conservation ideology was also becoming more influential in South Africa, although this term itself was still being debated and developed and there were many definitions that described conservation; these will be discussed later. This chapter begins to look at this concept developed locally and internationally and the impact conservation had on marine environments and, in particular, sharks. Originally, provincial conservation excluded sharks and it was only in the 1980s and 1990s that conservation became influential in marine environments. This marked a new era of scientific shark research; however, as indicated in the Introduction, these periods fall outside of this period of study.

1974 saw the publication of Peter Benchley’s hugely popular novel, *Jaws*, while one year later, in 1975, Stephen Spielberg’s film of the same name was released.

Both the book and the film today have become classics. The popularity of these highly negative and sensationalized media representations of sharks proved to be problematic for shark populations worldwide. Paradoxically, they emerged at the same time as the conservation movement. This controversial combination of media sensationalism and emergent conservation adds further interest to the 1970s in this study.

In Natal, 'white' working-class recreational use of the beach expanded and grew during the 1970s. The beach was no longer used primarily by exclusively 'white' middle-class citizens. In 1969, tourism was hailed as "one of the four main (economic) elements [contributing] to the continued prosperity of the City of Durban."¹ The recreational rush had subsided slightly during the mid-1960s and the growth during the 1970s can be seen as a re-birth and further acknowledgement of beach recreation within the tourist industry of Natal and South Africa. This is reflected in a collection of theses produced at the University of Natal during the 1970s, in addition to the occasional thesis that had been produced in the mid-1960s. These studies are an important source for this chapter. The 1970s was an era of internal political uprising in South Africa.² As mentioned, the working class started to use the beach frequently during the 1970s³, as well as, the increasing 'non-white' use of the beach as a recreational space. According to L. J. Grant, whose Master's thesis in Geography was submitted in 1992, the beach was predominantly used by 'whites' in Natal, South Africa. She argues:

Taken as a whole, the cultural preferences dominant in Durban's beachfront during this period, reflected the racist, instrumental ideology of Apartheid...Black South African's were not allowed on white beaches, and the repressive [sic] power of the state, made it impossible and unlikely to contest.⁴

This chapter on anti-shark measures in Natal during the 1970s, has resulted differently to what I had originally expected. It has become a story of its own. To

¹ L.J. Grant, "An Historical Geography of the Durban Beachfront", (MA, Department of Geographical and Environmental Sciences, University of Natal, Durban, 1992.) p. 175.

² Grant, "An Historical Geography of the Durban Beachfront.", p. 189.

³ Grant, "An Historical Geography of the Durban Beachfront.", p. 189.

⁴ Grant, "An Historical Geography of the Durban Beachfront.", p. 193.

explain the variety of features and arguments, this chapter has been organized chronologically.

1967 - 1970: Natal attempts to reverse the threat...all research directed towards physical barrier protection: The debate

The ostensibly most effective anti-shark measure of the 1960s in Natal was, as has been noted in previous chapters, the shark nets. In the late 1960s, the introduction of a competitor in the form of electrical barriers started a controversial battle between the experimental electrical barriers and the already employed shark nets. The research field of shark biology and shark behavioural studies had become estranged from other forms of shark research in the late 1960s. During the 1970s research primarily focused on anti-shark measures. The primary factor in shark research was the issue of finances to support research projects. Significantly, in the 1970s, the Anti-Shark Research Association (ASRA), that had previously been responsible for allocating financial resources to the various shark research organizations, handed responsibility over to the Anti-shark Measures Board (ASMB), renamed the Natal Sharks Board (NSB) in 1974. In 1967, Mr. J.D. Roberts, Chairman of ASRA, alluded to this shift in emphasis at the fifth Annual General Meeting of ASRA, where he stated that:

The primary aim of the Anti-shark Research Association was to co-ordinate all shark research as well as collect funds for this work. It was true, however, that...the Anti-Shark Measures Board had increased [their funds] to the point where they were now virtually the sole contributors. This was tremendously appreciated by the Research Association, but he did not feel it called for the disbanding of this body.⁵

The growing involvement of the ASMB in shark research and maintenance of the nets was also reflected in the ASMB 1968 annual report:

The Board must express itself as being particularly satisfied with the new and difficult work being done by its staff, particularly so much is done on new ground which work has to be developed realistically with intelligence and determination because little precedent exists on which action can be based. The Board's staff is in constant touch with all local authorities undertaking meshing

⁵ "Pietermaritzburg Archives Repository (PAR) for Anti-shark research (ASR) 3/PMB 4/5/632 Ref TC248/205 "Minutes of the Fifth Annual General Meeting of the Anti-Shark Research Association, 18 November 1967" pp. 2 – 3.

and is able to advise and assist in the general work of anti-shark measures.⁶

The report shows that managing anti-shark measures along the Natal coast was challenging and the reality of managing and researching anti-shark measures was difficult. It should be noted, here that the ASMB was a world first and all the work it undertook, whether physical (maintenance of the nets) or mental (academic research and net data capturing), was relatively new, not only to the ASMB, but also to the international shark research community. Originally, many different fields of shark research were studied in order to combat the “shark menace” and create safe bathing for beach recreationalists. Chapter 3 indicated that previous shark research included studies on shark biology. These studies produced material on shark behaviour as a method to determine whether there were any patterns in shark attack. At the ASRA fifth general meeting, A.E.F. Heydorn presented a research progress report, in which he noted that there was a divided focus within shark research. His 1968 Oceanographic Research Institute’s (ORI) progress report for the ASRA stated the following:

It will be noted that whereas the research by the CSIR [Council for Scientific Research] and the Natal Anti-shark Measures Board is directed at the provision of physical barriers to keep sharks away from bathers, that of ORI is carried out on the broader basis of obtaining information by which reasons for attacks can be explained.⁷

Heydorn continued that “(t)ribute must be paid to the effectiveness of the net barriers...”⁸ Two facts can be gleaned from Heydorn’s report: firstly, that South African shark research was divided into two directions, i.e. shark biology and anti-shark research; and secondly, that anti-shark research had investigated different shark barriers and that ORI favoured the shark net barriers. In contrast, E.D. Smith argued in his report at the same ASRA general meeting, that experiments with electrical barriers in St. Lucia had been successful and effective. The results

⁶ NSBL “Fifth Annual Report of the Natal Anti-shark Measures Board” 1 January 1968 to 31 December 1968, p. 2.

⁷ PAR ASR 3/PMB 4/5/632 Ref TC 248/205 A.E.F. Heydorn, “Progress Report on Shark Research for Annual General Meeting of the Anti-shark Research Association of 16 November 1968” *The Oceanographic Research Institute (ORI)*, Durban p. 15.

⁸ PAR ASR 3/PMB 4/5/632 Ref TC 248/205 A.E.F. Heydorn, “Progress Report on Shark Research for Annual General Meeting of the Anti-shark Research Association of 16 November 1968” *ORI*, Durban p. 15.

indicated that when the electrical field was active, no sharks were caught in the surrounding nets, whilst when the electrical field was inert, several sharks were captured. In addition, it was noted that the nets had suffered severe damage due to the animals becoming entangled in the nets when the electrical field had been inactive.⁹ By the 1980s, shark research was focused on electrical barriers.

The increasing knowledge of both sharks and of the effectiveness of different anti-shark measures in Natal occasionally led to dispute. For instance, in 1968 the first rebellion against shark nets was recorded in the Natal press. A number of reports revealed that in several incidents of vandalism, the shark nets and the launching pier for the netting boats had been damaged.¹⁰ At the time, the press recorded these incidents as “teenage vandalism”. The timing of this vandalism suggests that it might have been the first conservation-motivated rebellion against anti-shark measures in Natal. However, the vandals were never identified, so it is impossible to know with any certainty.

At the 1968 general meeting of ASRA, it was noted that: “(d)uring a group meeting between the CSIR and Mrs [B.] Davis from the Natal Anti-Shark Measures Board on 13th March, 1968 it was decided to make an allowance for the testing of a long electrode at St. Lucia.”¹¹ The support for anti-shark measures research was further advocated in the Chairman’s report of 1969: “Very satisfactory progress has been made in the development of the electrical shark barrier. It is hoped to carry out a full-scale test on a Natal beach in the near future.”¹² The Chairman’s report also emphasized the increasing significance of the relationship between the NSB and the CSIR. In the sixth annual report of the

⁹ PAR ASR 3/PMB 4/5/632 Ref TC 248/205 E.D. Smith “Progress Report on Shark Research for the Annual General Meeting of the Anti-shark Research Association of 16 November 1968” *National Physical Research Laboratory (NPRL)* p. 16.

¹⁰ NSBA Marie Levine Archives “Vandals damage shark-net launch – A menace” (April 1968) and “Shark nets ripped” (November 1986) *Cuttings from Natal Newspapers* File 4: December 1965 – December 1976.

¹¹ PAR 3/PMB 4/5/632 Ref TC 248/205 E.D. Smith “Shark Research for the 1968 Annual General meeting” *National Physical Research Laboratory (NPRL)*, 1969. p. 17. (Testing of Electrical Barriers)

¹² PAR3/PMB 4/5/632 Ref TC 248/205 J.D. Roberts (chairman) “The Anti-shark Research Association Limited Chairman’s Report” *Annual General Meeting of the Anti-shark Research Association*, 1969. p. 3.

ASMB, the increasing use of the nets is noted via the acquisition of maintenance materials:

Apart from the research being undertaken by the two bodies receiving subsidy [from the board]¹³, the Board now has two ski-boats and crews with a trained Field Officer in charge of each, who are undertaking research into all aspects of the effective placing and maintenance of nets, as well as the routine inspection of work being done at each beach.¹⁴

As noted, shark research had begun to focus on anti-shark measures by the later 1960s, and this would stimulate a debate (“nets vs. electrode barriers”) that would last into the 1990s. Heydorn’s 1969 ORI progress report for ASRA suggested that shark research in Natal had shifted away from research into shark biology and had begun to focus primarily on anti-shark research. Heydorn’s 1969 report emphasized “the debate”, but it also marked a shift that divided shark researchers and began to estrange the shark research institutions from each other. Heydorn argues in his report:

In recent months the NASMB [Natal Anti-shark Measures Board] has...reviewed its policy concerning the extent to which it is prepared to support the shark research of ORI. This revised policy was made known to the Board of Control of the ORI at a joint meeting held on 6 December 1968 and in a letter by the Secretary of the NASMB dated 15 January 1969. In a further letter from the NASMB dated 24 April 1969, the following was stated. Subject to the estimates being approved, an amount of R5, 000 would be made available for shark research. During 1969/1970, a further sum of R10,000 was set aside for research, which in the opinion of the Board “would have a direct, practical and beneficial effect upon its programme of protecting bathers from shark attack.” The implication is clear, i.e. that the NASMB does not consider the shark research of ORI to be of direct value to the aim of protecting bathers against shark attack. It is acknowledged that our research is not directly involved in aspects such as the development of barriers to separate sharks and bathers. The motivation for our work has always been and still is, to carry out research aimed at providing information by which the reasons for shark attacks may be explained...Any reduction in financial support for this work, which cannot be carried out on a short-term basis, is therefore extremely embarrassing and the change of policy by the NASMB has placed ORI in a very difficult position. The alternative appears to be: (a)

¹³ Electrode Barrier (St.Lucia) undertaken by the NPRL and Research into Shark Biology and Behaviour undertaken by ORI.

¹⁴ NSBL “Sixth Annual Report of the Anti-shark Measures Board” 1 January 1969 to 31 December 1969, p. 3.

to stop all further work on sharks and concentrate on the writing up of all accumulated data. Even then R5,000 p.a. is inadequate to pay the salaries of two staff members involved in this work (b) To carry the research as planned since 1959 through is logical conclusion...[in a reduced format] ...¹⁵

Heydorn indicates that shark research would primarily focus on anti-shark measures. Consequently, during the 1970s, there was a notable decrease in published research on anti-shark measures and on sharks in general. Although some research was undertaken in the period, it was primarily confined to investigation of anti-shark measures and ORI publications, which were write-ups of earlier research on shark biology projects. The absence of ORI's their shark behaviour research was further stressed in the 1969 ASRA Chairman's report, which emphasized the accelerated completion of the biological data:

The Oceanographic Research Institute has continued its shark research...The main facets of this work are the processing of the mass taxonomic data accumulated at the Institute over the past ten years, the acceleration of the collection and processing of biological data...¹⁶

The 1969 NSB Annual Report noted that with regard to "research into shark biology and behaviour...it is expected that results of the research should be available in the coming year."¹⁷ This again emphasizes the urgency to finish the shark biology articles by both the ASRA and the NSB. From this report it is also evident that the amount of R20,000 that NSB allocated to the CSIR's National Physical Research laboratory (NPRL) far exceeded the amount allocated to ORI (R15,000).¹⁸ This underlined the increasing value the ASRA placed on research done by the NPRL - a scientific institution whose research focused on physical barriers, particularly electrical barriers. The NSB annual report of 1970 again calls attention to the allocation of funds to shark research: the NPRL again received

¹⁵ PAR 3/PMB 4/5/632 Ref TC 248/205 A.E.F. Heydorn "Progress Report on Shark Research [in 1968] for the Annual General Meeting of the Anti-shark Research Association of 5th December, 1969" *ORI*, Durban pp. 8 – 9.

¹⁶ PAR 3/PMB 4/5/632 Ref TC 248/205 J.D. Roberts (chairman) "The Anti-shark Research Association Limited Chairman's Report" *Annual General Meeting of the Anti-shark Research Association*, 1969. p. 3.

¹⁷ NSBL "Sixth Annual Report Natal Anti-shark Measures Board", 1 January 1969 – 31 December 1969, p. 2.

¹⁸ NSBL "Sixth Annual Report Natal Anti-shark Measures Board", 1 January 1969 31 December 1969. p. 2.

R20,000, whilst ORI received only R10,000.¹⁹ These financial allocations indicate that in the 1970s shark research would be steered towards work on anti-shark measures. The 1970s shark research would begin off the backbone of the previous decade, starting with a symposium of the South African National Committee for Oceanographic Research (SANCOR) from 4 to 6 August 1970, in Durban.

‘Laying a net is a practised [sic] art.’²⁰
1970 – 1973: Nets vs. Electrical Barriers

Both the ORI and the NSB presented papers at the symposium and these were subsequently published. Two ORI papers were published: the first on research conducted by ORI during the 1960s presented by Heydorn and the second, a study on shark behaviour, by A.J. Bass. The NSB published a paper on the nets, in which the author, Beulah Davis, proclaimed that “laying a net is a practised [sic] art.”²¹ In his paper, Heydorn refers to the union of the shark research institutions in the 1960s:

Apart from the tragedy of loss of human life or the maiming of victims, the psychological impact of, and publicity given to cases of shark attack is such as to have a most deleterious effect on the tourist trade upon which the coastal areas of Natal are so dependent for their economy. For these reasons shark research is continued at ORI in close collaboration with the CSIR. and the Natal Anti-shark Measures Board (NASMB).²²

Future research will be planned in consultation with the CSIR and the provincial authorities responsible for the protection of Natal beaches against shark attack.²³

Heydorn again stressed the effectiveness of the nets. The majority of researchers at ORI tended to support the use of nets. The paper presented by Bass at the symposium, had a double-edged characteristic. On the one hand, the paper

¹⁹ NSBL “Seventh Annual Report Natal Anti-Shark Measures Board”, 1 January 1970 – 31 December 1970. p. 2.

²⁰ B. Davis, “The Natal Anti-shark Measures Board” *Oceanography in South Africa* Durban 4 – 6 August South African National Committee for Oceanographic Research (SANCOR) Symposium Review F 1, 1970, p. 2.

²¹ Davis “The Natal Anti-shark Measures Board”, p. 2.

²² A.E.F Heydorn “A Review of Marine Biological Research carried out by the Oceanographic Research Institution, Durban, in waters of the South African East Coast during the period 1960 – 1970” *Oceanography in South Africa*, SANCOR Symposium Review F 2, Durban, 4 – 6 August. 1970, p. 2.

²³ Heydorn, “A Review of Marine Biological Research Carried out by the Oceanographic Research Institution, Durban, in Waters of the South African East Coast during the Period 1960 – 1970”, p. 7.

humanizes the sharks by appealing to our human nature to nurture the young. At the same time, the author plays on their “cannibalistic” nature, “the social organization of large sharks is designed to protect the young from being eaten by adults.”²⁴ The unfathomable nature of sharks, as discussed in Chapters 1 and 2, increased the desire to protect beach recreational users from the supposed threat that these professed inherently “cannibalistic” man-eating rogues posed. As surmised earlier, the psychological benefit of the nets provided room for shark researchers to study new forms of research. As discussed earlier, it was notably Davies who, in the 1960s, embarked upon bubble barrier research. This was reinforced in the 1970s, however, this time in improving the nets and not in researching new anti-shark measures. In the Seventh annual report of the NSMB, it is stated that: “The Board was... continuously undertaking research of an applied nature to enable it to improve the installation and placing of nets and in getting to know more about shark habits.”²⁵

As mentioned, in the 1970s, a “debate” arose about the most effective anti-shark measure. In 1970, a Master’s student at ORI, Lynette Trevorrow, submitted a thesis on the reactions of sharks to nets.²⁶ This thesis is of particular relevance for two principal reasons: firstly, it indicated a shift in research perspectives at ORI from research on shark behaviour, toward research on the nets; and secondly, it emphasized the importance of the nets as a barrier to shark attack. Illustration 8 on page 140 demonstrates various shark reactions to the nets and whether the nets are effective or not. The following explains Trevorrow’s work:

As the experiments were designed to investigate the reactions of captive sharks to the type of netting barriers used in Natal, it is necessary to describe the method of gill netting and some of the enigma associated with it.²⁷...Although the present gill netting system has proved effective against shark attack during the day it has not been possible to explain how the barriers actually operate or how sharks respond to them. Moreover, in the absence of this

²⁴ A.J. Bass, “Shark Distribution and Movements along the Eastern Coast of South Africa” *Oceanography in South Africa* SANCOR Symposium Review G5, Durban, 4 – 6 August 1970. p. 3.

²⁵ NSBL “Seventh Annual Report of the Anti-shark Measures Board” 1st January 1970 – 31st December 1970. p. 3

²⁶ L. Trevorrow, “Behaviour studies in Three Species of Sharks: Behaviour studies in Three Species of Sharks: *Carcharhinus leucas*, *Carcharhinus brevipinna* and *Odontaspis taurus*”, (MSc, Department of Animal Biology, University of Natal, Natal. 1970.).

²⁷ Trevorrow, “Behaviour studies in Three Species of Sharks:”, p. 47.

information it is difficult to recognise weaknesses in the system and thus devise a means of increasing the efficiency of the barriers. It was for these reasons that ORI, in collaboration with the Natal Anti-Shark Measures Board, conducted a series of experiments on the reactions of captive sharks to netting barriers in a large research tank. The experiments afforded the opportunity of observing and filming the responses of sharks to nets of various colours and configurations set across their paths of swimming.²⁸

Trevorrow's thesis highlights two factors: firstly, the use of the nets to determine various aspects of shark behaviour; and secondly, by adopting such a project assisted in the union of the ORI and the NSB, which would allow the ORI to continue investigating shark biology, even with its limited funding. Although Trevorrow's thesis contains a great deal more information on shark behaviour, the only information to be published and considered relevant to anti-shark measures, was the research on the reactions of sharks to various types of nets.²⁹ This is significant because her research incorporates a variety of other results - such as the sharks' reaction to different colours - that were not published.

In SAAMBR, *Bulletin* 8 of 1970, Trevorrow indirectly confirmed that her project had been undertaken to conform to the 1970s aspirations that shark research should emphasize anti-shark measures:

The elimination of sharks plays an important role in protecting bathers. Any method of increasing catches is thus beneficial and it is hoped our findings...will result in a more general use of these nets on the Natal coast.³⁰

This split approach to shark research had further funding implications, when in 1971, the NPRL received R45,000 from the NSB, whereas ORI only received R8,000. Although ORI had attempted to steer their research towards the NSB's orientation to shark research, they had failed. In 1971, SAAMBR published an ORI progress report that declared that the majority of ORI's research was currently in its final stages. The article also conveyed that ORI hoped to publish write-ups of remaining research findings in the mid-1970s.³¹

²⁸ Trevorrow, "Behaviour studies in Three Species of Sharks:", p. 48 – 49.

²⁹ L. Trevorrow, "Netting Barriers in the Shark Research Tank" *South African Association for Marine Biological Research (SAAMBR) Bulletin* 8. 1970, pp. 13 – 14.

³⁰ Trevorrow, "Netting Barriers in the Shark Research Tank", pp 13 – 14.

³¹ A.J. Bass "Shark Biology and Taxonomy" *SAAMBR Bulletin* 9. 1970. p 42.

Central to the majority of shark research, was how to protect beach recreationalists from shark attack. At the end of 1971, the ASMB could quite happily declare that “(t)here were very few occasions during 1971 when members of the public were unable to bathe” due to the threat of shark attack.³² Nonetheless, continual considerable donations were made by both the Board and the Department of Tourism for anti-shark research.³³ These donations emphasized the desire to protect beach recreational users from attack. However, scientific uncertainty about the causes of shark attack continued. In 1971, Smith proffered the following opinion: “Shark attacks on humans are characterised by their apparently unpredictable nature.”³⁴ The causes, he believed, could be determined by “the response of shark to stimuli like certain sounds and minute traces of perspiration, urine and blood, etc., in the water.”³⁵ Smith’s research encompassed methods of using electromagnetic waves to deter or attract sharks. He also indicated that different environments were required for different electromagnetic frequency levels, for instance, he applied low frequency experiments in a tank environment.³⁶

In California, in 1972, a study of shark behaviour at sea was initiated, outside of a confined tank or lake environment. The project researched the “behaviour of unrestrained sharks in their natural environment.”³⁷ The significance of this project was that it was one of the first projects to undertake open-sea research - not in an estuary or a tank - and it promoted electrical research internationally. Simultaneously, in 1972, the “National Physical Research Laboratory of the Council for Scientific and Industrial Research laid a cable in the sea at Margate

³² NSBL “Eighth Annual Report of the Natal Anti-shark Measures Board” 1 January 1971 – 31 December 1971. p. 4.

³³ NSBL “Eighth Annual Report of the Natal Anti-shark Measures Board” 1 January 1971 – 31 December 1971. p. 2.

³⁴ E.D. Smith, “Remote Recording of Shark Response”, *Symposium on Biotelemetry* Pretoria, 1971. p. 2.

³⁵ Smith, “Remote Recording of Shark Response”, p. 2.

³⁶ Smith, “Remote Recording of Shark Response”, p. 2.

³⁷ E.A. Standora, T.C. Sciarotta, D.W. Ferrel, H.C Carter and D.R Nelson “Development of Multichannel, ultrasonic telemetry system for the study of sharks at sea” *California State University Technical Report No. 5* August 1972. p. 1.

during June for research work as an electrode barrier against sharks.”³⁸ Testing of the barrier was to commence the following year.

In his 1972 PhD thesis in Animal Biology, “The Carcharhinid and Scyliorhinid Sharks of the East Coast of Southern Africa”, John Bass incorporated a collection of ORI’s shark research.³⁹ In 1973, ORI published two further articles on shark biology, the second of which pertains to this thesis, because it was about the study of shark biology, more particularly, the biology of the Zambezi shark (*Carcharhinus leucas*). According to Bass, D’Aubrey and Kistnasamy, the Zambezi shark regularly frequented the coastal areas of the Indian Ocean, including the Natal coast. Records of the Zambezi sharks’ movements showed that they entered shallow inshore waters habitually, as well as occasionally travelling up river estuaries.⁴⁰ Due to the migratory routes of the Zambezi sharks, it became increasingly evident that the Zambezi sharks and humans would frequently come into contact. This is indicated in Figure 6 on page 47, Chapter 1 of this thesis and links back to the original argument demonstrated in Figure 4 on page 45, Chapter 1, that the ratio of attacks was linked to the recreational use of the sea and that attacks occurred more frequently as a result from the increasing use of the sea as a recreational source. It was thus changes in human behaviour and not an increasing ferocity on the part of “rogue” shark species that was leading to increased numbers of shark attacks on humans in unprotected areas - beaches that were not netted.

1973 – 1974: “Rogue Shark Fears”⁴¹

In 1973, American scientist, H.D. Baldrige, published a highly influential report that was to affect all future shark research. This report debunked some of the earliest myths about sharks, including, as indicated in Chapter 1, the misconstrued

³⁸ NSBL “Ninth Annual Report Natal Anti-shark Measures Board” January 1972 – December 1972 p. 2 and “Migrate submarine cable installation procedure” *NPRL* Pretoria, June 1971.

³⁹ Bass, A. John. “The Carcharhinid and Scyliorhinid Sharks of the East Coast of Southern Africa” (PhD, Department of Animal Biology, University of Natal, Durban. 1972.).

⁴⁰ A.J. Bass, “Analysis and Description of Variation in the Proportional Dimensions of Scyliorhinid, Carcharhinid and Sphymid Sharks” *ORI* Investigational Report No. 32 1973. and A.J. Bass, J.D. D’Aubrey and N. Kistnasamy, “Sharks of the east coast of southern Africa I. The genus *Carcharhinus*” *ORI* Investigational Report No. 33 1978 p. 40

⁴¹ NSBL Marie Levine Archives “South Coast Sun: Rogue Shark Fears” *Cuttings from Natal Newspapers* File 4: December 1965 – December 1975, 29 March 1974.

hypothesis about water temperature and its relation to the occurrence of shark attack. The report covers every possible cause of attack and provides a variety of statistics related to shark attack.⁴² The aim of the project was to analyse two main precepts from a collection of data. These were to:

- (a) provide statistical significance to the existence or absence of common factors associated with known instances of predaceous shark behavior towards man, and
- (b) evaluate the present approach to the gathering of meaningful data on shark attack and thereby determine the requirement for maintaining such an effort in the future.⁴³

The results provided shark scientists worldwide with a new research base. However, Richard Ellis argues that whilst Baldrige's original scientific work demonstrated that shark attacks occurred much less frequently than people thought they did, "people were frightened in anticipation of them out of proportion to their frequency or the actual danger involved in swimming where sharks were known to be present."⁴⁴

Interestingly, Ellis adds in his footnotes that:

In the same year, Baldrige also published a popular version of this report. Titled *Shark Attack*, it bore this line on the cover: "True tales of shark attacks on man - facts more terrifying than the fiction of JAWS." Obviously, the public hungered for more accounts of gory attacks, but without the graphs and tables.⁴⁵

It is interesting to note that, according to Ellis, scientific information of the time was different to popular knowledge and this was influenced by what material was published to the public. Nonetheless, whilst Baldrige's popular work was consumed by the public, his scientific work was incorporated into science.

During this period South Africa's principal shark research was still directed towards anti-shark measures and not shark behaviour. Tim Wallett, who was a scientist from the NSB, wrote a Master's thesis in 1973, similar to that of the ORI scientist, Trevorrow's thesis, on shark behaviour in respect of the nets. However,

⁴² H.D. Baldrige, *Shark Attack Against Man: A Program of Data Reduction and Analysis* Mote Marine Laboratory, Florida, 31 October 1973.

⁴³ Baldrige, *Shark Attack Against Man: A Program of Data Reduction and Analysis*, p. 2.

⁴⁴ R. Ellis, *The Empty Ocean*, (Washington: Shearwater Book, Island press, 2003), p. 51.

⁴⁵ Ellis, *The Empty Ocean*, p. 51.

Walleth's thesis focused on the function of nets and not on shark behaviour towards the nets. Although Walleth's thesis does include shark behaviour, the primary function of his project was to study the effectiveness of the nets. He begins his study as follows:

This...study deals with the analysis of the meshing return forms with the view to gaining an insight into the behaviour of sharks in relation to the nets, the occurrence and biology of the shark entering the inshore zone and the reasons why the nets have been so successful in preventing shark attacks.⁴⁶

Walleth states that "(i)n theory, the presence of shark nets in front of a bathing beach should not prevent shark attacks because sharks can swim around or over the nets..⁴⁷ He argues that two of the main causes for the effectiveness of the nets is firstly, "(t)he accumulative effect of catching shark has decreased the number of sharks entering the inshore zone" and secondly, "(t)he presence of decomposing sharks in the nets cannot be ignored as a repellent."⁴⁸ Furthermore, Walleth argues that equal numbers of shark catches occur on either side of the nets.⁴⁹

It is of particular interest that both theses were written in the 1970s. Furthermore, only in the 1990s, was another thesis on the nets, researched by Sheldon Dudley, a current employee of the NSB, completed. Dudley's thesis introduces the focus on the environmental impact of nets, a previously ignored area.⁵⁰ He argues:

Shark nets are fishing devices, believed to protect bathers primarily by reducing shark numbers. Although the extent of this reduction is not well understood, any reduction in numbers of top predators carries, in principle, a high ecological risk.

The aim of the study is to assess the environmental impact of the present operation and to consider modifications to the operation which will result in a reduction both of costs and impact, but without a substantial reduction in bather safety.⁵¹

Given the doubts about the efficacy of nets expressed as early as the 1960s, it is noteworthy that most of the academic work on sharks produced at South African

⁴⁶ T. Walleth. "Analysis of shark meshing returns off the Natal Coast.", (MSc, Department of Biological Sciences, University of Natal, Durban. 1973.), p.1.

⁴⁷ Walleth, "Analysis of shark meshing returns off the Natal coast.", p. 109.

⁴⁸ Walleth, "Analysis of shark meshing returns off the Natal coast.", p. 109.

⁴⁹ Walleth, "Analysis of shark meshing returns off the Natal coast.", p. 85.

⁵⁰ S.F.J. Dudley, "Shark nets in KwaZulu-Natal: An Evaluation of Catches and Alternatives.", (PhD, Department of Zoology, University of Cape Town, 1995.), p. 3.

⁵¹ Dudley, "Shark nets in KwaZulu-Natal: An Evaluation of Catches and Alternatives", p. 3.

universities was principally related to nets and not to electrical barriers. On the other hand, the majority of the research work produced on electrical barriers was undertaken by scientific researchers within the scientific research institutions.

In his thesis, Wallett acknowledged the usefulness of the data recorded by ORI. Wallett also stated that all shark species caught in the nets were taken to the NSB for scientific examination. During the 1970s, the bulk of ORI's original research work was relinquished to the NSB for continued research. This was, firstly, because of the limited funding ORI received and, secondly, because while all captured sharks were previously transported to ORI in Durban, from 1973, the specimens were transported directly to the NSB in Umhlanga.

The 1974 annual report of the ASMB records a change of policy:

Aiming to establish greater efficiency and the more effective stringent control, the formal adoption of a revised ultimate policy represented a major advance in the development of this organisation. The Board, in terms of this policy, will take over direct control of all meshing activities within its area of jurisdiction...⁵²

Accordingly, in April 1974, "the Shark Attack File was officially handed over to the Natal Anti-Shark Measures Board by the Oceanographic Research Institution."⁵³ "Aiming to establish greater efficiency and more effective stringent control...the board... will take direct control of all meshing activities...from August, 1974."⁵⁴ The funds allocated to ORI by the NSB decreased to a dismal R2, 500 that year.

It was also in 1974 that the NSB decided to open its doors to the public with a regular "Open Day". This was an initiative "to promote the education of the public and thus achieve a greater safety margin for all concerned..."⁵⁵ This idea was embraced by the public and the NSB had displays and talks, which became an

⁵² NSBL "Eleventh Annual Report Natal Anti-shark Measures Board", January 1974 – December 1974. p. 2.

⁵³ NSBL "Eleventh Annual Report Natal Anti-Shark Measures Board", January 1974 – December 1974. p. 5.

⁵⁴ NSBL "Eleventh Annual Report Natal Anti-Shark Measures Board", January 1974 – December 1974. p. 3.

⁵⁵ NSBL "Eleventh Annual Report Natal Anti-Shark Measures Board", January 1974 – December 1974, p. 6.

integral part of the Durban tourist experience.⁵⁶ The “Open Day” also centralised the NSB in all shark related activities. Whilst ORI had dominated research in the 1960s, the NSB began to monopolize the South African shark research field in the 1970s. Even though the shark research institutions had both collaborated and competed with each other, recognition of each other never failed. In 1974, at the official opening of the new NSB building, the Administrator of Natal expressed the following regarding the NSB research programme:

Over the years there has been close co-operation with the Oceanographic Research Institute, the Natal Parks Board, the CSIR and other research organisations.⁵⁷

Contradictory and paradoxical trends in attitudes towards sharks in the late 1970s:

Not only was 1973-74 pivotal in shark research because of the shift in research fields and in a growing monopoly by the NSB, but in that year, *The Symposium on Wildlife Conservation and Utilization in Africa*⁵⁸ was published and this led to the formalization of a relatively new concept in South Africa. This was one of the initial conservation movements in South Africa. The symposium identified three interesting aspects of conservation in South Africa: firstly, the increasing value of marine animals such as dolphins in marine tourism; secondly, an interest in the aquaculture/marine farming as a potential means to protect South African marine sources; and thirdly, the conservation and utilization of whales off the Natal coast. South Africa has been a signatory to the International Convention for the Regulation of Whaling (ICRW) since 1946. In 1973, South Africa redefined its relationship with the ICRW under the subtle influence of the South African Fishing Industries Act of 1973.⁵⁹

⁵⁶ NSBL “Eleventh Annual Report Natal Anti-Shark Measures Board”, January 1974 – December 1974, p. 6.

⁵⁷ NSBL “Eleventh Annual Report Natal Anti-Shark Measures Board”, January 1974 – December 1974, p. 9.

⁵⁸ “The Symposium on Wildlife Conservation and Utilization in Africa” *Journal of the Southern African Wildlife Management Association (JSAWMA)*, 1973.

⁵⁹ C.K. Taylor and G.S.Saayman, “Techniques for the Capture and Maintenance of Dolphins in South Africa” *JSAWMA* 1973. p. 89, and A.E.F. Heydorn, “Aquaculture: A Substitute for Management of Living Marine Resources”, *JSAWMA*, 1973. p. 109. and P.B. Best and L.C.

Thomas Craig defines conservation “as a ‘wise utilization’ and not preservation. It must be borne in mind that man is part of the eco-system and therefore must utilize the system wisely and protect it for the future.”⁶⁰ However, in 1973-74 conservation views had not yet been readily adopted in some scientific fields. For instance, although conservation of specific marine species was acknowledged as important, sharks were unclassified and of no concern. In 1974, the Town and Regional Planning Commission of Natal drew up a “Draft Regional Plan for the South Coast” in which they argue: “Much has been said and much more has been written on the need for conservation, especially nature conservation, but very little has been done and much remains to be achieved.”⁶¹ Even an embryonic notion of conservation was limited in publications on sharks in the 1970s.

One force that certainly played a role in delaying any movement towards shark conservation was the mass media, which had become even more influential with the emergence of contemporary popular culture. John Engelbrecht, with use of Marshall McLuhan’s hypothesis on the mass media, argued in his thesis that “it is clear that because of technology our senses are once again bombarded by visual and sound images.”⁶² Richard Ellis, a contemporary natural marine science historian, argues further that the public of the 1970s desired sensationalised images and productions, such as *Jaws* fed this thirst.⁶³

Peter Benchley’s novel *Jaws*, about the over-sized, highly intelligent Great White Shark that caused havoc in a small coastal town, led to the following comments by Australian Valerie Taylor, a famous underwater shark photographer: “Reading it, I heard the sounds and smelled the smells, for this segment is true to life. It is really like this. He describes to perfection...”⁶⁴ With such powerful authoring skills, it leaves little to the imagination and I postulate that powerfully written images,

Surmon, “Conservation and Utilisation of whales off the Natal Coast” *JSAWMA*, 1973. pp. 149 – 150.

⁶⁰ C. Thomas, “Brighton Beach Complex”, (BArch, University of Natal. 1977.), p. 11.

⁶¹ “Draft Regional Plan for the South Coast” Town and Regional Planning Commission Natal (1974) Natal Town and Regional Planning Reports Vol. 29 p. 112.

⁶² M. McLuhan “The Sound and the Fury” *Understanding Media* (1964) in J. Engelbrecht, “Entertainment Centre: Durban Beach” (BArch, University of Natal, 1970.), p. 61.

⁶³ Ellis, *The Empty Oceans*, p. 51.

⁶⁴ Valerie Taylor insert from “3 From Jaws: Peter Benchley” *Great Shark Stories*, Valerie and Ron Taylor 1978 (Revised 1986). p. 25.

such as that reproduced below, certainly influenced international fear about sharks.

The great fish moved silently through the night water, propelled by short sweeps of its crescent tail. The mouth was open just enough to permit a rush of water over the gills. There was a little motion: an occasional correction of the apparently aimless course by the slight raising or lowering of the pectoral fin – as a bird changes direction by dipping one wing and lifting the other. The eyes were sightless in the black, and the other senses transmitted nothing extraordinary to the small, primitive brain. The fish might have been asleep, save for the movement dictated by countless millions of years of instinctive continuity.⁶⁵

Jaws could not have emerged in during a more critical era: on the one hand, there was an emerging concern for nature conservation, but on the other, Natal had also experienced further economic growth from beach recreationalism. The Town and Regional Planning Commission noted, in 1974: “The real growth potential of the South Coast lies with its tourist industry.”⁶⁶

Ideas in favour of shark conservation were not only challenged by the promotion of tourism, but also the book and movie, *Jaws*. The Natal press states that: “With the film “Jaws” soon to be screened in Durban I foresee beaches packed, as usual but devoid entirely of bathers”⁶⁷. The combination of the above factors certainly hindered the development of active shark conservation.

JAWS: American Theatres in June 1975⁶⁸

**“Amity is a summer town. We need summer dollars.”⁶⁹
1975**

Valerie Taylor, shark photographer, reviews Benchley’s *Jaws*:

Benchley makes his fish completely believable, then gives it a brain which can think to plan the destruction of three men. No wonder that this shark inflamed the imagination of so many

⁶⁵ P. Benchley, *Jaws*, (New York: Double Day Publishers, 1974), p. 1.

⁶⁶ “Draft Regional Plan for the South Coast” Town and Regional Planning Commission Natal (1974) Natal Town and Regional Planning Reports Vol. 29 p. 109.

⁶⁷ NSBL Marie Levine Archives ‘Jaws’ fear for Natal Beaches’ *Cuttings from Natal Newspapers* File 4: December 1965 – December 1976, 30 October 1975.

⁶⁸ J. Lemkin, “Archetypal Landscapes and *Jaws*” *Planks of Reason: Essays on the Horror Film* (ed.) B.K. Grant and C. Sharrett. (Oxford: BK Grant and C Sharrett. Scarecrow Press, Inc., 2004.), p. 321.

⁶⁹ Larry Vaughn (town mayor) *Jaws* 1975 directed by Steven Spielberg

people, causing the beaches to be deserted and thousands of sharks to be slaughtered in a frenzy of mass hatred.⁷⁰

In 1975, Spielberg produced the film, *Jaws*, and the powerful written word, now visual, made the fish even more real. X. Maniguet argues in his book that, “the shark is a creature tailor-made for media-sensationalism.”⁷¹ Spielberg embraced this concept and “tailor-made” his *Jaws* to align with the human perception of the shark-beast. Thus, in Natal, the film both recreated and enhanced the fear of sharks that “Black December” had created among beach recreationalists in the late 1950s and 1960s.

Jaws drew on incidents from US history, such as the recurring shark attacks said to have been perpetrated by the “the (New) Jersey Man-eater” of 1916. Accounts, such as the Natal “Black December” attacks of 1957-1958, also influenced his book. In a letter to Richard Fernicola, renowned author of *Twelve Days of Horror: A Definitive Investigation of the 1916 New Jersey Shark Attacks*, based on the attacks in New Jersey, Peter Benchley said that the 1916 attacks were “epochal”.⁷² *Jaws* encompassed this “epochal” notion of shark attack. As the movie graphically showed, the sporadic occurrence of attacks made them especially feared, as shark attack cannot be predicted, but when they occur they are usually violent.

Maniguet, in his critique of *Jaws* writes: “Anyone investigating the man-shark relationship will be struck by the disproportion between the impact on the subconscious of a few exceptional mishaps and the statistical reality of the facts.”⁷³ The psychological damage on the human mind when visualizing a shark attack, first hand or pictorial, certainly affects the human perspective of sharks. Spielberg uses this to his advantage, creating an ominous atmosphere although “...a full view of the shark is not provided until over an hour into the film.”⁷⁴ J. Lemkin, a film analyst, argues that “*Jaws* in many ways is a propaganda film...(i)t

⁷⁰ Valerie Taylor insert from “3 From Jaws: Peter Benchley” *Great Shark Stories* V. and R Taylor (Ramsbury, Marlborough, Wiltshire: The Crowood Press, 1978 (Revised 1986)), p. 25.

⁷¹ X. Maniguet, *The Jaws of Death*. (London: Harper Collins Publishers, 1991). p. 32.

⁷² R. Fernicola *Twelve Days of Terror: A Definitive Investigation of the 1916 New Jersey Shark Attacks* (United States of America: The Lyons Press, 2002). p. 180.

⁷³ Maniguet, *The Jaws of Death*, p. 30.

⁷⁴ T. Dirks, *Jaws (1975) Greatest Films* <http://www.filmsite.org/jaws.html> (accessed on 17/08/2005)

draws on deep, submerged beliefs, manipulates them, and feeds them back to us.”⁷⁵ This was reflected by reviewer, Tim Dirks, as he described the opening scene:

The ominous, well-known, ‘shark theme’ – the two-note (E and F) ‘da-dum; cello and bass chords of John Williams’ moody, driving musical score play under the opening credits, followed by a subjective camera view of an underwater creature swimming along. The opening scene, shot day-for-night, is marvellously visual and terrifying. It depicts a blonde girl skinny-dipping and...[an image of which is]prominently displayed on the film’s poster in distinctly Freudian terms (showing the ventral view of the shark’s gigantic, pointed head, positioned vertically in a phallic position, with a dark mouth filled with voracious, jagged teeth).⁷⁶

Lemkin argues this further:

Spielberg also makes powerful use of another aspect of the environment – the beachfront and ocean. Not only in American culture, but almost in all cosmologies, the ocean is the predecessor of all...and while the ocean may be too pure, it is not necessarily gentle.⁷⁷

The combination of visual horror and the use of fear, made *Jaws* famous. It might be argued that the film’s town, Amity, shared a common feature with Durban in that both were small towns that relied on the incoming tourist trade and, the threat and reality of shark attack could destabilize the economy. Amity relied solely on their summer tourist trade, whereas Durban does have a variety of other economic trades. However, tourism remains one of the principal economic activities in Natal. In the movie, *Jaws*, the town’s Mayor says: “I’m only trying to say that Amity is a summer town. We need summer dollars. If people can’t swim here, they’ll be glad to swim in the beaches of the Cape Cod, the Hamptons, Long Island.”⁷⁸ The film posed a minor upset to the Natal tourist industry by unsettling the minds of the holidaymakers along the Natal coastline.

The ASMB was quickly aware of the problems the film posed and the twelfth annual report indicated this by stating they would provide an “antidote to the

⁷⁵ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 330.

⁷⁶ T. Dirks, *Jaws (1975) Greatest Films* <http://www.filmsite.org/jaws.html> (accessed on 17/08/2005)

⁷⁷ Lemkin, “Archetypal Landscapes and *Jaws*”, p. 322

⁷⁸ T. Dirks, *Jaws (1975) Greatest Films* <http://www.filmsite.org/jaws.html> (accessed on 17/08/2005)

possible adverse effects associated with the release of the film.”⁷⁹ The ASMB also made its influence felt in the press. For instance, Davis, then Director of the ASMB, was quoted as saying: “Americans were ‘frightened to death’ of swimming in their oceans because of the dangers of shark attacks” but that “Natal has a positive antidote – our anti-shark nets have been working since 1952 – which they will be well advised to copy.”⁸⁰ The ASMB were supported by local authorities, who were also quoted in the press: according to one report, “Durban’s beach and council officials feel the film “Jaws” will help the tourist industry rather than scare holiday makers off the beaches”. One of the officials, a Mr Tom Linley, was quoted as saying: “Tourists have been aware for some time that nets are the best anti-shark measures.”⁸¹

The film affected all coastal societies and the ripple effect of the movie continues up to the present day. Indeed, Lemkin reported that by 1980 it had proved to be the second most popular film in history, grossing more than \$130 million dollars.”⁸² In Natal, it is clear that *Jaws* actually created increased support for the nets in Natal and this temporarily checked any early moves towards shark conservation.

The film became part of 1970s and 1980s popular culture; it also marked the beginning of an era that still exists today. In addition, it created a conflict of interests between the beginnings of shark conservation and the beach tourism. It was only from the late 1980s that conservation measures – which themselves became connected to commercial concerns - would become influential in the public and scientific treatment of sharks.

⁷⁹ NSBL “Twelfth Annual Report of the Natal Anti-shark Measures Board” 1 January 1975 – 31 December 1975, p. 8.

⁸⁰ NSBL Marie Levine Archives “We’re world beaters at beating shark threat” *Cuttings from Natal Newspapers* File 4: December 1965 – December 1976 2 November 1975.

⁸¹ NSBL Marie Levine Archives “ ‘Jaws’ will help tourism say officials” *Cuttings from Natal Newspapers* File 4: December 1965 – December 1976 8 December 1976 – release of *Jaws* in Durban.

⁸² Lemkin, “Archetypal Landscapes and *Jaws*”, p. 321.

In November 1975, the *Sharks and Man* conference was held at Kissimmee, Florida. The report on the conference was published in February 1976 with a foreword that began:

Through the ages sharks have played an important role in the natural balance of the oceans. Man has viewed them as part nuisance, part recreation [angling], food supplies and commercial products.⁸³

Davis and Tim Walleit presented a paper on behalf of the NSB, primarily about the nets, in which they report:

(T)he board is deeply conscious of the need to investigate other avenues which may be developed to increase the safety factor for bathers; it is simultaneously equally conscious of the need to ensure the vital ecological niche which sharks must occupy if the delicate balance in the marine ecosystem is to maintained.

[the nets] while undoubtedly not 100% safe, remain for the present.⁸⁴

1976 – 1979: Aesthetically Pleasing “Attractions are the real pulling power of the tourist trade”⁸⁵

In 1976 the first conference on Recreation Research was held in Stellenbosch and a participant, F.F. Ferrario, a geographer at the time, stated: “The South African environments, mainly scenery and local landscape, had the strongest appeal power to overseas tourists... together with “sun and beach” [which] appealed to at least one [to] three visitors.”⁸⁶ He added that Natal was invaluable to South African tourism. Ferrario acquired his information through a tourist survey, which established the “quality of each attraction” within a certain area.⁸⁷ In the same year, J.K.M.Cameron, a town planning student at the University of Natal, used the aesthetic concepts “visually satisfactory” and “sensuously satisfactory” in his

⁸³ *Sharks and Man – A perspective* (Proceedings of a conference held November 20 – 21, 1975 in Kissimmee, Florida Coordinated by State University System of Florida and Sea Grant Marine Advisory Program) *Florida Sea Grant Report Number 10* (ed.) William Seaman (February) 1976, p. ii.

⁸⁴ *Sharks and Man*, p. 16.

⁸⁵ F.F. Ferrario, “The Evaluation of Tourist Environments – A New Method and its Application to South Africa”, *First Conference on Recreation Research*, Department of Nature Conservation, Faculty of Forestry, University of Stellenbosch, 29 September – 1 October 1976, p. 167.

⁸⁶ Ferrario, “The Evaluation of Tourist Environments – A New Method and its Application to South Africa”, pp. 170 – 173.

⁸⁷ Ferrario, “The Evaluation of Tourist Environments – A New Method and its Application to South Africa”, pp. 170 – 173.

thesis.⁸⁸ He states that aesthetics is “the common denominator” of the Natal coast.⁸⁹ In his view, the “basic function” of the coast is “a recreational, leisure, and holiday resort area” that relies on its aesthetics.⁹⁰ Even the ASMB was regarded as a tourist activity. As he noted:

The ever-increasing number of visitors to the Board’s Headquarters...has indicated the growing interest and awareness of the unique operations conducted by the Board and the important contribution thus related to the tourist industry.⁹¹

Chapter 2 conveyed the importance of the beach recreational tourist industry in South Africa and showed that there was an increase in beach recreational participation in Natal during the 1940s and 1950s. As was demonstrated, tourism played an important role in the development of anti-shark research and measures, particularly in the 1960s. In turn, Ferrario’s paper also emphasizes that beach activities were significant for the development of tourism in South Africa.⁹² The 1976 academic conference on recreation in South Africa marked another era of increased tourism in Natal. The economic benefits of tourism are indicated in the table below that shows a significant growth of both tourism and the money spent by the tourists.

Figure 1: Number of tourists to Durban and amounts spent by them in 1970 and 1975⁹³

YEAR	TOURISTS	RANDS SPENT
1970	300 000	180 000 000
1975	500 000	250 000 000

By 1977 travel experts predicted “that within the next two years, Durban will attract more tourist in a year than the city has residents. By the turn of the century, tourism will be Durban’s predominant industry.”⁹⁴ The increase in the number of

⁸⁸ J.K.M. Cameron, “Towards a policy for the control of building height on the Natal Coast” (MSC, Department of Town and Regional Planning, University of Natal, Durban. 1976.), p. ii.

⁸⁹ Cameron, “Towards a policy for the control of building height on the Natal Coast”, p. 3.

⁹⁰ Cameron, “Towards a policy for the control of building height on the Natal Coast”. p. 3.

⁹¹ NSBL “Thirteenth Annual Report of the Natal Anti-shark Measures Board” 1 January 1976 – 31 December 1976. p. 7.

⁹² Ferrario, “The Evaluation of Tourist Environments – A New Method and its Application to South Africa”, p. 170.

⁹³ I. Cronjé, “Recreation Facility for Durban Beachfront.”, (BArch, University of Natal, Durban, 1977.), p. 7.

⁹⁴ Cronjé, “Recreation Facility for Durban Beachfront.”, p. 7. Retrospectively Cronjé statement is accurate; currently tourism dominates KwaZulu-Natal economy.

architectural studies during the 1970s indicates the importance of beach recreationalism and the need for entertainment along the beachfront. "For inland visitors it is sea-bathing and sun-bathing which are of prime importance and which are the most sought after forms of recreation."⁹⁵

In his thesis on Brighton Beach, Thomas Craig indicated that this was "a beautiful natural amenity", but that no attention had been given to enhance the beach's potential. More importantly, he studies the racial use of the beach.⁹⁶ The Apartheid ideology reinforced the use of certain beaches to 'whites only'.⁹⁷ Craig's thesis implies this as he highlights the racial divide: "The Bluff with a resident 'white' population of 32, 000, and a residential multi-racial population exceeding that of Pietermaritzburg combined with a large holiday component does not [fully] recognize this valuable asset".⁹⁸ However, during the 1980s, there was a pressure release off these newly utilized beaches, as Craig indicates, there was an increase in 'non-white' beach recreational activities.

This policy has therefore placed Brighton Beach in a 'white only'... Zoned alongside are the coloured and Indian areas which have portions of the coast designated for their respective exclusive use. The problem here is that the beaches are not very suitable for bathing, while there is no vehicular access to the beaches.⁹⁹

Craig's thesis indicates that the government limited 'non-white' use of Natal's beaches by allocating unsafe beaches to 'non-whites'. During the late 1970s, 'non-white' recreational users were becoming more "visibly" prominent. Craig states that 'non-white' beach recreationalists were creating man-made paths to the beaches, because, as mentioned, there was no vehicular access to the designated beaches. This spoilt the natural, attractive coastline of Natal.¹⁰⁰ Grant's thesis highlights the importance of motorways and their value in relation to access to the beach.¹⁰¹ The destruction of the beach slopes caused two problems, one of an ecological and the other of an aesthetic nature. The first was directly linked to the

⁹⁵ Natal Town and Regional Planning Reports Vol.29 "Draft Regional Plan for the South Coast" Town Commission and Regional Planning Commission in Natal, 1974, p. 109.

⁹⁶ T. Craig, "Brighton Beach Complex", (BArch, University of Natal, 1977.), p. 4.

⁹⁷ Grant, "An historical geography of the Durban Beachfront.", p. 193.

⁹⁸ Craig, "Brighton Beach Complex.", p. 4.

⁹⁹ Craig, "Brighton Beach Complex.", p. 47.

¹⁰⁰ Craig, "Brighton Beach Complex.", p. 47.

¹⁰¹ Grant, "An historical geography of the Durban Beachfront.", p. 179.

growing conservation movement and the second was a key factor in the tourist industry.

In addition to the arising political problems, which peaked in the 1980s, there was a shark attack in 1978. The 15th ASMB Annual Report stated, “with regret we [ASMB] report a shark attack which occurred on 17.01.78 at Glenashley Beach, a ‘white’ beach location. This particular beach is also not protected by shark nets.”¹⁰² This attack affirmed the importance of the nets and also the importance of protecting the most prominent (‘white’) recreational user. The combination of political changes and the effects of this shark attack directly affected both tourism and the deployment of the nets off the Natal coastline.

Conclusions:

The 1970s was a period of growing controversy and changes in public, scientific and official attitudes towards the apparent threat that sharks posed to the Natal beach recreationalists and to the profitable tourism sector. The 1970s saw the emergence of conservation sensibilities on the one hand, and, on the other, the beginning of a media-led fear of sharks, as epitomized by the movie, *Jaws*. Although there were scientific doubts about the true extent to which shark nets, could in fact, protect bathers, surfers, other sportsmen and women and fishermen, these doubts were not widely publicized and the film increased Natal’s faith in the nets. The Glenashley shark attack marked the beginning of a new era that would emerge in the 1980s. This attack challenged the rising conservation ethos, because the attack occurred at an un-protected beach and this pushed for the deployment of more nets off the Natal coastline. This did in fact occur: Figure 11 on page 141, a table provided by Dudley, shows the deployment of nets off the Natal coast from 1952 – 2004. The 1980s was a decade of controversy as the deployment of nets along the coastline increased, but simultaneously conservation was increasing within South Africa. . In conclusion, it is evident that the 1970s marked the high tide of hostility towards sharks. By the last two decades of the 20th century, a shift in human attitudes towards sharks had occurred, the once hated creature now had become a commercial icon.

¹⁰² “Fifteenth Annual Report of the Natal Anti-shark Measures Board” 1 January 1978 – 31 December 1978. p. 5.

The 1980s and 1990s:

“(T)here is potential to reduce the number of nets used in KZN.”¹⁰³

In the late 1980s, NSB started publishing articles in the *South African Journal of Marine Science* on shark species caught in the nets off the Natal coastline. It should also be noted that during the 1980s, sharks caught alive in the nets were set free and not killed.¹⁰⁴ This method has continued to the present and shows a greater regard for a species of animal that had long been thought of instinctively, as an “enemy” of humans. The conservation movement that emerged in South Africa from the 1980s was primarily driven by concern for the ecological and environmental impact on the marine environment caused by humans, for instance, through activities such as whaling and more importantly for this thesis, shark netting. During the late 1980s and early 1990s, several articles debating the use and impact of these nets were published, even in popular magazines, such as *African Wildlife*.¹⁰⁵ The difficulty with these articles, for the purposes of this thesis, is that they are opinionated and biased. I have tried to avoid opinionated views and instead focus on the shift in research material. Sharks were sidelined, but not ignored, from these concerns originating from the conservation movement, both popular and scientific, during the 1980s.

In 1988, Leonard Compagno, world renowned shark scientist, published an article in the popular publication, *African Wildlife*, entitled “The Fear Factor... irrational attitudes to bather protection” in which he highlighted the limited risk of shark attack. This can be seen as marking a turning point in shark conservation.¹⁰⁶ Compagno argued: “At present (1988) sharks are considered by many people in

¹⁰³ S.F.J. Dudley, “Shark netting in KwaZulu-Natal: An Update, and a Personal Perspective on Shark Control”, *Shark Management and Conservation: Conference Proceedings “Shark Control (Public Safety)”* (ed) N.A. Gible, G. McPherson and B. Lane, (Queensland: Publication Production, 1998) p. 37 Sharks and Man Workshop of the Second World Fisheries Congress, (Australia, Brisbane, August 1996)

¹⁰⁴ G. Cliff and S.F.J. Dudley, “Protection against Shark Attack in South Africa, 1952 – 90”, *Australian Journal of Marine and Freshwater Research*, no. 43, 1992. p. 263.

¹⁰⁵ B. Davis and Jeremy Cliff, “In Defence of Shark Nets” pp. 173 - 174; H. Richards, “The Net Effect: Shark Nets and the Inshore Ecosystem”, pp. 167 – 172; K. Cooper, “The Shark-netting Controversy”, pp. 175 – 176. *African Wildlife*, Vol. 42, no. 3, (May/June) 1988 and S. Dudley and G. Cliff, “Shark-netting: Natal Sharks Board responds”, *African Wildlife*, Vol. 46, no. 6 (November/December) 1992. *African Wildlife*, Vol. 42, no. 3, (May/June) 1988, pp. 177 – 178.

¹⁰⁶ L. Compagno, “The Fear Factor... irrational attitudes to bather protection”, *African Wildlife*, Vol. 42, no. 3, (May/June) 1988, pp. 177 – 178.

South Africa as murderous vermin to be exterminated without regard to their value and conservation.”¹⁰⁷ He continued to argue that some individuals, such as anglers, were becoming less hostile toward sharks and, if sharks were to be conserved, they would have to receive the “oceanic equivalent” protection of terrestrial predators.¹⁰⁸

In 1991, it was pointed out by Geremy Cliff, a current employee of the NSB, in “Shark attacks on the South African coast between 1960 – 1990” that “(i)n 1989, 139 persons drowned at sea (SA Lifesaving statistics), while six individuals were bitten by sharks.”¹⁰⁹ He continued to say that only one of the six “attacks” to occur in 1989 was fatal. It was in 1991 that protective legislation, which was exclusive to South Africa, was passed for the Great White shark. The protective legislation criminalized the selling or marketing of any Great White shark or part thereof, nor was it now legal to catch or kill a Great White Shark, unless authorized by the Director-General of Environmental Affairs.¹¹⁰ The protective legislation for the Great White Shark in South Africa was a world first and marked the beginning of a very slow change towards shark conservation in the 1990s. The conservation movement of the 1980s had slowly swung towards shark conservation and the impact of shark fishing and hunting on the marine ecological life cycle had caused concern amongst conservationists, scientists and even anglers during the late 1980s.

By 1996, seven shark species had been red-listed by the World Conservation Union. The only legislation providing shark protection in South Africa is the 1998 Marine Living Resources Act, which is primarily related to the commercial fishing industry.¹¹¹ This act controls the shark quotas allocated to the fishing industry and is only relevant to the fishing industry, therefore not providing full protection. As elsewhere in the world, sharks are thus only given partial protection

¹⁰⁷ Compagno, “The Fear Factor...irrational attitudes to bather protection”, p. 178.

¹⁰⁸ Compagno, “The Fear Factor...irrational attitudes to bather protection”, p. 178. The protection land predator received was commonly referred to as game park management.

¹⁰⁹ G. Cliff, “Shark Attacks on the South African Coast between 1960 – 1990”, *South African Journal of Science*, Vol. 87, (October), 1991, p. 513.

¹¹⁰ L.J.V. Compagno, “Government Protection for the White Shark (*Carcharodon carcharias*) in South Africa”, *South African Journal of Science*, Vol. 87, Issue 7, (July) 1991, pp. 284 – 285.

¹¹¹ Marine Living Resources Act 18 of 1998, Chapter Five, Part Three: Department of Environmental Affairs and Tourism

in South Africa. One of the reasons for this failure, as this dissertation will argue, is the heavy emphasis which historically has been placed on anti-shark measures.

In 1994, Irene de Moor, returned to Compagno's 1988 argument, in which he had speculated about Natal's shark attacks and the involvement of the press in sensationalizing shark attacks. She wrote:

Compagno (1988) noted: "I find it difficult believe that Natal's record of no more than 124 recorded sharks attacks could cause crowds to desert the beaches and rush, lemming-like, back home." In this context it should be noted that South Africans are particularly paranoiac about sharks, but much of this paranoia is fed by media hype...even Americans, who have the reputation for being angst-ridden about dangers in the wild, are more sanguine when it comes to sharks. In Florida and California, where the incidence of shark attack is almost as high as that on the Natal coast, bathers are happy to accept beaches which have no protective nets at all.¹¹²

Both de Moor and Compagno's opinions tend to be extreme in relation to the deployment of the anti-shark measures to protect bathers. Yet, I tend to agree that perhaps South Africans are inclined to be slightly paranoid about shark attacks in relation to their occurrence (and this is certainly influenced by the media). However, some form of protection needs to be provided, though as this thesis has shown, shark nets are by no means guaranteed to protect bathers.

A decade ago, Dudley argued that from information obtained in comparative studies of South Africa and Australia (New South Wales and Queensland) it seemed possible that "(t)here is potential to reduce the number of nets used in KZN."¹¹³ This realization is reflected in Dudley's table, (Figure 13 on page 141), which demonstrates a gradual decrease in nets deployed off the now KwaZulu-Natal coast after 1994. Dudley also argued that "(b)aited lines, or drum lines, were tested as possible alternatives to gillnets...[as] they demonstrated greater species

¹¹² I. de Moor, "3. Shark Nets – Is their use justified?", *The Naturalist*, Vol. 38, part.1, (March) 1994, p. 12

¹¹³ S.F.J. Dudley, "Shark netting in KwaZulu-Natal: An update, and a personal perspective on shark control", *Shark Management and Conservation: Conference Proceedings "Shark Control (Public Safety)"* (ed) N.A. Gible, G. McPherson and B. Lane, (Queensland: Publication Production, 1998) p. 37 Sharks and Man Workshop of the Second World Fisheries Congress, (Australia, Brisbane, August 1996)

selectivity for sharks.”¹¹⁴ The baited lines attracted certain species, such as Tiger and Zambezi sharks; they also limited captures of other marine life, such as turtles and dolphins.¹¹⁵

In the same paper, Dudley challenged the role of the media in influencing the deployment of anti-shark measures off the Natal coastline. He showed - and it has been discussed in this thesis - that “(a) shark-proof bathing enclosure built on one of Durban’s beaches in 1907, [is] evidence that people demanded protection from attack before the era of the mass electronic media.”¹¹⁶ I am inclined to agree, with Dudley, that there are other reasons for the deployment of the nets. However, I also believe that the mass media (not the “mass electronic media”, but rather the print media - such as newspapers), has been a significant influence in the history of anti-shark measures in this region since at least the late 1950s, if not before.

The 1990s reflect many of the concerns of the previous decade’s themes such as the reactions of the public, the involvement of the press and the results of earlier shark research. However, these have been discussed and reviewed taking the growing conservation movement into consideration. By the 1990s, there was a massive commercialisation of the shark, to the point where it became an icon for the tourist industry. An example would be uShaka, the popular marine and water world of Durban, which, ironically, has built its popularity on the “cute” shark that is now displayed on advertising billboards to attract holiday-makers to Durban. The shark theme is still used, but shark feeding is now a popular aquarium attraction and the creature once reviled is now a major draw card to attract tourists and generate income for South Africa. Thus, capitalism has led to both the exploitation of sharks and their preservation. This is directly linked to the idea that human perceptions of nature are fluid and never constant.

¹¹⁴ Dudley, “Shark Netting in KwaZulu-Natal: An Update, and a Personal Perspective on Shark Control”, p. 38.

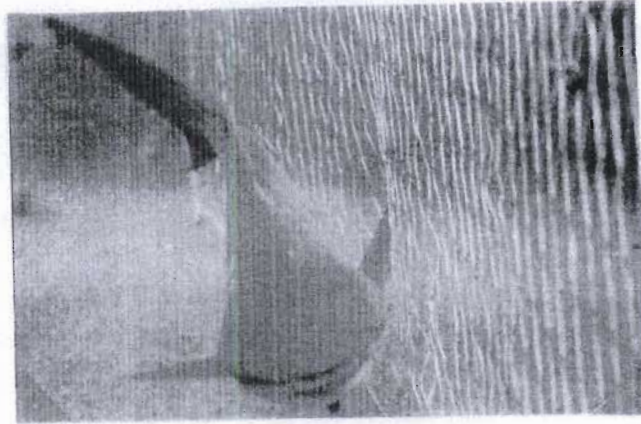
¹¹⁵ Dudley, “Shark Netting in KwaZulu-Natal: An Update, and a Personal Perspective on Shark Control”, p. 38.

¹¹⁶ Dudley, “Shark Netting in KwaZulu-Natal: An Update, and a Personal Perspective on Shark Control”, p. 37.

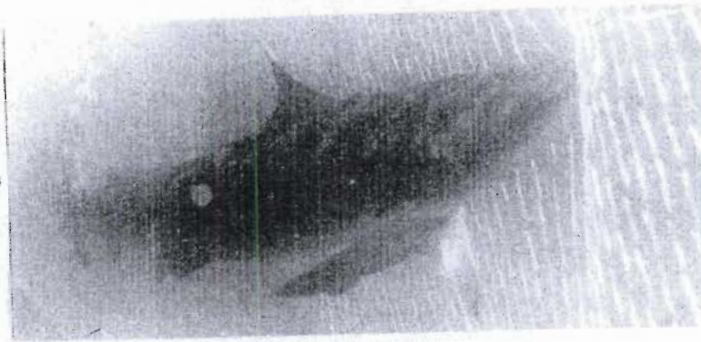
Mankind's relationships with the environment have changed, as is illustrated by the introduction of cage diving and "chumming" off the shores of the Western Cape. This has caused a huge stir, as it is believed that this may attract sharks closer to the land, posing a new, more extensive risk to beach recreationalists. Furthermore, there was an increase in shark attacks in the Western Cape after 1998 that coinciding with the introduction of the popular shark cage diving and chumming. Thus, concluding that human and shark relationships are certainly influenced by human cultural changes.

Illustration 8: Three types of shark contact with the nets:

a) rub



b) bump



c) mesh



Figure 15. The three types of contact with the net.

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¹¹⁷ Trevorrow, "Behaviour studies in Three Species of Sharks: Behaviour studies in Three Species of Sharks: *Carcharhinus leucas*, *Carcharhinus brevipinna* and *Odontaspis taurus*", Figure 15.

Figure 11: Total Fishing Effort (km-net) 1952 – 2004 (at December of each year)

YEAR	EFFORT(km)	# Installations
1952	1.65	1
1953	1.65	1
1954	1.65	1
1955	1.65	1
1956	1.65	1
1957	2.06	1
1958	2.06	1
1959	2.06	1
1960	2.33	1
1961	2.87	2
1962	3.95	3
1963	4.27	3
1964	6.80	4
1965	11.28	9
1966	14.27	17
1967	17.99	28
1968	20.98	34
1969	26.36	35
1970	30.74	39
1971	31.38	40
1972	31.38	40
1973	30.74	41
1974	31.58	41
1975	33.71	40
1976	34.03	40
1977	34.69	41
1978	35.44	41
1979	35.22	41
1980	37.77	42
1981	38.73	43

1982	38.94	43
1983	39.36	43
1984	40.10	44
1985	40.74	43
1986	43.38	43
1987	43.81	43
1988	44.34	43
1989	44.66	43
1990	42.42	43
1991	44.56	44
1992	44.56	44
1993	43.70	44
1994	40.50	43
1995	40.93	40
1996	40.93	43
1997	40.93	40
1998	39.22	40
1999	34.41	39
2000	31.00	38
2001	29.26	37
2002	29.26	37
2003	28.19	38
2004	27.55	38

Conclusion

As has been argued in the course of this thesis, humans have shifting perceptions and constructions of their surrounding environment. This is most certainly the case for sharks, where research and scientific opinions have remained fluid yet authoritative at the same time. It appears, therefore, that science is shaped by time and the concerns of the time. As N. Rothfels has commented, the result of having shifting perceptions of nature is that “we end up having to accept that our current scientific, heavily researched ideas about animals are in a state of constant transformation and that we do not really know what we think we know about them.”¹

These fluid ideas have created myths about sharks and “myths can be dangerous [-] they induce misguided attitudes and responses.”² The primary myth about sharks which has been accepted is that all sharks are inherently man-eating rogues. The key author in developing this influential myth was Victor Coppelson and his “rogue shark”, which was drawn from the popular book and film of the 1970s, *Jaws*. Myths about sharks have been extremely long-lived, not only in the popular imagination, but also within scientific studies. Myths, such as all sharks are inherently man-eating and that shark attack occurs in warmer waters continually reared their heads in many forms of scientific shark research.

The most enduring consequence of shark myths is the human fear of sharks, which not only developed from myths, but also assisted in the dissemination of these myths. The human fear of sharks is an elemental fear, as I have explained, since whilst it can rationally be pointed out the shark attack is one of the rarest forms of animal attack on humans, we are still disproportionately fearful of this species. This is influenced principally, by the fact that humans have dominated and controlled terrestrial predators for almost a century relatively successfully, but sharks are regarded as still posing a threat, because humans cannot control or dominate sharks in their environment. Recent developments, such as uShaka Marine and Water World, in Durban, represent attempts to artificially manipulate the sharks’ environments in

¹ N. Rothfels, *Representing Animals*, (Bloomington: Indiana University Press, 2002), p. xi.

² J. Tosh, *The Pursuit of History*, (London: Longman, 1991), p. 104

aquariums, while at the same time feeding off our instinctive fear of sharks, in order to generate profit from the tourist industry.

The “hysteria” around sharks which has often been influenced by sensationalist media representations of shark attacks is further enhanced by the deep-seated human fear of the sea. In other words, our instinctive fear of sharks is by no means based on the frequency of attack, but instead, stems from a universal fear of being eaten alive. Shark attacks are unquestionably brutal, but it can be pointed out that, relatively speaking, they are rare. On the other hand, no matter how rare they are, they do still occur. I have argued in this thesis, that there was an increase of shark attacks off the Natal coastline in the 1940s and 1950s and, that this increase was due to cultural and geographical factors. The most notable factor is explained in D.H. Davies’s “recreational hypothesis” of 1963. Davies argued that simultaneous to the increase of beach patronage off the Natal coast was an increase in shark attacks. I have shown that Natal was, and is, aesthetically and geographically suited to the needs of the beach recreationalist and tourist. The beautiful landscapes provide a serene, peaceful place for a holiday, while the warm ocean provides free entertainment. The serenity of the ocean is time away from the urban environment, whilst the ocean is an entertainment facility.

In the twentieth century and especially in the years following the World Wars, Natal experienced industrial expansion and increasing prosperity which resulted, notably from the 1930s onwards, in an increase in leisure time amongst the ‘white’ middle class of Natal and other areas of South Africa. The introduction of an improved railway infrastructure in Natal during the 1930s and 1940s increased physical mobility. The political economy of these times meant that the ‘white’ middle class were the first beach recreational users in Natal; and until the 1990s it was only these South African locals that could afford the luxuries of the Durban beachfront.

At the same time as the physical development of the Durban beachfront and other busy beaches along the South Natal coastline, there was the emergence of a “contemporary popular beach culture” that reflected the increasing use of the beach for recreation. It should be noted, that it was also in the late 1940s and early 1950s that recreational use of the Natal coast began to expand, particularly along the South

Coast. This movement was heavily influenced by the increased use of Durban beaches by the 'white' working class, which was Afrikaans and not English and this was another segregating factor. With the increase of working-class families on the Durban beachfront, many middle-class families started holidaying along the Natal South coast. During the late 1950s and the early 1960s, the combination of expansion of international and local beach recreational activities and the ideal geographical location of the Natal coastline, initiated a tourist boom. The greatest shift in beach recreation was the marketing of the Durban beachfront as a modern entity. The modernisation of Durban ran parallel to the growth of beach recreationalism as an economic and social activity in South Africa. During the 1950s, beach recreation became a central part of "contemporary popular culture" and this saw the introduction of several commodified beach sports, such as surfing and diving.

There was an increase in shark attack off the Natal coast especially in the 1940s and 1950s. In 1952, Durban deployed nets off some beachfronts to protect bathers. The catalyst for the rest of Natal to follow suit was the attacks off the Natal South Coast during "Black December" of December 1957 to April 1958. "Black December" was instrumental in heightening the human fear of sharks, via the press and the actual turn of events. I have argued that misguided views of sharks have led to an exaggerated and undeserved fear of attack and ultimately to the deployment of anti-shark measures in Natal.

It was after "Black December" that the South African and Natal public and scientific communities became more aware of the supposed threat that sharks posed to popular beach recreational activities along the Natal South Coast, which was, as has been noted, becoming integrated into the newly thriving tourist industry of Natal. The National Physical Research Laboratory (NPRL) concluded that the only means to secure swimmer safety and, more specifically, tourist safety, was to provide them with a means of protection against shark attack, even if this were, in fact, a largely psychological safety.³

³ NSBL CSIR File "Memorandum on Anti-shark Measures" *CSIR NPRL Pretoria, May 1958*, p. 2.

In the 1960s and 1970s, modernisation was accompanied by a substantial increase in beach recreation off Durban and the Natal South Coast and also by the pressures to provide bather protection from sharks. While financial restraints always curbed the full deployment of anti-shark measures in Natal, the human fear of sharks generated enough power to ensure the financial security for the deployment of shark nets off the more popular beaches in Natal. Moreover, as I have argued, in the late 1950s, the 'white' Natal press was instrumental in popularising the message that sharks were a threat to beach recreationalists. The dramatic presence of shark attacks recorded by the newspapers circulated in key 'white' areas, certainly persuaded and united the majority within the 'white' population in their consensus to favour the deployment of anti-shark measures, and, in particular, shark nets. In hindsight, one can criticize the overwhelming faith that was placed in shark nets. After all, attacks continued along the coast and the results were often fatal. As I have argued, the fear of sharks was well founded at the time; however, the press unduly exploited this fear. Furthermore, the emergent popular culture of beach recreationalism was continuously pressurized by the press to employ anti-shark measures. The press assisted in "choosing" the supposedly more practical and financially viable anti-shark measures and promoted the success of the nets. As such, the press moulded the psychology of the Natal public by fuelling a false sense of faith in the nets. As I have argued, the nets did not provide a complete physical barrier between humans and sharks.

The growth of beach recreation off the Natal coast ran parallel with a modernising society from the late 1950s. But to this ideal a "threat" arose: that of sharks and shark attack. The finances received from the infant tourist industry were increasingly commercially beneficial for Natal. This, alongside the motivations of the press, meant that Natal decided to provide security for visitors and beach recreationalists to protect this new economic resource and so it became almost automatic that Natal would deploy anti-shark measures along its coastline. Although not yet proven, the establishment of anti-shark measures was crucial to the Natal tourist industry because it provided the holidaymakers with the psychological safety and "knowledge of knowing" that they were "safe" from shark attack.

In the early 1960s, after "Black December", shark attacks moved from being a local (Natal) to a wider national South African problem. It can be seen that from this time

shark attack was an international problem. This was the motivation for the South African government to become involved, as was the case in other countries. For example, the Australian government was dealing directly with the “problem”. Simultaneous to this nationally-based concern, there was national scientific involvement by the South African Association for Marine Biological Research (SAAMBR) and the Council for Scientific and Industrial Research (CSIR).

After 1958, various marine scientific bodies were founded and began to research the shark “problem”. These bodies included: the Oceanographic Research Institute (ORI) from 1959; the South African Anti-shark Research Association (SAARA) from 1961; and from 1964, the Anti-shark Measures Board (ASMB).

The late 1950s and early 1960s thus saw collaboration and the emergence of many different anti-shark research institutes, and all of them agreed that financial assistance was essential to establish and maintain both the research boards and anti-shark measures in Natal. The supposed safety provided by the nets was accepted by the Durban public and municipalities and after 1964, nets were deployed and supported by the Natal South Coast even though, as this thesis has shown, the nets are not a foolproof method of protection against sharks.

I believe that in many ways, as indicated in chapter 2, humans have attempted to dominate and exploit the sea to the maximum and, in the process, have naturalized shark netting in South Africa. This line of argument has been illustrated in this thesis by briefly looking at the changing scientific understandings of shark biology and therefore adapting these methods to the appropriate anti-shark measures. For instance, in 1958, scientific research institutions such as the NPRL were sceptical about the shark nets, but by the 1970s, the nets were accepted by the scientific research institutions. The nets were considered to be effective and financially viable and earlier doubts about their efficacy were forgotten. During the 1960s, several different anti-shark measures had been studied, including chemical repellents and mechanical barriers. Even earlier, shark research was obliged to consider the aesthetics of the Natal coastline, as the beauty of the Natal coastline was invaluable to the tourist industry. Anti-shark measures such as enclosed pools and metal barriers, were abandoned due to their unattractive appearance and, as the NPRL argued: these

measures confined the movements of the bathers and it was pleasurable and preferable to bathe in the open surf.⁴ Underlying this early research, however, was the opinion that the best method to control the shark “problem” would be to exterminate the shark population. Hence, the main aim of this shark research was not understanding sharks *per se*, but was heavily focused towards trying to develop swimmer protection policies. However, as early as 1959, there was awareness that there was a lack of “knowledge about sharks”.⁵

During the 1960s, shark research was oriented towards shark biology and anti-shark measures. I have argued that 1963-64 was a pivotal period in shark research as, prior to 1963, research had focused on “cause and effect” of attack, whilst after 1963, shark research tended to focus more on anti-shark measures. Research into shark biology was a method to establish which the “dangerous” shark species were and to determine their behavioural habits and habitats. This knowledge was used in conjunction with anti-shark research to establish the best method of preventing shark attack in Natal. In 1964 D.H. Davies published his book, *About Sharks and Shark Attack*, which, as the title implies, contained information about shark biology and anti-shark measures in South Africa. The two most studied and researched forms of anti-shark measures in Natal were electrical barriers and the shark nets. In addition to South Africa’s concentrated research on anti-shark measures, the country also became a world leader in medical treatment for shark attack victims during this period and these methods were quickly adopted internationally.

I would like to suggest that Natal and South African research into shark attacks was heavily influenced by the “cause and effect” methodology. This early research led South African scientists to look into shark biology, but the aim of the research was always to lead to the development of effective anti-shark measures. During the 1960s, research was preoccupied with the identification of supposedly man-eating sharks, as well as establishing preventative measures against them. This research led to a debate

⁴ Natal Sharks Board Library (NSBL) Council of Industrial and Scientific Research (CSIR) File “Memorandum on Anti-shark measures” CSIR National Physical Research Laboratory (NPRL), Pretoria, (May) 1958, p. 10.

⁵ PAR ASR 3/PMB 4/5/632 Ref TC248/205 D.H. Davies “Memorandum of Anti-shark Investigations including Progress to Date and Indicating Work to be Carried out in the Future” in *Oceanographic Research Institute (ORI)*, *SAAMBR* and the University of Natal (UN) publication uncertain, but within 1959. p. 1

about the most effective anti-shark measures to be used and experimentation with some methods, such as electrical barriers. Despite the experiments and the expressed concerns about the nets, the nets continued to be the most commonly deployed measure to protect bathers from sharks off the Natal coast. It was in the 1970s that a shift occurred in the focus of shark research: it was suggested as early as 1969 that the focus of research had shifted from shark biology to anti-shark measures.

Another opinion that shifted during the 1970s was scientists' scepticism about the nets. During the 1960s, several scientists had questioned the efficacy of the nets, but by the 1970s, many scientists highly praised the nets and affirmed their faith in them. For much of the 1970s, anti-shark measures research was focused on improving the nets, not developing new measures. It was in 1973 that American scientist, H.D. Baldrige, produced a highly influential report that was to affect all future shark research. This report debunked some of the earliest myths about sharks, including the mistaken hypothesis about water temperature and its relation to the occurrence of shark attack. The 1970s shark research in Natal encompassed two main features: the nets and the development of electrical barriers. The bulk of the work produced on the nets was produced by universities, whilst material written on electrical barriers was produced by scientific research institutions.

Not only was 1973-74 pivotal in shark research because of the shift in research fields and in a growing monopoly of shark related research by the NSB, but also in that it saw the formalization of a relatively new concept in South Africa - the early conservation movement. However, views about conservation were slow to be adopted in some scientific fields; for instance, although conservation of specific marine species was acknowledged, sharks were unclassified and therefore apparently of no concern.

One force that certainly played a role in delaying any movement towards shark conservation was the mass media, which had become even more influential with the emergence of contemporary popular culture. The 1975 film, *Jaws*, catered to the public's desire for sensationalised images of sharks. The film was adopted from Peter Benchley's novel, *Jaws*, which was about the over-sized, highly intelligent Great White Shark that caused havoc in small coastal town. Ideas in favour of shark

conservation were not only challenged by the book and the movie, *Jaws*, but also by the increased promotion for beach tourism in Natal.

Jaws could not have emerged during a more critical era: on the one hand, there was an emerging concern for nature conservation, but on the other, Natal had also experienced further economic growth as a result of beach recreationalism. In 1976 the importance of beach activities was emphasized by the government and local authorities as being significant for the development of tourism in South Africa.

After the 1980s, a change occurred in attitudes towards sharks. Attitudes can be described as being ambivalent; some views were still as hostile as they had been in the earlier periods, whilst others had become more neutral towards sharks. The earliest indication of this change was noticeable in the mid-1970s at the Natal ASMB and the Natal Sharks Board. This coincided with the emergence of the fledgling conservation movement of the 1970s. In later decades and in a turn of great irony, instead of the dominant attitude that it was best to “kill all sharks”, this reviled species became a popular commercial icon. In this century, the exploitation of sharks through such ventures as uShaka means that sharks have become a valuable economic asset. Thus, the changing attitudes of humans towards sharks have been illustrated: although this thesis has focused on the originally hostile attitudes towards sharks, it has touched on the shift towards the changing economic context that emphasizes the change in attitude. I hope to embark upon a future study that incorporates the 1980s and 1990s, a study that will focus on this period of change. The image of the shark may have been tamed, but the shark still remains untamed and undominated.

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