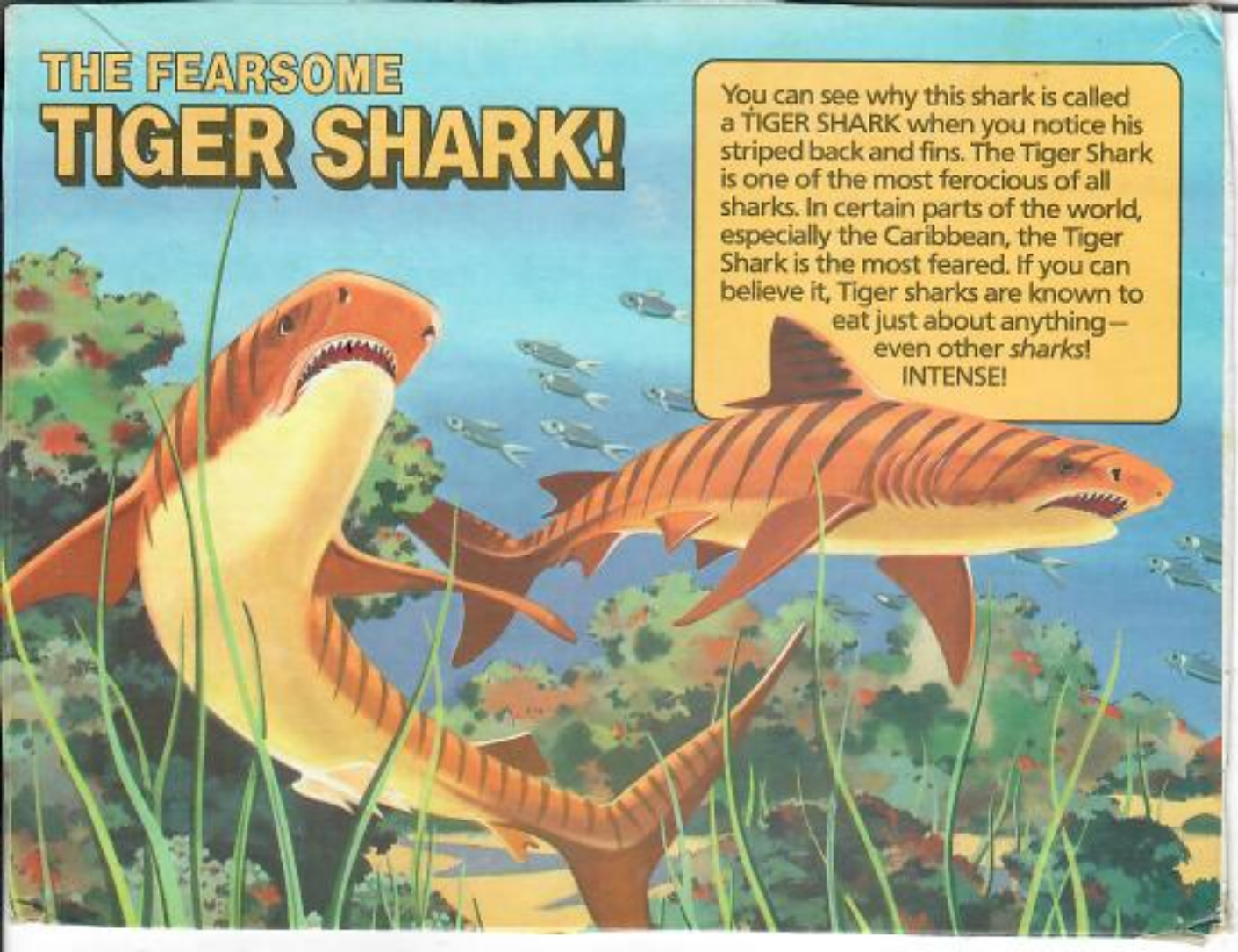
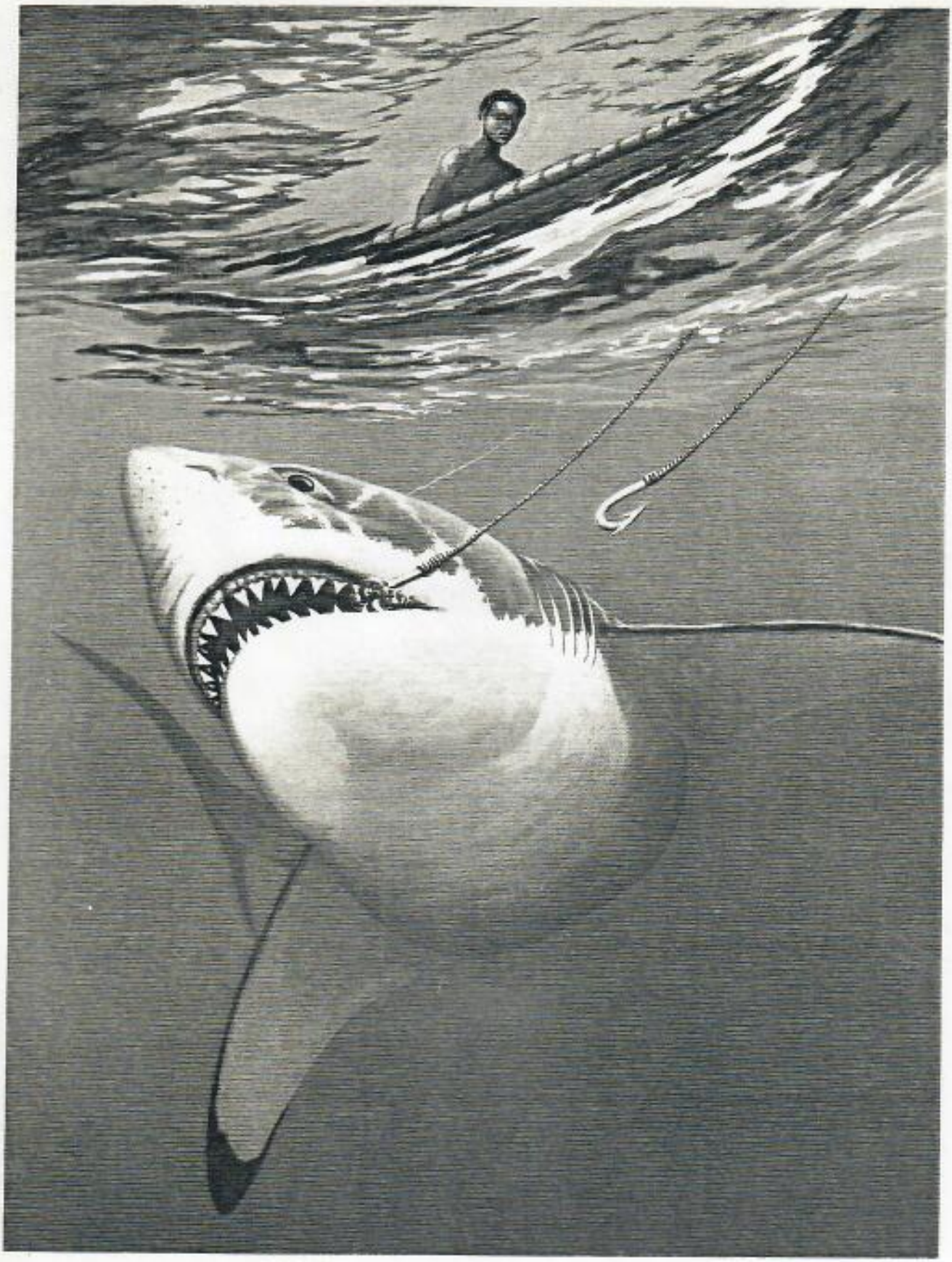
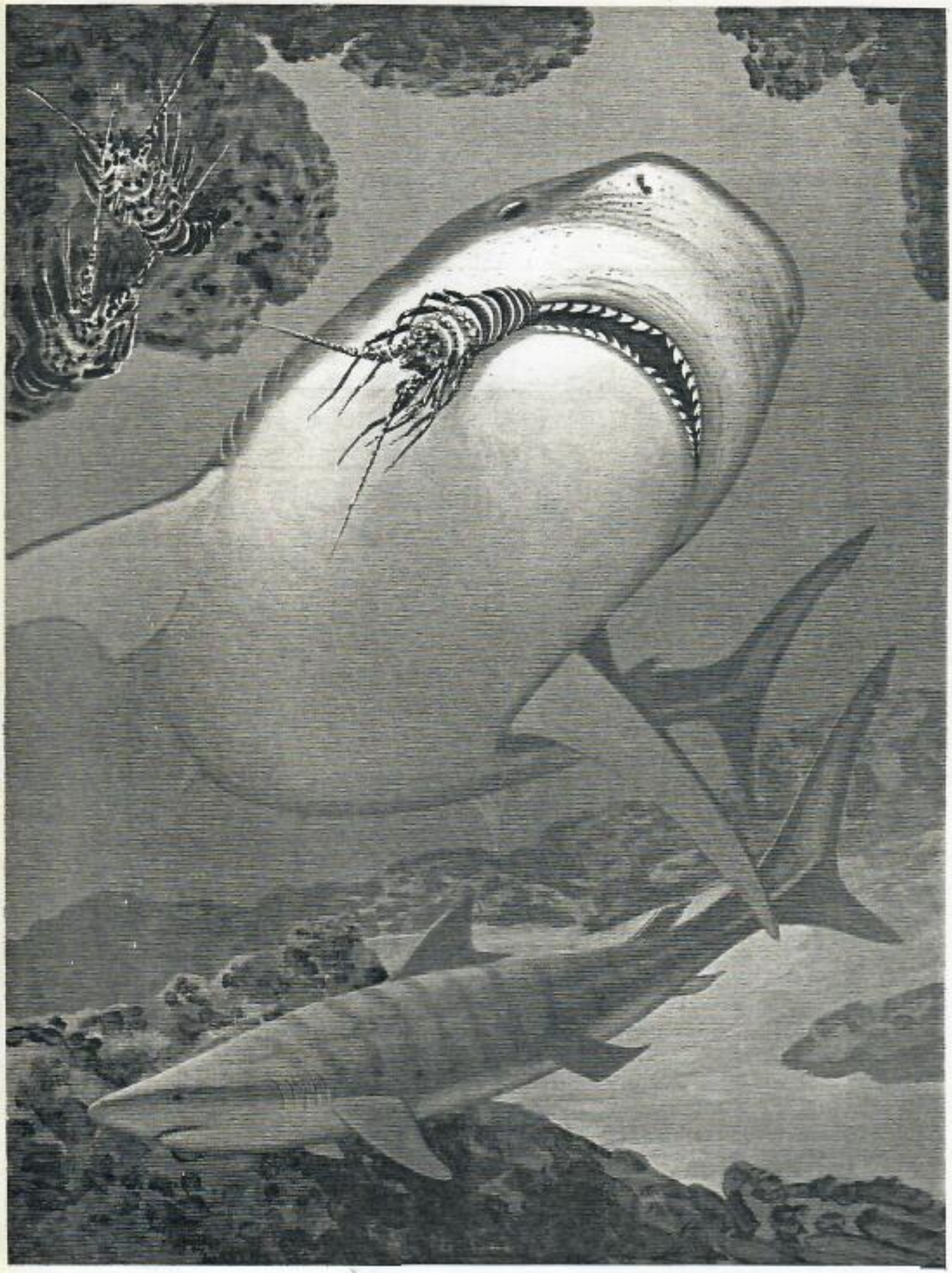
THE FEARSOME TIGER SHARK!



You can see why this shark is called a TIGER SHARK when you notice his striped back and fins. The Tiger Shark is one of the most ferocious of all sharks. In certain parts of the world, especially the Caribbean, the Tiger Shark is the most feared. If you can believe it, Tiger sharks are known to eat just about anything—even other *sharks*! INTENSE!



Carcharodon carcharias **great white shark**



Galeocerdo cuvier tiger shark

-Typed from photocopy of handwritten original-

August 3, 1993

Dr. George H. Burgess
International Shark Attack File
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

Dear George:

Many thanks for your understanding letter of 23 July 1993. I appreciate your comments and viewpoints. And, of course, I fully appreciate that you can't control movement of your cc'ed letters from one to another, or how they're (mis)used. In the same respect, it's difficult-to-impossible for me to regulate the way newspaper reporters (mis)report my list. Whenever I have the opportunity, I do certainly try to explain and clarify what is clearly written in the footnoted categories. But reporters are a strange lot-- as I'm sure you well know.

Its been interesting to deal with "all sides" since doing the compilation these past 13 years. Some want me to ignore-- not include-- any mortality in which there was no firsthand witness to say death was due to shark bite. I reject this idea as being unscientific, especially in the face of compelling circumstantial evidence. Even with no circumstantial evidence, I believe it is more appropriate to include than exclude "unknown" cases of mortality. I made this decision at the start, when attempting to pattern my Hawaiian list after Schultz's original ISAF. I felt that Schultz's categories were not appropriate for the Hawaiian circumstances, but that the definitions used (for inclusion in the entire list) were applicable. See the hilites I've made on the attached. With the exception, however, of "boat attacks" and "doubtful attacks", i.e., failed to make physical contact. I don't include cases of such nature. In this respect, the Hawaiian list is more conservative than ISAF. Some argue that I should include them. I reject that argument also, although an entirely separate list may indeed be justified for strictly boat and equipment "attacks". Damned if you do, damned if you don't! I hold what I believe to be the middle ground.

I'm out of space and time. At least for now. Dinner is ready. I'm at home.

Aloha,

George Balazs

APPENDIX

A List of Shark Attacks for the World

By Leonard P. Schultz and Marilyn H. Malin
Smithsonian Institution, Washington, D. C.

This list of shark attacks was prepared from the documented file in the Division of Fishes, United States National Museum, under the sponsorship of the Biology Branch of the Office of Naval Research, Contract Number NONR 1354 (07). Members of the AIBS Shark Research Panel are kept informed of current shark incidents in all parts of the world by means of five clipping or press-cutting services, three of which are subscribed to by Cornell University and two by the Smithsonian Institution. The assistance of these two institutions, as well as of all persons who have cooperated in supplying documentation on individual cases of attack, is gratefully acknowledged. Special thanks go to Mr. Michael Lerner, who solicited and compiled information relating to shark attacks from chapters of the International Game Fishermen's Association.

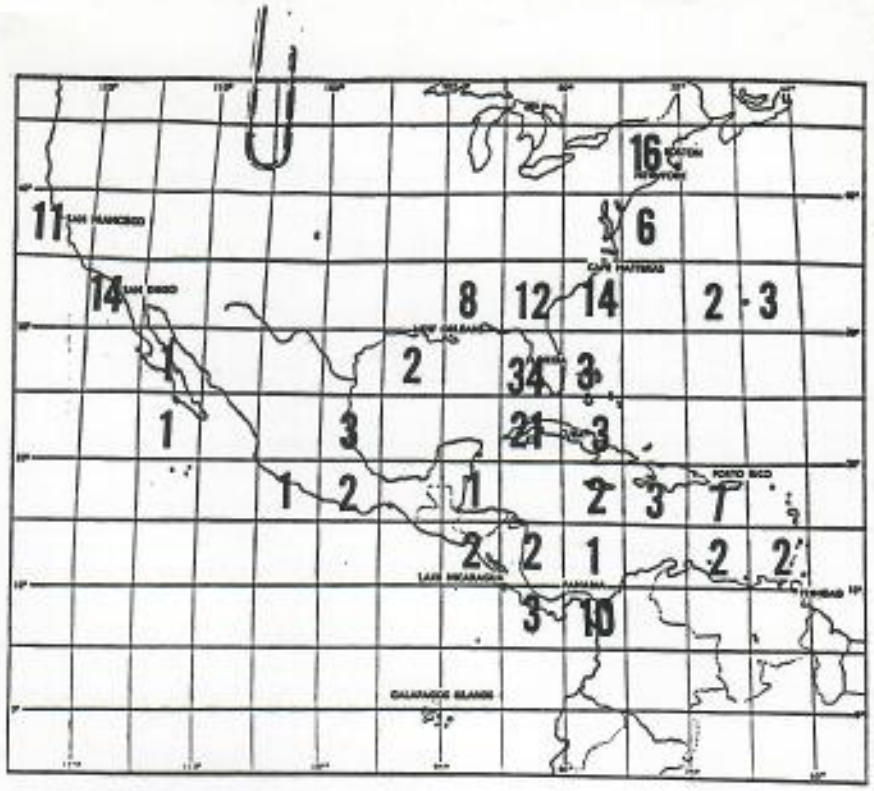


Fig. 4 Numbers in each square of 5° latitude and longitude represent number of unprovoked shark attack cases in our files on January 31, 1962, for North and Central America and the West Indies.

In the tabulation that follows, we set up certain categories for the various kinds of shark attacks.

1. *Unprovoked Shark Attacks* This includes all cases in which "unprovoked" sharks have made physical contact with the victim or the gear he is wearing (Table 1).

2. *Provoked Attacks* This includes all cases in which a shark was caught, trapped, speared, injured, or in some way provoked and then attacked the victim. (Although the use of the terms "unprovoked" and "provoked" raises questions about the separation of attacks into two such categories, we believe it is important to distinguish between the two kinds because it emphasizes what sharks may do when annoyed or injured.)

3. *Boat Attacks* This includes all cases in which an unprovoked or provoked shark deliberately made physical contact with a boat, life raft, water ski, or equipment being used in the operation of a boat.

4. *Air and Sea Disasters* This category includes all cases in which unprovoked sharks have eaten or mutilated victims of such disasters, but there may not be any way of knowing whether the victims died before being attacked or as a result of the shark attack.

NOT INCLUDED IN HAWAIIAN LIST

I DON'T USE THIS CATEGORY IN HAWAIIAN LIST.

I USE THIS DEFINITION IN HAWAIIAN LIST (WITH APPROPRIATE FOOTNOTES). SUCH CASES ARE CLOSELY COMPONENTS OF THE ISAF, I.E. APPENDIX TITLE "A LIST OF SHARK ATTACKS FOR THE WORLD".

I Don't include these categories

Table 1

SUMMARY OF NUMBER OF SHARK ATTACK CASES FOR THE WORLD, BASED ON DOCUMENTED SHARK-ATTACK FILE IN THE DIVISION OF FISHES, SMITHSONIAN INSTITUTION

Localities	Kinds of shark attacks					Totals
	Boat	Doubtful	Provoked	Air and sea disasters	Unprovoked	
Africa	4	2	3	1	72	82
Asia	—	—	—	—	50	50
Atlantic Ocean	8	5	9	24	49	95
Australian region	54	28	25	1	272	380
Europe	1	—	2	—	—	3
Indian Ocean	1	—	—	2	5	8
Mediterranean Sea	—	—	—	1	15	16
North America:						
East Coast	24	13	13	3	112	165
West Coast	6	8	10	3	40	67
Pacific Ocean	3	6	3	19	104	135
South America:						
East Coast	—	—	—	—	3	3
Totals	101	62	65	54	722	1004

5. Doubtful Attacks This includes all cases in which unprovoked sharks have approached swimmers but failed to make physical contact with them; it also includes cases reported as shark attacks but which subsequent investigations tended to discredit or place in doubt, or where it was found that the victim was dead before being mutilated by a shark.

I have one old case like this which Baldridge felt was doubtful.

Because of the large number of cases, it is not possible to publish here all the details of each attack. However, all available photographs, letters, and signed statements are on file for each case.

The numerous cases assembled in the documented shark-attack file in the Smithsonian Institution were segregated into geographical regions, and then the data for each case were summarized and tabulated. By using these tabulations, we analyzed the recorded facts and factors that were common to many attacks as part of the constant search for clues to what stimulates predatory sharks to bite swimmers, divers, and those wading in shallow water or otherwise entering the habitat of sharks.

Shark alert spooks Waikiki Beach

THE Honolulu Advertiser 8/6/93 FRONT PAGE

Surf cleared briefly after Hilton guest reports sighting 5-footer

By Walter Wright
Advertiser Staff Writer

A possible shark sighting emptied the waters of bathers along Waikiki Beach in front of the Hilton Hawaiian Village and the Hale Koa military hotel yesterday afternoon.

Ironically, the incident occurred just a day after a Hilton executive urged state legislators to authorize a shark hunt along the beach because a shark had been seen inside the reef.

A Hilton guest on the 21st floor alerted security personnel yesterday when he spotted what looked like a 4- to 5-foot shark swimming in front of the hotel beach inside a reef about 2 p.m., police Sgt. George Smith said.

Security alerted the police department, which sent officers to ask people to leave the water.

From the shoreline, beachgoers could see a small dark object, possibly a dorsal fin, moving along the surface of the water near the reef, about 50 yards offshore.

"It put me off going in the water, that's for sure," said Australian visitor Bromwyn Davis of Brisbane.

Asked if she weren't used to sharks on Australia's shoreline, Davis said, "Yes, but we have shark nets out!"

She said she would go back into the water today unless there is a new sighting.

Coincidentally, Hilton Hotels Corporation Senior Vice President Dieter Huckestein told state senators Wednesday that shark hunting makes sense.

If a tourist is attacked and the story makes front-page news, "we're going to say, why didn't we do this before," he told members of the Senate Tourism, Recreation and Transportation Committee.

He also told the senators a 4-foot hammerhead shark had been spotted in three feet of water inside the reef. "where it is difficult to get." (Hammerheads are not generally considered much of a threat to humans. Recent attacks in Hawaii waters have been blamed on much larger tiger sharks.)

Huckestein did not say when the

See Waikiki, Page A2

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Waikiki: Water cleared after shark report

FROM PAGE ONE

shark was seen.

There seemed to be some confusion about who would deal with the situation yesterday.

Police said the State Shark Task Force declined to come to the scene yesterday because the animal sighted was less than eight feet long.

Eventually, the State Harbor Patrol showed up with an inflatable boat, but left after about 15 minutes, reportedly to bring in a smaller boat that could maneuver among the shallow reefs.

Police said they turned the situation over to state Department of Land and Natural Resources officials at 4:15 p.m., and beachgoers were seen reentering the water shortly thereafter.

Advertiser Staff Writer Kevin Dayton contributed to this report.

Advertiser photo by Richard Ambo

Beachgoers behind the Hilton Hawaiian Village watch for sharks.

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International Shark Attack File

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Gainesville, FL 32611
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23 July 1993

Dr. George Balazs
Honolulu Laboratory
Southwest Fisheries Science Center
National Marine Fisheries Service
2570 Dole Street
Honolulu, HI 96822-2396

Dear George:

Thanks for the recent shipment of clippings and your thought provoking letter.

First of all, I'd like to apologize for the apparent tone of Brad Wetherby's letter, and whatever he might have said to you. I was, of course, not privy to the contents of his letter, but because a copy of my 4/8/92 letter to you was included I feel like I was party to his comments.

I should explain my involvement with the Hawaii attack situation. In addition to curating the ISAF, I am a member of the AES Conservation Committee and am a Vice Chairman of the IUCN/SSC Shark Specialist Group. In my roles with these groups I am frequently called on to comment on conservation and attack issues. Chris Lowe requested that AES respond to the call for shark eradication in Hawaii, so I did so, in my roles as ISAF Director, AES Conservation Committee member, and IUCN/SSC/SSG member. My letter to Paty (4/28/92) essentially reiterated what I had written to you (4/8/92) since my message remained the same. I sent a copy of the 4/8/92 letter to Lowe sometime between the two mailing dates to indicate to him the ISAF perspective and to see if the basic contents might be useful to the Dept. Land & Natural Resources (DLNR). How the letter moved from Lowe to Weatherby, and how it was interpreted, was out of my hands.

I don't dispute your data at all. Your regional investigations are as complete as any I've seen, and I truly appreciate your willingness to share the data with ISAF. I had two concerns with how I saw your data being utilized **by non-shark folks**: (1) your *total* attack figures were being bandied about as documented attacks

(i.e. all your carefully produced footnotes were being ignored), thereby producing an inflated perception of the "problem", and (2) the entirely predicable increase in number of documented attacks over the years shown by your data was not interpreted adequately since (a) local and tourist population increases, (b) changes in human utilization patterns, and (c) changes in press coverage were not factored into a denominator.

Absolute numbers of sharks attacks are rising all over the world. As I indicated in the recent letter to the DLNR, after graphing Hawaii and Florida's historical unprovoked attack rates and trends in native population growth it is clear that attack rates simply reflect the increased utilization of our states' inshore waters humans; if tourist data were added, we would see that attack rates probably are actually declining relative to the man-hours in the water. And this does not factor in trends (b) and (c) which, I think, would skew the trend even more this way. The tremendous rise in popularity of surfing, wind surfing, scuba/skin-diving, kayaking, in addition to continued interest in swimming/wading, certainly have led to a situation where humans are now using the water more, per capita, than ever before. In addition, many of these activities put their participants at greater risks than more traditional aquatic activities since they occur in areas where humans are most likely to encounter and attract large sharks. Finally, while I buy your explanation about how you have uncovered your attacks in the press, I would argue that (1) geographical coverage of the press is certainly more complete today than earlier in the century, (2) that an increase in interest in attacks spurred on by "Jaws" and sensational media accounts has fostered an increased public awareness in reporting attacks and made *all* attack incidents headline material (not just deaths as was the case earlier in the century), and (3) that the press now is less likely to work in tandem with the local chamber of commerce in choosing not to report attacks "for the good of the community".

I really can't comment on how John West categorizes attacks. The ISAF has always followed an "innocent until proven guilty" approach to definition of shark attack. Since sharks are such well-documented scavengers of human corpses, I think that it is scientifically imperative to be conservative on what we accept as an attack. While we certainly miss attacks this way, the alternative -- routinely accepting all shark ravaged bodies, missing persons, etc. -- would be a gross misrepresentation of reality. I believe as scientists it is incumbent for us to prove, not guess.

We keep case files for all incidents potentially involving sharks. We then assign a "doubtful" designation to

those that are doubtful, certainly not shark-related, or fabrications. To wit, please tell me what you know about the enclosed case documented by that bastion of journalistic excellence, The Sun. Have you seen this piece, and if so, followed up on it? Let me know.

Hope this straightens some things out. If you get a chance to make it up to Gainesville, please visit. The beer's on me. Aloha.

Best wishes,

George

George H. Burgess
Director
International Shark Attack File

1993 G.H. BALAZS

INTRODUCTORY NOTE BY THE COMPILER: The following list provides a case-by-case factual synopsis of the 104 known shark attacks in the Hawaiian Islands, from the earliest recorded event in 1779, to the most recent one in June of 1993. Available information is also summarized here in separate tables covering the activity of the victim, the month of the attack, and the species of shark involved.

Prior to publication of my first assembled shark attack list in 1981 (coauthored with Alan K. H. Kam), no consolidated historical information of this nature was available for Hawaii. Old cases of shark attack were located through comprehensive searches of books, newspaper files, and other sources. This is an ongoing process. I am grateful to Gail Bartholomew, Leighton Taylor, John Naughton, and others for their continuing assistance in uncovering valid cases from Hawaii's past that warrant addition to the list.

Since 1981 nearly all new cases have been readily identified at the time of their occurrence when they appeared in Hawaii's newspapers and television reports. In many instances I have been able to personally interview the victim, or the last person to see the victim alive, in order to record first-hand accurate information to the extent that it is known. Autopsy and police reports have also been used to contribute meaningful data. A list of the literature and other sources used to document each

case, too long to include here, has been deposited in the Pacific Collection of Hamilton Library, University of Hawaii at Manoa.

Forty-four (42.3%) of the 104 cases on the following list are tabulated as having involved a fatality. However, nine (20.5%) of these 44 fatalities are considered to have been "likely" due to drowning or other causes, which was then followed by shark bite, dismemberment, and/or consumption. No cases have been included on this list in which a person was known with certainty to have been dead prior to being bitten by a shark. Cases involving fatality present special challenges to a compiler when there is no first-hand witness to the death, and medical evidence is inconclusive or nonexistent. In each such case I have used the best available information to render a professional judgement in assigning one of four footnoted categories to the fatality. It is recommended that the reader become familiar with these footnotes before studying the list. The inclusion on this list of cases where the cause of death is uncertain or unknown is both valid and consistent with the scientific protocol followed by several other registers of shark attacks compiled elsewhere worldwide, including Australia.

Sixty (57.7%) of the 104 cases involved persons who survived the shark attack. For cases occurring during recent years, these individuals have been available to describe the event in detail on a first-hand basis. The circumstances and documentation given by them provide valuable insight that can be used to surmise what

may have transpired in fatal cases where no witness was present. For example, read and compare Case No. 75 with Case No. 95.

The criteria and style used to compile the list of shark attacks in Hawaii has been patterned after the International Shark Attack File (ISAF), which was first assembled in the late 1950's with funding from the Office of Naval Research. A tabular summary of the ISAF list was published in the 1963 classical reference book entitled "Sharks and Survival" edited by Dr. Perry Gilbert. Later, in 1973, an analysis of data involving 1165 cases in the ISAF was published by Dr. David Baldridge in his report "Shark Attack Against Man". The ISAF is currently maintained under the auspices of the American Elasmobranch Society at the Florida Museum of Natural History where it is curated by Dr. George Burgess. Updated and revised versions of the shark attack list for Hawaii are regularly forwarded by the compiler for inclusion and use by the ISAF.

Cases of shark attack shown in the following list all involve some manner of physical injury to the person that resulted from a shark. Cases in which "only" the person's equipment was attacked (bitten), or aggression was displayed without harmful contact to with a person, are not included. In this respect, the list for Hawaii is more conservative and differs from certain other lists compiled elsewhere (including the ISAF). On those registers, attacks solely on boats, surfboards, and other items are included even though no injury to a human took place. Significant cases

of this nature have indeed occurred in Hawaii. At a later date they will be cataloged into a separate list. An example of one such case is as follows. In October of 1990 Greg Filtzer was lying on his 9-foot long surfboard in Hanalei Bay on Kauai when a 12-foot shark bit the board and violently pulled it and Greg backwards underwater. In the process the shark ripped off a 14-inch wide piece of the surfboard. Without so much as a scratch, Greg miraculously paddled to shore after the shark released the board. The entire event was witnessed by a companion on a surfboard next to him.

In Dr. Gilbert's book "Sharks and Survival" the following notable comment appears on page 466: "Although it is probable that most people would regard a statement of the rarity of attacks in the statistical sense as correct and reasonable, it appears that people in general are less willing to accept a risk involving sharks than greater risks of almost any other kind." This is not surprising considering that two words most commonly used in relation to shark attack are "fear" and "apprehension". Most people gain no comfort from being told they are at greater risk from bee stings and car accidents than from shark attack. Statistics alone have a way of reducing people to simple numbers devoid of the personal tragedies and, in some cases, incredible courage associated with shark attack in Hawaii. The following list speaks for itself in that each case presented is an individual story, not simply a statistic.

In the State of Hawaii's 1972 report covering the last systematic shark control and research program conducted in Hawaiian waters, it is stated that "Sharks normally receive negligible fishing pressure and since they function as apex predators in the sea's food pyramid they can increase to maximum density. A dense shark population coupled with growing popularity of water sports activities increases the probability of shark encounters". Although shark attacks are statistically few in number, the validity of this statement now, 20 years later in 1993, appears to hold true. There is no question that sharks must be rationally conserved as a fishery resource, and not "eradicated" as some have suggested. But at the same time the issue of public safety in Hawaiian waters, coupled with fear and apprehension among residents and tourists alike, must not be neglected.

George H. Balazs

June 1993

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Letters

(from page 12)

HEY GEORGE, IT'S NOT JUST A RUMOR

In response to George H. Balazs, Deputy Chairman of the IUCN Marine Turtle Specialist Group and his letter entitled "Merely a Vicious Rumor," which appeared in the June '93 issue of *Surfing*, I would like to make a few comments.

In spite of Mr. Balazs' impressive credentials and his authoritarian statement that there is no scientific information to support the idea that surfers are attacked by tiger sharks out of mistaken identity with sea turtles, I would like to call our attention to the fact that there are severe limitations to our current understanding of all biological life, marine, terrestrial, or otherwise.

As a Hanalei Bay surfer who frequents areas of known tiger shark sightings and attacks (not without some concern I might add), I personally support, along with other longtime experienced watermen in this area, that as is the case with Great Whites and seals, there is mounting evidence that tiger sharks may indeed confuse surfers for one of their evolutionarily-adopted food sources, the sea turtle.

Tiger sharks, as all species, are intelligent and wise by nature, especially when considered in the context of the

Do they think we're turtles? Do they even care??

specific environment in which they have evolved. As food sources are crucial to survivability, behavioral patterns relating to these factors cannot be ignored.

As renowned British naturalist David Attenborough has so poignantly noted, half of the present living animal species in the world have not yet even been discovered by scientists. We must therefore remember that science as it now stands is incomplete in assessing all that is true in our natural world. To assert otherwise is dangerous and arrogant.

Before we dismiss the case of "mistaken identity," as Mr. Balazs suggests, further study of tiger sharks, sea turtles, and surfers is clearly warranted.

Arthur H. Brownstein, M.D., M.P.H.
Hanalei, Hawaii

SURFING OCT. 93

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13 Aug 93

Dear George (Mr. Balazs),

Thank you for your letter and unedited correspondence.

I apologize for my hostile in judging the intentions of your position.

I too love sea Turtles, and find myself as a western-trained scientist increasingly embracing the oriental philosophy that admires the amazing diversity, sophistication, balance, and wisdom inherent in Nature.

As a physician, I spend every day defending that magnificent microcosm of Nature known as the

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human body, its integrity, and its incredible ability to heal itself, even in the face of years of chronic self-neglect and abuse.

I am a member of the Wilderness Society, National Parks and Conservation Assoc. The Institute of Noetic Sciences (founded by Edgar Mitchell, Apollo 14 astronaut) and former member of the World Wildlife Foundation, Natural Resources Council, OXFAM, and many others.

If you are ever in Kauai, please let us meet. I would love to take you for lunch if your schedule permits.

(I live above the Hanalei Wildlife Refuge on 3.5 acres)

Thank you again for taking the time to write me.

Warmly,

Art Brownlee
826-4093 (H)
822-3431 (W)

P.S. - keep up the good work.

human body, its integrity, and its incredible ability to heal itself, even in the face of years of chronic self-neglect and abuse.

I am a member of the Wilderness Society, National Parks and Conservation Assoc. The Institute of Noetic Sciences (founded by Edgar Mitchell, Apollo 14 Astronaut) and former member of the World Wildlife Foundation, Natural Resources Council, OHFDM, and many others.

If you are ever in Kauai, please let us meet. I would love to take you for lunch if your schedule permits.

(I live above the Hanalei Wildlife Refuge on 3.5 acres)

Thank you again for taking the time to write me.

Warmly,

Art Brownlee
826-4093 (H)
822-3431 (W)

P.S. - keep up the good work.

University of Hawai'i at Mānoa

Hawai'i Institute of Marine Biology
P.O. Box 1346 • Coconut Island • Kāne'ohe, Hawai'i 96744-1346
Telephone: (808) 236-7401 • Facsimile: (808) 236-7443

Mr. George Balazs
National Marine Fisheries Service
2570 Dole Street
Honolulu, HI 96822

August 5, 1993

Dear George,

As a result of the recent article in the Honolulu Advertiser on white shark attacks in Hawaii (July 19, 1993), we wish to renew our request for applying the International Shark Attack File standard to Hawaiian shark attacks. Although it is of interest to compile potential human-shark interactions, it is a disservice to provide the media with such a list. As must be abundantly clear time after time, the media uses your attack list with little regard to your footnoting (see enclosures).

We know how passionate you are in protecting the green sea turtle, and how you rigorously speak up for proper representation of sea turtles in the media. As you are aware, sharks receive even more negative press, and also deserve accurate and fair representation. Misinterpretation of your list may contribute to the public's negative impression of sharks.

We strongly feel that your list as presented to the media causes additional hysteria and inflates the public's view of the risk of shark encounters in Hawaiian waters. With shark stories such as the white shark story making front page headlines, accuracy and adherence to an accepted international shark attack standard is essential. According to the International Shark Attack File a shark attack is defined as "a confirmed attack on a live human being in the shark's natural environment". Your compilation of shark attacks in Hawaii contains a number of incidents which do not meet this definition. We believe that Hawaii would be best served by a strict adherence to the definition of shark attack used by the International Shark Attack File.

We sincerely hope that you will respect our concerns about sharks, misinterpreted data, and damage being done to the tourism industry by the media making statements such as "104 shark attacks have been documented in Hawaii". We look forward to your response to our letter and hope that our concerns can be addressed with a modified list of shark attacks in Hawaii.

Sincerely,

Jerry Crow, Chris Lowe, Brad Wetherbee

An Equal Opportunity/Affirmative Action Institution

get that populations are once again nearing maximum levels.

Steve Kaiser caught six sharks with only 11 baited hooks off Laniakea after the last "attack." How many more are still out there? John Naughton of the National Marine Fisheries Service tells me there is one very large tiger shark off Maili Beach that has been sighted so many times by the surfers and fishermen in that area that they have given it a name, "The Maili Tiger."

Four attacks have occurred in the last year alone and two people have died (one person was not recovered).

More and more people are recreating in the ocean each year. A review of the record of shark attacks compiled by George Balazs

for each decade in Hawaii since 1900 shows that attacks have increased significantly in the last 20 years.

I believe that people are more important than sharks — even 'aumakua sharks, for those who truly believe that they might be some sort of family gods.

Or will it take a tourist swimming off Waikiki to be eaten before public opinion on this issue swings back to common sense?

RICHARD W. GRIGG
Professor of oceanography
University of Hawaii at Manoa

Editor's note: Grigg's letter was written before the shark attack that on Thursday took the life of Aaron Romento.

Honolulu Advertiser 11-92

Star Bulletin 11-27-91

Balazs, a sea turtle biologist who keeps records of shark attacks as part of his job, said this is the 88th attack since 1779.

Yesterday's was the third attack this year. Two other people, both surfers, were bitten but both survived. A 34-year-old man was attacked in April off Oneula Beach Park in Ewa, while a 24-year-old man was bitten while in waters off Maili Point in May.

Hawaii Pacific Press 3-1-93

1779 through 1990, 85 shark incidents, including 36 fatalities, were reported. Of the 36 fatalities, 18 were fishermen; nine were swimmers or waders; five were divers; and four were surfers, bodysurfers or air mattress riders, according to the booklet *Sharks Hawai'i* by Bishop Museum ichthyologist Arnold Suzumoto.

Honolulu Advertiser 2-22-92

But National Marine Fisheries zoologist George Balazs said yesterday the bite appears almost identical to that inflicted on a board being ridden by Kauai surfer Joe Thompson when he was attacked by a shark in November, 1985.

The shark took Thompson's hand and right forearm and cleanly cut through the board, Balazs said. Thompson managed to get to shore and survived the attack.

Adona's disappearance comes within months of the confirmed fatal tiger shark attack on a Maui woman in November — Hawaii's first documented fatal attack since 1958. Since 1779 there have been 84 recorded attacks, 37 of them fatal.

Recent shark attacks in Hawaii

■ **Oct. 22,** Laniakea, Oahu: Surfer Rick Gruzinsky, 26, is waiting for a wave when a 14-foot tiger shark attacks his board about 7:45 a.m. The shark takes a 16-inch bite out of the board, but Gruzinsky escapes unhurt. State hunters haul in a trio of big tiger sharks the next day. The teeth on the largest one match the bite mark.

■ **March 28,** Haena, Kauai: Surfer Jude Chamberlin, 37, escapes with cuts on her foot after an 8-foot shark attacks her at 6:30 a.m.

■ **Feb. 19, "Leftovers,"** Oahu: Bryan Adona, 29, an Aloha Airlines mechanic, disappears while bodyboarding at twilight. His board is found the next morning at Waimea Bay, missing a chunk consistent with the bite of a large tiger shark.

■ **Nov. 26, 1991,** Olowalu, Maui: Martha "Marti" Morrell, is killed by a shark while swimming 100 yards from her beachfront home at 9 a.m. National Marine Fisheries Service biologist George Balazs said the attack was the 88th documented in Hawaii since 1779, and the first confirmed death by shark attack since 1958, when 15-year-old Billy Weaver was fatally bitten off Lanikai.

■ **May 26, 1991,** Maili, Oahu: Surfer Scott Betz, 24, is bitten on the right leg at 4:45 p.m. after seeing an 8-foot tiger shark nearby. He suffers puncture wounds, is treated and released.

■ **April 3, 1991,** Oneula Beach, Ewa, Oahu: A 34-year-old surfer was sitting on his board when he is bitten on the leg by a shark 6-to-10 feet long.

■ **Feb. 18, 1990,** Makapuu, Oahu: Shark-mutilated remains of fisherman Roy T. Tanaka, 47, are found. He disappeared after a Marine Corps recreation dive boat carrying him and four other men capsized off Kaneohe Marine Corps Air STation.

■ **Oct. 14, 1989,** Kahe Point, Oahu: Ray Mehl, 32, disappears while scuba diving with friends. Searchers find a headless body in the area the next day, but a 12- to 15-foot tiger shark devours it before it can be recovered.

Honolulu Advertiser 11-6-92

2-22-92 Star Bulletin

Shark attacks

It can be difficult to tell if a shark killed someone or merely attacked the body of someone already drowned. These are figures on shark attacks in Hawaii:

■ **1950s:** 14 shark attacks reported and seven bodies found that had been attacked by sharks.

■ **1960s:** Nine shark attacks reported and four bodies.

■ **1970s:** 11 attacks reported and three bodies.

■ **1980s:** 24 attacks reported and nine bodies.

■ **1990s:** Seven attacks reported and two bodies (does not include Adona case).

Source: George Balazs, federal Marine Fisheries Service

These two attacks, so different in setting and circumstance, involving two very different species of shark, were the most horrific in a series of frightening batterings and close calls over the last five years as shark attacks, first on the West Coast and then in Hawaii, have been on the rise. Between 1982 and 1987 there was a total of 20 attacks: in the five years since, that number has jumped to 33. What's got shark experts puzzled and the surfing community nervous is that 79 percent of those 33 attacks have been on surfers: in the previous five years, only 25 percent of the victims were surfers.

Outside Magazine 7-93

George Balazs, of the National Marine Fisheries Service, keeps the only record of shark attacks in Hawaii. His log dates back to 1779 and cites 96 attacks, 41 of them fatal.

The first attack on Balazs' record was on a man named Nu'u-anu-pa'ahu at Maliu on the Big Island. Balazs' entry reads, "Young male gashed on one side of buttocks after being pursued while surf boarding. Subsequently suffered 'great pain' and died at Pololu." Attack No. 96, the most recent, was on Chamberlain last March.

Honolulu Weekly 3-24-92

Honolulu Advertiser 10-10-89

During the decade of the 1970s, Balazs said, there were 11 shark attacks and three people died.

Balazs has gathered a list of 78 shark attacks since 1900.

The 1980s decade holds the record at 22. The 1950s were second with 14 attacks, he said.

In most cases, it wasn't clear what type of shark was responsible. The great white shark was implicated in some, he said.

Great white sharks have been spotted here now and again since the turn of the century, according to reports, but they do not make Hawaiian waters their home.

Star Bulletin 12-13-91

George Balazs, a Fisheries Service zoologist, said sharks can't bite and make shear marks like the ones found in Park's clothing unless there is something solid in the clothes.

"The presumption is that there was something solid behind it," he said. Balazs, a sea turtle biologist who also keeps records on shark attacks, recorded Park's disappearance as the 88th reported attack in Hawaii since 1779.

Morrell's death, not compiled in Balazs' list yet, would be the 89th attack and the first fatality directly attributable to a shark since December 1958.

Honolulu Advertiser 7-14-93

More than 90 percent of shark attacks in Hawaii are believed to be the work of tigers, and of 104 shark attacks documented in Hawaii since 1779, only two are attributed to great whites.

George Balazs, a researcher with the National Marine Fisheries Service, keeps a log of shark attacks in Hawaii. While great white sharks are known in Hawaiian waters, and Hawaiian artifacts have turned up with great white shark teeth, their contact with humans is comparatively rare. People out

Honolulu Advertiser 2-6-92

known to be dangerous to humans.

University of Hawaii biological researcher George Balazs submitted testimony saying that since 1980, there have been 31 shark attacks in Hawaiian waters, including 12 in which there were deaths.

His figures, however, contrast sharply with published reports that say the fatal attack on Martha Morrell, on Nov. 26 was the first death directly attributed to a shark since 1958.

Waikiki Aquarium Director Bruce Carlson said he believes a carefully managed program to remove tiger sharks from waters with high recre-

Honolulu Advertiser 11-27-91

An exception is the tiger shark — common to Hawaii's reef faces and inshore areas — which enjoys a varied diet that includes lobsters, turtles, seabirds, monk seals, dolphins and animal remains.

"People are not really on the diet of sharks," said Suzumoto.

However, when aroused, sharks will attack.

George Balazs of the National Marine Fisheries Service, who tries to keep track of every shark attack that occurs in the Islands, has documented 88 incidents since 1779.

-Typed from photocopy of handwritten original-

August 3, 1993

Dr. George H. Burgess
International Shark Attack File
Florida Museum of Natural History
University of Florida
Gainesville, FL 32611

Dear George:

Many thanks for your understanding letter of 23 July 1993. I appreciate your comments and viewpoints. And, of course, I fully appreciate that you can't control movement of your cc'ed letters from one to another, or how they're (mis)used. In the same respect, it's difficult-to-impossible for me to regulate the way newspaper reporters (mis)report my list. Whenever I have the opportunity, I do certainly try to explain and clarify what is clearly written in the footnoted categories. But reporters are a strange lot-- as I'm sure you well know.

Its been interesting to deal with "all sides" since doing the compilation these past 13 years. Some want me to ignore-- not include-- <u>any</u> mortality in which there was no firsthand witness to say death was due to shark bite. I reject this idea as being unscientific, especially in the face of compelling circumstantial evidence. Even with no circumstantial evidence, I believe it is more appropriate to include than exclude "unknown" cases of mortality. I made this decision at the start, when attempting to pattern my Hawaiian list after Schultz's original ISAF. I felt that Schultz's categories were not appropriate for the Hawaiian circumstances, but that the <u>definitions</u> used (for inclusion in the entire list) were applicable. See the hilites I've made on the attached. With the exception, however, of "boat attacks" and "doubtful attacks", i.e., failed to make physical contact. I don't include cases of such nature. In this respect, the Hawaiian list is more <u>conservative</u> than ISAF. Some argue that I should include them. I reject that argument also, although an entirely separate list may indeed be justified for strictly boat and equipment "attacks". Damned if you do, damned if you don't! I hold what I believe to be the middle ground.

I'm out of space and time. At least for now. Dinner is ready. I'm at home.

Aloha,

George Balazs

APPENDIX

A List of Shark Attacks for the World

By Leonard P. Schultz and Marilyn H. Malin
Smithsonian Institution, Washington, D. C.

This list of shark attacks was prepared from the documented file in the Division of Fishes, United States National Museum, under the sponsorship of the Biology Branch of the Office of Naval Research, Contract Number NONR 1354 (07). Members of the AIBS Shark Research Panel are kept informed of current shark incidents in all parts of the world by means of five clipping or press-cutting services, three of which are subscribed to by Cornell University and two by the Smithsonian Institution. The assistance of these two institutions, as well as of all persons who have cooperated in supplying documentation on individual cases of attack, is gratefully acknowledged. Special thanks go to Mr. Michael Lerner, who solicited and compiled information relating to shark attacks from chapters of the International Game Fishermen's Association.

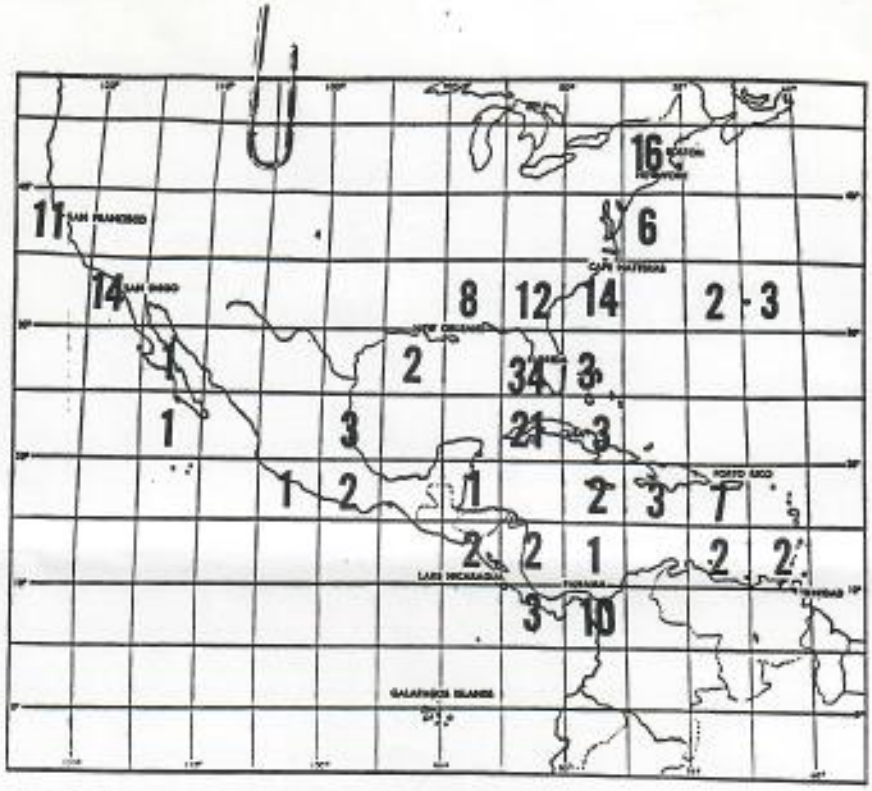


Fig. 4 Numbers in each square of 5° latitude and longitude represent number of unprovoked shark attack cases in our files on January 31, 1962, for North and Central America and the West Indies.

In the tabulation that follows, we set up certain categories for the various kinds of shark attacks.

1. *Unprovoked Shark Attacks* This includes all cases in which "unprovoked" sharks have made physical contact with the victim or the gear he is wearing (Table 1).

2. *Provoked Attacks* This includes all cases in which a shark was caught, trapped, speared, injured, or in some way provoked and then attacked the victim. (Although the use of the terms "unprovoked" and "provoked" raises questions about the separation of attacks into two such categories, we believe it is important to distinguish between the two kinds because it emphasizes what sharks may do when annoyed or injured.)

3. *Boat Attacks* This includes all cases in which an unprovoked or provoked shark deliberately made physical contact with a boat, life raft, water ski, or equipment being used in the operation of a boat.

4. *Air and Sea Disasters* This category includes all cases in which unprovoked sharks have eaten or mutilated victims of such disasters, but there may not be any way of knowing whether the victims died before being attacked or as a result of the shark attack.

NOT INCLUDED IN HAWAIIAN LIST

I DON'T USE THIS CATEGORY IN HAWAIIAN LIST.

I USE THIS DEFINITION IN HAWAIIAN LIST (WITH APPROPRIATE FOOTNOTES). SUCH CASES ARE CLOSELY COMPONENTS OF THE ISAF, I.E. APPENDIX TITLE "A LIST OF SHARK ATTACKS FOR THE WORLD".

I DON'T include these CATEGORIES

Table 1

SUMMARY OF NUMBER OF SHARK ATTACK CASES FOR THE WORLD, BASED ON DOCUMENTED SHARK-ATTACK FILE IN THE DIVISION OF FISHES, SMITHSONIAN INSTITUTION

Localities	Kinds of shark attacks					Totals
	Boat	Doubtful	Provoked	Air and sea disasters	Unprovoked	
Africa	4	2	3	1	72	82
Asia	—	—	—	—	50	50
Atlantic Ocean	8	5	9	24	49	95
Australian region	54	28	25	1	272	380
Europe	1	—	2	—	—	3
Indian Ocean	1	—	—	2	5	8
Mediterranean Sea	—	—	—	1	15	16
North America:						
East Coast	24	13	13	3	112	165
West Coast	6	8	10	3	40	67
Pacific Ocean	3	6	3	19	104	135
South America:						
East Coast	—	—	—	—	3	3
Totals	101	62	65	54	722	1004

5. *Doubtful Attacks* This includes all cases in which unprovoked sharks have approached swimmers but failed to make physical contact with them; it also includes cases reported as shark attacks but which subsequent investigations tended to discredit or place in doubt, or where it was found that the victim was dead before being mutilated by a shark.

I have one old case like this which Baldridge felt was doubtful.

Because of the large number of cases, it is not possible to publish here all the details of each attack. However, all available photographs, letters, and signed statements are on file for each case.

The numerous cases assembled in the documented shark-attack file in the Smithsonian Institution were segregated into geographical regions, and then the data for each case were summarized and tabulated. By using these tabulations, we analyzed the recorded facts and factors that were common to many attacks as part of the constant search for clues to what stimulates predatory sharks to bite swimmers, divers, and those wading in shallow water or otherwise entering the habitat of sharks.

TRANSMITTAL SHEET

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

Commercial: (808) 943-1221
Telefax: (808) 943-1290

TELEFAX FOR: GEORGE BURGESS DATE: 9 AUG 93

FROM: GEORGE BALAZS TELEPHONE EXT: _____

NUMBER OF SHEETS TRANSMITTED (including this page) 3

MESSAGE:

Dear George -

Oh my, I must admire these fellows for ardently working on behalf of Elasmobranch Conservation! However, I view it as misdirected in this case. Cutting my list will not cut the perceived problem. In fact, at this point it would be seen by many as an attempt to downplay the issue to "protect tourism". What do you make of their statement, i.e. "According to ISAF a shark attack is defined as ..."? I haven't seen that in Gilbert, Baldridge, or anything you've sent to me.

Best,

Should state hunt

Disagreement still prevails

By Jim Borg
Special to The Advertiser

ON Sunday, March 14, in a bay near Wailua, Maui, Roddy Lewis, 35, was surfing with two friends, John Gangini and Jerry Wilson. A Honolulu native and 1975 graduate of Kailua High School, Lewis lived in Kuau, Maui, working as a carpenter and competing in professional wind surfing races.

It was past 3 p.m. and the break was crowded with young, gung-ho surfers. After about a half hour, Wilson called it quits. Lewis and Gangini opted to check out a smaller bay around the headland.

"We got to this particular kind of debris-filled spot in the bay where there was little sticks and twigs and leaves floating around, and as I was paddling through that section I was thinking that this is a prime spot for sharks to hang out," Lewis recalled.

At the same time, he took comfort in the speed of the board.

"Right in the middle of this one section, feeling like I was paddling as hard as I could, almost like I was invincible, I felt this incredible impact and pain," said Lewis. Something had his right calf.

"I felt something go right through my meat, right into the bone, and apparently I let out a scream," he said. "I don't remember, because I couldn't hear myself scream.

"I looked over my shoulder and saw the white underside of the shark with my leg in its mouth ... I clung to the board with all my might and knew if I let go I was completely down in the murky water and it was going to finish me off."

Apparently frustrated by the buoyancy of the board, the shark tried a different approach.

"The thing arched its back, kind of like a submarine coming out of the water — easily over three feet out of the water — and as it was arching its back it was getting a better purchase on my leg, and started violently shaking its head side to side trying to tear my leg off."

Until then, Lewis had been outstretched, with the shark pulling his leg away from him. Now it pushed in close to Lewis.

"I was staring at the head of this thing, right in my lap, sawing my leg through, a couple seconds away from tearing off my leg, and with all my might and fury somehow I drilled the thing on the side of the head with everything I had." The blow with his left fist was so hard that it ripped one of his tendons.

And then the shark was gone.

"I ran the board up onto the boulder beach and put my good foot down and put my mangled leg down and as that leg went down onto the rocky boulders it was a red stream of blood pouring back into the water."

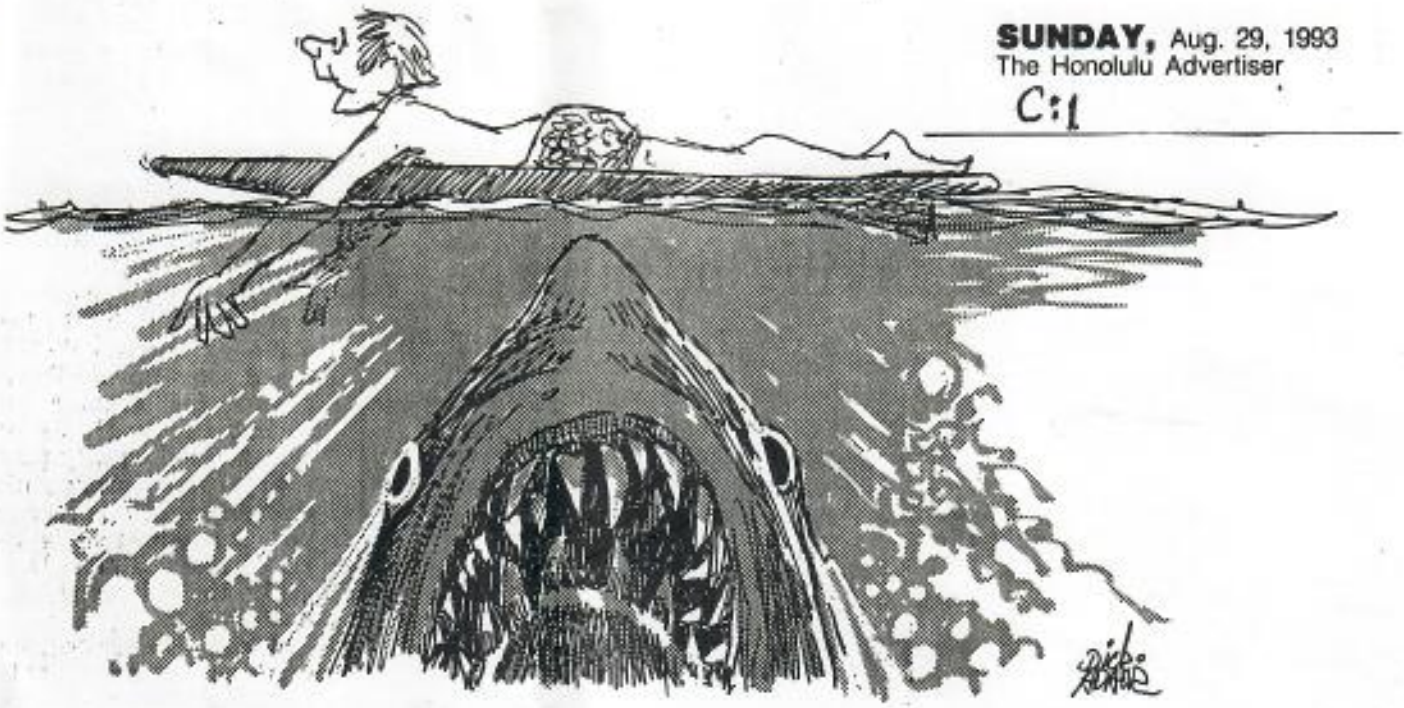
After extensive surgery, the leg was saved. From his ankle bone, doctors removed the serrated tooth of a tiger shark.

Much to the dismay of the Maui surfing community, State Shark Task Force Chairman Bill Paty announced that the task force would not go after the shark.

"We are concered about the safety of surfers," he said. "But those waters are known by local residents to be frequented by sharks. Unless there is considerable community support for such action, we're not going to fish

tiger sharks?

SUNDAY, Aug. 29, 1993
The Honolulu Advertiser
C:1



that area."

Lewis was angry.

"The people who are anti-shark hunt don't seem to be the people who are in the water all the time," he complained. "They don't make their livelihood by fishing and diving. How many people do you want to see get eaten before you decide to take some sort of control measure?"

■ ■ ■

On both sides of the shark-hunting issue, many people were frustrated and confused by the state's actions in the 17 months after the fatal attack on Martha Morrell of Olowalu, Maui, in November 1991.

Shark-catching expeditions had followed that attack, but not the attack on Lewis at Wailua, Maui. How come?

The difference was that a representative of the Hawaiian community had approved the first, but others had not approved the second. This was not science. It wasn't even democracy. But it was quintessential Hawaii.

The central problem still was that no one knew for sure — and scientists couldn't agree — whether shark-catching was a good thing, a bad thing, effective or futile. In the absence of conclusive scientific information, the task force — dominated by public servants — tended to react with steps measured to comfort the public. And different segments of the public had different perceptions and fears.

University of Hawaii graduate students Chris Lowe and Brad Wetherbee believed shark hunts provided merely a "psychological Band-Aid."

Steve Kaiser of Sea Life Park agreed. When he fished on his own and not for the task force, Kaiser tagged and freed even very large tigers.

"I don't believe we're going to learn anything unless we get some tags out," he said. "If everybody who came down with cancer we took out in the back and popped, the number of people dying of cancer would drop, but we would never find a cure for cancer."

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□

Jim Borg is a former Advertiser reporter and author of the new book "Tigers of the Sea: Hawaii's Deadly Sharks." This article is an edited excerpt from the book, which examines tiger sharks from the perspectives of public safety, science, the environment and Hawaiian culture. Since the fatal attack on Martha Morrell, tiger sharks have been a subject of increasing public concern in Hawaii.

JOHN WAIHEE
GOVERNOR OF HAWAII

KEITH W. AHUE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JOHN P. KEPPELER, II
DONA L. HANAIKE

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
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CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

August 31, 1993

George Boehlert
National Marine Fisheries Service
2570 Dole St.
Honolulu, HI 96822

Dear George,

This afternoon representatives from the Department of Land and Natural Resources, Honolulu Fire, Police and Health (Ambulance Service) Departments, the Dept. of Public Safety, and the U.S. Coast Guard met with Ralph Goto and me to discuss the formalization of communications protocols and incident command structures in the event of confirmed shark sightings and shark attacks on Oahu. While a few details remain to be worked out, we will soon have written procedures which will facilitate interagency communication in the wake of these incidents.

We have already established criteria for determining under what conditions shark fishing efforts might take place. With the completion of these additional protocols, we will have, in essence, a set of standard operating procedures for shark incidents on Oahu. These procedures will be expanded to the neighbor islands in the near future.

My feeling at this point is that the main objectives of the Shark Task Force have been accomplished. The Task Force was initially convened for the purpose of providing recommendations on how to deal with the shark "situation" to those of us who were in a position to make decisions on such matters. The approach we took - research, education and limited control - is one that we can all feel comfortable with.

I believe that every task force should sunset at some point, and that it should not be an entity that perpetuates itself indefinitely. The time has come for the Shark Task Force to be deactivated. However, nothing substantial will change. We all know there will always be shark issues, and they will occupy the public's attention to some extent (the media will see to that).

The responsibility for dealing with nearshore shark incidents will continue to lie with DLNR and all agencies involved with public safety in the ocean. Our present research and education efforts will continue, 58-SHARK will remain in operation, and from time to time the occasional shark will have to be removed from action. All Task Force members will continue to be consulted by phone, fax or mail as needed, and as critical situations arise the entire group may reconvene.

Summaries of shark sightings will be compiled on a monthly or bimonthly basis. If you would like to continue to receive copies, please contact Randy Honebrink at 587-0111. Any other information on current activities can be coordinated through him as well.

I am extremely grateful to you for all the time and energy you've put into this effort. Your advice has been most helpful, and we can all be proud of what the Task Force has accomplished. Even though the Task Force may be deactivated, the lines of communication that we've established among ourselves will be continued by DLNR.

Thanks again for all your help.

Sincerely,

Bill Paty, Chairman
Shark Task Force

Shark-Slashed Surf

By TERRY MC MURRAY

HILO—A 15-foot shark attacked and slashed a 16-year-old surfer Wednesday at Awili, but the boy stayed on his surfboard and though suffering five deep slashes in his left leg and foot managed to make it safely towards shore.

Elevis Napua Aona Aka caught a wave as the shark turned for a second attack.

JOSE UA, 17, from the shore saw the shark before it made its first attack and shouted a warning. But Alonzo Aka did not hear him. Ua said the shark was 12 to 15 feet long.

The Weather

Today: Partly cloudy, mountain showers; southeast winds 10 mph.
Yesterday's Temperatures: Highs 87, low 68.
Yesterday's Rainfall (at airport): None.

The Hon

...er Rides Board To Safety

The boys were surfing behind the Keaukaha Hawaiian Village about 2 p.m. when the shark appeared.

"I THOUGHT it was a turtle at first," said Ua. "It was heading for one of the other boys who just happened to catch a wave.

"Then it flipped over and headed for Clevis. That's when I saw it was a shark and yelled."

"MY LEG was hanging down in the water," said Alona Aka, "but I shifted to catch a wave just as he hit me and he missed getting a solid hold. The teeth just cut into my leg.

"I looked back and saw only the shark's head as he went by. I yelled and hung onto the board, work-

See SHARK on A-2, Col.

"The Barefoot Boy"
Sterling [illegible]
3-6 p.m.
KGU 76

...ulu Advertiser
54,042
Friday APRIL 12 1963
10 cents

Shark

Continued from Page 1

ing to catch the wave."

The boy managed to surf to a small rock island a few yards offshore. The shark was left behind in the deep water.

* * *

TWO FRIENDS waded out into the chest-deep water and brought Aiona Aka to shore.

Hardy Unea, 16, of 223 Kauhane St. and Roy Nunes, 17, of 1315 Kalanianaole Ave., carried him to Nunes' car. Both Nunes and Aiona Aka are Hilo High School students. Unea is a St. Joseph's High sophomore.

* * *

UNEA, a Sea Scout and son of a nurse, Mrs. Lot Duke Unea, stripped off his new shirt and made a pressure pack to stop the boy's bleeding until they reached Hilo Hospital.

"There were deep, gaping cuts in his calf and the top of his foot and it seemed like the heel was hanging," said Unea.

* * *

SHARKS ARE relatively common in the area where the youths were surfing, but the alarm was always sounded in time before, said Aiona Aka.

He is the son of Mr. and Mrs. Albert Aiona Aka of 1120 Kalanianaole Ave.

Bill Gilmartin

REVIEW OF WORLDWIDE SHARK CONTROL PROGRAMS

PROGRESS REPORT

Leighton Taylor, Director Waikiki Aquarium
Anne M. Houtman

August 3, 1980

CONTENTS

LIST OF FIGURES AND TABLES

INTRODUCTION

Many monk seals carry fresh and/or healed scars suggestive of shark bite. Balazs and Whittow (1979) observed sharks feeding on the carcass of a monk seal. Taylor and Naftel (1978) found monk seal remains in the stomachs of tiger sharks (Galeocerdo cuvier.) However, there has been no documentation of a shark killing and eating a monk seal. There have been many observations of monk seals and sharks in the same vicinity, with no aggression displayed by either. (Kenyon, 1959; Kramer, 1971) More research needs to be done before the magnitude of shark predation on monk seals is known. It has been suggested that a shark control program in the monk seal's range, the Northwestern Hawaiian Islands, could have a positive effect on the seal population. However, before a control program is undertaken, it would be useful to determine both cost of such a program and possible effects of a control program on the trophic structure of the Northwestern Hawaiian Islands. The following data on shark control programs and shark fishing in Australia, the Indian Ocean, South Africa, and the major Hawaiian islands yield pertinent information for the consideration of a shark control program.

TROPHIC STUDIES IN THE NORTHWESTERN HAWAIIAN ISLANDS

The only intensive study of the trophic structure of nearshore communities in the Northwestern Hawaiian Islands is still in progress and will not be completed for two years (Parrish, et al., 1980). One of the main objectives of the study is to "determine local, short term effects of fishing pressure on top predators and the fish community." No definitive conclusions have been reached at this point.

SHARK CONTROL IN AUSTRALIA

Shark control programs for the protection of bathers have been carried out since 1937 off Sydney, and were introduced off Queensland in 1962.

Methods and Materials

Gill nets are set diagonal to the beach two hundred yards offshore. The nylon net is made of twenty inch mesh. It is one thousand feet long and twenty feet deep. A yellow buoy and thirty pound anchor are attached on either end.

Cost

The yearly cost of the Queensland program as of 1969 was $75,000 to $100,000. No breakdown of costs by materials, salaries, etc. is available at this time. No costs for the Sydney program are available.

Catch data

Catch data by year from November 1962 to June 1968 are found in Table 1. Breakdown by monthly capture and species is not yet available.

Ecological studies

There have been no studies done to determine ecological effects of this program.

Table 1. Shark catches in Queensland
(The season is September 1 through May 31)

Season	# of sharks
1962/63	1160
1963/64	1243
1964/65	1398
1965/66	1408
1966/67	1409
1967/68	1307

SHARK FISHING IN AUSTRALIA

Commercial shark fishing data from Victoria and Tasmania (South-eastern Australia) have been recorded from 1927.

Methods and Materials

Methods and gear used are unknown at this time. In Tasmania, where there is not the specialization of fishing found in Victoria, sharks are usually caught with gear used to catch other fish.

Cost

The yearly cost is unknown.

Catch data

Catch data by year from 1927 to 1956 are found in Table 2. A more complete breakdown by port, as well as description of effort by year can be found in Olsen, 1959. Breakdown by species is unavailable.

Ecological studies

There have been no studies done to determine ecological effects of this program. Olsen (1959) found a decline in juvenile sharks caught from 1943 to 1952. He attributed this to unrestricted inshore fishing of juveniles and pregnant females about to pup.

Table 2. Shark catches in Southeast Australia

Year	Pounds (in thousand)	Year	Pounds (in thousand)	Year	Pounds (in thousand)
1927	9	1937	851	1947	2968
1928	11	1938	950	1948	3288
1929	59	1939	1129	1949	3614
1930	24	1940	1249	1950	3082
1931	37	1941	1780	1951	2210
1932	45	1942	1803	1952	2583
1933	451	1943	2363	1953	2879
1934	254	1944	2402	1954	2639
1935	447	1945	2419	1955	2069
1936	717	1946	2558	1956	1653

SHARK FISHING IN THE INDIAN OCEAN

Sharks are taken incidental to tuna fishing in the Indian Ocean.

Methods and Materials

The sharks are taken by tuna longline.

Cost

No yearly cost has been estimated.

Catch data

Catch data for the period April 1958 to March 1960 are presented in Table 3. Catch data by area and season are found in Table 4. Breakdown by species is not available.

Ecological studies

There have been no studies done to determine ecological effects of this program.

Table 3. Shark catches in the Indian Ocean

Season	# sharks/100 hooks
April - June	1.66
July - September	.84
October - December	1.49
January - March	2.05

Table 4. Shark catches in the Indian Ocean by area and season (#sharks/100 hooks)

Season	N of 10°S W of 80°E	N of 10°S E of 80°E	S of 10°S W of 80°E	S of 10°S E of 80°E
April - June	.60	.48	---	---
July - September	.46	.38	---	---
October - December	.71	---	.28	.50
January - March	.73	.65	.41	.26

SHARK CONTROL IN SOUTH AFRICA

A shark control program for the protection of bathers has been carried out since 1952 off Durban.

Methods and Materials

Gear used was designed after that used in Australia. The gill nets are made of polyethylene trawl twine with twenty inch mesh. The nets are 450 to 500 feet long and twenty feet deep. They are set in two rows sixty feet apart and staggered in twenty feet of water. They are checked weekly.

Cost

The yearly cost as of 1965 was approximately R30,000 ($39,480 by the current rate of exchange.) No breakdown of costs by materials, salaries, etc. is available at this time.

Catch data

Yearly catch data off Main Beach, Durban from 1952 to 1972 are found in Table 4. Table 5 shows catch data off Brighton Beach, Durban from 1961 to 1972. Breakdown by species is not yet available.

Ecological studies

There have been no studies done to determine ecological effects of this program. Holden (1977) presents data on the species of shark caught.

Table 5. Shark catches off Main Beach, Durban, South Africa

Year	# of sharks	Effort (meters of net)	Catch/meters x 10^3
1952	552	18.105	30.5
1953	184	21,397	8.6
1954	195	21,397	9.1
1955	158	21,397	7.4
1956	140	21,397	6.5
1957	140	26,152	5.4
1958	225	26,746	8.4
1959	165	27,746	5.9
1960	117	30,114	3.9
1961	121	36,850	3.3
1962	107	49,530	2.2
1963	103	49,530	2.1
1964	131	59,436	2.2
1965	57	59,436	<.1
1966	39	59,436	<.1
1967	26	59,436	<.1
1968	30	59,436	<.1
1969	23	75,286	<.1
1970	14	75,286	<.1
1971	29	75,286	<.1
1972	38	75,286	<.1

Table 6. Shark catches off Brighton Beach, Durban, South Africa

Year	# of sharks	Effort (meters of net)	Catch/meters x 10^3
1961	51	1726	29.5
1962	17	1982	8.6
1963	27	3963	6.8
1964	82	3963	20.7
1965	49	3963	12.4
1966	46	3963	11.6
1967	36	7926	4.5
1968	80	7926	10.1
1969	24	7926	3.0
1970	36	7926	4.5
1971	31	7926	3.9
1972	47	7926	5.9

SHARK CONTROL IN THE MAJOR HAWAIIAN ISLANDS

Shark control programs for the protection of bathers have been initiated three times in the major Hawaiian islands: in 1959, in 1967, and in 1971.

BILLY WEAVER SHARK RESEARCH AND CONTROL PROGRAM

In 1959, the "Billy Weaver shark research and control program" was begun after the fatal attack of Billy Weaver, a teenage surfer, by a shark off Lanikai Beach, Kailua, Oahu in 1958. The program lasted from April 1, 1959 to March 31, 1960.

Methods and Materials

Gear used (Figure 1) consisted of a main line 1/2 mile long of ten fathom sections of 1/2 inch rope. 24 hooks attached to three fathom long gangens were spaced ten fathoms apart. The line was anchored at each end and buoys were attached at every four hooks. Three of these units were set at approximately 25 fathoms parallel to the shore 1/2 to one mile apart. They were set in the afternoon and retrieved in the early morning. Bait used was initially porpoise, then skipjack.

Cost

The cost for one year was $27,440, and included the charter of vessel and crew, equipment and supplies, repairs, and the salary of the biologist in charge ($462.)

Catch data

Catch data by each circuit of the major islands are found in Table 7. Data on species, area composition, stomach contents, length and information on gravid sharks can be found in Ikehara (1961.)

Ecological studies

There have been no studies done to determine the ecological effects of this program.

Table 7: Shark catches in Hawaii, Billy Weaver program

Circuit #	Date	# of sharks	Catch/100 hooks
1	5/18/59 - 8/14/59	219	11.13
2	8/19/59 - 10/25/59	178	6.53
3	10/26/59 - 2/4/60	107	4.13
4	2/5/60 - 3/22/60	58	2.52

THE 1967-1969 COOPERATIVE SHARK RESEARCH AND CONTROL PROGRAM

In 1967, the second shark control program in the major Hawaiian islands was initiated. The program lasted from June 1, 1967 to June 30, 1969.

Methods and Materials

Gear and methods used were similar to those used in the previous program. See Figure 2.

Cost

The cost for two years was $208,447. No breakdown by materials, salaries, etc. is available at this time.

Catch data

Catch data by each circuit of the major islands are found in Table 8. Data on species, area composition, stomach contents, length and information on gravid sharks can be found in Tester (1969.)

Ecological studies

There have been no studies done to determine the ecological effects of this program.

Table 8: Shark catches in Hawaii, 1967 program

Circuit #	Date	# of sharks	Catch/100 hooks
1	6/27/67 - 7/29/67	121	11.29
2	9/18/67 - 10/31/67	77	7.13
3	12/15/67 - 2/7/68	62	5.47
4	4/24/68 - 5/27/68	50	4.34
5	7/16/68 - 8/9/68	54	4.69
6	10/11/68 - 12/11/68	51	4.44
7	1/14/69 - 4/5/69	45	3.91
8	5/1/69 - 5/21/69	74	6.42

THE 1971 SHARK CONTROL AND RESEARCH PROGRAM

In 1971, the third shark research and control program in Hawaii was begun, with more emphasis on control rather than research than the previous programs.

Methods and Materials

The gear and methods used were similar to those used in the previous programs. In fact, some of the gear was obtained from the 1967 fishing program. See Figure 3.

Cost

The cost for six months was $47,644.32. Expenses were charter of vessel and crew, equipment and supplies, bait, meals and salaries.

Catch data

Catch data by each circuit of the major islands are found in Table 9. Data on species, area composition, stomach contents, length and information on gravid sharks can be found in Fujimoto and Sakuda (1972.)

Ecological studies

There have been no studies done to determine the ecological effects of this program.

Table 9: Shark catches in Hawaii, 1971 program

Circuit #	Date	# of sharks	Catch/100 hooks
1	3/5/71 - 5/26/71	120	4.95
2	6/4/71 - 8/28/71	188	3.90

SHARK FISHING IN THE NORTHWESTERN HAWAIIAN ISLANDS

Preliminary shark fishing was done in the Northwestern Hawaiian Islands in 1977 (Taylor and Naftel, 1978) to make an estimate of population size and species composition of large sharks in the Northwestern Hawaiian Islands and to determine if seals were a food source of the sharks caught.

Methods and Materials

Methods used were modeled after those designed for the shark control programs in the major Hawaiian islands, but the number of hooks per line was reduced from 32 to 8, 16 or 24 due to the abundance of sharks in the study area. The lines were set in twenty to thirty meter water. Both night and day sets were made.

Cost

Cost of the program is not yet available.

Catch data

Catch data are found in Table 9. Breakdown by species, size and gut contents can be found in Taylor and Naftel (1978.)

Ecological studies

Trophic studies are now underway in the Northwestern Hawaiian Islands.

Table 10: Shark catches in the Northwestern Hawaiian Islands

Site	# of sharks	Effort (# of hooks)	Catch/100 hooks
Pearl & Hermes Reef (4/20/77 - 4/24/77)	29	127	22.8
French Frigate Shoals (5/16/77 - 6/28/77)	49	261	18.8

DISCUSSION

As is apparent in this report, very few studies have been done on the ecology of the shark and its range, nad none have been done on the effect of shark fishing on this ecology. While such studies are underway in the Northwestern Hawaiian Islands, no definitive conclusions have been reached yet. There is evidence that under continued fishing pressure shark populations drop. At this time, it is unknown how such a drop in population size might affect the delicately balanced trophic structure of the almost pristine waters of the Northwestern Hawaiian Islands. More studies need to be done before such a measure is taken.

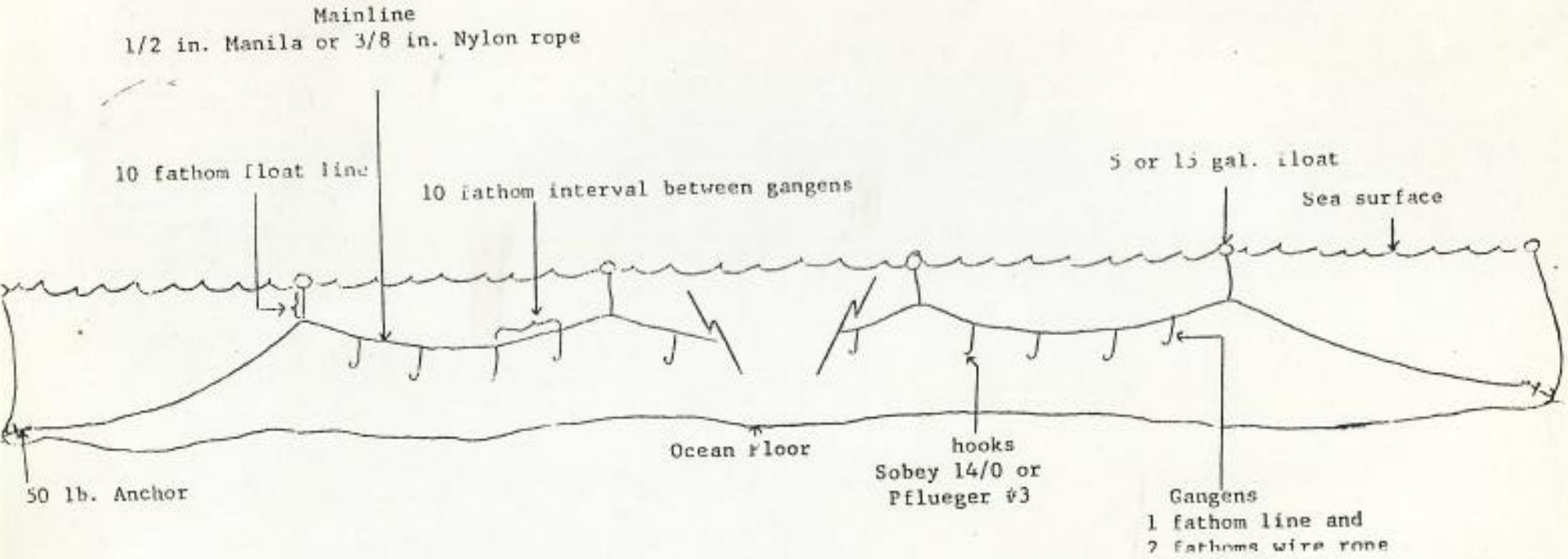

Figure 1: Gear for Hawaii shark control (1959)

from Ikehara (1961)

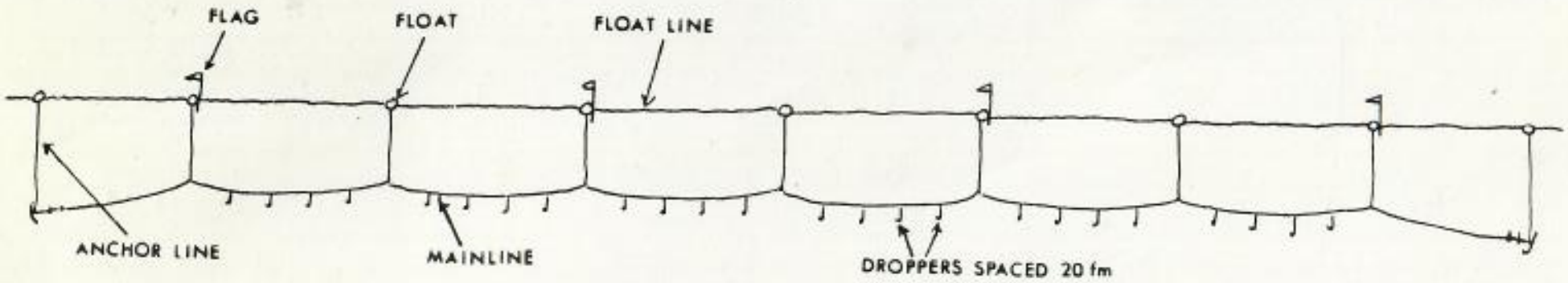

Figure 2: Gear for Hawaii shark control (1967)

from Tester (1969)

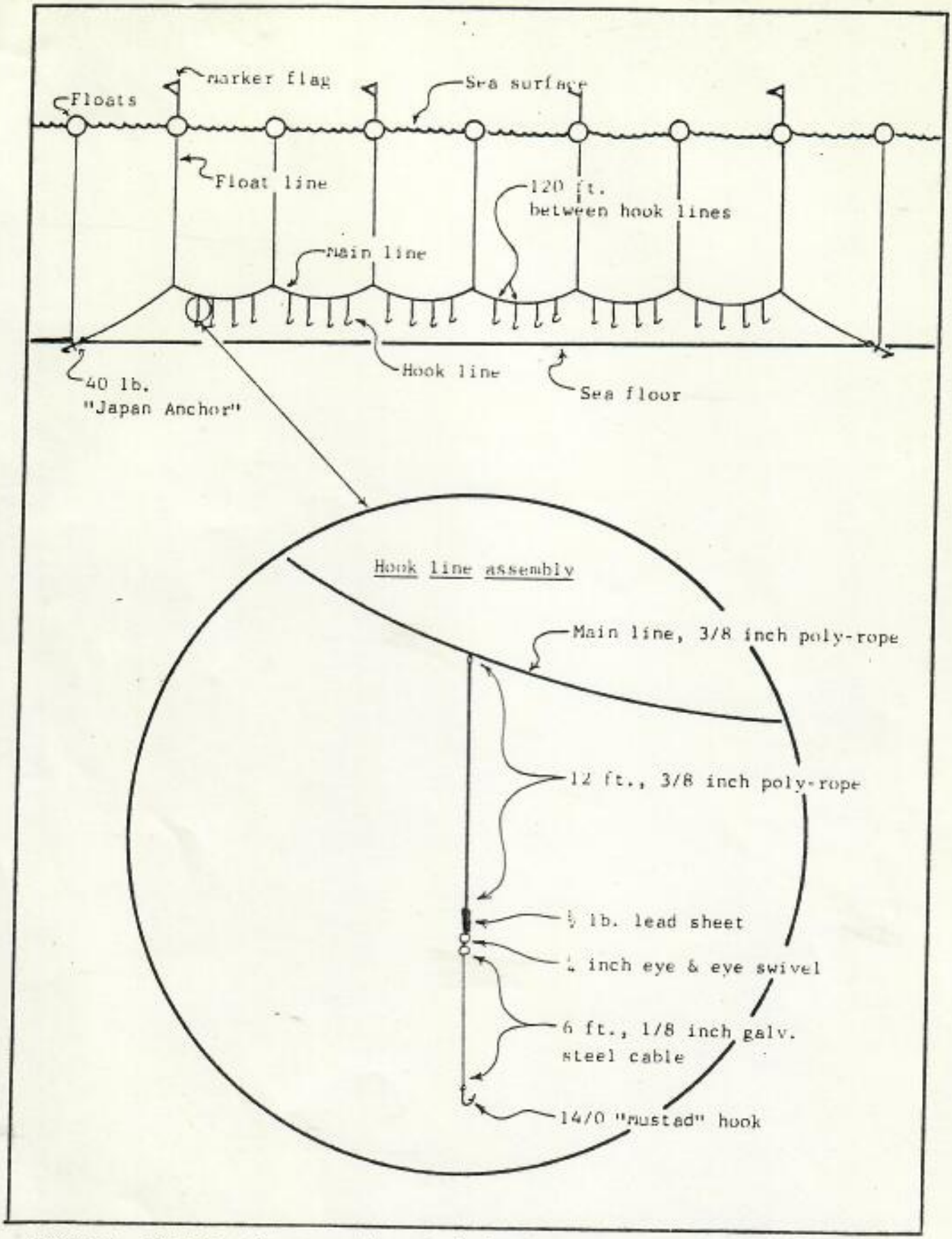

FIGURE 2. Diagram of one section of the Longline Gear used in the 1971 Shark Control and Research Program.

from Fujimoto and Sakuda (1972)

Table 11: Sources

Sources	Information
Mr. Jack Casey Fisheries Biologist	no reply to date
Dr. Eugenie Clark Biologist, Mote Marine Lab	no reply to date
Dr. Jeannette D'Aubrey Biologist Oceanographic Research Institute	no reply to date
Mrs. Beulah Davis Director Natal Anti-Shark Measures Board	no reply to date
Richard Ellis Author, The Book of Sharks	South Africa shark control program
Dr. M.J. Holden Biologist Great Britain Fisheries Lab	no reply to date
Dr. C. Scott Johnson Biologist Naval Ocean Systems Center	referred to Mrs. Beulah Davis Director, Natal Anti-Shark Measures Board
Dr. P.P. Pillai Biologist CMFR Institute, India	no reply to date
Dr. H. Burr Steinbach Biologist Woods Hole Oceanographic Institute	no information
Dr. Wolfgang Sterer Director Bermuda Biological Station	referred to Dr. James Burnett-Herkes Director of Fisheries, Bermuda
Mr. Bernard J. Zahuranec Assistant Program Director Oceanic Biology Program Office of Naval Research	no reply to date

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Letters

Deadly digestion

May I provide some clarification to statements made in a recent letter ("The fisherman's point of view," *HW* 12/23) on sharks and shark attacks in Hawaii. The letter stated that "...in some fisheries in the Pacific, 60 to 70 percent of the tiger sharks examined are found to have turtle remains in their stomach contents." Readers might easily get the flawed impression that turtles are the overwhelming component of the tiger shark's diet. That's simply not the case. Numbers don't always tell the whole story. In this instance some basic knowledge of tiger shark and sea turtle biology is required.

The digestive tract of tiger sharks functions in such a way that only paste-like material — the broken-down remains of prey — can pass out of the stomach into the intestines. Objects that can't be broken down in the stomach are retained there for an unknown and likely extended period of time. The outer surface of sea turtles is made of a tough keratin-like substance that is completely resistant to decomposition in the stomach. Consequently, these large and clearly recognizable items are held in the stomach, while the rest of the turtle, including the meat, bones and all else, is digested. These factors over-represent turtles in tiger sharks' stomachs, and give a biased picture to persons cutting open the animals to see what they eat. It is a biological fact that tiger sharks eat a wide variety of items. In a two year study conducted by the University of Hawaii, tiger sharks in Hawaiian waters were found to prey upon the following items (in descending order): fish, crabs and lobsters, garbage, birds, sharks and rays, squid and octopus, turtles, porpoises or whales, and humans. Jean-Michel Cousteau summarized the situation correctly following the tragic death of Mrs. Morrell on Maui. Cousteau said, "Tiger sharks are particularly dangerous to swimmers. Some sharks are more fussy than others about what they eat. Tiger sharks are known to eat almost anything and everything, and... are more likely to attack anything on the surface whether it's a piece of wood, a surfboard, a boat or a bird."

George Balazs
Deputy Chairman
IUCN Marine Turtle Specialist Group

BUNTING, EVE 1979
The Sea World book of Sharks

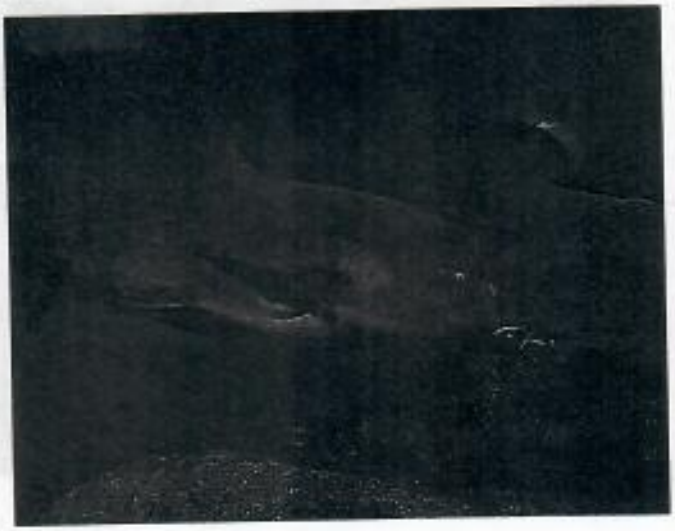
when they are spread like this, over a wide area. When this shark swims along the bottom, its head swings from side to side like a minesweeper. Stingrays, which bury themselves in sand, are the hammerhead's favorite food. Ninety-six poisonous barbs were found in one hammerhead's jaw, mouth, and head. Maybe they'd slowed the hammerhead a little, but they surely hadn't stopped it.

Nurse sharks also live in tropical seas. They are slow, rather drab, and generally harmless. "Nasal barbels," like soft tusks, come down from their snouts. Nurses are brownish in color and can grow as big as fourteen feet. Since they are able to breathe without moving, they often lie half-hidden on the bottom. They don't look at all ferocious lying there, and divers are sometimes tempted to prod them — just to see what happens. A thirteen-year-old boy saw what happened. He had his arm bitten when he pulled on the tail of a little two-footer.

Tiger sharks also like warm, tropical oceans. They often swim together in groups, the markings on their backs like bars of sunshine and shadow. Their snouts are squarish, their teeth curve to the side and their tempers are ferocious.

The largest tiger shark ever caught was eighteen feet. The Shark Attack File shows that they have made twenty-seven attacks on humans.

Two men were killed in 1937. Their legs, parts of their arms, and the hand of one were found the next day in an eight-hundred-and-



Right: A nurse shark.
Opposite page: A tiger shark.

fifty-pound tiger shark. In 1967 a spear diver in Australia was "bitten in half" in a tiger shark's jaws.

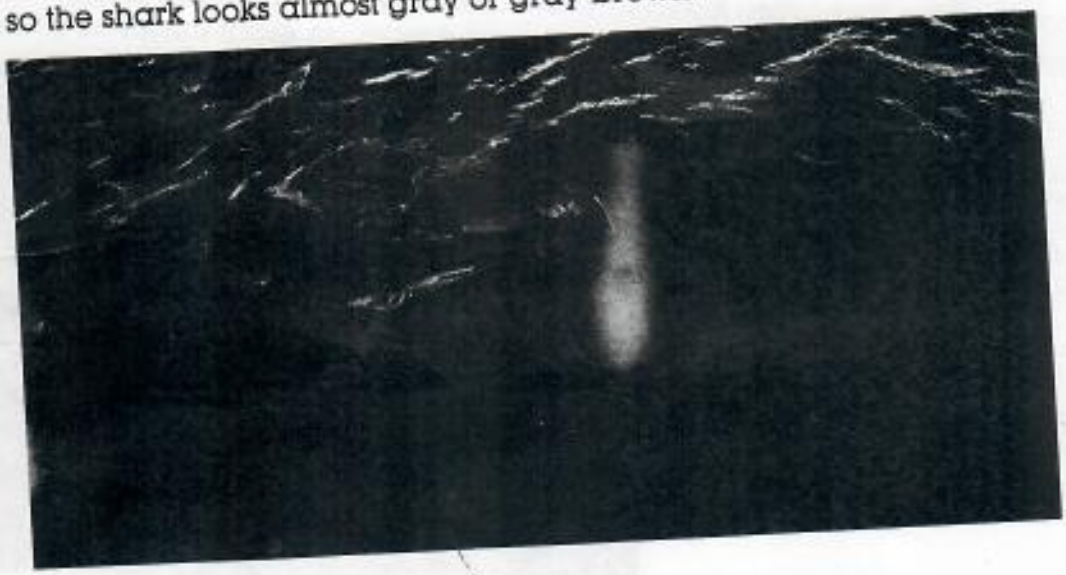
Tiger sharks are basically shy and don't care for the company of other sharks. It is often difficult to get them to eat in captivity, which is strange because in the wild a tiger shark will eat almost anything. The head of a cow was found in one, the head of a horse in another, the head of a crocodile in still another. Even elephants are not safe. In 1959 a crazed elephant plunged into the ocean off South Africa. It was torn apart before it could escape.

Fishermen who trap their fish in nets say it is the tiger sharks who feed most often on other captured sharks.

Stewart Springer, one of the world's leading shark researchers, holds a strange record. And it must surely be the record for the most sharks ever caught on one hook. He caught a tiger shark at the mouth of the Mississippi River. In its stomach was a bull shark. In the bull's stomach was a blacktip shark. In the blacktip's stomach was a dogfish. There they were, the four of them — one inside the other, like Chinese boxes.

Tiger sharks are ovoviviparous. Their litters are large. One gave birth to eighty-two pups.

The tiger stripes that make this shark easy to recognize are more noticeable in the young sharks. As they get older, the markings fade so the shark looks almost gray or gray-brown.



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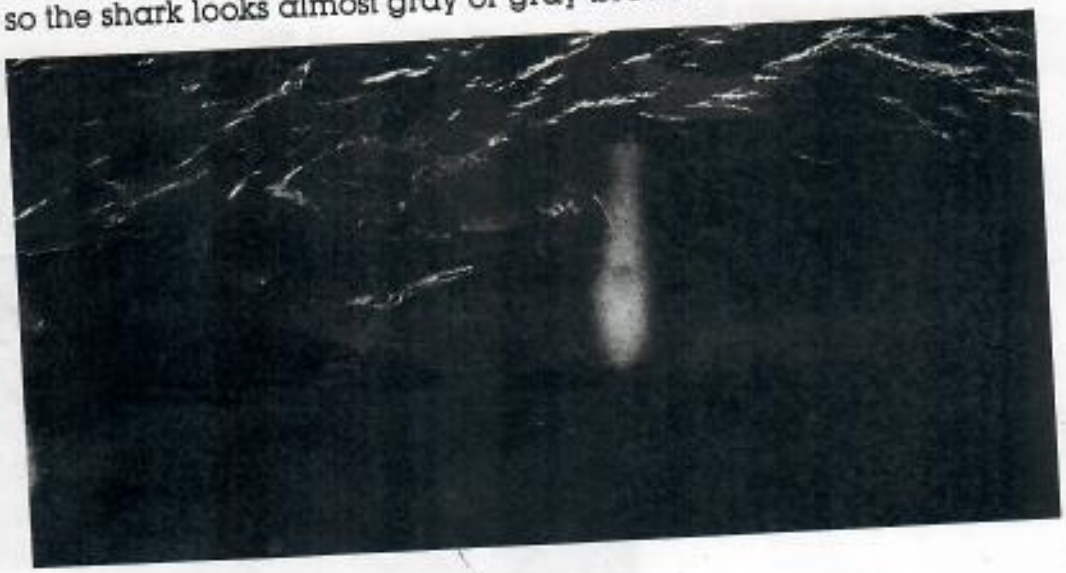

JAW-waiian Kine

Local fisherman caught two huge monster sharks on the North Shore just days after a State official said the waters were safe again. Who can you trust? The damaged dorsal fin could identify this shark as the predator who took a large bite out of a surfboard recently. (Photos by Norm Duerdan and Rusty Spencer.)

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Table 22. Percentages of sharks (with food in their stomachs) which had eaten the listed items.

Items	Tiger	Sandbar	Galapagos	Blacktip
Squid, octopus, etc.	15 (6)	35	35	20
Crabs, lobsters, etc.	40 (2)	13	10	-
Sharks and Rays	24 (5)	3	20	-
Fish	60 (1)	67	60	100
Large (> 1 ft)	26	9	5	20
Small (< 1 ft)	10	30	15	40
Turtles	13 (7)	-	-	-
Birds	24 (4)	-	-	-
Porpoise or whale	6 (8)	-	-	-
Human	1 (9)	-	-	-
Garbage	25 (3)	2	5	-
Number Examined	96 error?	189	41	13
Percentage with empty stomachs	13	51	51	69

January 23, 1993
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SURFER MAGAZINE- LETTERS
33046 Calle Aviador
San Juan Capistrano, CA 92675

The warning to Hawaii's surfers (in More Bad Shark News 3/93) to "do your best not to look like a green sea turtle" if you "want to live to tell about it" was strange advice from misguided reporters. A surfer on a 6-to-7 ft board 2 ft (or less) wide bears no resemblance at all to a 1-to-3 ft oval sea turtle. The common denominator, however, is that both the surfers, and intermittently the turtles, are at the surface where tiger sharks are known to feed.

Do tiger sharks have to "mistake" surfers for turtles in order to attack them? Of course not. There is absolutely no scientific evidence of substance to show that mistaken identity is involved in such attacks. Unfortunately the news media in Hawaii has repeatedly voiced this flawed speculation, causing many to believe it's true. The theory by some scientists that great white sharks mistake surfers for seals off California simply can't be logically transposed to tiger sharks and turtles in Hawaii. Very different species of sharks and prey items are involved. All sharks aren't the same, and they certainly don't behave in a similar manner.

The fact is that tiger sharks don't have to mistake anything floating at the surface in order to strike, bite, or eat it. Taking things at the surface is a natural part of the tiger shark's feeding strategy. It is well known that tiger sharks eat a wide variety of prey items, more so than any other shark. For example, in a two year study conducted by the University of Hawaii, tiger sharks were found to consume (in decreasing order of % sharks containing the items) fish, crabs and lobsters, garbage, birds, other sharks, rays, squid and octopus, turtles, porpoise and whales, and humans.

Turtles are frequently overestimated in the diet of tiger sharks by people cutting them open to see what they eat. This happens because the outer surfaces of a sea turtle, like the scutes of the shell, are resistant to being broken-down by the shark's strong stomach acid. Consequently these items stay in the stomach for a long time before eventually being regurgitated. In contrast soft bodied prey items, with far fewer (and smaller) indigestible parts, digest away quicker and therefore can be easily underestimated in stomach contents.

Explorer Jean-Michel Cousteau summarized the situation correctly when interviewed a year ago following the death of a swimmer attacked by a large shark off Olowalu on Maui. Cousteau said "Tiger sharks are particularly dangerous to swimmers. Some sharks are more fussy than others about what they eat. Tiger sharks are known to eat almost anything and everthing, and ...are more likely to attack anything on the surface whether it's a piece of wood, a surfboard, a boat, or a bird."

What's the bottom line? If you are really that worried about shark attack, "don't surf at the surface." But of course that makes about as much sense as telling someone to "do your best not to look like a green sea turtle".

George H. Balazs
Deputy Chairman
IUCN Marine Turtle Specialist Group

handouts from 1-6 meeting

Yikes!

~~SJP~~
JAW
~~SBP~~
GHB
DO

Shark Task Force Meeting
Board Room
Kalanimoku Building

January 6, 1993
1:30-3:30 p.m.

Agenda

I. Open/Introductions

II. Events since last meeting
- "Pre-emptive" hunt; suspended
- Laniakea attack, response
- Media report of surfers chased out at Chun's
- Public response

II. Signage

III. 58-SHARK data

IV. Catches to date

V. Budget
- Current status
- Future funding (legislature)

VI. Neighbor island concerns

VII. Plan of action

VIII. Summary
- Future meetings
- Adjourn

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DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

December 26, 1992

Mr. William Paty
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty,

I have received your letter dated December 22, 1992 and I appreciate your reply. However, as I have received only generalities in reply, I must stand by my beliefs. The DLNR feels the culling operation is justified; I disagree. To justify the culling of sharks, I believe the goal must be achieved. The goal, as I understand it, is to remove large Tiger sharks, which may become overly aggressive, from heavily used beach areas, and eliminate the threat to public safety. As I have expressed previously, this is an impossible goal. The random setting of baited long line hooks can in no way be selective. There can be no guarantee that any specific and overly aggressive Tiger shark will be caught. The territorial behavior of sharks will also render the goal impossible. As one shark is killed, another will assume its territory. This is the nature of the complex ecosystem and it cannot be change by a simple shark hunt. All of the basic shark hunt premises are in error. The culling is not selective, the culling will not alter the natural behavior and feeding habits of the sharks, and removal of a few sharks will not reduce the possibility of shark attack. As the basic laws of nature will not be altered and the goal cannot be achieved, logic concludes that the shark hunt is senseless and is not justified. Logical analysis can lead to no other conclusion. The death of a surfer is unfortunate, but is not justification for a shark hunt. Justification must come as a result logical reasoning to achieve a specific goal. The justification now appears to be some form of retribution against the shark species, with vigilante fishermen out to kill some sharks because they killed a human. From the television newscasts and interviews with Task Force members, it is obvious that the DLNR sanctions these actions. I appreciate the need for some action on the part of the Task Force, but I cannot agree with the current actions being taken.

I am also concerned with the make up of the Task Force. Although the group includes shark experts, I question the depth of their experience in dealing with sharks, and the wisdom of their remarks made to the news media. How specific is their expertise and how much real life in-the-water experience do they have? I understand Mr. Charles Maxwell is the Hawaiian activist representative and I appreciate his input. Mr. Steve Kaiser is also a member, but his expertise has never been explained. He has made statements during news interviews which I believe are inaccurate. Specifically, Mr. Kaiser does not believe the sharks are attacking what they believe to be a seal or turtle and bite a surfboard or human by mistake. I believe the attacks are mistakes, where the surface shadow of the surfer or boogie boarder resembles a seal or turtle. It must

be noted that all of the recent attacks have been on surface swimmers. The noise of the thrashing of the swimmer attacked off the Maui coast may have had some influence on that event. The underwater sound of a surface swimmer can be mistaken for the sound of an injured seal or large fish or whale. Although the "mistake theory" is discounted by the Task Force, the events confirm my belief. It must be noted that there have been no attacks or reports of "aggressive behavior" against scuba divers, many who are in the water day and night off the coast of all islands. I would suggest that the Task Force include experts with very specific real life knowledge of sharks, and include an individual from the professional dive community. A candidate might be the renown underwater photographer, Chris Newbert, a part-time resident of Kailua-Kona. He has thousands of hours of diving experience world-wide with vast experience with schooling hammerhead sharks. His photographs are a testimony to the beauty and benign nature of what is considered an aggressive shark species. If in fact the Task Force is made up of experts, where are they? The news reports continue to quote Harold Blomfield, shark vigilante, Arthur Kamisugi, dentist, and Perry Dane, surfer. None of these people are professional shark researchers or Task Force members, yet you condone their possibly inaccurate remarks. Perry Dane has actually humanized a shark giving it cognizant thought process indicating it "knows people are food." Statistics from the recent attacks would indicate it knows surfboards are food, not people. Condoning this type of statement demonstrates neither professional direction, awareness of the ecosystem, nor commitment to the nearshore environment on the part of the Task Force and the DLNR.

Mr. Paty, I have tried to be specific in my reasons for disagreement with the current methods employed by the Task Force. I am offended by inaccurate news reports, media hype events complete with shark hunters out to eradicate the species, and by the fact that the DLNR continues to sanction these events. The evening news Sunday, December 27, 1992 reported that since no large sharks had been caught over that weekend, "the North Shore is now free of sharks." This report is absurd, in error, and instills a false sense of security in the public. I am also offended by the killing of sharks simply to mollify the public, as specifically indicated by Task Force members during a news interview. The Task Force openly admitted that the only purpose of the culling operation is to demonstrate to the public that "they are doing something." If this is the response of "the most knowledgeable shark experts in Hawaii," then we need a new Task Force. I am also offended by the use of an individual's death, misrepresenting the public safety threat, and media hype to justify a shark hunt. This equates more to a lynch mob than the logical reasoning of "knowledgeable shark experts." I am open to any specific and definitive explanation of the reasoning used to arrive at the justification that allows the continued shark hunts, however, to date I have seen none.

It must be understood that the near coastal shoreline is the birthplace of the marine ecosystem and the food chain. The smallest plankton to the large sharks are all part of that interdependent system. The DLNR cannot remove the top most predator without affecting the interdependent marine system. I have previously suggested that the recent attacks may be symptomatic of other stress in the ecosystem. The waters off Oahu are heavily fished commercially and there have been three recent events; the waters off the Big Island are not heavily fished commercially and there have been no

recent attacks. I am not a fisheries management specialist, yet I see a possible correlation. I suggest further research of the Oahu fishery, not additional stress to the ecosystem by senseless shark killing.

Additionally, from Australia to California ocean-goers know that if you act like shark food, you may end up as shark food. California scuba diving spear hunters learned after several attacks that hanging dead fish from their waists was not very smart; the bleeding fish would attract sharks. We are the thinking species, not the sharks. We bear the responsibility for our actions and the consequences, not the sharks. Hawaiian surfers and boogie boarders should learn from example; if they splash around like the Tiger shark's prey, they may become the sharks prey. Educational programs are necessary and to be praised, yet that effort continues to be overshadowed by media hype and inaccurate statements made by non-professional individuals not associated with the Shark Task Force. It must be understood that the ocean by nature is a place "waiting for an accident to happen." The potential dangers are more than sharks. From the small and nearly invisible man-of-war jellyfish to eels, from sharp coral to strong ocean currents, the ocean is filled with hazards to man simply because it is not our natural environment. You cannot simply, with the stroke of the shark hunters pole, remove all threat to public safety. Specifically, we have had more deaths on the Big Island to people picking opi'i than caused by sharks. We have had more attacks by eels on the Big Island than by sharks. I have personally witnessed severe near-death allergic reactions to jellyfish stings. Yet, to these threats to public safety, we shrug our shoulders and tell people, watch for rogue waves and don't turn your back on the ocean while picking opi'i; don't be stupid and stick your fingers where eels may lurk; stay out of the water when jellyfish are present. We do not cull every creature that poses some hazard. If you swim in a posted area while jellyfish are present, you will surely be stung. If you surf in an area where sharks are heavily populated and are stupid enough to act like a seal, you may get bit. If scuba divers can safely dive with the same sharks that are attacking surfers, it is obvious that the responsibility for these attacks lies with man, the thinking species, not the Tiger shark.

I look forward to seeing some form of demonstrated professionalism, "awareness of the important role sharks play in our marine ecosystems," and commitment "to maintaining the integrity of our nearshore environment" on the part of the Task Force in 1993.

Sincerely,

Greg L. Carter

cc: Mr. Joshua C. Agsalud, Executive Chambers; Shark Task Force

TASKMASTER CONSULTANTS

VALUE ENGINEERING • COST CONTROL • PROJECT MANAGEMENT

Christmas Day 1992

Mr. Joshua C. Agsalud
Executive Chambers
State Capitol
Honolulu, Hawaii 96813

Dear Mr. Agsalud,

The television Evening News on Christmas Eve presented a report of another shark attack off the North Shore of Oahu. In that report Mr. William Paty was amazed, confused and at a loss for an explanation as to how another attack could have occurred after the successful culling operation. Mr. Steve Kaiser was also at a loss as he has indicated that the attacks have no relationship to the shark mistaking the surface shadow of surfers as that of a seal or turtle. The newscast, again imitated the movie "Jaws," presenting a "Quinn" like local shark hunter, who in a deep and foreboding voice indicated the sharks must be eliminated.

In my previous letters to you, the DLNR, the Shark Task Force, the Governor's office, and the television news media, I indicated the Taskforce's shark hunts were senseless and would ultimately fail. The latest attack proves my point. The senseless culling operation will not alter the feeding habits of sharks, nor will it alter the territorial nature of sharks.

Mr. Steve Kaiser on a newscast interview denied the commonly proposed relationship between the surface shadow cast by surfers and their normal prey, seals and turtles. I believe the recent attacks prove him in error. All of the recent attacks have been to surface swimmers. Specifically, two surfers and one boogie boarder off the Oahu coast, and one surface swimmer off the coast of Maui. During this same period there has not been a single report of shark attack or even "aggressive behavior" towards scuba divers. It should be noted that scuba divers are in the water day and night off the coast of all islands.

I again suggest that the Shark Task Force stop the senseless "selective culling operation." It is not selective and cannot succeed. The Hawaiian marine ecosystem, in the words of shark researchers Richard Ellis and John McCosker, will be "sorely and criminally diminished" by the continued killing of sharks. I again suggest that the Task Force employ knowledgeable shark researchers to deal with education of the public. To reiterate, we do not have a "public safety problem," but need an education solution. A forty-eight page publication available locally, titled Sharks, The Story Behind The Scenery (Shorelines of America series) portrays the benign nature of sharks, and would be an excellent primer for the Task Force. Members from the Hawaii dive community might be included on the Task Force as they have considerable in-the-water experience with sharks. Diving with schooling sharks is an experience of a lifetime and can be done with little danger. The secret is knowledge; the solution is not in killing. Species of sharks existed some 350 million years ago and the behavioral patterns established over that period will not be altered by any "selective culling operation." I suggest that for 1993, the DLNR and the Shark Task Force resolve to adopt a program of education and solution, not eradication.

Sincerely,

Greg L. Carter
cc: Mr. William Paty, Mr. Steve Kaiser, DLNR Shark Task Force

AR Linda | cc STF Members 1 6

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DEP. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

William Paty, Chairman
State Shark Task Force
P.O. Box 621
Honolulu, Hawaii 96809

December 29, 1992

Dear Mr. Paty:

I want to thank you for the letter you sent me concerning the culling program. I appreciate that you took the time to write me and I hope that my efforts helped you in getting the culling program started. Getting the program started was not easy since you had to deal with all the various groups on all sides and your leadership skills and courage at making the right decision indicate that you are a good person.

Since I have been off-island, I was not able to write you earlier and thank you for your efforts. When I returned, I found that the culling effort had been suspended and was saddened that the Task Force had decided to suspend the culling effort so soon. I felt that another shark attack would surely happen again and apparently it did at Chuns Reef at Christmas time. I'm sure you are also saddened by the sudden attack after all your hard won efforts.

The public feels very frustrated with the Task Force since the culling efforts were suspended and another attack occurred as I have heard on the radio and television and talking with many people. I propose that a permanently funded continuously operated culling effort be started now. This will make the public feel that the Task Force cares about their safety. At present, all the public hears is that the culling effort is suspended and this makes it appear that the Task Force is not actively pursuing this problem and waiting for the next attack to take serious action again.

My other proposal is to offer monetary compensation of $500 to $1,000 to local fisherman to cull sharks over 8 feet. This will be a tremendously effective program which can make the waters safe again. The legislature may need to allocate more funds for these proposals and I feel that they will fund these programs if necessary. Your strong leadership is critical to helping implement these proposals soon to reduce the danger to the people, like me, who use the waters.

I am enclosing a letter to be hopefully published in the newspaper to help keep public pressure focused on this issue so that the Task Force does the right thing to protect our safety.

I believe that you understand that the problem has not been solved and that a serious threat to the public's safety still exists. This problem will not go away unless an on-going effective culling program is implemented. It should not take another attack or death to get things going again in the future. Let's solve this problem before another death occurs, this is my major hope.

I heard that you will be leaving the Department of Land and Natural

Resources in February 1993 and your absence will be missed. I can only hope that your successor will continue the work that you started. I hope that you can help influence your successor about the proposals in this letter and the importance of the culling efforts in stopping additional deaths.

Again, I thank you for getting the culling program started and helping to protect people's lives.

Sincerely,

Troy Smith

Troy Smith
P.O. Box 90591
Honolulu, Hawaii 96835

Letters to the Editor
Honolulu Advertiser
P.O. Box 3110
Honolulu, Hawaii 96802

December 29, 1992

Dear Editor:

William Paty and the State Shark Task Force should be commended for their courage in finally starting a shark culling program to reduce the numbers of large, predatory sharks which have been attacking and killing our friends and neighbors the past two years. Starting the program was not an easy thing to do considering that there are groups actually opposed to the program.

I was shocked and dismayed when I called the Task Force before Christmas and was informed that the culling program had been suspended. The culling program had only been in operation for about one month when the task force decided to suspend the program. I was told that the situation was under control and no further efforts appeared necessary. A few days later, a surfer in Chuns Reef was attacked by a shark and escaped death by a miracle. The Task Force would like the public to believe that the situation is under control and leave them alone. I regret to inform you that the situation is not under control.

It appears that the only thing that motivates the Task Force to take action is public and media pressure. Attacks and deaths had been occuring in the islands for the last two years and the Task Force did nothing but study the problem while people died. This is exactly what will happen again unless you, the people of Hawaii, do not keep the pressure on them. Once public pressure is gone, it will be business as usual, with the Task Force with its head in the sand hoping the shark problem will go away by its own.

The argument against an effective, large scale culling program is that we may endanger the shark population by culling too many sharks. This is a ridiculous argument, since the shark is a world wide species and even if all sharks were culled in Hawaii, the species would recover and live on. The other argument is that the ecosystem will be thrown off by the reduction of sharks. Hawaii could actually benefit by the reduction of sharks since more fish which would have been eaten by sharks would be available to local fisherman improving their living standard, and the supply of ahi and other fish would increase, thus helping keep food costs under control. When sharks were effectively culled in the past, there has been no substantial evidence that the ecosystem was damaged at all. Man was given the ability to swim and use the water, just like sharks, and should not have to be forced out of the water by sharks. The sharks are keeping the people hostage on this island now that people are scared of entering the water and are forced to stay on crowded dry land.

What is the answer to this dangerous problem? The Task Force must establish a permanently funded culling program which continuously culls sharks year round. The program would have full time employees in boats monitoring the Hawaiian waters and immediately culling sharks when the public spots large sharks and makes calls to the 58 shark telephone line. The Task Force must offer monetary compensation of $500 to $1,000 to any private fisherman who culls a shark over 8 feet in length. This will enable local fishermen to get involved in the culling efforts and help reimburse them for their gas and time. If these efforts are immediately implemented, the Hawaiian waters can be made safe again.

If the Task Force continues to suspend the culling program as is happening now, then the next shark attacks and deaths will be their responsibility since the Task Force members are entrusted with protecting the public's safety. This will almost be a certainty the way things appear now.

If you care about protecting your friends and family from this dangerous threat, then call the State Shark Task Force at 587-0320 and demand that a permanently funded culling program operating year round be started and that monetary compensation be offered to private fishermen who cull large sharks to make our waters safe again. Call your legislators and demand that adequate funds be allocated to the Task Force. Don't give up until action is taken. The alternative is more shark attacks and deaths.

Sincerely,

Troy Smith

Troy Smith
Honolulu, Hawaii
CC: State Shark Task Force

THE ORCA GROUP

Mail to: P.O. Box 88191 • Honolulu, Hawaii 96830

210 Ward Avenue, #C-329 • Honolulu, Hawaii 96814 • Ofc: (808) 531-6363 • Fax: (808) 523-7810

December 28, 1992

Dear ORCA member,

This letter is being sent only to our Hawaii members. Normally, we are relatively passive in our approach to saving sea mammals. This is usually done by our research projects.

However in this instance the sea mammal involved are human beings and to us a human life has the utmost importance. What I am referring to is the recent increase in the shark attacks on surfers.

I do respect the Hawaiian cultural views of sharks as "aumakua". BUT these views do not call for human sacrifice which is happening today.

Twenty years ago we had a government sponsored vessel visiting all of the Islands to keep the shark population in balance. Now we have a very limited response. I recently inquired of the Department of Land & Natural Resources why it is so limited. Their response appears to be that they are keeping a tally of people calling in to them and so far the poll shows only a 50/50 basis for the shark hunt.

Thus a few "activist" are capable of keeping ourselves, our children and their friends exposed to a dangerous situation.

It appears that if we believe in human life then we must organize in order to let our government realize our views . When I talk to the surfers who come from all backgrounds including Hawaiian, I do not find a one who is not now afraid and concerned of sharks.

Please help show DL&NR that we too are concerned and that we are greatly in the majority. Please have at least four of your friends sign the petition on the back of this letter and then send it to Chairman of the Board, Department of Land & Natural Resources, 1151 Punchbowl, Honolulu, HI 96813.

Save human lives ---- Make your voice heard.

Regards,

Ted Beck

AR

Chairman of the Board
Department of Land & Natural Resources
1151 Punchbowl
Honolulu, HI 96813

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93 JAN 4 AM : 38
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

Dear Chairman:

Please be known that we, the undersigned, are deeply concerned over the increase in shark attacks on humans in Hawaii. We do understand that there is an increase in the population which may be due to several factors. This may be because the State of Hawaii stopped their periodic shark fishing. The attacks may also be because the sharks are coming closer to the beachs because "long liners " have depleted food stocks at sea or the return of the turtles.

No matter what the cause may be we are concerned. We appreciate your efforts to create research programs. HOWEVER, we consider human life as precious and an overriding concern. We wish to greatly reduce the chance of shark attacks. THUSLY, we respectively request an immediate return to full time, state wide, shark hunts.

SIGNATURE	PRINT NAME	ADDRESS
	PHILLIP A. DEEPS	1022 POE POE PL, HONOLULU 96819
	PATRICK G. BRIGGS	P.O. BOX 30884 Honolulu, HI 96820
	Darlene Griffin	1720 Ala Moana #1201A Hon, HI 96815
	R.B. STERIE	876 CURTIS ST. " " 96813
	LAURA A. JONES	900 WAI NANI WAY #1503, HONOLULU, HI 96815
	REX E. HERREN	HWC #10833 1720 Ala Moana Blvd #B-2 Hono HI 96815
	Patrick J. Shine	46-152 Lilipuna Rd Kaneohe, HI 96744
	John L. Campbell	45-070 Lilipuna Rd. Kaneohe, HI 96744
	Judy Reynolds	44-497 KANEOHE RD. D KANEOHE HI 96744
	BRUCE WATSON	69225 WAIMALU LOOP WAIANAE HI 96792
	BRUCE VASCONCELLOS	24 Diamond Dr. Honolulu, Hi 96819

Surfing
March '93

SHARK ATTACK!

Why Surfers are First on the Menu

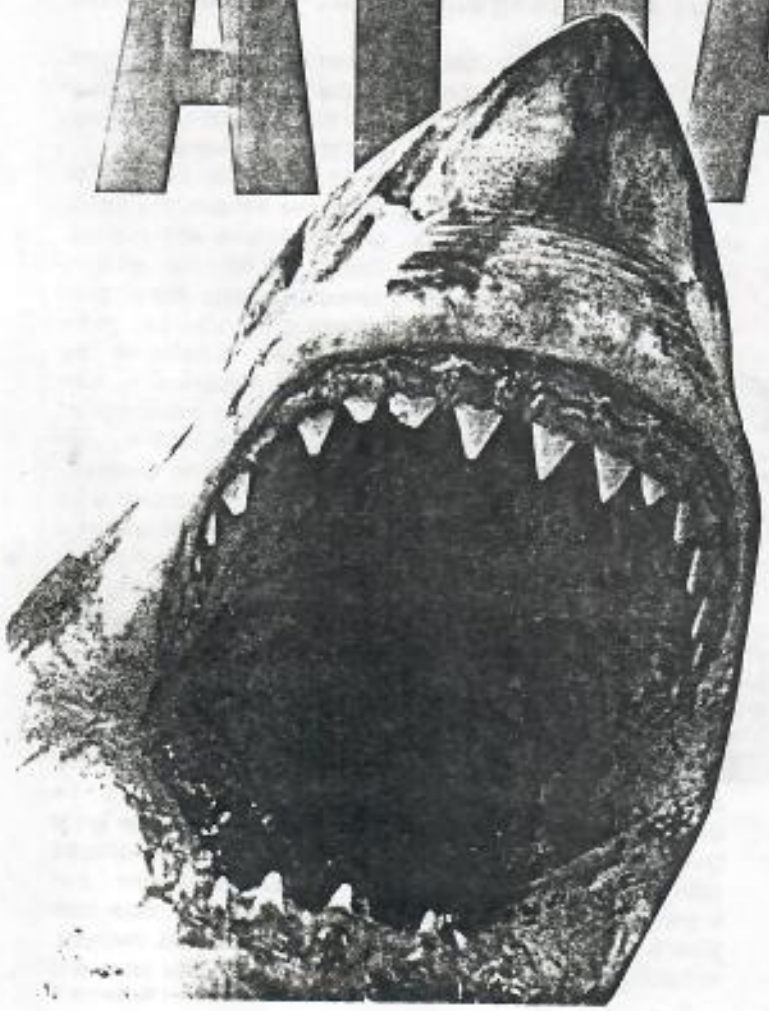
This is what they will tell you: the average citizen—even the average swimmer—has as much chance of being attacked by a shark as being struck by falling satellite debris. In the U.S., for example, the chances of drowning—even along those beaches where shark attacks have occurred—are estimated to be over 1000 times greater than dying from shark attack.

Then there is the old lightning standby: the fact that in the sixty-four years from 1926 to 1990, when there were a total of sixty-five recorded great white shark attacks in the U.S., approximately 32,000 Americans were struck by lightning. Even in Florida, the shark-bite capital of the world, where they average 10–15 "incidents" a year, the statistical chances are comparatively low when factored into the millions of man-hours spent by swimmers in the water.

"Nothing to really worry about" is the message, apparently, from scientists, biologists and tourist bureaus everywhere. On paper, the odds are in your favor.

But try telling that to Rick Gruzinsky. As this article was being written the 26-year-old surfer was sitting in the lineup at Laniakea on Oahu's North Shore. It was around 8AM, a nothing day, and there were only a few other surfers out.

Suddenly, Rick felt something strike the bottom of his thruster near the fins. His board was flipped out from under him; he splashed into the water, but seized the



Right: A *big* tiger shark. Left: Great white. photos: Hank, Nachoum/ WaterHouse.

shark's tail with his arms. Rick found himself staring into the predator's big black eye.

After one last convulsive bite, the shark quietly sank below the surface. In contrast, Rick frantically hauled himself up onto his precious board—now missing a sixteen-inch chunk—and was promptly cut by the jagged glass. Bleeding freely, he paddled safely to shore.

That same night, the Department of Land and Natural Resources' Shark Task Force sent commercial fisherman and biologist Steve Kaiser to drop a series of baited hooks off Laniakea. The following morning, he hauled up three big tiger sharks. Later, when a chunk of rail washed ashore, it was found to fit perfectly into the bite radius of one of the fish, which measured 13'7".

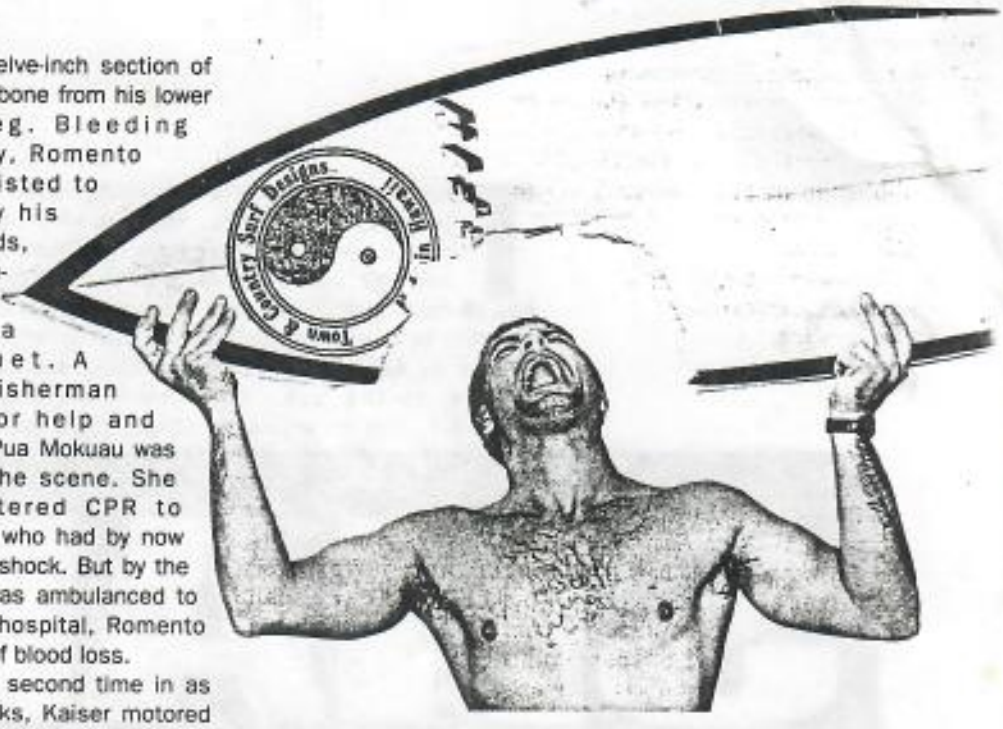
To the average bystander, this closure indicates the sort of happy ending normally associated with B-movies—the "monster" caught and killed, the spree averted. But in fact, the real horror story was yet to be told.

Just two weeks later on November 5, 18-year-old Aaron Romento from the Pearl City area went bodyboarding with a couple of friends at Keaau Beach Park along the Waianae coast. At approximately 9AM, while waiting for a wave, a large shark passed underneath one of the bodyboarders and seized Romento by the leg. The force of the attack knocked Romento from his board, the shark having delivered a massive bite that took a twelve-inch section of flesh and bone from his lower right leg. Bleeding profusely, Romento was assisted to shore by his two friends, who immediately applied a tourniquet. A nearby fisherman called for help and lifeguard Pua Mokuau was first on the scene. She administered CPR to Romento, who had by now gone into shock. But by the time he was ambulanced to a nearby hospital, Romento had died of blood loss.

For the second time in as many weeks, Kaiser motored out and laid the hooks. The following morning, the hooks were hauled up—attached to two tiger sharks, a ten-foot male and a thirteen-foot female. Two even larger sharks were seen circling the boat but didn't take the bait.

Even in the face of this latest tragedy, experts in Hawaii are quick to point out that despite increased numbers of sharks and humans in local waters, attacks have not increased proportionally. However, Gruzinsky's close shave and Romento's death indicate in all too dramatic fashion that despite the reassurances, more and more surfers worldwide are being attacked.

Even the most cautious experts agree that this is indeed the case. Since 1990 along the coast of Northern California, near Santa Cruz, two surfers were mauled by great whites in as many years. In Hawaii, a mysterious disappearance (Bryan Adona's savaged bodyboard was recovered—his body wasn't) and the two recent attacks happened within the same year. Two years ago, the first surfer shark attack was recorded at Jeffrey's Bay, and as recently as October 1992, an Australian surfer was killed while surfing off Northern Queensland. In fact, when John Ferrara was attacked by a great white while surfing Scott's Creek in '92, surfers, in California at least, officially ranked higher than skin-divers on the shark's menu. Bottom line: it's happening to surfers, and at an increasing rate.



The Hawaiian tiger shark attacks are believed by some to start as a case of mistaken identity; the fish misidentifying the prone surfer as a sea turtle, its favorite prey. Rick Gruzinsky and his savaged board. photo: Hank.

To the average bystander, this closure indicates the sort of happy ending associated with Hollywood B-movies—the "monster" killed, the spree averted.

To understand why is to study the behavioral pattern of both sharks and surfers. One of the first biologists to seriously analyze surfer-shark interaction was Dr. John McCosker, curator of the Steinhart Aquarium in San Francisco and co-author of "Great White Shark." An occasional surfer himself, McCosker naturally was interested in any attack on a board rider. Conventional wisdom makes clear the fact that, in the twenty years since the Marine Mammal Protection Act passed in 1972, burgeoning pinniped populations along the California coast gave rise to a natural increase in predators—namely, the great white. Subsequently, attacks on surfers kept time. But McCosker felt that more than mere bad luck was involved. "We started to see more and

more attacks," explains Dr. McCosker, "when surfers got off the longboards and onto the shortboard. Which happened at approximately the same time as the Marine Mammal Act."

The significance is one of mistaken identity, the modern shortboarder, with his legs often trailing behind, looking more and more like a seal or sea lion from the shark's perspective. In "Great White Shark," Dr. McCosker recalls a 1985 experiment he conducted in South Australia. Using a wetsuited dummy on a shortboard, McCosker simulated the classic attack pattern: the slow, almost cautious approach, the tightening circle, leading to an almost vertical rush and big, debilitating first bite. "It's not a matter of increasing surfer populations or increased great white populations," explained Dr. McCosker during a recent interview. "The fact remains that if surfers are going to continue to surf in areas where sharks are known to feed, then more and more surfers are going to be attacked."

The subject of shark populations is a controversial one, especially when you talk to the experts who are actually out there counting the dorsal fins. Along the California coast, for example, researchers can't even agree on whether the number of great white sharks is growing or remaining static.

"The problem is how to estimate populations," says Peter Klimley, of the Bodega Bay Research Center. "Very little is actually known about the ecology of the great white. However, by analyzing the numbers of normal attacks on seals, sea otters and attacks on people, we've seen no obvious relationship of increasing shark populations throughout the Eighties."

Klimley and his colleagues have concentrated their census around both the Farallon Islands and Año Nuevo islands off Northern California, where, apparently, the number of sharks is still relatively low.

"I've been stationed at Ano Nuevo State Park for over five years," says Supervising Ranger (and surfer) Gary Strachan, "and have spent hours and hours in the water. And I've never seen a live great white."

Estimating shark populations in Hawaii has proved equally difficult, especially the tiger sharks. "So little is known about their movements and population densities," explains Chris Lowe, University of Hawaii researcher. "In the Sixties and Seventies, the state had a shark eradication program to control the population of potentially dangerous sharks. But there's been nothing done in the last twenty years, so the tiger population right now should really be at a peak. However, in that same time, attack rates remained stable, while the number of people in the water increased dramatically."

Lowe feels that, in regards to Hawaii's latest shark attack, the key factor is the human element.

"We paddle out into the

Dr. McCosker recalls an experiment he conducted using a dummy on a shortboard. He simulated the classic attack pattern: the slow approach, the tightening circle, leading to the vertical rush and big first bite.

There are over 300 species of shark. From top to bottom: the deadly great white, the catlike gray reef, the tasty mako, the alien hammerhead and the common blue. photos: Marty Snyderman, Carl Roessler/WaterHouse and Stephen Frink/WaterHouse.

SHARK TRIVIA

all sharks are dangerous

Of the 344 species of shark, only 27 have been involved in authenticated attacks on persons or boats.

great whites, tigers, bulls and hammerheads are all known man-eaters

In very few instances have great white sharks actually eaten a human attack victim. Tiger sharks, on the other hand, have been known to completely consume their human prey. Bull sharks, who top the list in serious attacks, are generally too small to eat an entire human and there have been few—if any—verified hammerhead fatalities.

the area off central California coast known as the "red triangle" is the shark attack capital of the world

In fact, the Atlantic coast of Florida maintains that honor, averaging, on a year-round basis, over one shark "incident" per month.

blows to the snout of an attacking shark is an effective defense

Maybe—if the shark is smaller than you are. Great white regularly prey on elephant seals, which can weigh up to three tons. The pugilistic efforts of even a very strong human would have to be considered only for its effect on morale.

great whites are cold water sharks

Mr. Whitey is a temperate water shark, and has been sighted or caught in such unlikely locales as Panama, Italy, Malta and Okinawa.

great whites are prevalent wherever there are seals and sea lions

If that were true, the Alaskan Aleutian and Polar regions—with the largest pinniped populations on earth—would be swarming with great whites. They are not. Water temperature as well as food supply seems to be a critical factor in the white's distribution. They are also seen regularly off New Jersey and New York.

blood in the water drives sharks into a "feeding frenzy"

A combination of food stimulus and plenitude of sharks seems necessary to trigger a feeding frenzy. In many attacks, even with the victim bleeding profusely, large sharks have shown a decidedly relaxed approach to predation—the very reason a majority of shark victims survive.

the biggest killer shark was over 20'

Although claims have been made as to 23-, 25- and even 36-foot great whites, the largest "authenticated" catch was a 19-foot, six-inch female lassoed off Australia in 1984.

shark's environment, their home," says Lowe, who surfs Lani's himself. "They're the ones who belong there."

Dr. George Burgess, of the Florida Museum of Natural History, echoes this opinion.

"Florida's shark attack statistics are more of a reflection of human activity than that of the sharks," says Dr. Burgess. "The sharks are there. Black-tip and spinner sharks are common along the shoreline—they're working in the surf just like the surfers, making choices, making judgement calls."

Dr. Burgess has analyzed enough "interactions" to have come up with a very detailed attack description: "Basically, surfers are doing a good school-of-mullet impersonation. Here in Florida, the soles of the feet and palms of hands tend to be much lighter than the rest of the surfer's tanned skin. Black-tip sharks, who are very good at distinguishing contrast, naturally perceive the flashing white as fish bellies."

The slashing bite at the "mullet" makes up the bulk of Florida's relatively numerous shark wounds.

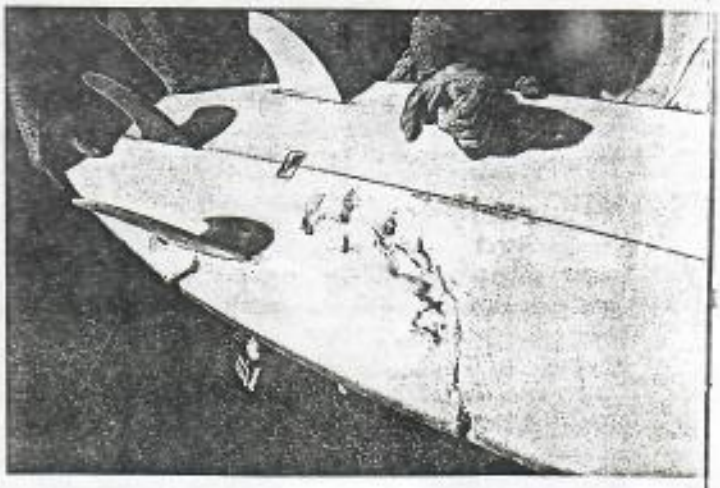
By unconsciously imitating a sea lion or a school of mullet, surfers seem to continually serve themselves up as an entrée. In a recent South African television special profiling the Natal Anti-Sharks Board, Director Beullah Davis explained that S.A. surfers especially put themselves at most risk because of several potentially fatal habits: surfing in the fading light of dusk, away from the netted beaches and often at murky rivermouth breaks. This almost blasé attitude does as much to explain an increase in attacks on surfers than does anything else. (During that same television show, a female Natal surfer who lost her leg to a shark testified that when she finally got a glimpse of her attacker, she was shocked. "A shark?" she said. "I thought I was being attacked by a crocodile.")

So how are you to avoid what Carl LaFasio, of Crescent City, California, went through in August 1988? Carl is one of those rare surfers who, for a few seconds, found himself locked in the jaws of a great white, and survived. Grabbed from behind, he was pulled underwater, and after what Carl described as "what seemed like a long, long time," the shark released its grip and Carl escaped.

That sort of surprise attack seems impossible to anticipate, but take a closer look at the conditions of LaFasio's "interaction," and you'll understand why shark experts merely shake their heads at the headlines. Carl was surfing a rivermouth break populated by sea lions. Local fishermen sometimes caught great whites in their nets. And Carl had a penchant for surfing alone. Put frankly, Carl was a shark attack waiting to happen.

When you look beneath the lurid headlines that inevitably follow every new attack, it becomes clear that the real story isn't about the shark, whose behavior is pre-patterned. The story behind shark attack on surfers is the surfers themselves who, continually paddle out into the shark's world, risking a rung on the food-chain for a chance at a few waves.

By SAM GEORGE



Experts contend that some shark attacks are motivated more out of curiosity than hunger. Above, Carl LaFasio's board following a great white's half-interested taste test. photo courtesy Sam George.

Great whites, with their threatening appearance, have been in the forefront of popular horror since "Jaws," but shark hunters say the biggest villain is the tiger shark.

Australians attack sharks

☐ The government shows undersea outlaws no mercy

By Burl Burlingame
Star-Bulletin

AUSTRALIA has many more miles of coast than Hawaii, and, therefore, should have that many more shark attacks on humans. Lately, however, the score's been about even. According to a veteran Queensland "sharker," the difference is that the Australian government puts the bite on sharks first.

Kim McKenzie is a one-time champion surfer who hails from Mooloolaba, near Brisbane. But her day job is by government contract — to kill as many sharks as possible.

"It's very organized and government-run, and has been that way since 1962," McKenzie said from Maui, where she's vacationing with friends. "Our economy in Queensland, like yours, relies heavily on tourism, so it's not in anybody's best interest to have people eaten regularly."

She's been killing sharks for 28 years now, inheriting the job from fisherman father Roy McKenzie. She averages nearly a thousand sharks a year, and is widely considered a world champion in shark-catching as well as surfing.

"We don't have a lot of different, disorganized people sailing around trying to kill sharks for short periods," she said. "You've got to keep the amateurs and cowboys out of it. What counts is the end result, and you've got to put money into it for the long haul."

Any professional fisherman can bid on the government contract, which is regularly renewed. The contractor provides the boat, crew and fuel, and the government provides the working area. Catching sharks is a combination of setting nets and "drum lines," anchored lines to which are attached bait and large steel hooks. A day's routine consists of McKenzie and her "deckie" making the rounds to check the nets and drum lines.

The netted sharks are generally dead when discovered. Without forward motion, their gills collapse and they drown in place. If they're still alive, a bangstick finishes them off. "Never, never bring a live shark aboard a boat," she advises. McKenzie was once batted into unconsciousness by the churning tail of a great white.

The nets are approximately 600 feet long and 20 wide. The mesh is nine inches, so that reasonably sized fishes can swim through it.

A dead shark is measured, weighed, its sex is determined and its stomach unzipped so that recent meals can be catalogued. They're also checked for shark "puppies," as McKenzie calls sharklets. Female sharks can bear 40 or so young. Sometimes the puppies are found in the mother's stomach.

The data goes to Australian shark scientists, who are then able to compile realistic statistics and create reasonable projections. "One of the problems I see you have here is that you don't even know how many sharks you've got," McKenzie said. "I think it's most important to know where you stand, which is why you've got to have overseeing" by a single agency.

As head of the Department of Land and Natural Resources, William Paty has recently been on the hook of public opinion, because of recent attacks on local surfers. He agrees that an "aggressive information-sharing program" is essential to understanding the threat.

"Our people read the same journals their people do," he said. "We want to gain as much from (Australia) as we can. On the other hand, we have people scuba-diving and swimming and snorkeling here all the time, and they aren't bothered by sharks. Only the surfers are bothered."

A recent controversial topic in Australia is the stringing of net mesh just offshore. It's controversial because "some porpoises have been killed in the meshes," said McKenzie. "That's the price we're prepared to pay. Australia hasn't had a single fatality in meshed areas since they went up."

Paty isn't sure meshing would work here. "It might on a sandy bottom, but what about reef areas? And where would you put it? Off Waikiki, where most people swim? Surfers wouldn't like that."

Great whites, with their steam shovel maw and kamikaze attitude, have been in the forefront of popular horror since "Jaws." The biggest villain is the tiger shark, according to McKenzie, who once hauled in a 25-foot tiger.

By Dennis Walsh, Special to the Star-Bulletin

Kim McKenzie is a champion surfer turned shark hunter.

"Tigers are the worst operators of all. They're close to shore most of the time, they're lazy, they swim night and day, they're territorial, and if they get a bad habit — like eating people — they'll continue with it. And there are a lot of them. We've found as many as 64 puppies in a female tiger."

A tiger's territory can cover 40 miles. "He'll be up and down it, cruising at 4 to 5 knots, looking all the time for food. A tiger is a very relaxed shark."

The usual shark chow is porpoises and turtles. The sight of a surfboard can lead a tiger shark to experiment. "If they see it, they go for it," said McKenzie. "Even if they're not quite sure what it is, they'll take a bite out of it to see what'll happen."

HAWAII'S knee-jerk response to shark attacks equals lynch-mob is too incoherent to be successful, said McKenzie. "I think you're going to have more fatalities. You need to get down the excess of really big sharks out there, but it takes decent money and non-stop patrolling. It takes a while. Any shark that's over 12 feet long is big enough. Crunch, crunch and that's it for a human."

"We tried an eradication program once before, and the sharks just came back after a while," said Paty. "If we tried it now, there'd be a firestorm of opposition from — how should I put it? — the 'environmental' groups. Judging by my calls, I get far more 'Shame on you's for catching sharks than 'Shame of you's for not catching enough sharks."

Despite the governmental effort, sharks continue to eat Australians. "We just had one — in an unmeshed area — where a boy was taken from the chest down," said McKenzie. "Only his head and arms were found. In another case, a boy was taken by the buttocks from below as he sat on a board. But because he was tethered to his board, he was able to climb back on and get away. He lived.

"A big tiger can take 40 pounds in one munch. They go for the intestine area, and just inhale your insides. To an animal like that, arms and legs are nothing. A snack."

The expertise of Australian sharkers like McKenzie is available, she says, should the Hawaii government get serious. She doesn't take it personally. Sharking is "my trade, and I don't dislike sharks. Well, they do frighten and alarm me! And I wouldn't like sharks on MY coastline — because they're very, very dangerous."

Hse SB4A 1/3/93

UNIVERSITY OF HAWAII

Pacific Biomedical Research Center

January 6, 1993

Jerry Crow
Research Coordinator, Shark Task Force
Waikiki Aquarium

Dear Jerry,

Thanks for your efforts in obtaining tiger shark samples for our planned analysis of shark population structure and movements. Briefly, our project will be to explore the boundaries of the local shark population by documenting the genetic differences between animals sampled from different localities. Specifically, we hope to determine whether the Oahu population is separate from the population in the NorthWest Hawaiian Islands, or whether the NWHI is a source of the animals that reside here. We have perfected the genetic techniques, and so feasability for this project depends on the availability of samples. It is dissapointing that tissue samples are not available from the animals that have been privately caught - if we had access to all of those, we would have nearly enough to begin serious work on the Oahu sample.

It is probably impossible to prevent and difficult to discourage private individuals from fishing for large tiger sharks. As a result, a viable State policy should include private ventures as inevitable, not ignore them or try to supercede them. Yet, the loss of biological data from the animals caught privately impedes our efforts to understand this species. I strongly suggest that you consider erecting a Hot Line Network that fishmen may call from on board ship when they catch a tiger shark. This way, arrangements can be made to meet the vessel at the dock to collect samples, or if the animal is too large, biological samples might be collected by the fishermen themselves under guidance from ashore. For our purposes, any tissue at all, kept on ice, will allow us to collect the data we need.

Although the studies I am planning will be interesting and valuable, they are not worth a single human life or injury. I feel the Task Force's main mission should remain the protection of people using our coastal environment. Our studies can help us understand the threat posed by large predatory sharks, and hopefully will better our ability to manage that threat.

Yours,

Stephen R. Palumbi
Associate Professor of Zoology

06 January 1993

SHARK TASK FORCE RESEARCH PROJECTS

ACOUSTIC TELEMETRY STUDY- PRINCIPAL INVESTIGATOR KIM HOLLAND

Tiger sharks will be followed with sonic telemetry to determine individual distribution patterns, home range dimensions, and site fidelity. The sharks will spot checked over a long period to determine duration of pattern.

DART TAG STUDY- PRINCIPAL INVESTIGATOR STEVE KAISER

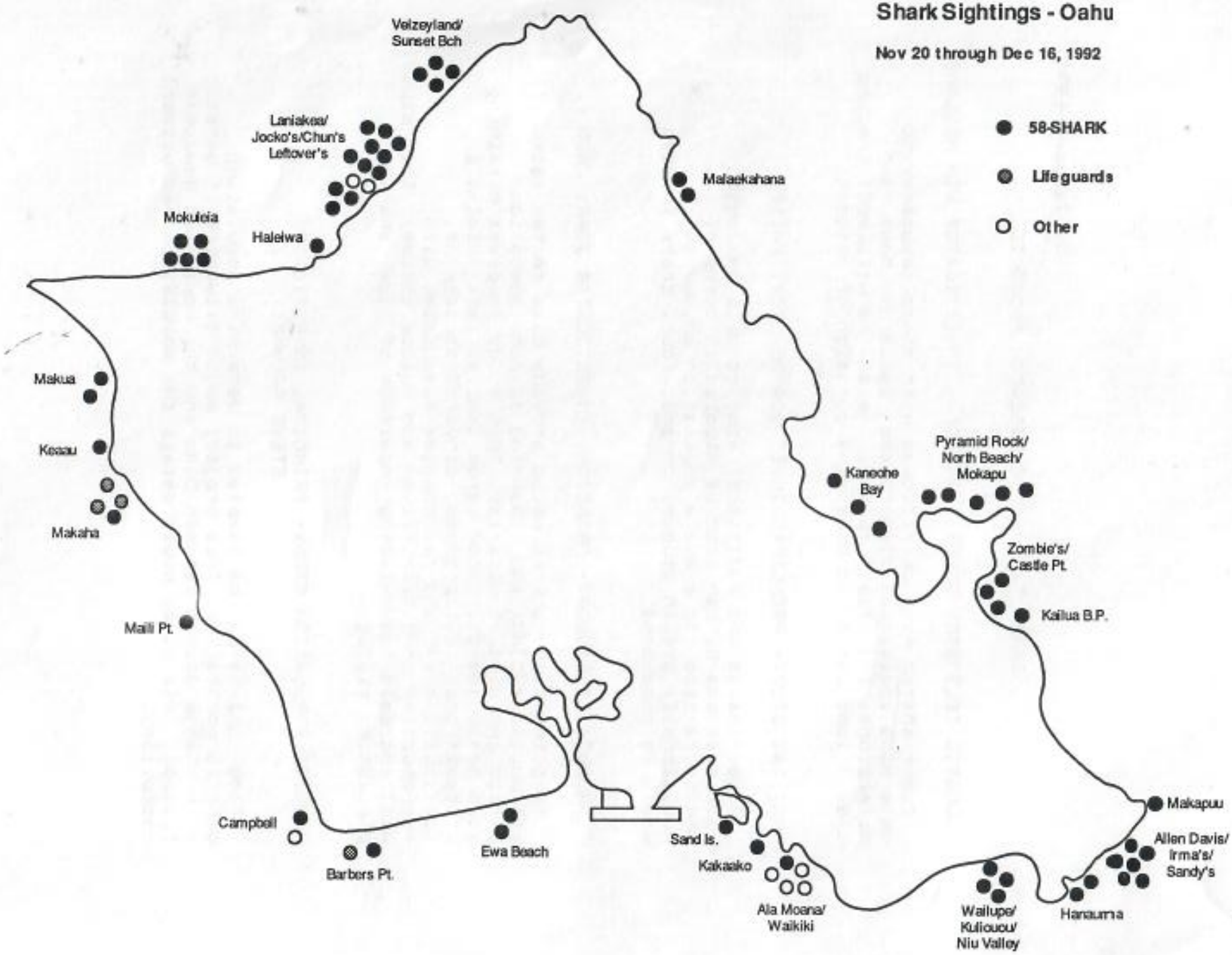
Tiger sharks and additional species will be tagged. Recovered sharks can then be studied in terms of tag-recapture sits (to examine population movements). Additionally growth studies on individual shark species could be conducted.

REPRODUCTIVE BIOLOGY- PRINCIPAL INVESTIGATOR JERRY CROW

Sampling tiger sharks would provide data on sex ratio, reproductive condition, spawning season, gestation period,and size at maturity. This study involves obtaining size measurements, blood serum samples (estradiol-17B, progesterone, testosterone, dihydrotestosterone, corticosterone), and fat changes associated with reproductive condition (liver and muscle tissue). This study will increase the existing knowledge of tiger shark population biology.

GENETIC POPULATION STUDY- PRINCIPAL INVESTIGATOR STEVE PALUMBI

Tiger sharks can be sampled to determine population genetic boundaries. This project would determine if genetic interchange occurs between Oahu and the Northwest Hawaiian Islands. This study would detail the population recruitment capability.


Shark Sightings - Oahu
Nov 20 through Dec 16, 1992
58-SHARK
Lifeguards
Other
Velzeyland/
Sunset Bch
Laniakea/
Jocko's/Chun's
Leftover's
Mokuleia
Haleiwa
Malaekahana
Makua
Keaau
Makaha
Maili Pt.
Kaneohe
Bay
Pyramid Rock/
North Beach/
Mokapu
Zombie's/
Castle Pt.
Kailua B.P.
Campbell
Barbers Pt.
Ewa Beach
Sand Is.
Kakaako
Ala Moana/
Waikiki
Wailupe/
Kuliouou/
Niu Valley
Hanauma
Makapuu
Allen Davis/
Irma's/
Sandy's

58-SHARK Reports Nov 20 through Dec 16, 1992

Oahu

Windward

Malackahana		
11/26 (report)	1	>10' tiger; half way to Goat Island
11/30 (report)	1	10'; close to shore
Kaneohe Bay		
Continuous	2	15' tigers
Past 8 months	many	<8' tigers and hammerheads
Summer	3	12' tigers near sandbar
KMCAS/Pyramid Rock/North Beach/Mokapu		
12/2	3	6' tigers; harrassing people
12/2	1	8'
12/3	1	>8'; chasing people
12/16	1	very large; repeated sightings
Zombies/Castle Point		
11/29	1	10'; Zombie's (Waimanalo side of KMCAS)
continuous	lots	various; Zombie's
11/29	1	10'-12'; charged kids
Kailua Beach Park		
11/18	1	12-14' tiger
Makapuu		
11/30 (report)	1	12'; halfway to Rabbit Island

North Shore

Mokuleia		
12/1	2	6'; in shallow water
12/1	1	8-12'; in lineup
12/5	2	8'-10' tigers
12/6	2	10'
12/8 (report)	1	8'-12' tiger; repeated sightings
Haleiwa		
12/13	1	10' tiger
Laniakea		
5/24*	1	>8'; attacked turtle
11/8*	1	6-8'
12/11	1	8' tiger

Jocko's		
12/1	1	8-10'; chasing surfers
Chun's		
11/24	2	4', 6-8' between Chun's and Jocko's
12/3	1	10'; called in by HPD
12/3	1	10-12'; may be same as above; in lineup
12/15	1	est. 12'; in front of WWP's house
12/16	1	10' tiger
Leftovers		
11/21	1	7-8' 200 yards offshore
11/25	1	12' tiger; chased surfers out of water
12/7	1	large (saw fin only) at Alligator's
Sunset Beach		
Off and on	1	14'
Velzeyland		
late November	1	medium size; in channel in front of river mouth
November	>5	outer reef
12/12 (report)	lots	

Waianae

Makua Reservation		
11/24 (report)	4-7	10-12'
12/12	1	6'-8' tiger; followed divers to shore
Keaau Beach		
late November	1	18' tiger, seen daily
Makaha		
10/21**	1	>6'
11/6**	1	6'; Makaha Channel
11/8**	1	4-6'; Makaha Channel
11/22	1	10'; Kabata's (Cabana's?)
Maili Pt.		
11/25 (report)	1	12'
Campbell		
11/14*	1	8' tiger; chased divers out of water
12/1 (report)	3	>10'; outside lighthouse
Barbers Point		
10/10**	2	6-7'
12/13	1	8'-10' tiger

South Shore

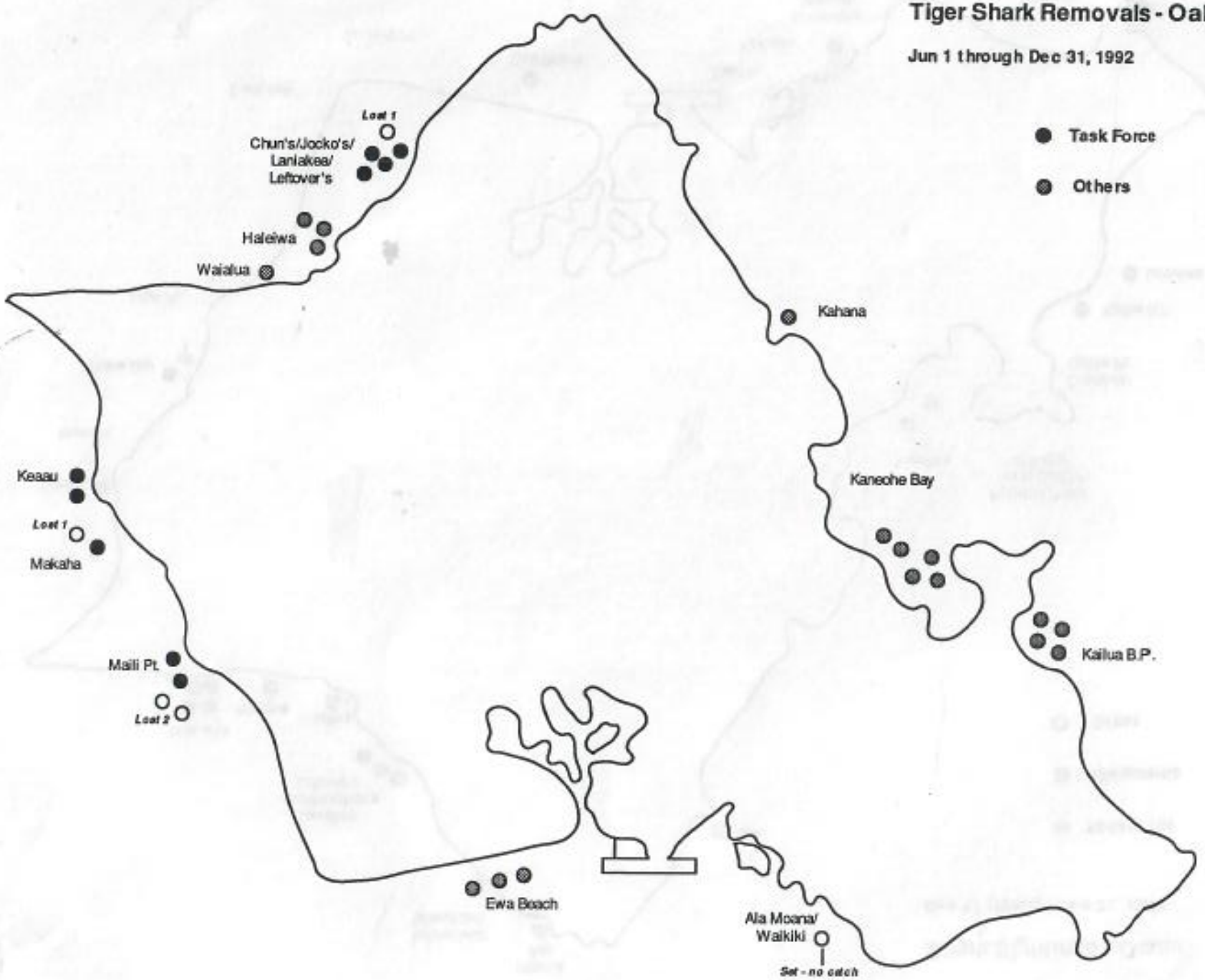
Ewa Beach		
11/11	1	>20' tiger swam along boat
11/14	1	10' tiger; chased spear fishers
Sand Island		
All summer	many	9-10' tigers and hammerheads
Kakaako		
11/27 (report)	1	10'; off waterfront park
Waikiki/Ala Moana		
5/29*	1	8-10'; Ala Moana Bowls; seen in area since 5/27
6/14*	1	8-10'; off Ala Wai; hanging around for 2 weeks
9/23*	1	12'; off Ikikai
11/23	1	10' off Ilikai
continuous*	many	5-12' at Ala Moana Courts
Wailupe/Kuliouou/Niu		
Last 3 months	2	8' tiger
11/30 (report)	3	8'
early fall	>1	>8'; near Toe's and Secret's
early fall	sev.	up to 12'; Paiko Drive to Aina Haina
Hanauma Bay		
early November	1	7'; outside reef
Sandy Beach		
mid November	1	7' galapagos; by Irma's in 75-130' water
late November	1	10' tiger; also several 6-8' whitetips
continuous	1	large tiger between Sandy's and Hanauma Bay
12/4 (report)	1	9' gray reef; followed divers, ate their fish
Allen Davis		
11/18	1	7-8' reef; dead
11/2	1	10' tiger;followed divers into shore

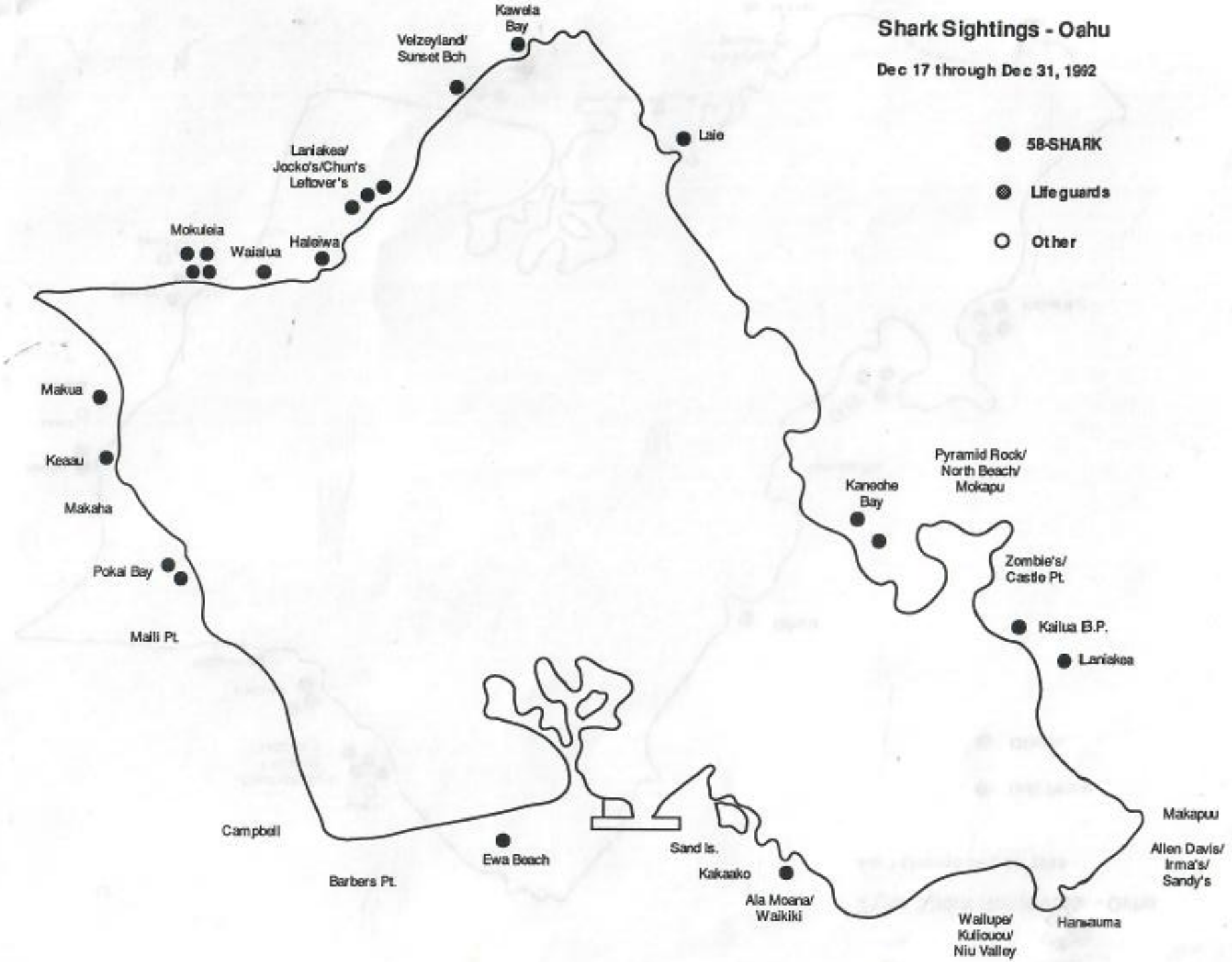
Maui

Paia Bay		
11/6*	1	6'; off Baby Beach
11/19 (report)	1	12' tiger
Hookipa		
11/21	1	friend almost attacked
12/14*	1	12' tiger; second-hand reports of others in area

Kanaha		
Early November*	1	6-8'; took fish from stringer
Kahului Harbor		
4/22 (report)*	4-5	largest up to 14' tiger
Kamaole		
2/3 (report)*	1	12'
Lahaina		
11/29*	1	10' tiger; approached spearfishers; "Shark Pit"
Launiupoko		
12/2*	1	16'-18' tiger; four miles out
Kahana		
10/23*	1	5'-6' blacktip
Molokai		
Kawakiu		
12/8*	3	8' tiger; aggressive toward skin divers

** reported by lifeguards
* source other than 58-SHARK


Tiger Shark Removals - Oahu
Jun 1 through Dec 31, 1992
Task Force
Others
Lost 1
Chun's/Jocko's/
Lanlakea/
Leftover's
Haleiwa
Waialua
Kahana
Keaau
Lost 1
Makaha
Kaneohe Bay
Kailua B.P.
Maili Pt.
Lost 2
Ewa Beach
Ala Moana/
Waikiki
Set - no catch


Shark Sightings - Oahu
Dec 17 through Dec 31, 1992
58-SHARK
Lifeguards
Other
Kawela Bay
Velzeyland/ Sunset Bch
Laie
Laniakea/ Jocko's/Chun's Leftover's
Mokuleia
Waialua
Haleiwa
Makua
Keaau
Makaha
Pokai Bay
Maili Pt.
Pyramid Rock/ North Beach/ Mokapu
Kaneohe Bay
Zombie's/ Castle Pt.
Kailua B.P.
Laniakea
Makapuu
Allen Davis/ Irma's/ Sandy's
Hanauma
Wailupe/ Kuliouou/ Niu Valley
Ala Moana/ Waikiki
Kakaako
Sand Is.
Ewa Beach
Barbers Pt.
Campbell

58-SHARK Reports Dec 17 through Dec 31, 1992

Oahu

Windward

Laie		
12/24	1	no size given; HPD report
Kaneohe Bay		
12/30	2	>10' tigers; circling tour boats (Marine Patrol)
Kailua Beach Park		
12/24 (report)	1	12'
Laniakea		
12/27	1	8'; by Moku Lua islands

North Shore

Mokuleia		
12/18	1	12'-15' tiger; inside reef at army beach
12/22	1	>7'; in shorebreak (2 reports)
12/23	1	7'-8'
12/27	1	8'; in 3' of water
Waialua		
12/27	1	8' tiger; middle of day
Haleiwa		
12/29	1	12'
Chun's		
12/23	1	**Attack**; surfboard chomped
Laniakea		
12/23	1	8' whitetip
12/29	1	1' fin; scared surfers out of water; made news
Velzeyland		
12/26	1	small tiger; 10' off shore
Kawela Bay		
12/18 (report)	1	10'-12' tiger; every 2 weeks; doesn't bother anyone

Waianae

Makua Reservation 12/29 (report)	1	14'-16'; outside Makua cave
Keaau Beach 12/18	1	12'; "attacked" boat while akule fishing
Pokai Bay 12/26	2	7'-8'

South Shore

Ewa Beach 12/31	1	6'-8'; headed for surfers
Waikiki/Ala Moana 12/24	1	6'; Hilton Haw'n Village (4 reports)

Maui

Kanaha 12/17*	1	12' tiger; seen repeatedly over 2 months
12/29*	1	8' female tiger; caught in net; terminated
Olowalu 12/22*	1	12' tiger; swam within 20 feet of divers

Kauai

Hanalei 12/10	1	10'-12', brushed surfer; lots in last 2 wks

*source other than 58-SHARK

1/23/93 HSB AZ

Tiger shark attacks diver off Bellows

The state Shark Task Force was assessing whether a hunt is needed after a veteran diver and fisherman lost his 50-pound catch of fish and lobsters to a shark yesterday off Bellows Beach.

But Randy Ganhinhin managed to flee unhurt after pushing the tiger shark away with the butt of his spear gun, he told KGMB-TV.

"He was right in front of me," Ganhinhin said. "He looked at the string of fish first and then he turned around and came after me."

After fending off the shark with his spear gun, Ganhinhin said he was able to slowly move to the safety of his boat, about 200 yards away.

"With a tiger shark, you cannot show excitement," he said. "It picks up your heartbeat.

"It picks up vibration. It knows fear. It hears fear. I think it can smell fear."

Compiled by George H. Balazs
Honolulu Laboratory, Southwest Fisheries Science Center
2570 Dole Street
National Marine Fisheries Service, NOAA
Honolulu, Hawaii 96822-2396

Case no.	Date	Location	Person	Circumstances and literature documentation
---	10/14/90	Hanalei Bay, Summer's Surf Break (Backdoor Hanalei) Kauai	Greg Filtzer	Crescent-shaped bite 13.50 in by 7.25 in. taken from tail section of 9-ft surfboard while Greg Filtzer was lying on it about 225 yd from shore at 3:15 p.m. Suspected 12-ft tiger shark bumped the board, pulled it backward underwater in a circle with Filtzer hanging on, then shook the board in the process of ripping off the piece. Filtzer's brother-in-law, Robert Duhe, was surfing with him and witnessed the attack. Both men paddled to shore after the shark let go and disappeared. Four days earlier, on 10/10/90, Rob Thompson was surfing at sunset about a half-mile away when "a large shark made several fast approaches and then circled his board as Thompson crouched on top, keeping his hands and feet out of the water." When the shark left, Thompson surfed to shore. (Amramo 1990; anonymous 1990, 1990; Donald Heacock, pers. commun.)

Shark task force called offensive

A1 1/7/93 THA

Hawaiian activist quits state group

By Thomas Kaser
Advertiser Staff Writer

The state's Shark Task Force is not doing enough to discourage — in fact, it is encouraging — random shark hunting, which is not only ineffective but also offensive to Hawaiian culture, a Hawaiian activist said yesterday moments after he resigned from the task force.

"I cannot belong to any group that condones the eradication of sharks for no reason," said Charles Maxwell, a Maui community leader and radio disc jockey.

Arriving late at a task force meeting yesterday afternoon in the state's Kalanimoku Building, he announced his resignation, then walked out to talk to reporters, who were not allowed into the meeting.


Maxwell

Inside, the task force decided to resume limited hunting of large tiger sharks because of the number of reported sightings and recent incidents on Oahu's North Shore.

Bill Paty, chairman of the state Department of Land and Natural Resources, said the task force will resume shark hunting on an as-needed basis, "not only to make the waters safer for recreational use but also to conduct research on tiger-shark biology and educate the public about safety measures and shark behavior."

As for individuals who hunt sharks on

See Sharks, Page A2

Sharks: Hawaiian on task force resigns

FROM PAGE ONE

their own, "we cannot prevent anyone from fishing for tiger sharks," Paty said. "We cannot sanction these private hunting efforts unless we work with the fishermen to ensure that valuable research information is being obtained."

In announcing his resignation to reporters, Maxwell said the task force and Paty "are encouraging the creation of instant 'Great White Hunters' who laughingly pose with with their prize 14- and 15-foot sharks," he said, referring to a free-lance shark hunter's catch of 15-foot and 11-foot sharks off Haleiwa early Dec. 31.

Maxwell said many Hawaiians still accept the traditional Hawaiian view that some sharks, especially those that frequent a particular area, are *'aumakua*, or personal gods, and should be respected, not killed.

"Modern man is the most intelligent being of all the animals in the world — and the most dangerous. . . . Now he wants to eliminate sharks because he wants to swim safely in the ocean," Maxwell said.

"The only way to make the ocean 'safe' is to eliminate everything that can cause harm, from sharks to jellyfish, and that is ridiculous. (Man should) learn how to co-exist with animals in the sea."

Paty later said he had no idea Maxwell intended to resign, "and I'm sorry to see him go. I valued his input; I valued him as a strong Hawaiian viewpoint on shark fishing, as someone who could help us avoid letting shark hunting become a media spectacle.

"Despite what he says, this task force does not sanction individuals going out and killing sharks. We want them to work with us in coming up with effective, non-hysterical reactions when humans are attacked by sharks. Unfortunately, there is some shark hysteria in the North Shore surfing community at this time."

Paty emphasized there are "no guarantees" that shark-hunting will make the ocean safe for swimmers and surfers.

"The ocean is the sharks' territory, and people must use common sense and follow basic safety precautions" such as "staying out of the ocean at dark, dawn and dusk; staying away from stream mouths, especially after a storm; and staying away from wounded or bleeding fish and other bait-type products in the water, he said.

On Maui yesterday, Hawaiian educator and cultural specialist Parley Kanakaole spoke out against free-lance shark hunting that goes beyond guidelines established by the task force.

He said he was consulted when the task force was organized in the wake of repeated shark attacks on Oahu, and felt the guidelines initially established met with Hawaiian cultural concerns.

But now individuals fishing for sharks are not following those guidelines, and the state is not doing anything to prevent hunting that ignores Hawaiian cultural concerns, he said.

Kanakaole compared a shark *'aumakua* to having an animal pet, but going beyond that and having the animal "accepted as part of the family.

"There are fishermen going out and eliminating sharks without the OK of the state. And the state is not doing anything to prevent it," he said.

"I don't know if they can control it — or if they want to control it, as they control fishing of lobsters or other seasonal fishing," he said.

Advertiser Staff Writer Edwin Tanji contributed to this report.

Recent attacks

Recent attacks that have occurred in Hawaii include:

Nov. 26, 1991 — Martha Morrell, 34, of Olowalu, Maui, is fatally attacked while swimming near her home.

Feb. 19, 1992 — Bryan Adona, 29, of Ewa, disappears while bodyboarding at "Leftovers" on the Oahu's North Shore. The next day his board is found at Waimea, missing a chunk that appears to have been bitten off by a large shark.

Oct. 23, 1992 — Rick Gruzinsky, 26, of Hawaii Kai, is attacked while surfing at Laniakea on Oahu's North Shore. His board is almost bitten in two.

Nov. 5, 1992 — Aaron Romento, 18, of Pearl City, is fatally attacked by a large shark while bodyboarding at Keaau on Oahu's Leeward Coast.

Dec. 23, 1992 — Gary M. Chun, 30, of Kaneohe, is attacked while surfing at Chun's Reef on Oahu's North Shore. His board is almost bitten in two.

touch is to sneak just one little touch. This accounts for a lot of unpleasant errors in judgment.

As you read on you should replace fear and ignorance of the unknown with respect and common sense.

• SHARKS

Sharks have a reputation that extends far beyond their watery homeland. Almost everyone, no matter how far inland, has a fear of sharks. I believe the only animals that are feared as much as the sharks by the general public are snakes. In both cases this fear arises from lack of knowledge.

As with snakes, the majority of species of shark is harmless. The diver who is fortunate enough to have warm or temperate water to dive in, however, could conceivably come face to face with one of the large dangerous varieties of sharks. But chances of him being bitten are so slight that the fear generated in the diver in such a meeting is usually far in excess of what it need be.

Although the larger sharks are very unpredictable, there are a few general traits which seem to hold true for most species. The shark has three main senses with which he finds his food: sight, smell, and low-frequency vibrations in the water (such as the vibrations sent out by a diver's fins as he is kicking). If the shark can see the diver, he will generally have no more than a passing interest. The diver does not look like any of his normal food. He may swim around the diver for a couple of minutes to satisfy his curiosity and then move on.

There are several procedures which a diver can use when this happens. One of these is to swim like a turtle. I have found through experience and have talked to other divers who also seem to find this true, that if you swim with a breast stroke and a frog kick similar to what a turtle might do, the shark loses interest and takes off. Perhaps most sharks have tried to eat a big turtle and have not had much luck. I don't know what the reason is, but they seem not to be too interested in you.

Secondly, if you swim toward the shark, this seems to upset him and makes him nervous because he is not really used to having things swim toward him. A good practice drill for this procedure is to lie on your stomach in bed and do the breast stroke with your arms and the frog kick with your legs while saying over and over to yourself, "I am a turtle. I am a turtle. I am a turtle."

If the water in which you encounter a shark is dirty and the visibility low, the shark may decide to attack before he realizes that you are not a fish. A high percentage of shark attacks occur at dusk, which is a natural feeding time for the shark. At these times the sharks are wandering around looking for food and the visibility is low enough that they are using their senses of smell and vibration, rather than sight, to a high degree. Shark-infested waters in times like these are a poor combination of environmental situations for the diver to be in.

The shark has a sense of smell many times more sensitive than a human's. He can detect the smell of blood in the water at very low concentrations. If the diver

SCUBA SAFE and SIMPLE

by John Reseck, Jr.

PRENTICE-HALL, INC.
Englewood Cliffs, New Jersey

Reprinted from "H30 Hawaiian Surfing Magazine" March 1993.

Sharks and Turtles

by
George H. Balazs
Deputy Chairman
Marine Turtle Specialist Group
International Union for the Conservation of Nature

My compliments to your environmental writer, Mindy Foster, for reporting factual instead of fantasy information regarding sea turtles and tiger sharks ("The Shark Factor" 2/93). Few people in the news media seem to be doing so these days. Mindy rightfully pointed out that "There is no hard evidence that the increased turtle population is the cause of increased (shark) sightings and attacks". I agree. There is no evidence whatsoever, beyond idle speculation. And, strangely enough, in some cases the speculators are persons interested in "solving" the shark problem by hunting and killing sea turtles.

In the first place, while more turtles are indeed being seen now, compared to say 15 years ago, the increase is not anywhere near as great as some would like us to believe. In addition, such sightings need to be viewed in their proper perspective. That is, turtles are highly visible creatures that must come to the surface every so often to breathe. Once there, they are easy to spot, even when you're not looking for them. A dozen turtles in an area, breathing once every 5 to 15 minutes, can give the deceptive impression of abundance well beyond the numbers actually present. In contrast, a dozen fish, crabs, or octopus spread out over the same area won't even be noticed unless you're intentionally searching underwater for them. You don't have to search hard to spot a sea turtle, even if there are only a few in the area where you're surfing.

Some people have also gotten the flawed impression that turtles are the overwhelming, if not exclusive, food item in the tiger shark's diet. But that's simply not the case. It is a biological fact that tiger sharks eat a wide variety of prey, more so than any other species of shark. For example, in a 2-year study conducted by the University of Hawaii, tiger sharks in Hawaiian waters were found to prey upon the following items (in descending order of percent sharks containing these items): fish; crabs and lobsters; garbage (often floating garbage); birds; sharks and rays; squid and octopus; turtles; porpoise and whales; and humans.

Even though the tiger shark preys on numerous items, turtles are nevertheless frequently overestimated in their diet by people (even some scientists) cutting them open to see what they eat. This happens because the tiger shark's digestive tract functions in such a way that only mushy material-- that is, the broken-down

remains of prey items subjected to strong stomach acid-- can pass out of the stomach into the intestines. Objects of any size that can't be decomposed in the stomach are retained there for an unknown but likely long period of time before being regurgitated. The outer surfaces of a sea turtle, especially the plates of the shell, are made of a tough keratin-like substance that is totally resistant to decomposition in the stomach. Consequently these large and clearly recognizable items from a turtle are held in the stomach, while the rest of the animal including meat, bones and all else is digested. The protective plates and scales covering the turtle also lengthen the total amount of time needed to digest the rest of the body, since turtles up to 50 lbs can be swallowed whole. In sharp contrast, soft bodied prey items, with far fewer and smaller indigestible parts, digest faster and can be easily overlooked and underestimated in stomach contents. These factor working together give an erroneous and biased picture of the dietary makeup of the tiger shark when viewed by persons who are unaware of the biological facts I have just described. Yes, of course, turtles are a part of the tiger shark's diet. But a very complex situation exists whereby many sorts of things are eaten under varying feeding rates, and then digested over different periods of time. No one really knows how often tiger shark's feed, how long it takes to digest each of their prey items, and how often they regurgitate items like turtle parts that can't be digested.

Some people have also speculated that attacks on surfers by tiger sharks are the result of "mistaken identity" for sea turtles. Again, there is no credible information to support such an idea. The theory by some scientists that great white sharks mistake surfers for seals off California simply can't be logically transposed to tiger sharks and turtles in Hawaii. In California a surfer is suppose to look like a seal floating at the surface. Copying that same theme, in Hawaii a surfer is purported by the news media to look like a turtle floating at the surface. Obviously both cases can't be correct, since a sea turtle bears no resemblance to a seal. Does a surfer on a 6-to-8 foot long narrow surfboard look like your average 2-foot oval sea turtle? Of course not. But maybe this is like looking at an inkblot. If you stare at it long enough you can start to see all sorts of things. And maybe that's what some people are doing when they make such faulty comparisons.

The fact is that tiger sharks don't have to "mistake" anything floating at the surface in order to strike, bite, or eat it. Taking things at the surface is a natural part of the tiger shark's known feeding strategy. Jean-Michel Cousteau summarized this situation correctly when interviewed a year ago, following the death of a swimmer attacked and devoured by a large shark off Olowalu on Maui. Cousteau said, "Tiger sharks are particularly dangerous to swimmers. Some sharks are more fussy than others about what they eat. Tiger sharks are known to eat almost anything and everything, and ..are more likely to attack anything

on the surface whether it's a piece of wood, a surfboard, a boat, or a bird".

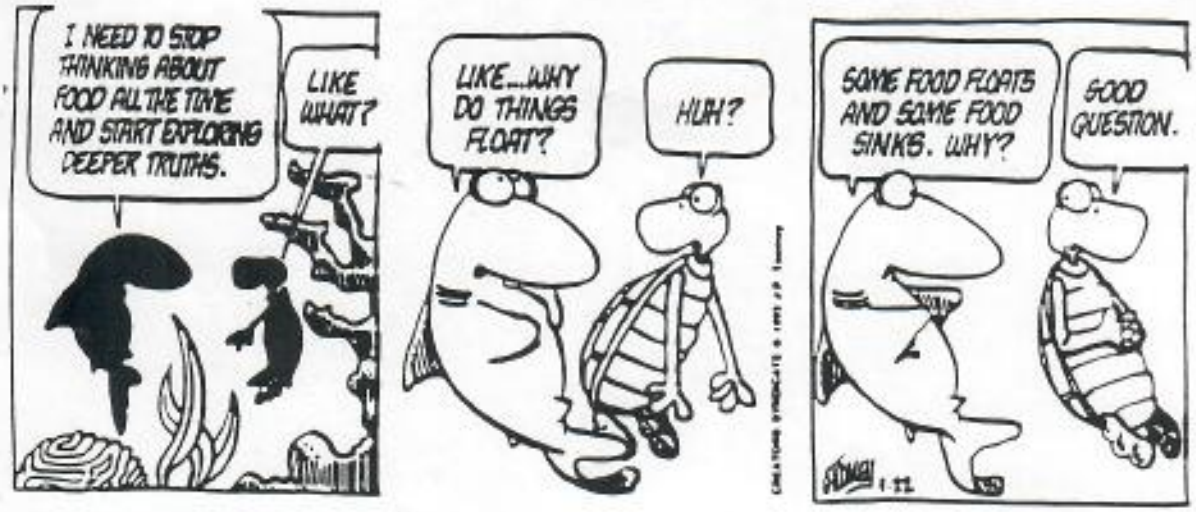
Recent attacks in Hawaii on surfers have taken place during daylight hours in reasonably clean, clear water. It's hard to imagine that the sharks involved mistook their victims for anything else than an object at the surface that was potentially edible. A few months ago there was even an eye-witness account (with photos) of a 2000 lb bull swimming in waters off Maui being attacked by tiger sharks (see Hawaii Fishing News, 12/92). Did the sharks "mistake" this bull for a sea turtle? Perhaps, but only if they had been staring at inkblots for too long!

Interestingly, the "mistaken identity" idea fits quite comfortably with those people who, due to their sincere convictions, for one reason or another are opposed to fishing for tiger sharks in Hawaiian waters. The logic would be as follows: If a shark really didn't mean to bite a human,-- that is, it was "just a big mistake", -- then the news media and public at large might be more inclined to have greater understanding and tolerance of attacks in Hawaii.

It is my responsibility, as a member of the IUCN Marine Turtle Specialist Group, to make sure that turtles don't get a bum rap as the result of groundless speculation, intentional bias, or flawed scientific reasoning. I've spent 20 years in the Hawaiian Islands dedicated to studying Hawaiian sea turtles. There's a lot known, but still much to be learned. Factual information, not emotions, must prevail. Some people are very emotional over the issue of fishing for sharks. Others may be overly concerned with the risk of shark attack in Hawaii. One thing for certain is that the current status of sharks here in Hawaii is very different from the east coast of the United States, where some populations are seriously depleted from commercial fishing.

Hawaii's sea turtles have long been considered the surfer's friend--rugged and skilled ocean animals that eat marine vegetation and pose no threat to humans. Tiger sharks, not turtles, have been attacking surfers. Recently an authority on Hawaiian sharks was quoted in Surfing Magazine saying, "In the sixties and seventies the state (of Hawaii) had a shark eradication program to control the population of potentially dangerous sharks. But there's been nothing done in the last twenty years, so the tiger population right now should really be at a peak". This statement certainly makes sense, considering that tiger sharks are apex predators that have no natural enemies of their own, except for other larger sharks. As a nearshore species roaming the reef edge in search of food, it would seem perfectly reasonable to expect a "peak" in the tiger shark population after 20 years of virtually no fishing. And that would even hold true for places where there are no turtles at all for tiger shark s to include in their diet.

Yes, sea turtles can still be considered the surfer's friend. Because if the turtles weren't out there now making themselves available as a food item, that "peak" population of sharks would simply turn to something else to eat. And that "something else" might be greater numbers of "someone else" out there surfing or swimming.



***A distinctively-patterned** tiger shark.*

THE CURIOUS EATING HABITS OF TIGER SHARKS

The tiger shark is one of three species most frequently named as being responsible for attacks on humans. Voracious eaters, they will swallow almost anything they encounter in the sea. At various times the stomachs of captured specimens have been found to contain an astonishing variety of objects including: a coil of copper wire, nuts, bolts, lumps of coal, boat cushions, clothing, a tom-tom, an unopened can of salmon, driftwood, birds, other sharks, seals and the head of a crocodile.

Sharks can regurgitate the contents of their stomachs at will, and some can apparently store food undigested. Sir Edward Hallstom, honorary director of Sydney's Taronga Park Zoo, once observed this phenomenon in a tiger shark that lived for a month at the zoo in 1950. On two occasions during its captivity the shark was fed on horse meat which it regurgitated. After it died the shark's stomach was cut open and was found to contain two undigested dolphins, eaten before its capture.

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Shark attacks in the rivers of southern Iran

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Key words: Elasmobranchs, Freshwater, Bull shark, *Carcharhinus*

Synopsis

The literature on shark attacks in freshwaters of southern Iran is reviewed and 11 attacks with 3 fatalities recorded from local informants for the period 1953 to 1985. The species of shark responsible is probably the bull shark, *Carcharhinus leucas*, whose presence in the Tigris River is confirmed by preserved specimens in the British Museum (Natural History). The Iranian records represent a significant proportion (~28%) of the documented cases world-wide for unprovoked, freshwater attacks.

Introduction

Records of sharks in rivers draining to the head of the Persian Gulf may be traced in the Arabic work 'Wonders of Creation' by Zakariya al-Qazwini published in 1263 A.D. and later translated into Persian. These fishes were reported from Basrah on the Tigris River and were formidable because of their voracity and teeth like the points of spears, swords or saws. Günther (1874) gave the first modern report of freshwater sharks, at Baghdad on the Tigris about 850 river km from the sea. Kennedy (1937), Khalaf (1961), Mahdi (1962) and Al-Daham (1976) confirm the presence of sharks far inland and Kennedy comments that, although less frequent at Baghdad than at Basrah nearer the mouth of the Tigris River, they were reported there every year.

Iranian reports of sharks are confirmed to brief mentions by Sykes (1902) and Blegvad & Loppenthin (1944) and to a more extensive article by Hunt (1951). Sykes (1902) saw sharks in the Ab-e-Gargar at Shushtar and said that men, women, children, horses and sheep were attacked and only the massive water buffalo was safe. Blegvad & Loppenthin (1944) noted that every year several people, especially children, fell victim to these sharks. Hunt (1951) was a member of the Royal Army Medical Corps, stationed at Ahvaz on the Karun River during the Second World War. He reported 13 cases of shark attack of which 12 died from their injuries. A further 10 cases were reported on from the Karun River, Khowr-e Bahmanshir and Shatt-al-Arab with 2 deaths. Many minor cases were probably not reported and the high mortality rate was attributed to the victims being mostly young children or old people either undernourished or feeble and to slow transport to medical facilities under the devastating summer heat on the Khuzestan plains. Size estimates for the sharks ranged up to about 2 metres and they were said to invade the Khowr-e Bahmanshir and the Karun River from July to September when freshwater flow was at a minimum and tidal penetration of salt water at its highest. Victims were paddling, swimming, bathing, washing vehicles or fishing. These records

have been partly summarised in the International Shark Attack File which is now maintained at the National Underwater Accident Data Center, University of Rhode Island, Kingston, R.I. However this File has been without funds for gathering foreign data for many years and has no post-1960 freshwater records from Iran (John J. McAniff, in litt. 1986).

New records

In this note we report on attacks from 1953 to 1985. Information from local people indicates that attacks are common and occur every year although perhaps less frequently than in the past as direct use of the rivers for water supplies has declined. Local legend has it that attacks have decreased since shark oil is no longer used to caulk boats but this must rank with Blegvad & Loppenthin's (1944) report that sharks at Khorramshahr station gather under palm trees in order to eat the falling dates! Since the start of the Iran-Iraq war a number of soldiers have fallen victim to sharks but we have no details on these attacks.

The documented attacks are as follows. In April 1953 Mr. Nasser Seemrookh and Mr. Kaaby both lost an arm to sharks in the Karun River near Ahvaz but survived. Ahvaz is about 275 river km from the sea. The shark was estimated to be about 1.5 metres long and was grey in colour. Mr. Seemrookh was swimming in mid-river and the attack took place about 200 metres from a sewage outlet and about 400 metres from a slaughter-house. Mr. Seemrookh lost his right arm (and wrist-watch!) from the elbow downwards. In 1954 Mr. Kasem Jasem was attacked in the Karun River in the Hesamabad area of Shushtar and died shortly thereafter. Shushtar is about 420 river km from the sea. His son Abbas was attacked at the same place on the same day but survived to give this report. A girl was fatally attacked in a village a short distance from Hesamabad on the same day. These three incidents may be attributable to the same shark. In 1957 a Mr. Falah was attacked in Hesamabad but survived to report this incident. Also in 1957, a Mr. Paniry was attacked near Band Misan in Shushtar and survived. Mr. Kalantar and Mr. Nagib were attacked in Ahvaz in 1971 and survived. An undated report of an incident in Ahvaz resulted in the loss of a foot for Mr. Jabar-Kaaby. In 1985 a fisherman was attacked at Ramin near Ahvaz and was dead when pulled from the water. Attacks are also reported as a regular occurrence in modern times in the Khowr-e Bahmanshir. The victims were mostly swimming, their clothing was black, grey, white and in one case red, and attacks occurred in bright daylight, in moderate current and at relatively cool water temperatures. These rivers are turbid with very low water visibility. The circumstances surrounding each attack are fragmentary and no particular pattern can be discerned. A total of 11 attacks with 3 fatalities are verified for the period 1953–1985 and doubtless more occurred which were not reported or were not found in our local enquiries. The earlier records bring the total to 34 attacks with 17 fatalities. These notes indicate that shark attacks are a continuing problem in the rivers of southern Iran.

Discussion

The sharks are probably bull sharks, *Carcharhinus leucas* (Valenciennes in Müller and Henle, 1839). Garrick (1982) revised the genus *Carcharhinus* and examined the head of a specimen from Al Karradah near Baghdad which proved to be this species and one of us (BWC) has seen this specimen in the British Museum (Natural History), London (BM (NH)) where it bears the annotation that the fish was 1.25 metres long. A second whole specimen of this species, also from Baghdad, was 82 cm total length. Bull sharks are common in all tropical and subtropical seas and are known to travel far up rivers and into lakes including the Mississippi River, Lake Nicaragua and the Amazon River in the Americas, the Zambezi and Limpopo rivers of Africa, and the Hooghly river of India. Lake Jamoer of New Guinea and rivers and lakes of Australia. Compagno (1984) reports that bull sharks appear heavy and slow but are quick and agile when attacking prey. He believes that this species may well be the most dangerous tropical shark and

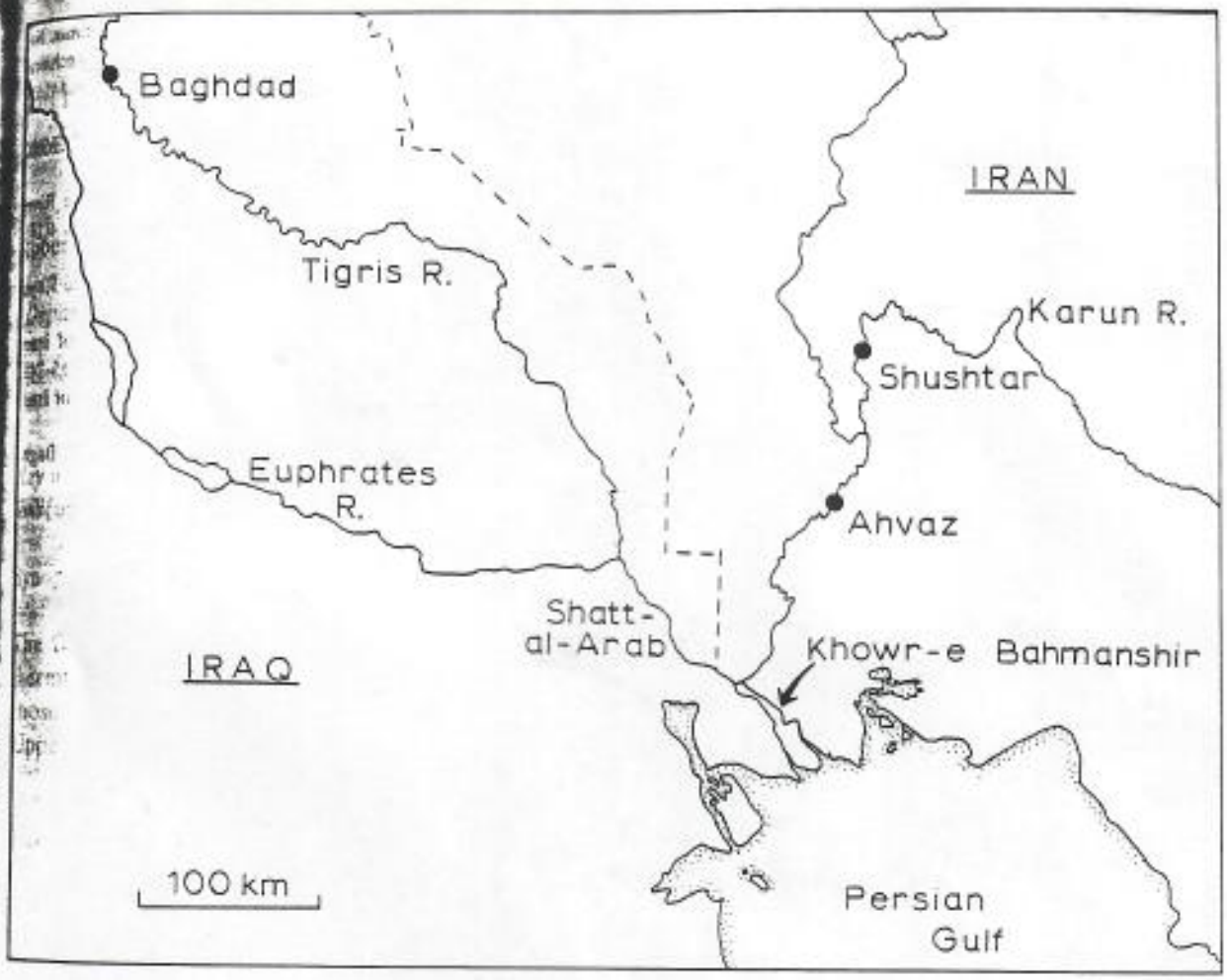

Fig. 1. Simplified drainage map of the rivers draining to the head of the Persian Gulf with shark attack localities.

the frequency of reported attacks in southern Iran bears this out.

Schultz and Malin in Gilbert (1963) summarise shark attacks for the world based on a documented file in the Division of Fishes of the United States National Museum. Unprovoked shark attacks in freshwater numbered less than 100 for the period 1837–1961 excluding Iranian records (a more accurate count is not possible because reports from several countries are vague as to numbers; 41 cases are from Australia where reports are best documented). Iranian records, numbering 34 in total from 1941–1985, are therefore a significant proportion (~28%) of reported freshwater attacks worldwide. In Iran half the attacks were fatal while for Australia about 60% were fatal.

Material examined

Carcharhinus leucas: BM(NH) 1874.4.28:9, Tigris River near Baghdad; BM(NH) 1924.10.1:1 (head only), Al Karradah on Tigris River near Baghdad.

Acknowledgements

We are grateful to our various informants who relived the unfortunate circumstances surrounding shark attacks on themselves and their relatives. BWC is grateful for the opportunity to examine material housed in the Fish Section of the British Museum (Natural History) through the hospitality of K. Banister and A. Wheeler. John J. McAniff,

Director, National Underwater Accident Data Center, University of Rhode Island consulted the International Shark Attack File for recent Iranian records.

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Police Beat

Shark scares give jitters to Kauai's Wailua Beach

LIHUE, Kauai – A big shark, then a pair of manta rays, gave beachgoers in the Wailua Beach area a scare Sunday and yesterday, but no one was harmed.

County recreation officers closed Wailua Beach to swimming Sunday after two police officers and others reported seeing a very large shark – by one estimate as big as 20 feet – cruising near the old Seashell Restaurant at the north end of the beach.

Some Wailua beachgoers say there's a big tiger shark that's a regular visitor to the bay, and there has been at least one shark attack on a surfer in the bay.

There was another report yesterday morning that one or more sharks were in the bay, but it turned out to be a pair of rays, whose wingtips sometimes break the water's surface and can look like shark fins.

April 1 injuries fatal to Waianae pedestrian

A Waianae woman died Saturday at The Queen's Medical Center from injuries suffered in a hit-and-run pedestrian accident last week, police said.

Laura Celestino, 35, was struck April 1 as she crossed Farrington Highway.

She was the 19th person to die from a traffic accident this year, compared to 24 at the same time last year, police said.

Three-car accident backs up the freeway

Westbound traffic backed up on the H-1 Freeway last night because of a 9:40 p.m. three-car accident at the Lunalilo on-ramp, combined with roadwork in the area, police dispatchers said.

No injuries were reported, although the dispatchers said several occupants of the vehicles involved in the accident were fighting. Details were not available.

Letters 1/7/93

Shark attacks are not 'mistakes'

I am writing to correct a mistake made in the commentary (Dec. 20) about sharks written by Charles K. Maxwell.

The statement was made that, "The experts in the (shark) task force have scientific information that shows every shark attack is a matter of mistaken identity by the shark for its natural food of turtles and seals." The fact is that there is no scientific information whatsoever to support such an idea.

There must have been a misunderstanding of information presented during one of the task force meetings. The proposition that tiger sharks have to "mistake" something floating at the surface for a turtle or other prey in order to attack it simply has no basis in fact. The idea also runs contrary to common sense, as well as the known feeding strategy of tiger sharks, a species that consumes an incredibly wide array of items, humans included.

Explorer Jean-Michel Cousteau summarized the situation correctly when interviewed last year following the tragic death of Mrs. Morrell at Olowalu. Cousteau said, "Tiger sharks are particularly dangerous to swimmers. Some sharks are more fussy than others about what they eat. Tiger sharks are known to eat almost anything and everything, and ... are more likely to attack anything on the surface whether it's a piece of wood, a surfboard, a boat, or a bird."

The 2,000-pound steer mentioned in Mr. Maxwell's column was in fact seen alive swimming off Maui when attacked and devoured by large tiger sharks. Certainly the steer wasn't "mistaken" by the sharks for a turtle, or even a Hawaiian monk seal, a very rare species around Maui.

Similarly, a surfer on a 6-foot, 4-inch-long surfboard, 21 inches wide, bears little if any resemblance to a turtle. The common element, however, is that both the surfers and intermittently the turtles are at the surface where tiger sharks are known to feed.

Recent attacks on surfboarders, as well as the fatal attack on a boogie-boarder took place during daylight hours in clean, clear water. It's hard to imagine that the sharks involved mistook the victims for something else.

George H. Balazs
Honolulu

The Maui News policy on letters

The Maui News welcomes and encourages letters to the editor. The letters should be brief and to the point and on subjects of general interest. Letters must be signed and include an address and phone number where the writer can be reached during working hours for verification. The writer's name and community will be published.

Letters should be limited to 250 words or less with shorter letters being given priority. Letters of any length are subject to editing. Typed letters are preferred but others will be accepted if they are legible.

Letters may be mailed to The Maui News, 100 Mahalani St., Wailuku 96793; or may be faxed to 242-9087.

State's Shark Task Force lists names of members

1/9/93 Honolulu Star-Bulletin A2

QUESTION: What are the names of the members on the state Shark Task Force? Who are the scientists on that task force? Why are the names a secret?

ANSWER: The names are not a secret.

The members are Bill Paty, chairman; Henry Sakuda, Randy Honebrink, and Linda McCrerey, all from the Department of Land and Natural Resources; John Naughton and George Boehlert, both from the National Marine Fisheries Service; Richard Brock from the University of Hawaii's Sea Grant program; Phil Helfrich, Chris Lowe and Kim Holland, all from the Hawaii Institute of Marine Biology; Bruce Carlson and Jerry Crow from the Waikiki Aquarium; and John Randall and Arnold Suzumoto from Bishop Museum.

Also Steve Kaiser, from Sea Life Park; Ralph Goto, Jim Howe, and Brian Keaulana, all Honolulu City and County lifeguards; Scotty Bowman, from Office of Hawaiian Affairs; and Gail Chew, from the Hawaii Visitors Bureau.

Sakuda, Naughton, Boehlert, Brock, Helfrich, Lowe, Holland, Carlson, Crow, Randall, Suzumoto, and Kaiser are scientists, said McCrerey, spokeswoman for DLNR.

KOKUA LINE

By Hildegaard Verploegen

Sandy Rowe, a worker at the clearinghouse, said fabric is given directly to some families if someone in the family can sew. In addition, she said one of the clearinghouse workers uses donated fabric to make baby blankets and shorts for children.

Mahalo

"Mahalo to Donald Chang, Honolulu's new fire chief, for telling it like it is.

"Fireworks are not a necessity of life. They neither fill the mouth nor feed the soul and should be banned.

"Since the governor and the mayor won't be running for those offices again, now is the time to take a stand and ban fireworks except for religious purposes."

Auwe!!!

"A big auwe to the person or

The statements made here represent the author's viewpoint. They do not reflect the agency position of the National Marine Fisheries Service.

TESTIMONY SUBMITTED BY GEORGE H. BALAZS IN FAVOR OF HB 2878 "MAKING AN APPROPRIATION FOR SHARK HUNTING"

COMMITTEE ON OCEAN & MARINE RESOURCES
LEGISLATIVE HEARING FEBRUARY 5, 1992

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12-foot tiger shark snagged with small one off Kailua Bay

By Shannon Tangonan
Advertiser Staff Writer

Kailua Bay hasn't been the site of recent shark attacks, but fishermen from the area hooked a 12-foot tiger shark overnight Tuesday near Mokolea Rock.

Kailua residents Bob Moncrief, his son Scott and a handful of Windward divers and fishermen set a 1,200-foot line with six hooks about a half-mile offshore Tuesday.

A 5-foot sandbar shark and a 12-foot tiger shark were caught on the same hook, Bob Moncrief said yesterday.

"The bigger shark was attracted by the little one," he said. When the crew retrieved the line yesterday morning, the tiger shark was hooked through its back and got tangled in the stainless steel wire rope, Moncrief said.

The catch follows a weekend of shark hunting on the North Shore by other local fishermen.

A series of tiger shark attacks in recent months on the North Shore has prompted both the state and local fishermen to launch shark hunts. The latest attack occurred last Wednesday near Laniakea when a tiger shark bit a chunk out of a surfer's board.

No shark attacks have been reported recently on the Windward side, but water enthusiasts say they are worried about the increased number of sightings.

Scott Moncrief said he has noticed that when there are smaller sharks around, the bigger tiger sharks are bound to be nearby.

He added sharks have been a concern in the Kailua Bay area for at least 10 to 12 years. Recently, however, divers have sighted large tiger sharks at night that are coming in closer to shore and in more shallow waters.

His father said, "We just want to remove some of them to decrease the likelihood of shark attacks."

The group has been shark hunting in different areas for about a year and a half, said diver Parris Ernst, another crew member. Recently, with improved gear, the group has been successful in hooking sharks, Ernst said.

The group will continue hunting "until we make sure the areas we frequent are rid of the threat," Scott Moncrief said.

The shark meat is eaten, the skin is donated to hula halau for drums and the group checks in with the state Shark Task Force to inform them of the shark's stomach contents, Moncrief said.

About three weeks ago, the crew caught a 14-foot tiger shark off Ewa Beach near Barbers Point, he said. That day, they caught two smaller tiger sharks — 9 feet and 7 feet — he said.

12/31/92 Honolulu Advertiser

Advertiser photo by Carl Vitt

From left, Scott Moncrief, Jerry McKay and Scott Carvill

Paty's no friend

Bill Paty has nothing to do with Hawaiian sovereignty, but personally he has had a lot to do with the state of Hawaii's reign of tyranny and oppression of the native Hawaiians. He is definitely no friend of Hawaiian sovereignty, as he tried to suggest in his commentary (11/29). Instead, as his political record attests, he is a dear friend of wealthy missionary families, foreign investors, golf course developers and vandals of Hawaiian historic and sacred sites.

On June 11, Mr. Paty himself organized and led a heavily armed band of state and HPD riot police to Iolani Palace to try to intimidate a peaceful gathering of native Hawaiians. At the palace grounds that day Mr. Paty threatened Hawaiians with more guns and violence than there were in the American invasion of Jan. 17, 1893.

KALEIKOA KA'EO

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