

# SHARK RESEARCH INSTITUTE NEWSLETTER

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## REPORT TO MEMBERS by Marie Levine

In late December 1994, National Geographic underwater photographer Amos Nachoum and I traveled to South Africa to document research efforts conducted by SRI members. Initially we worked northeast of the Cape of Good Hope, then in mid-January we up the eastern coast to the subtropical waters of KwaZulu/Natal.

### WHITE SHARKS

Five kilometres off the southern tip of the African continent lie two small islands: Geyser and Dyer. Dyer Island is a breeding site for cormorants and home to colonies of jackass penguins. Geyser Island hosts a breeding colony of Cape fur seals. When I began working in the channel between the two islands in 1987 I soon realized that it was patrolled by some very large white sharks. In 1990 I returned to the United States. Throughout the years the channel came to be known as "Shark Alley" and six months ago it became a laboratory for [redacted], an SRI member and a research biologist from Cape Town University studying predatory behavior of white sharks on Cape fur seals.

Every spring thousands of seals converge on rocky offshore islands and secluded beaches from Namibia to the eastern Cape, and some 24 of the 35 sites are breeding colonies. The bulls arrive at the colonies in late October and early November and establish their territories. Stationing themselves at the water's edge the largest bulls often accumulate harems of up to 28 cows. The pregnant cows arrive in November, give birth a day or two later, and then about six days later they mate again. By mid-January most of the bulls have returned to sea.

Decimated by sealers in the 19th Century, the number of seals has steadily increased, particularly since 1940. (In fact, since the pre-exploitation population is unknown it may have already recovered.) Years ago up to 75,000 pups were harvested annually, but marine mammals are now protected by international regulation and seal populations have boomed. The seasonality of the seals, and the appearance and disappearance of large numbers of white sharks around the rookery support the hypotheses that white sharks are not territorial in the classic sense. "A white shark would gain no advantage by restricting its territory," observes [redacted].

[redacted] has been observing consumptive bouts by white sharks on seals from a tower on Dyer Island. From this vantage point we were able to monitor



the surface activity in the channel. Through observations made from the tower and underwater cages we saw a repertoire of white shark behaviors. These include "hunching" when the shark arches its back and drops its pectoral fins so that the dark patch on either side becomes visible, and "gaping" when the shark swims open-mouthed with upper jaw protruding to display its teeth. \_\_\_\_\_ also recorded incidents of "tail slapping", including one incident in which the behavior appeared to be directed at his boat. It is thought that such behaviors are designed to establish or reinforce hierarchy among the sharks.

It is now believed that the white shark is a social animal which forms complex relationships with its own species. Aggregates of up to ten white sharks have been recorded elsewhere along the South African coast. On two occasions \_\_\_\_\_ has observed sharks which appeared to be hunting cooperatively. Although in both instances only two sharks were seen, he believes there might have been more unseen below the surface. In each case just as the first shark took a seal the other seals in the group appeared to mob the shark. "They began jumping over the shark's back in high leaps," said \_\_\_\_\_. "It would seem that the shark could simply turn and bite one of these seals. But, if there were more sharks behind the leading shark, the safest place for a hunted seal might be just behind the head of the shark that first attacked -- too close for the other sharks to approach without violating the first shark's space and inviting aggression."

\_\_\_\_\_ is preparing to experiment with models of jackass penguins to test a hypothesis that some white shark attacks on birds may be displaced aggression. The penguins are not part of the shark's normal diet, and most attacks on them are nonfatal. When predation is ruled out it leaves an array of possibilities. "Perhaps the sharks use them to hone their hunting skills," suggests \_\_\_\_\_. "Such behavior has been observed by killer whales practicing on seals."

Earlier in the month we worked in Mossel Bay, 327 km north of Dyer Island. Setting up chum slicks first in one area, then another, we finally moored our vessel near Seal Island. Although the white sharks did not approach our cage, they were nearby. (See Global Shark Attack File, Case 413).

## WHALE SHARKS

In mid-January Amos and I moved north to the coast of KwaZulu/Natal to join SRI's Whale Shark Study. We made an aerial patrol in a Cessna 172 with pilot Pieter Gent, and covered the area from Amanzimtoti (26 km south of Durban) to the Tugela River (86 km north of Durban) and spotted seven whale sharks swimming at the surface. All were headed north, and all were 50 to 500 metres behind the backline of breakers.

For nearly a week we attempted to tag and film the sharks off Durban, but a cyclone off the coast of Madagascar generated swells that reduced underwater visibility to three metres. We spent evenings commiserating with the crew of the Cousteau Society's vessel *Alcyone*, then preparing to drydock in Durban.

The team traveled north to Sodwana (80 kilometres south of the Mozambique border) in search of clean water with little success, although Rob



Allen managed to set tags in three whale sharks. A week later the sea began to clear. 75 whale sharks were spotted on aerial survey with SRI's microlight! In all, six whale sharks were tagged, and as luck would have it, the day my plane landed at Dulles Airport, a whale shark stranded on the KwaZulu/Natal coast!

## **PROVISIONAL REPORT ON THE WHALE SHARK STUDY FOR THE 1994-1995 SEASON by Andrew Gifford...**

Despite having had to contend with abnormally adverse weather and sea conditions compared to the 1993/1994 season, we have continued to make progress in developing this project following the management plan detailed in our 1993/1994 Report.

### **1. AERIAL SURVEYS**

Ten aerial surveys were conducted this season. Of these, four were flown with fixed wing aircraft and six were made in the microlight. The microlight has proved to be the more cost effective and useful for aerial photography. Of necessity, Pieter Gent had to spend much of his available flying time converting from fixed wing to microlight aircraft, but this objective has now been achieved.

### **2. SEA SURVEYS**

A total of six sea surveys were conducted with adverse water conditions proving to be a very frustrating and limiting factor.

### **3. TAGGING OPERATIONS**

a) Eighteen whale sharks have been tagged this season at various points along the coast of South Africa and Mozambique.

b) Rob Allen has upgraded both the tags and their delivery system.

c) We are currently assisting a British-Based research facility in developing a tag for use on basking sharks.

d) Provisional design work has commenced to develop a satellite tracking system suitable for use on either whale sharks or basking sharks. This aspect of the project is being done in association with scientific research organizations in the United States and Great Britain.

### **4. GENERAL:**

a) To the best of our knowledge only two whale shark strandings occurred on the coastline of KwaZulu/Natal during the period under review. The first shark stranded just north of Richards Bay, and the second at Umdoni Point just south of Pennington Beach.

Unfortunately we were only afforded the opportunity of examining the specimen in the second stranding. Tissue samples were taken and sent for analysis.

b) Our plans to expand this project on an international basis are already well-advanced and beginning to produce results.



## **Global Database of Shark Attacks...**

Case 413: Ian Galbraith was swimming at Hibberdene, RSA, on January 3, 1993, when his foot was bitten by a small shark (less than 1.3 metres in length). Natal Sharks Board nets were in place when the incident took occurred. The attack was investigated by Jeremy Cliff.

Case #UC12/Pending: Andrea Rush, a visitor from New Zealand, was recently attacked by a shark while swimming at Malekua Island, Vanuatu. The case was reported by Joy Wu, SRI Shark Attack Investigator, Vanuatu.

Case 416: Cedric Mpanza, a 14-year-old lifesaver, was fatally attacked at Isipingo Beach, RSA, on January 24, 1995.

Case 415: On December 30, 1994, boogie-boarder Fritz van Zyl was attacked by a white shark in Mossel Bay, RSA. Van Zyl was not injured but his board was bitten. The incident took place in the same area where a diver was bitten by a raggedtooth shark just five weeks earlier (See newsletter Vol.4, No.1). Cases 415 & 416 were investigated by Andrew Gifford.

## **Public Education...**

Lawrence Wahba of 20th Century Fox (Brazil) videotaped an interview with Marie Levine for a Brazilian television documentary. The film spotlights the critical need for conservation of large coastal shark species, and is expected to air in Brazil this June.

SRI members Dean Fessler, Marcia and Ken McMahan, Teresa and Keith Markey, Maurice Coutts, Kathy Rothschild and Marie Levine staffed SRI's booth at Beneath the Sea. More than 5,000 people attended the Symposium that was held at White Plains, NY, on March 24, 25 and 26th. The event grows larger each year and it is rumored that in 1996 it will be moved to the New Jersey Meadowlands.

## **SRI Photo Bank...**

Images of white sharks were sent to Richard Martin for a presentation titled "Super Shark: Biology of the Great White." His lecture, soon to be available on the speaker's circuit, will focus on anatomy, physiology, reproductive biology, predatory and social behavior of white sharks, and recent developments to protect these magnificent animals.

## **Thanks, from SRI's researchers working in Africa...**

We'd like to give special thanks to Marie Levine. She donated her Nikonos 102 UW strobe and a Helix UW strobe to the Whale Shark Study team.