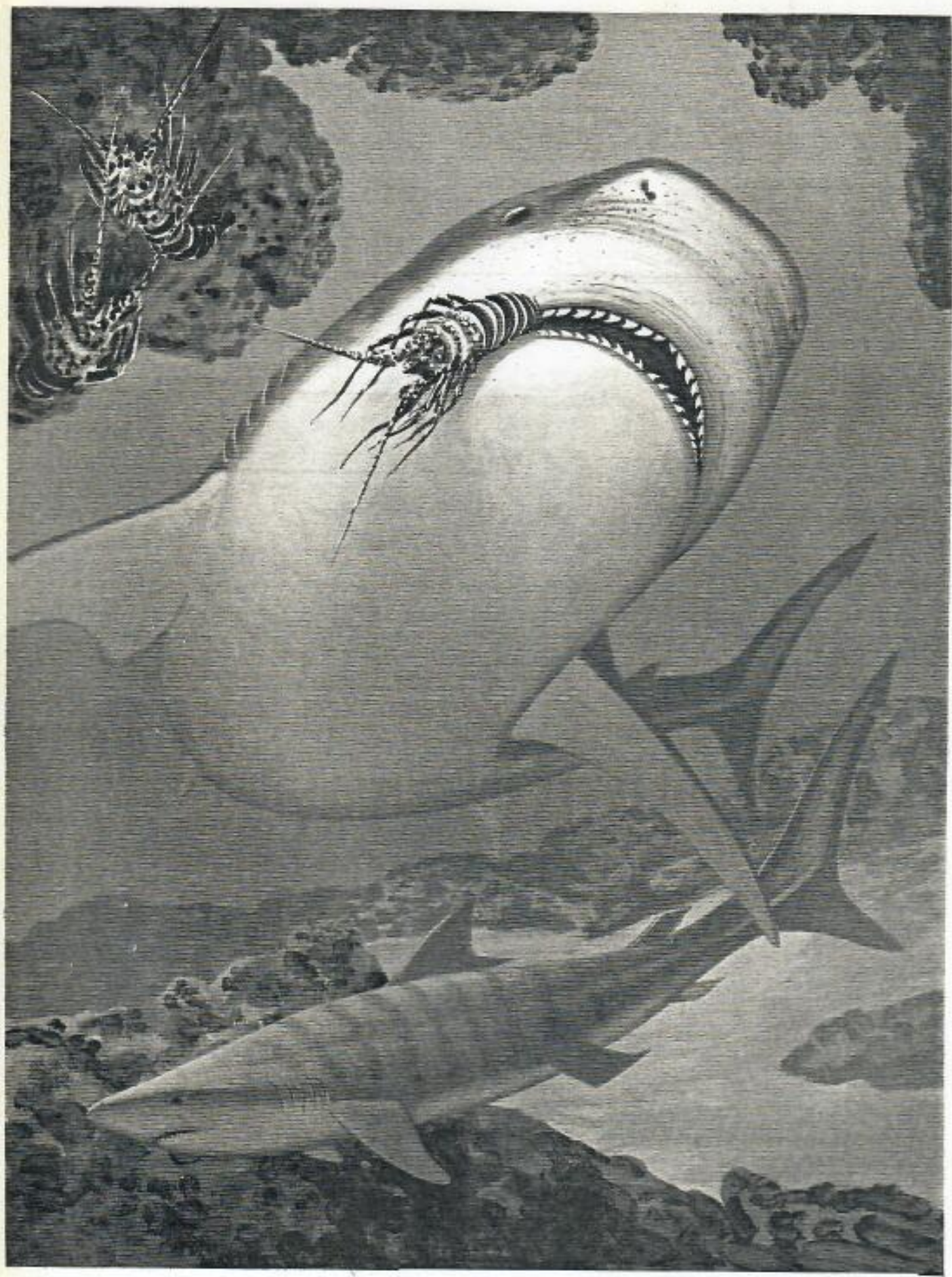


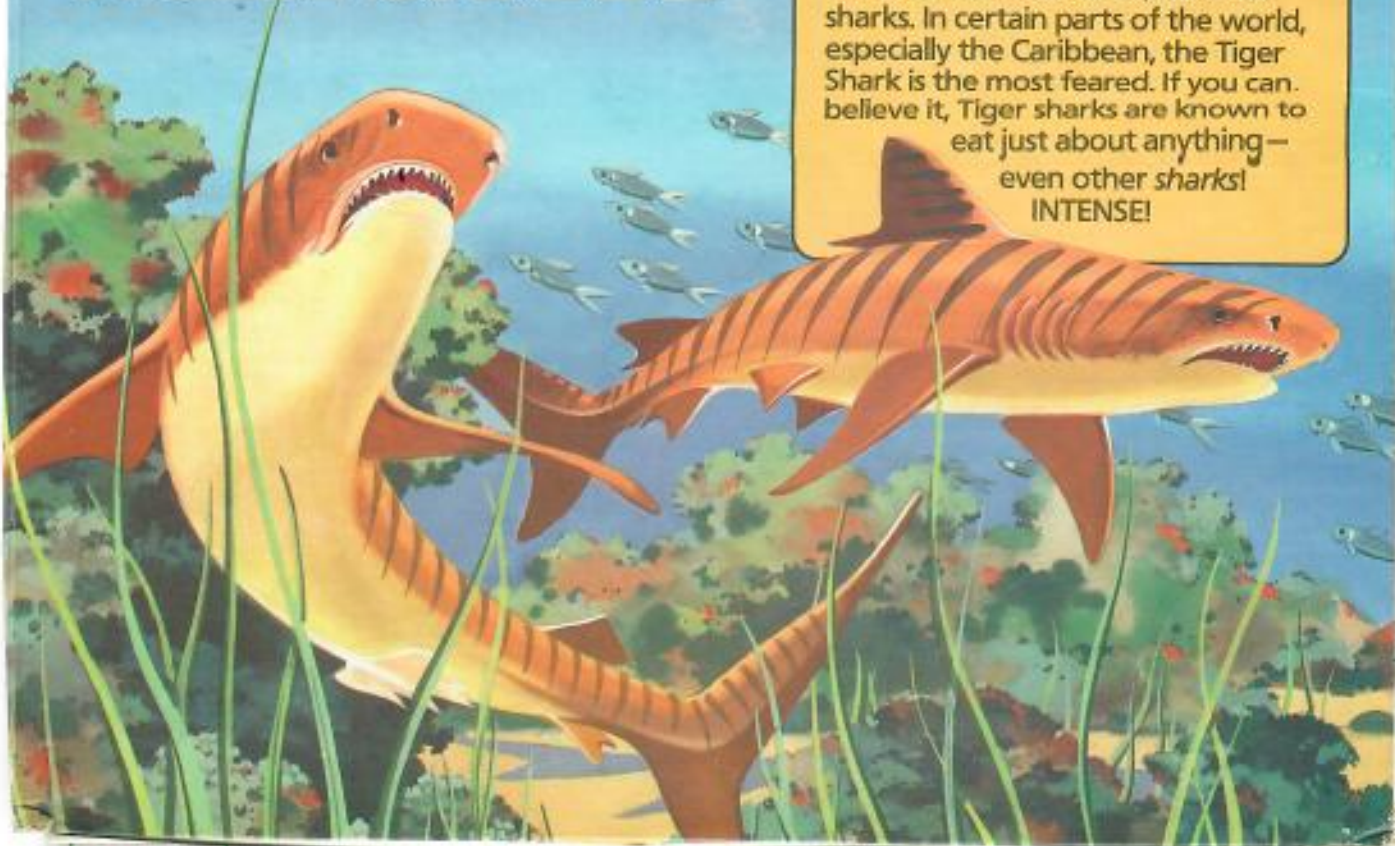
Carcharodon carcharias great white shark



Galeocerdo cuvier tiger shark

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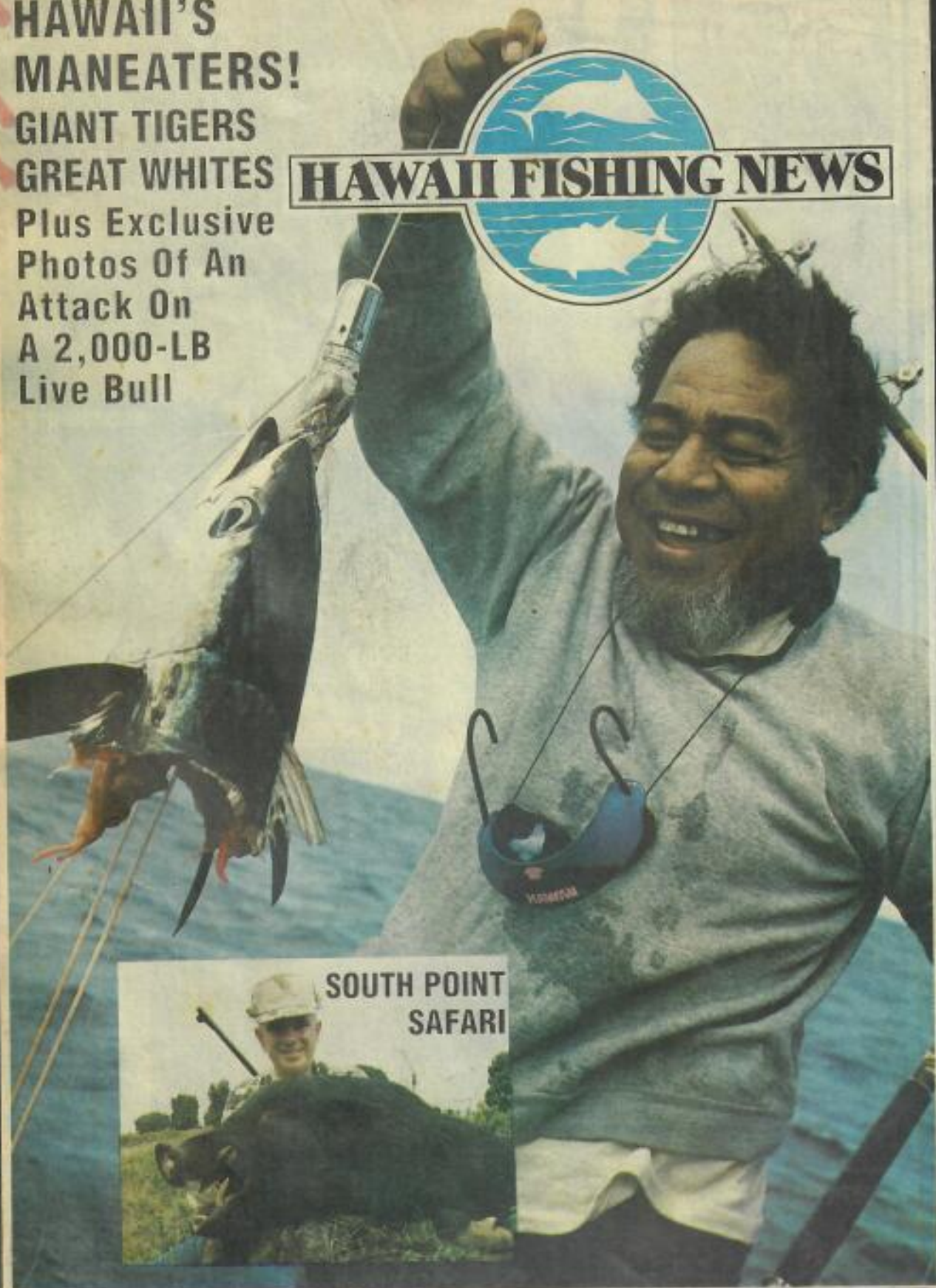
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HAWAII FISHING NEWS



THE VOICE OF HAWAII'S FISHERMAN
December 1992 Volume 17, No. 11 \$2.75

Wai'anae Coast

by William Aila Jr. with Uncle Paul and Uncle Bobby



Earl Omoto photographed the capture and inspection of two large tiger sharks caught off the Wai'anae Coast by the Shark Task Force.

from shore when he heard Aaron cry out. They both made it back to the beach where they discovered that Aaron had a serious wound on the back of his right leg. Before making it to the beach, Ric had spotted several turtles swimming in and away from the area and had caught a glimpse of a shark estimated to be 10 feet long.

Several people were alerted by the calls for help, and someone applied a tourniquet to the wound. City and county lifeguards Pua Mokuau and Brian Keaulana administered CPR until a city and county ambulance arrived. Aaron was rushed to the Waianae Comprehensive Health Center where he passed away, apparently from blood loss. Our sympathy on the Wai'anae Coast goes out to Aaron's mom and dad and the rest of his family and friends.

Immediately, calls came into Bill Paty's office at the **Department of Land and Natural Resources (DLNR)** with suggestions that the state should start a shark control program and that an effort should be made to capture as many of the large sharks as possible. Just as immediately, calls came in from several Hawaiian groups, each with its own ideas about what needed to be done. Some were adamant that nothing be done; others were concerned that only limited action should be taken with care that it be done correctly.

Bill consulted with the **State Shark Task Force**, and it was decided that an effort would be made that night to capture any large sharks in the immediate area. Steve Kaiser brought down his shark fishing gear, the same gear that was used to capture three large tiger sharks off of Hale'iwa two weeks prior. Gene Clark of Leeward Dive offered the use of his vessel, the **KAHANAOLA**. Together with a group of Wai'anae fishermen and surfers, they prepared to set the fishing gear that night.

Prior to the fishermen's departure, several of the Wai'anae community's most respected *kupuna* were consulted. OHA Trustee Aunty Frenchy Desoto, Aunty Theola Silva and Glenn Kila were some of the *kupuna* who supported the shark control effort. Aunty Frenchy gave the shark fishermen strict guidelines to follow during the course of their effort. A *pule* (prayer) was said prior to departing to set the lines each evening and to check the lines each morning during the two-day effort.

On the first morning, three small sharks were recovered. These were later returned to the sea, as stipulated by the *kupuna*. Also found on that first morning were two large tiger sharks. The smaller one was 11 feet long, and the larger one was 13 feet long. An examination of the stomach contents turned up empty. It is possible that either one of the sharks regurgitated its stomach contents while fighting to free itself from the line or during capture. We will never be absolutely sure that the shark that bit Aaron was caught. However, these two sharks were caught right off the beach where Aaron was attacked in approximately 30 feet of water. It was decided to set the lines a second night because another large shark was seen swimming in the area during the capture of the two large tiger sharks.

The second night of fishing produced no results. Most of the baits were still on the hooks. After consultation between the *kupuna*, the scientists and the fishermen, it was decided to suspend fishing for the sharks pending any further developments.

In light of the recent shark attacks, many ill-informed citizens across the state have proposed that the DLNR investigate an immediate shark control program. Think about this: hundreds, perhaps a thousand times more people are injured and killed by automobiles than by sharks. I don't hear anyone calling for an automobile control program. What irritates and sometimes frightens us as human beings is that once we get into the water we lose our ability to control our own destiny. We find it hard to deal with the fact that we are no longer in control of the situation; and, yes, sometimes we are at the mercy of less intelligent animals.

Bill Paty and the State Shark Task Force have developed a phone number (**58-SHARK**) that the public can use to report shark sightings or shark encounters. If a particular shark is exhibiting aggressive behavior, then the Shark Task Force would meet with the community leaders, time permitting, to decide what the best course of action would be.

No one can predict what the consequences of eliminating all the large sharks in one area would be. Other large sharks could move in from other areas, or the smaller sharks could get more aggressive because there are no large sharks to keep them in check. No one really knows. **continued...**

Encounters With Hawai'i's Maneaters

by Chuck Johnston, Tommy Kaniho, and Mark Collins; researched by Clay Ching and Mike Collins

With all the reports of shark activity in the dailies lately, it's probably safe to assume you were anticipating an article or two in this issue of *HFN*. Well, if that's the case, you won't be disappointed. Read on, and you be the judge of how safe or dangerous Hawai'i's waters are.

Our first incident was reported several months ago in *The Maui News*. A fisherman and his girlfriend were terrified by a "great white" while bottom fishing off the island of Maui. The fisherman was very experienced. It was midday, and he was anchored over his favorite 'paka hole. They were in 50 to 60 fathoms. What the fisherman identified as a great white suddenly appeared beside the boat. The shark made several close passes and gave the couple the weird feeling it was contemplating how to get them. Terrified, they huddled out of sight by the steering console, hoping that if the shark couldn't see them it would lose interest and go away. The shark, reportedly over 20 feet long, actually hit the boat in its effort to get at its occupants. After huddling for what seemed like forever, the fisherman got up his nerve to lift anchor and head for home. Terrifying, but true!

Yet another Maui bottom fisherman related this story to Clayton Ching of Moloka'i of a 20-foot tiger shark that makes similar appearances at his favorite bottom fishing ground. The fisherman gives the shark one of his large snapper each time he sees it, and each time the shark has been content with the single offering and has left the area. The fisherman said that he has never had the shark take a fish off his line. He did say, however, that one day he was fishing with a friend and they had caught a number of fish. When the large shark appeared, they got to talking, he recalled, and they forgot to give the shark a fish. The shark, he said, became impatient and roughly bumped the boat's side with its flank. "That time we gave it two fish!" he exclaimed.

But wait! You haven't heard the best of it yet.



windshield of his 19-foot fishing boat, cut the straining rope and headed home, certain that he had had an encounter with the 20-foot great white spotted 10 days earlier just 10 miles away.

I learned of the next incident during a phone call. The call was in regard to another, more incredible fishing experience (not involving sharks), which we will publish in the January issue. Here it is in Tommy Kaniho's own words.

November 4, 1992 Two Divers Encounter Sharks Off Sandy Beach, O'ahu

"On Wednesday, November 4, my friend Gordon Olavar and I decided to do some spearfishing. We met at the blowhole at 8:45 a.m., and the water looked so good that we decided to try our luck down the road. We were in the water by 9 a.m., swimming against the current toward Alan Davis.

Within 15 minutes, our stringer was showing the results of a fairly good dive. At 9:30 a.m., we ventured farther outside to see what the grounds were like. The

Hawaiian Shark Attacks 1992 compiled by George H. Balazs

14 Oct. '90 Hanalei Bay, Kauai Greg Filtzer Crescent-shaped bite 13.50 inches by 7.25 inches taken from tail section of 9-foot surfboard while Greg Filtzer was lying on it about 225 yards from shore at 3:15 p.m. Suspected a 12-foot tiger shark bumped the board, pulled it backward under water 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 Duke, 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 hand and feet out of the water." When the shark left, Thompson surfed to shore.

19 Feb. '92 Waimea Bay, Oahu Bryan Adona Disappeared while body boarding late in the afternoon at a surfing site about 1.2 miles southwest of Waimea Bay. The following morning, his board was found at Waimea Bay with a 16-inch crescent-shaped piece missing from the left side. Distinct serrations of shark bite were present in board. Danny Titiloh, the last person to see Bryan Adona alive, saw a large shark shortly after he and Adona paddled out toward separate breaks at Leftovers. Others on shore also reported seeing a large shark in the vicinity. Left swim fin, identified as Bryan Adona's, was found during an extensive search. Strap of fin was severed, but without serrations.

28 Mar. '92 Cannons, Kauai Jude Chamberlain Scurches and small puncture inflicted to foot when a large shark bit her surfboard while paddling seaward 10 feet from reef edge (and 85 feet from shore) in clean water about 10 feet deep. Crescent bite marks (12 to 14 inches) made in both sides of board. Shark shook board three times then pulled it completely under and dragged victim by leash for 20 feet before leash severed. Attack occurred at about 6:45 a.m. after victim had been

But wait! You haven't heard the half of it yet.

Shark Fact: Despite the belief that the current number of large tiger sharks in Hawai'i is due to a marked increase in sea turtles in island waters, no evidence of turtles was found in the stomachs of sharks caught during recent shark hunts.

A Moloka'i bottom fisherman had a similar encounter to that of the Maui fisherman and his girlfriend, 10 miles from the first encounter, while anchored in 45 fathoms and fishing alone, as he often does. It happened some time after midnight, probably at 2 a.m. He recalled, "I had just dozed off with only one line down when I felt a different rocking sensation of the boat and woke to find my line wrapped around the anchor." There was no wind, and the tide had quit running. He untangled the line from the anchor rope and rebaited. He also put out a second line. Suddenly, about 15 feet away in the edge of the glow of his fishing light, a big fin appeared.

He recalled, "It did not blow like a whale or a dolphin, so I was sure it was a shark."

Like many bottom fishermen, he had bridled his boat sideways to the anchor to give more spread to his baits. He noticed that the boat was beginning to move.

As the boat started moving and jerking sideways through the water, he quickly reeled in his two bottom fishing rigs. By this time he had seen both the fin and the tail of the shark in the moonlit night. He glanced at his depth recorder and saw that he was in 80 fathoms of water. Something had dislodged his anchor and was pulling him at trolling speed out to sea. He thought, "Maybe a submarine," but then it stopped and shook the boat like a cork in the still, calm night. He, like the couple, had an eerie feeling that this thing was contemplating what to do next.

He cut the bridle so he was being towed bow-first through the night. It had been at least 20 minutes. He gave one last thought to the possibility of trying to catch the shark, which at this moment had him caught. He decided he best not try. He leaned over the

farther outside to see what the grounds were like. The place looked ideal and was only 35 feet deep. We picked up a few he'e before I saw a big spiny lobster. I called Gordon over and asked him to keep an eye out for me while I went down to retrieve the lobster. After three dives I was able to grab the lobster and pull it out of a small cave. The lobster was a big one, and it took me a minute to put it on the stringer. As I pushed the floater away, I noticed something large along the bottom, and so did Gordon!

It was a shark, all right, and we were trying to figure out what kind of shark it was. I felt that the shark was either a gray reef or Galapagos. The female appeared to be 8 feet in length. I say it was a female because of the scratches along its fins, scratches that usually occur during mating. We kept a close eye on the shark, and she headed away from us. We glanced at the beach and realized that we were about 450 yards out. I told Gordon that we'd have to make an effort to watch for the shark, and wouldn't you know! She came right back, even closer to us than before. Gordon swam right at the shark in the hope of scaring it away. The shark wasn't phased, and when I looked to my left I knew why. A larger shark approached, and I assumed that it was her mate.

The new arrival seemed to measure close to 9 feet. Gordon and I got closer together as the sharks started to circle. The sharks were tightening their circle and moving in close. We had our spearguns aimed and ready in case they got any closer. In a split second they broke their circle and moved about 20 feet away. We decided to head in to shore, but not without the sharks moving in front of us, to our side and even next to the floater at times. About 100 yards from shore, Gordon stopped me and said, "Tommy, there's one more, and it's bigger!" I knew we were almost safely ashore. Gordon stopped me again and said, "It's a tiger!" I looked around and saw the stripes on a shark that was easily 10 feet long. The tiger shark actually kept its distance, but the other two became even bolder. We were surprised that our catch hadn't been devoured yet.

Gordon and I reached a shallow reef that extended from shore. It was only knee-deep, and I tried to bring the floater in quickly. One shark made an attempt at the floater but missed. It swam on the reef and turned back to sea. All three sharks stayed in the area with their fins extended above the water.

occurred by about 20 feet before leash severed. Attack occurred at about 6:45 a.m. after victim had been surfing for a short time with a friend Mike Cox, who witnessed attack at close range.

22 Oct. '92 Lantakea, Oahu Eric Gruzinsky

Bruises and scratches to arm and chest resulting from a 12-foot shark biting a crescent-shaped piece from his 6-foot 4-inch surfboard. Attack occurred at 7:52 a.m. in clear water 12 feet deep, 150 yards from shore.

5 Nov. '92 Keaukapuni, Oahu Aaron Romento

Fatally bitten on the back of the leg while body boarding in clear water 30 yards from shore at 9:45 a.m.

Gordon ran down to the beach, and with the help of two young ladies, was able to get some surfers in the area out of the water. A couple of surfers were able to see the sharks for themselves. At 11:30 a.m., we filed a report with the city and county lifeguards and Jim Howe.

We've encountered sharks before and have been left with the peace of mind to dive another day. We love the ocean and realize the dangers involved in doing what we enjoy most. In general, I'm not for the killing of sharks, but I do believe that study and research can benefit both man and sharks alike. In the meantime, if you decide to enter the water, you may want to keep an eye out for your partner and 'you know who.'"

Tommy went on to say that despite his close encounter off Sandy Beach, he still is not in favor of indeterminate elimination of large sharks but would rather see additional research into the problem—a strange attitude for someone who easily could have become a shark's next meal. Not many shark attack victims who have lived to tell of their ordeal have voiced similar feelings of compassion for the attacker.

Yet another encounter occurred recently. An insurance agent from Honolulu was diving off Lau Point, Moloka'i, when he had a very close call with a 12-foot tiger shark. Reportedly he was diving at his familiar lobster hole in 50 to 60 feet of water. According to the diver, he always sees sharks when diving off Lau, but this day it was different. The 12-footer became very "fresh" (his word to describe the shark's behavior). He fortunately sensed the aggressiveness in time to get back to his boat. Just as he was getting himself out of the water, the shark bit his fin completely in two. At first, he said, he was angry because the shark had ruined a \$50 pair of fins; but, as he headed the boat for home, he realized he was lucky to have his leg.

Close Encounters continued....

We saved the most incredible, or should I say credible, story of all for last. For those who still have any doubts about these reported incidents, here's Mark Collin's account with photographs.

October 12, 1992

The Battle For the Hana Bull

"October 9, 1992, was one of those glassy, variable days. Capt. Marc Minkler, crew member Moki Bergau and passenger Dr. Phillip Adams, a guest at the Hotel Hana-Maui who was visiting from Houston, Texas, had the *PACIFIC SAFARI* out on a shakedown cruise.

We had just bought the *PACIFIC SAFARI*, a 38-foot Wilson with glass panels on the bottom. It was built for sightseeing tours and research work around Kaua'i prior to Hurricane 'Iniki. The vessel is now used to operate a charter business out of Hana Bay (Hana Hou Charters) to subsidize our fishing business.

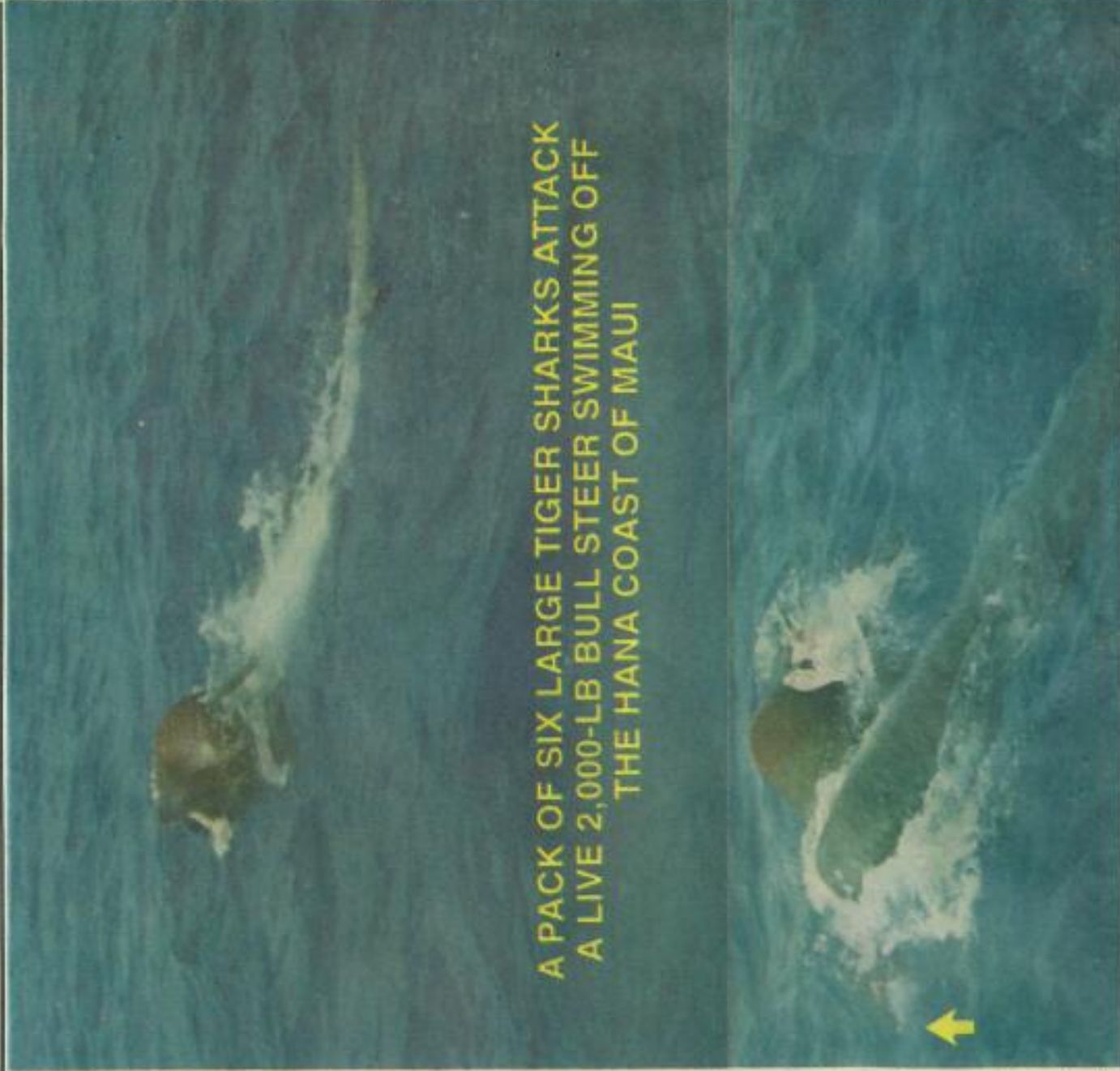
Capt. Marc was working the 100-fathom ledge down the coast about 7 miles south of Hana and about 2½ miles offshore when the crew spotted what appeared to be a large log or net floating off in the distance.

What happened next was one of the most extraordinary events that either Capt. Marc or Moki had ever witnessed in all their years at sea.

As Capt. Marc approached the large object, they realized it was a bull swimming toward the Big Island. As they got closer, Capt. Marc figured he'd get a rope around the animal and lead it back to shore. But as they pulled up next to the bull, they realized it already had company with other plans.

There were three large tiger sharks that appeared to be in the 12- to 14-foot range swimming below the bull, whose right front hoof was missing and who had a small bite out of its hindquarter. As Capt. Marc and Moki were contemplating getting the rope around the bull's head, three more tiger sharks showed up, and all were larger than the first three.

The accompanying photographs show some of



**A PACK OF SIX LARGE TIGER SHARKS ATTACK
A LIVE 2,000-LB BULL STEER SWIMMING OFF
THE HANA COAST OF MAUI**

the scenes witnessed by Capt. Marc, Moki and Dr. Adams during the feeding frenzy that followed. The photo of the bull with its head still visible was taken just prior to the largest shark decapitating the bull and swallowing its entire head in one gulp, an unforgettable sight for those who witnessed it. After about 10 minutes, about 1,000 lbs of the bull had been devoured. Capt. Marc and Moki thought they would try to get a rope around the remaining carcass and take a meal away from the sharks instead of vice versa. As the **PACIFIC SAFARI** backed down, the sharks backed off and Moki was able to get a rope around what was left of the bull. But the two biggest sharks then moved in aggressively to take the remainder of the bull. Capt. Marc moved the **PACIFIC SAFARI** off about 20 feet.

For an awesome finale, the largest shark took the remaining 500-lb piece of the bull in its jaws and swam under the boat, as Capt. Marc, Moki and Dr. Adams watched the entire scene through the boat's viewing panels.

After word of the incident got around Hana, resident Henry Rost, who had raised the bull, said that the animal was a large one in the 1,500- to 2,000-lb range. He figured that the bull must have slipped down the Pali. Unable to get back up and with no fresh water available, it must have taken its last option and headed out to sea.

Dr. Adams called us the next day to thank us for taking him on an unforgettable fishing trip. He summed it up by saying, "That was the best cow killing I've ever seen."

We would like to thank Dr. Adams for taking the photos and sending them to us after his return home."

What you've just read are true encounters that have occurred within the past few months. **HAWAII FISHING NEWS** is not suggesting a shark eradication effort, nor are we suggesting nothing be done to eliminate the presence of large man-eating sharks in Hawai'i's nearshore waters. Our purpose is to inform our readers who use Hawai'i's ocean resource for food, work or recreation what at this moment in time lies beneath the surface so they can be more aware and thus better prepared for an encounter.

... **Chuck**

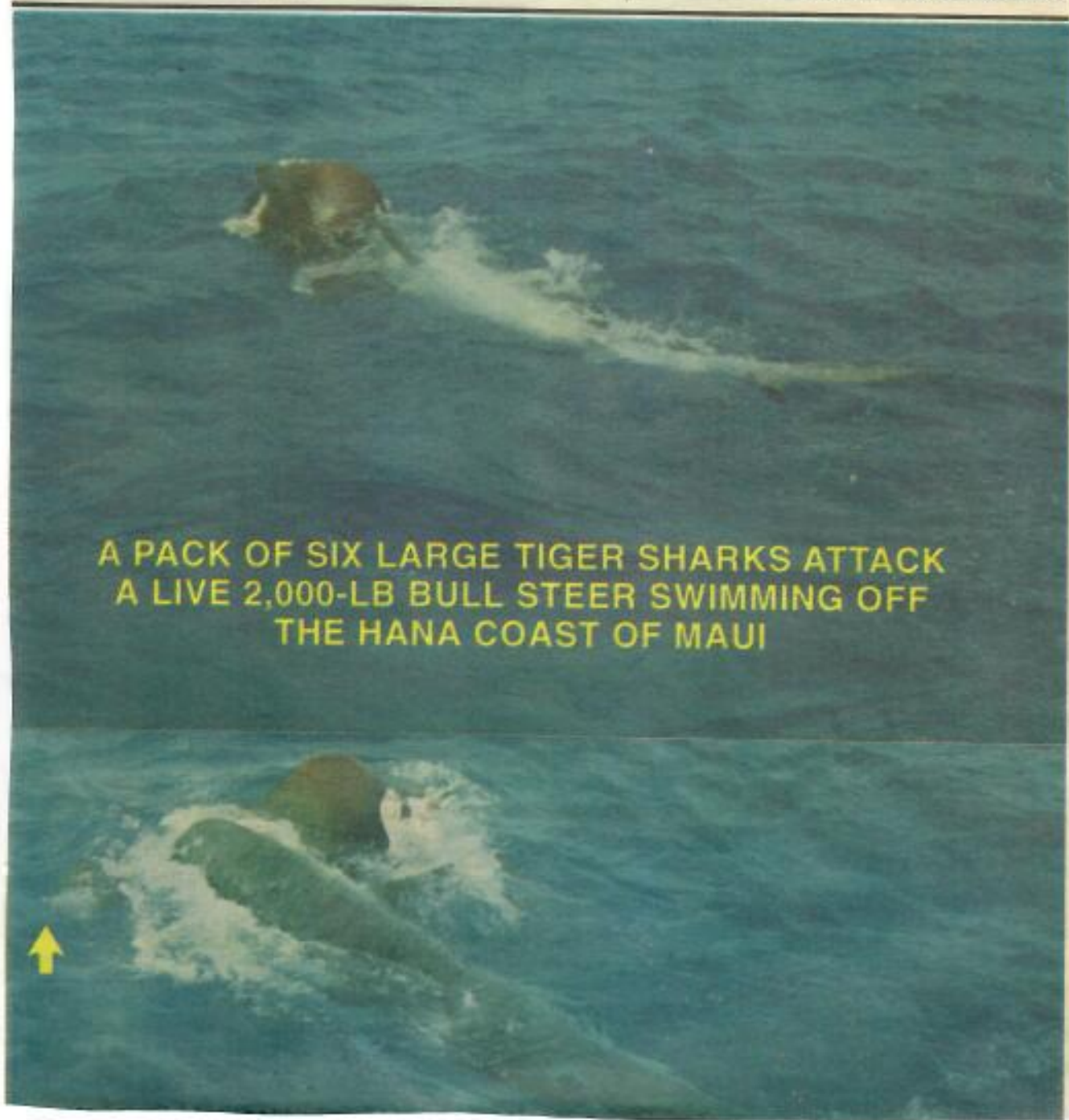
ARROW POINTS TO TIP OF THE BULL'S NOSE. BASED ON THAT MEASUREMENT, THE TIGER SHARK COULD BE CLOSE TO 20-FEET LONG

10 9'92

**FISHERMEN AND SHARKS
BATTLE FOR THE
REMAINING 500 LBS OF
PRIME STEAK**

**Exclusive Photos By
Dr. Phillip Adams
Courtesy of Mark Collins**





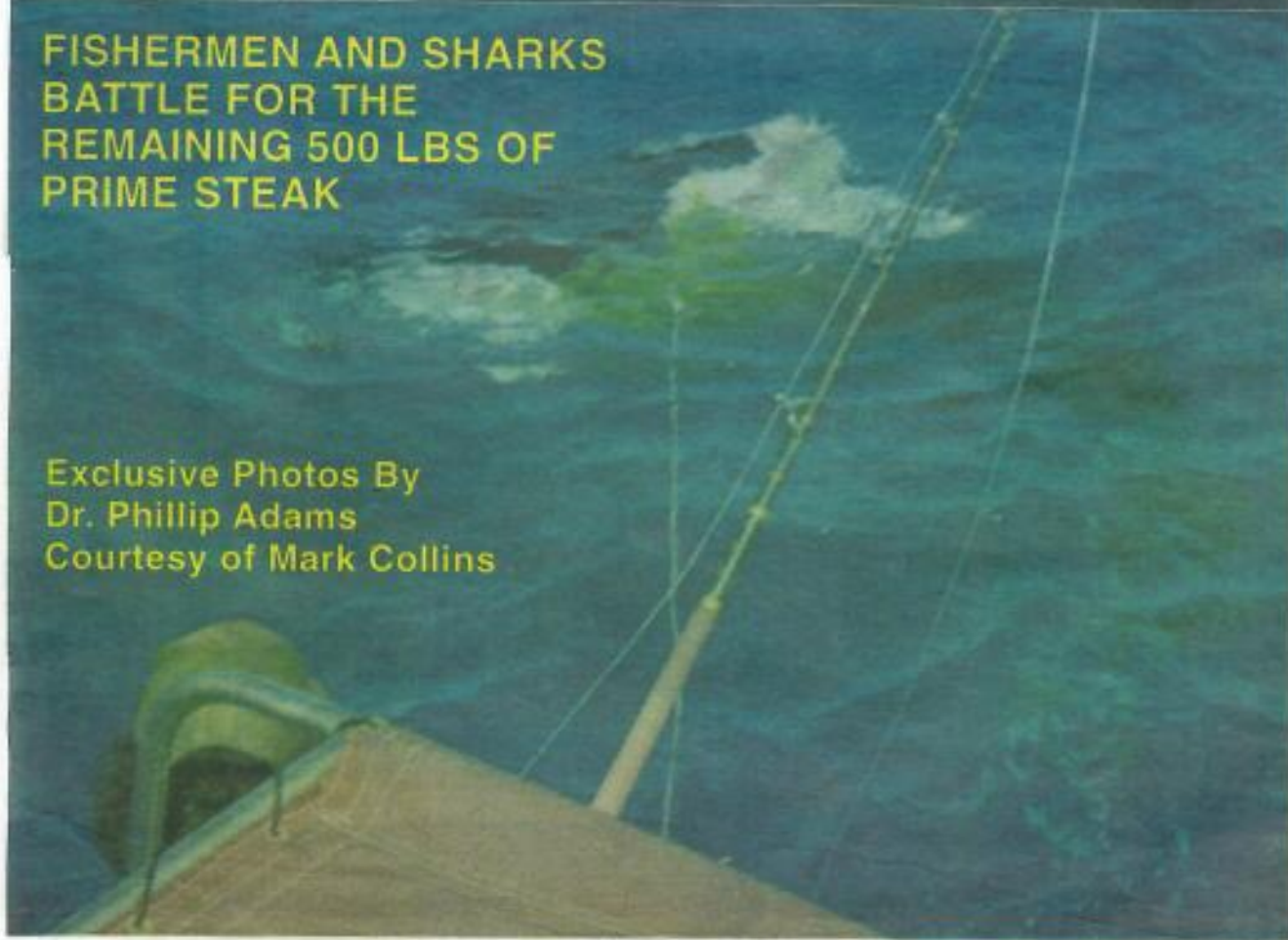
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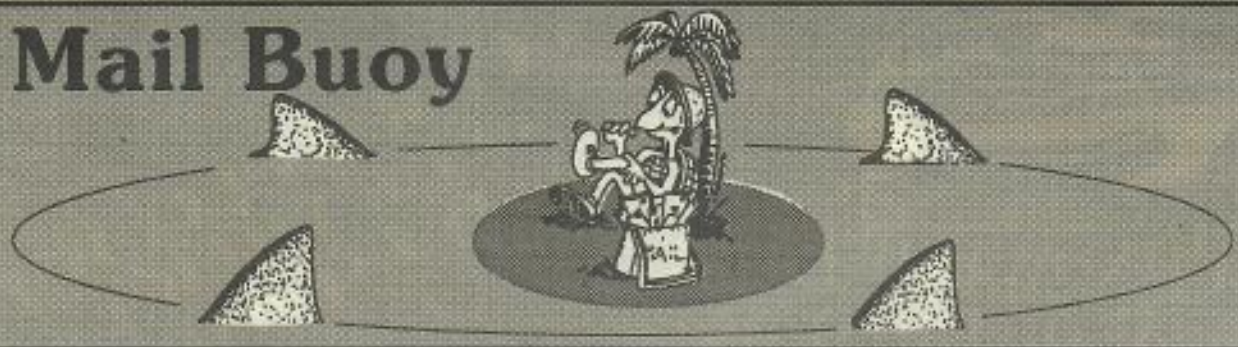
10 9'92

FISHERMEN AND SHARKS
BATTLE FOR THE
REMAINING 500 LBS OF
PRIME STEAK

Exclusive Photos By
Dr. Phillip Adams
Courtesy of Mark Collins



Mail Buoy



Dear HAWAII FISHING NEWS,

This letter is in reference to your cover story, "Catch a Tiger..." from February 1993. As a spearfisherman and water sports enthusiast who also makes his living in the water sports market in Hawai'i, I am frustrated by the media's constant sensationalism of sharks in Hawai'i. When are you and the rest of the media going to stop reinforcing the myth that there are man-eating sharks just waiting for anyone to enter the ocean? Don't you realize the damage you are doing to our local economy and especially our number one industry, tourism? Does anyone on your staff even consider how many people come to Hawai'i for water sports and how many now won't because of paranoid and irrational reporting like yours that perpetuate this myth? I wonder how advertisers in your paper who rely on sales of diving and related equipment (Maul Sporting Goods, Clark Sales, Windward Boats, etc.) feel about cover stories that negatively impact their business? I suggest that in the future you consider other cover stories to sell papers and not engage in Tabloid Journalism.

Sincerely,
Mark A. Souza
Waipahu, O'ahu

Dear Mr. Souza,

This note is in response to your letter to HFN regarding last month's issue of the cover story, "Catch a Tiger." First, I would like to respond to your question, "when are you and the rest of the media going to stop reinforcing the myth that there are man-eating sharks"? Excuse me, the fact that there have been two deaths and two recent attacks strongly suggest that rather than a "myth" we do have a real problem that needs to be addressed.

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-lb 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.

Sincerely,
George H. Balazs
Honolulu, O'ahu

cc. HAWAII FISHING NEWS

Secondly, you refer to my article as "paranoid and irrational" reporting that damages our local economy and our number one industry, tourism. I think you're missing the point here. The interview was done to give Perry a chance to speak for himself without the media speaking for him. Granted, this wasn't an article to lure tourists to this state. It was intended to inform readers of one man's reasons and way of dealing with this very serious situation.

As far as the question of how many people come to Hawai'i to enjoy our water activities and how many won't now because of negative press remains to be seen. I guess the only way to find out is to do a census. While I realize that companies spend big dollars on advertising, it wasn't my intent to chase away business.

And, as far as tabloid journalism goes? Let me share this story about a little island in the South Pacific where every year thousands go to enjoy water sports. But this year the island is threatened by large creatures lurking in the depths. A town deputy who is aware of this tries to warn everyone, but the town's mayor tries to "cover it up" in fear of losing thousands, even millions of dollars. (You get the picture.)

Please don't take the last scenario seriously, it was only meant for amusement.

Till we see each other in the water.

Dive Safely,
Al Lagunte
Hale'iwa, O'ahu

MARCH 1993

Shark Attacks are not Mistakes

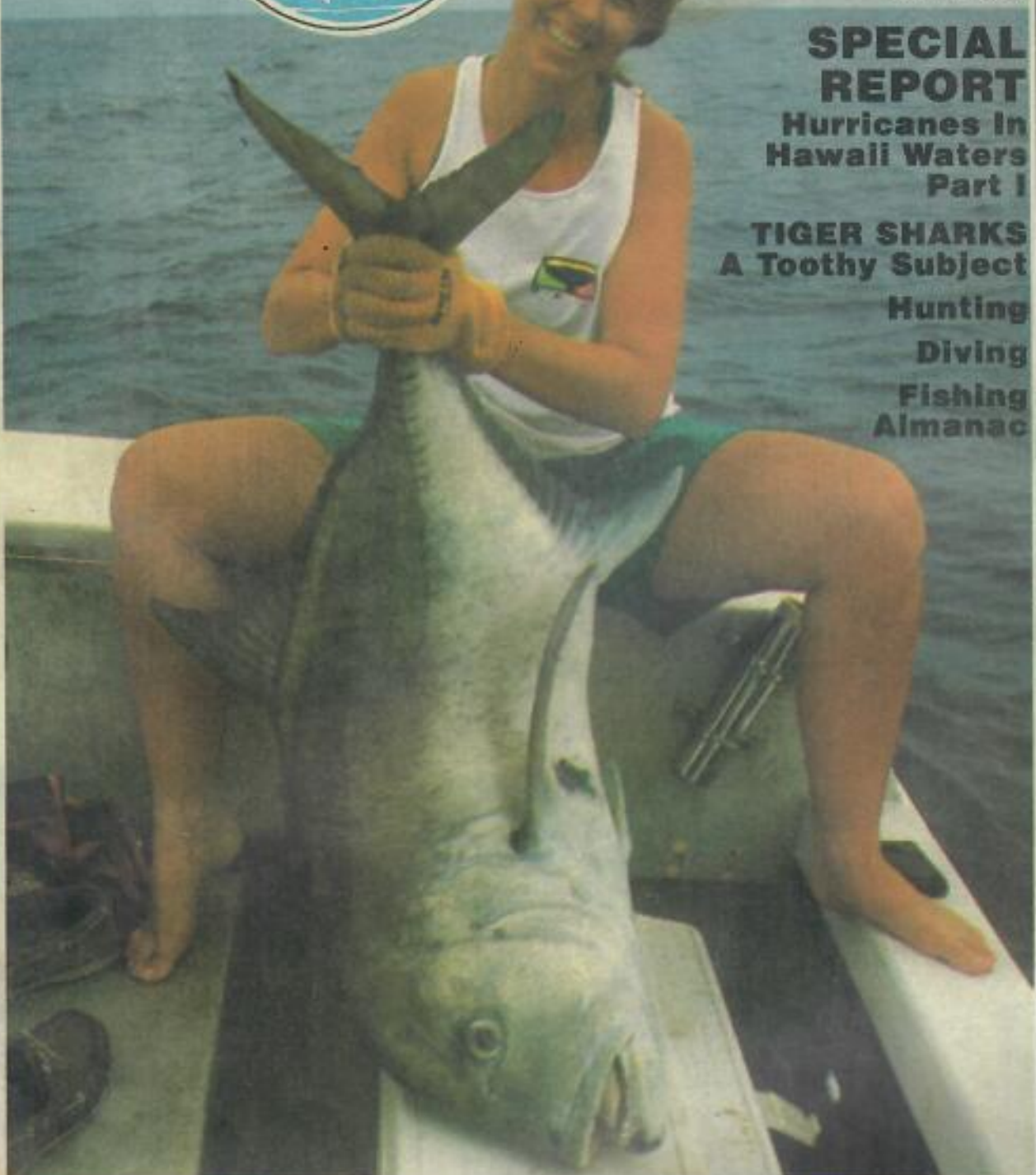
(Reprinted from the Maui News, January 7, 1993)

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

R/B/S → GHB



HAWAII FISHING NEWS



Cover Story...
TACKLE TEST

Aboard The
Rizzuto Maru

**FOUR
100-PLUS
ULUA**

**SPECIAL
REPORT**

Hurricanes In
Hawaii Waters
Part I

**TIGER SHARKS
A Toothy Subject**

Hunting

Diving

Fishing
Almanac

THE VOICE OF HAWAII'S FISHERMAN

March 1993

Volume 18, No. 2

\$2.75

Tiger Shark

Reprinted from
"The National SHARK-O-PEDIA"
by Victor R. Faughnan

Galeocerdo cuvier (Peron and LeSueur), 1822
Also known as leopard shark

Most prominent feature Body marked with dark vertical blotches or bars (stripes) from gill area to upper lobe of caudal fin. Very prominent in young; weak or absent on large adults.

Color Gray to grayish-brown above; upper portion of body is usually darker than sides, with white undersides

Size Reported to reach lengths of 30 feet; such lengths remain to be authenticated. Known to attain lengths of 12 to 14 feet with authenticated lengths of 15 to 18 feet. Adults capable of weights in excess of 1,500 lbs. Maturity attained between 10 to 11 feet, though gravid females from 12 to 13 are more common.

Reproduction Fertilization is internal, a prolific shark; females capable of bearing large litters or broods of up to 50 or more embryos. One specimen recorded contained 82 embryos. Gestation period of two years is likely. The young, born alive and free-swimming, are about 24 inches in length.

Range Both pelagic and littoral; occurs far out at sea as well as inshore. When in close proximity to land, enters shallow inshore waters at night. Commonly enters shallow bays and harbors; frequents river mouths as well. Occurs in depths of 90 to 180 feet regularly; however, will be found both shallower and deeper. Seems to prefer shallow waters during nighttime hours; appears to return to open ocean and deeper water in daylight hours. Known to occur in most warm waters throughout the world; eastern United States, Florida, Gulf of Mexico, and throughout the Pacific Ocean. A very common shark off the Hawaiian Islands.



Recognized by the International Game Fish Association as game fish. The present record on rod and reel for a tiger shark is 1,780 lbs. Its length was 13 feet 10½ inches with a girth of 8 feet 7 inches. It was caught at Cherry Grove, South Carolina on June 14, 1964 by Walter Maxwell on 130 lb test line.

Related species None. Very unlikely to be confused with any other shark. This species was formerly known as *Galeocerdo cuvieri*. This shark is in no way related to the leopard shark *Triakis semifasciata*, a common California species. Along the coastal waters of India this shark is known by the scientific name of *Galeocerdo rayneri*.

Physical features peculiar to this species

1. The body is marked with dark vertical blotches or bars (stripes) from gill area to upper lobe of caudal fin.
2. The snout is short, wide and prominently blunt as seen from above.
3. A prominent mid-dorsal ridge is present on the midline of the back between both dorsal fins.
4. A well-pronounced primary keel is present on both sides of the peduncle.
5. The caudal fin is asymmetrical in shape.
6. A well-developed lip or groove is present on underside of the snout.
7. A small, inconspicuous spiracle-slit is present behind both eyes.
8. The teeth are unique, cocks-comb in shape; the central cusp is triangular with large serrations and notched on one side with large serrations.
9. The eyes possess a well-developed nictitating membrane.

Diet Apparently prefers slow-swimming marine life such as puffer fish and sea turtles. Definitely a feeder of opportunity; will readily sample as food simply anything that presents itself. The stomachs of specimens examined contained the following items: other sharks—whole or parts, various fishes—large and small, sea turtles porpoise, portions of whales, cats, dogs, cattle, sheep, rats, birds, chickens, horses, sea lions, rays, as well as remains of human beings. Tigers consume an endless list of trash and garbage; wire, tin cans, paper, plastic, wood, nails, rocks (coral), clothing, fishing gear, and other paraphernalia. In short, it is a scavenger in the truest sense of the word.

Danger rating Highly dangerous, a reputed man-eater; will sample man with little or no hesitation. Capable of dismembering a man of considerable girth easily. A sluggish swimming shark when not feeding, but once excited by the scent of food or the erratic behavior of wounded fish it becomes very fast and aggressive. This species is guilty of a great number of attacks on humans throughout the warmer waters of the world.

Economic importance The flesh of young tiger sharks is used as food; however, larger tigers are not considered desirable. Hide is used commercially for leather; and is considered the most desirable of leathers. Liver was used at one time for extracting Vitamin A. The jaw is capable of producing some 100 teeth sometimes used in making unique jewelry.

2 testify that they witnessed teen shoot man in head on Makena beach. See p.3

Local election victors spend \$600,000 to win. See details on p.5

Entertainment, holiday fun crams weekend events calendar. See Maui Now

SOUTH MAUI TIMES

Winner of five 1992 HPA writing awards, mailed weekly to the communities from Maalaea to Makena

December 9, 1992

False arrest investigation wraps up - police mum

by Valerie Muroki

A year ago in October, a woman was arrested for harboring a criminal.

She complained that it was a false arrest, that two officers entered her house without a warrant.

They agreed they did, but said the law was on their side for they believed they saw the fugitive through a window.

The woman's name is Helen Thompson. The person who arrested her is Officer Gerry Neff-Vares, along with Officer Ronald Tamamaha, who



Sea turtles on increase, now facing new threat

by Jerome Kaiser

There is a growing herd of green sea turtles outside Maalaea Harbor, one of a number of spots off South Maui where these sea reptiles regularly congregate.

Invariably called Turtle Towns by dive operators and others, the sizable groups of turtles here - it's not uncommon to see as many as a dozen at a time in Maalaea - appear to be proof that green sea turtles are making a comeback in Hawaii. Their numbers here and

VOLUME 5/NUMBER 27

Green sea turtle herd increases, but faces new threat

TURTLES from page 1

Species Act, their numbers appear to be increasing here.

Turtle expert George Balazs, zoologist and leader of marine turtle research with the National Marine Fisheries Service (NMFS) said he is cautiously optimistic about their recovery. That's the good news.

The bad news is that tumors are threatening them now, a mysterious condition known as fibropapilloma, an aquatic Elephant Man disease in which their bodies are covered with tumors big enough to cause them to drown or

blind them.

In a case of life resembling pop entertainment, there are real-life teenage, mutant turtles.

No ninjas, but the disease actually strikes hardest among green turtles in their teenage years.

The cause of the disfiguring, life-threatening disease is unknown, but a virus is strongly suspected.

"We just can't say for sure what causes it," said Balazs, one of the world's leading authorities on the graceful saltwater reptiles.

Pollution could be a factor, but

there's been an increase in tumors where pollution is low as well as in more polluted waters.

Fibropapillomas have reached epidemic proportions in some segments of the Hawaiian green sea turtle population, as well as in Florida and other places.

Studies are underway, some of which have been completed, to try and determine the cause of the disease, in order to develop a long-term disease management program, Balazs said.

The disease is just one more threat to the survival of the green sea turtle, one of three species of turtle native to Hawaii (the other two are the hawksbill and leatherback). Called the *honu* by Hawaiians, the green turtle is the most common here. The color of their upper shells (carapaces) is dark with olive or gold flecks, and they received their name from the color of their body fat.

Weighing up to 400 pounds, they primarily eat limu growing underwater on coral reefs and rocks close to shore. They prefer to live near pastures of limu that are in nearshore waters around Hawaii.

Even without life-threatening diseases, it is tough being any kind of sea turtle. Thousands are incidentally captured in shrimp trawls, drift nets and other fishing gear, injuring and drowning many. Turtles also become tangled in discarded fishing gear.

They sometimes eat floating plastic debris, which releases toxic substances and blocks digestion of food. Coastal development and pollution have degraded nesting beaches and

feeding areas for sea turtles. Dogs, cats and mongooses eat their eggs and hatchling sea turtles.

If all this weren't enough, they are also a favorite food of tiger sharks. Turtles have been in the news in Hawaii over the past year, in the wake of three tiger shark attacks on humans here, two of them fatal. There has been speculation that the increase in the number of green sea turtles has brought tiger sharks closer to shore, a theory that Balazs downplays.

Still, the only contents in the stomach of a 10-foot tiger shark caught off Oahu in the last week of November were turtle remains.

Individuals can help aid in the recovery of sea turtles here, Balazs said. All sea turtles in Hawaii are fully protected under laws that prohibit harming, harassing, killing or keeping sea turtles in captivity. Divers should be aware that riding sea turtles is illegal and puts them under stress.

Fines can be substantial. For example, simply entering the United States with sea turtle products is prohibited, and violators may receive penalties of up to one year in prison and a \$20,000 fine.

Anyone who sees turtles being captured, harmed or killed is urged to call the Enforcement Division of the NMFS at 541-2727, or the Maui office at 243-5414.

Individuals can also aid in sea turtle recovery by reporting nesting or basking activities, and dead, sick, injured or incidentally captured turtles by calling the NMFS at 943-1221.

Abused, neglected children need homes

There are children who need a temporary home in the Kihei area.

Sometimes during the course of a year they're toddlers, sometimes adolescents.

The Department of Human Services has put out a call for help from South Maui residents.

LoAnn McMillan, who works for the agency, said she's looking for couples, or single adults, who have

"room in their hearts and homes" to house abused and neglected children.

It's important that children be kept in their schools, if at all possible.

That's why South Maui foster homes are needed for youngsters from this area.

Those interested in more information about being a foster parent are invited to call McMillan or Beverly Bartlett at 243-5467.

ASK-2000 listing holiday functions here

ASK-2000, the 24-hour statewide information and referral service, is listing organizations, businesses, churches, neighborhood associations and so on that are sponsoring holiday dinners or other functions.

ASK-2000 is assembling this

information to link the community together.

ASK-2000 has already received the Toys for Tots 1992 update.

Call 275-2000 (Maui County Administrative line 871-5203).

was new to the force.

Thompson was charged with obstruction of justice. She asked for a jury trial, which was then set for Jan. 21, 1992. But on Jan. 18, the prosecutor, Joseph Barbaro, dropped the case. Judge E. John McConnell dismissed the case "with prejudice in the interest of justice." Thompson promised not to sue.

Thompson's story was first told in the *South Maui Times* on Feb. 19, after Thompson had met with Maui Police Chief Howard Tagomori. He promised her an investigation into the arrest.

On Oct. 29 Stanley Tadaki, deputy chief of the Maui Police Department, See **ARREST** on page 6

Corps of Engineers to meet on Maalaea Harbor project

The U.S. Army Corps of Engineers have set a public informational meeting in Kihei Thursday to discuss the status of the joint federal-state Maalaea Harbor improvement project.

All interested persons are invited to attend the meeting which will be in the Kihei School cafeteria starting at 7 p.m. Representatives from the Corps of Engineers and the state Department of transportation,

Harbors Division, will be available to answer questions.

The Corps has completed and distributed a draft federal-state environmental impact statement which discusses the impacts associated with the recommended plan to improve Maalaea Harbor. The federal portion of the plan consists of realigning the entrance channel and modifying the existing breakwater to protect the new channel. The state Department of Transportation would then expand the berthing facilities and improve the infrastructure.

The supplemental EIS updates the 1980 final EIS which concluded that the planned harbor improvements would have no effect on the endangered humpback whale or the threatened green turtle, and that there would be no significant impact on other environmental resources. However, recent opinion of National Marine

Fisheries Service as part of the current study identifies a possibly adverse but

Drivers' licensing schedule changes for mobil office

The drivers' license bus has changed its schedule for Kihei.

The county bus now comes to Azeka Place II, near Liberty House, on Thursdays and Fridays from 12 noon to 6 p.m., rather than on Saturdays.

Residents who need to renew their licenses can take the written test and complete their applications on the bus.

worldwide were decimated as they were hunted for their meat and shells. Once there were tens of millions of green sea turtles worldwide, while now there may be fewer than 200,000 mature females.

Before protective laws were passed, turtles around Hawaii were killed in large numbers to serve as food for fishing crews in the northwestern Hawaiian Islands. Ancient Hawaiians used the meat of green turtles - reportedly very delicious - for food. Turtle meat and eggs are still sold for consumption in poor and wealthy countries alike.

Now fully protected under state law and the federal Endangered See **TURTLES** on page 5

Corps of Engineers to meet on Maalaea Harbor project

mitigable impact on the endangered humpback whale.

The supplemental EIS states there are no prime agricultural lands and no physical remains of man-made archaeological sites or other cultural features in the project area.

Construction of the improvements would have some impact on one or more of the five surfbreaks adjacent to the harbor.

All interested parties are invited to attend the Dec. 10 information meeting to obtain information and provide their comments relating to the Maalaea Harbor project. The draft supplemental EIS is available at public libraries on Maui for review prior to the Dec. 10 meeting.

Written comments on the draft supplemental EIS should be mailed by Jan. 15 to the Honolulu District Engineer, Building 230, Fort Shafter, Hawaii 96858-5440.

ALL SMILES - Selling Christmas tree ornaments at the Epilepsy Foundation crafts fair at Kalama Park last month are members of Junior Girl Scout Troop 162. Clockwise from top are Nicole Texeira, Jaynina Yamamoto, Kauamailani Bradley, Melissa Petro and Allyson Higa. Photo by Valerie Muroki.



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

Dear George:

I need your help in testing a hypothesis:

Ho: Pohaku Pa'akiki was sacred to local sweet potato farmers who offered 'awa (a natural narcotic drink) daily to Kamohoali'i, their shark god. Legend holds that a fisherman, trying to annoy the farmers, caught sharks and threw their severed tails into the water by this pohaku. Naturally, this annoyed Kamohoali'i, who caught the fisherman in the water one day and began to devour him, beginning with his feet. The shark god stopped at the fisherman's buttocks because of the smell of excrement, and the spirit of Kamohoali'i revealed to one of the farmers his pledge to never again eat human flesh or allow other sharks to harm anyone between Makapu'u and Waianalo. For many years thereafter no shark-related injuries were reported in this area.

I've enclosed a map of how Kamohoali'i might view "between Makapu'u and Waianalo." Zone A encompasses the waters between Makapu'u Point and Wailea Point connected by a straight line. I've added on Zone B to give the offshore area some curvature.

Please check your shark attack file and see if there are any attacks in either Zone A or B.

I say that the odds are on the side of Kamohoali'i on both scores. Some sharks do grind on humans in some areas, but I have done thorough search of the scientific literature and I have not found even a single reference. Please let me know what you discover.

Sincerely,
Justin Rutka
Honolulu, O'ahu

Enclosure: Map of zone A and Zone B
P.S. Since this legend predates Capt. Cook, I'm assuming that haoles are fair game.

Legends Of The Sea

by Justin Rutka



An apparition appeared in Justin's recent photo of the pohaku mentioned in the legend. Could it be the spirit of Kamohoali'i?



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Honolulu Laboratory
National Marine Fisheries Service
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Honolulu, HI 96822-2396

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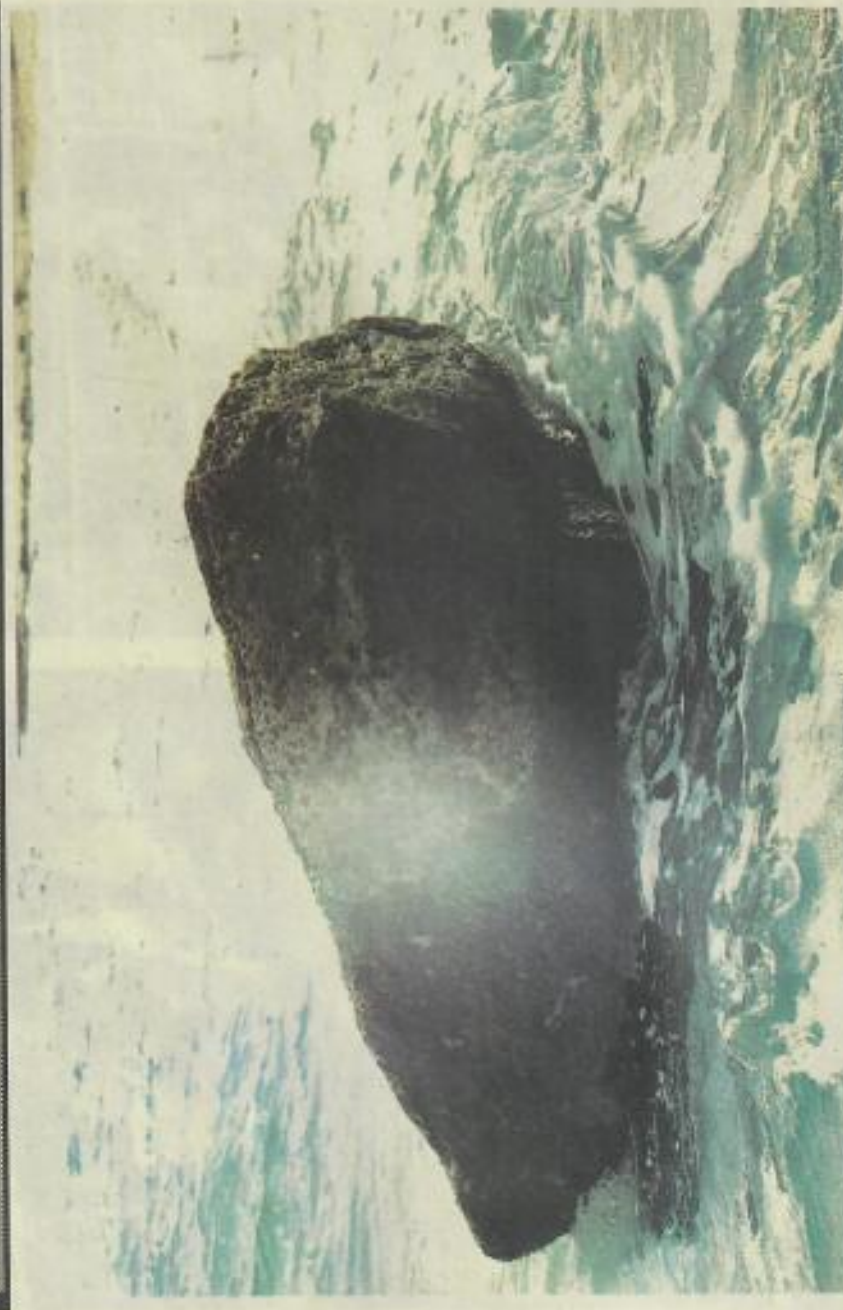
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**SPRING INVENTORY
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Dear Justin,

Thank you for sending me that wonderful story of Kamohoali'i and the picture of Pohaku Pa'akiki. Here's what I discovered from my shark attack file:

Case # Date Location Victim
1• 1779 Maluu, HI Nu'u-anu-pa'a hu
Circumstances: Young male gashed on one side of buttocks after being pursued while surf boarding. Subsequently suffered "great pain" and died at Pololu (Kamakau 1961; Anonymous 1983c).

Case
4• July 14, 1900 Makapu'u E. Uhlbrecht
Circumstances: Believed to have drowned when carried out to sea while hunting sea shells with companions. "A thorough search was made for the body for several days." Victim's foot with skin and flesh intact "in a fair state of preservation" was found in the stomach of an 11-foot 9-inch shark hooked on the night of 8-17-00 off Kaka'ako, Honolulu, by John Kinipeki. Positive identification of victim was made by Mrs. Uhlbrecht based on an ingrown toe nail. Human pelvis and femur, blackened and totally denuded of flesh, were also recovered from the shark's stomach. These bones were thought to be from a different person, probably one of several Chinese fishermen lost overboard in the harbor during the past months (Anonymous 1900; McMurray 1991).

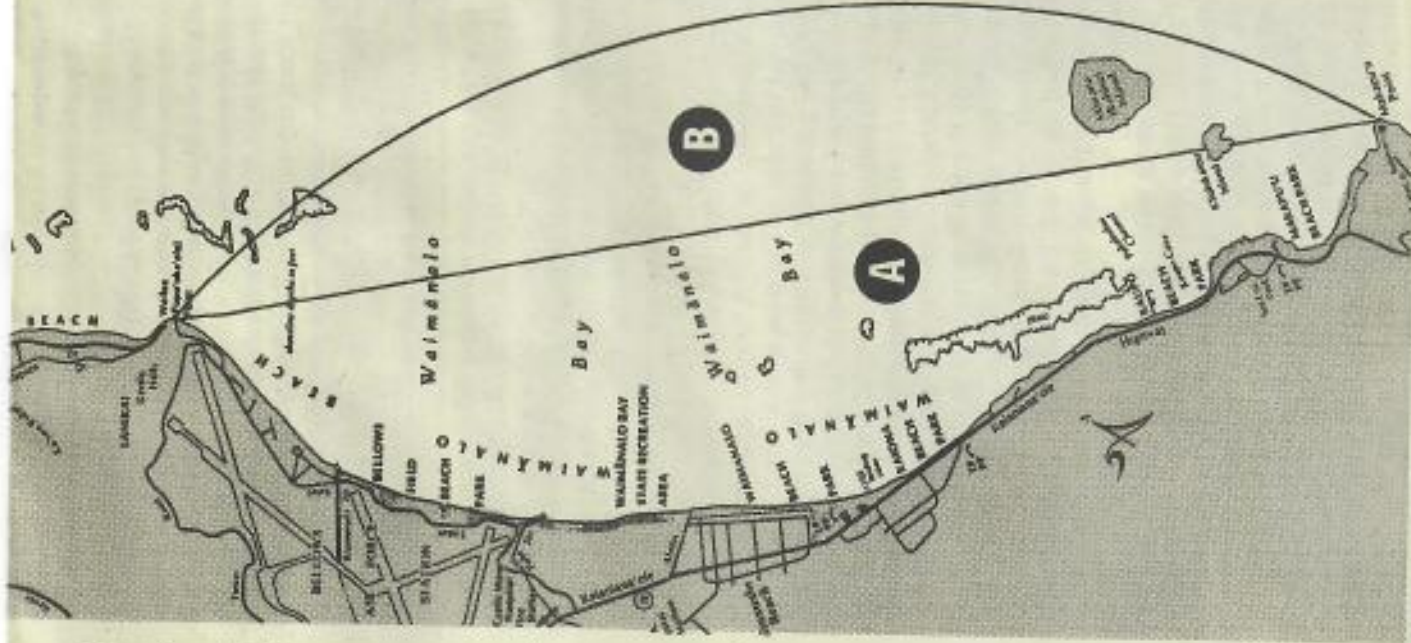
Case
29 Sept. 19, 1948 Makapu'u N. Kalama
Circumstances: Bitten on leg while swimming (Anonymous 1948; Morse 1953; Gilbert 1963).

As far as shark attacks go, that's it for the area between Makapu'u and Waimanalo.

Sincerely,



George H. Balazs
Zoologist, Honolulu Lab
P.S. Where did you find the legend of Kamohoali'i, and where did you get the map?



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PART II**

THE VOICE OF HAWAII'S FISHERMAN

May 1993

Volume 18, No. 4

\$2.75

SHARK CONTROL FUNDS APPROVED

The State legislature, which adjourned April 30, appropriated \$150,000 in fiscal year 1992-93 to DLNR for a shark population control program to improve water safety in Hawaiian waters.

DLNR will consult with the native Hawaiian community in planning and implementing this program.

Inclusion of this item in the State budget follows months of debate and controversy about Hawaii's shark "problem."

Hawaii's nearshore waters seem to have more sharks these days, according to many ocean users. And there have been a few attacks on people in recent months, including one confirmed fatality.

What should DLNR do about it?

To find a consensus in the complex shark issue, DLNR circulated a written questionnaire/survey at an April 13 shark task force meeting. Nineteen of the 27 attendees who answered the questionnaire chose the option of conducting research along with a small control effort to kill only a few identified predator sharks or threateningly large sharks at certain sites.

The 36 attendees included representatives from DLNR and other government agencies, Bishop Museum, Waikiki Aquarium, Sea Life Park, National Marine Fisheries Service, City and County of Honolulu Water Safety Division, Western Pacific Regional Fishery Management Council, U.S. Coast Guard, University of Hawaii, Hawaii Visitors Bureau and the Waikiki Improvement Association. Also present were commer-



cial fishermen, ocean recreators, a Hawaiian civic/cultural leader and others.

Six people chose the "conduct research program only" option, and two selected "conduct research along with a large control effort (statewide eradication of large potentially dangerous sharks)."

The "do nothing" and "don't spend money or time on research; conduct a large control effort" options had no proponents.

Several people recommended more public education about ways people can avoid attracting sharks.

Here are the responses to survey questions:

1. Does an increase in shark population in local waters present a risk to humans? Yes, 13; Neutral, 11; No, 3.
2. Should an MLCD (Marine Life Conservation Districts)/Artificial Reef be established off Waikiki Beach? Yes, 15; Neutral, 5; No, 7.
3. Should fish feeding be stopped in MLCDs? Yes, 20; Neutral, 7; No, 1.
4. Should Atlantis (submarine tours) be asked to stop feeding fishes at the (artificial) reef site? Yes, 13; Neutral, 8; No, 5. (Comments: (See page 9)

Fisherman Steve Kaiser kneels by 13-foot tiger shark he and his crew caught off Olowalu, Maui. DLNR sponsored this successful shark-catching expedition in response to a fatal attack there in November 1991.

HISTORIC PRESERVATION GIVES 5 GRANTS

The State Historic Preservation Division recently awarded five historic preservation grants. The grant money was established by the 1990 Legislature through a historic preservation special fund.

On Kauai, the Ho'opu-lapula Haraguchi Rice Mill was awarded grant money to restore the mill's machinery. The Haraguchi Rice Mill is the last rice

mill standing in Hawaii and is currently used as a museum.

In Honolulu, the Hawaiian Mission Children's Museum will reroof their three historic buildings: the frame house, the coral block Chamberlain residence and the print shop. The frame house, originally constructed in 1821, is the oldest building in the State. The grant money will allow the museum to restore the buildings to their original roofing material.

Another missionary house, Hale Hoiikeke on Maui, received funding for roof and masonry repairs. It was constructed in 1833 for missionary Jonathan Green. The residence is currently under the care of Maui Historical Society and is operated as a museum.

A fourth museum that received funding is the Greenwell Stores, located on the island of Hawaii, and owned by the Kona Historical Society. Built in the 1870's, it is the old-

est commercial structure on the Kona Coast and one of the oldest in the State. Grant money will be used for termite treatment and window repairs.

The final grant was awarded to the Molokai Museum and Cultural Center for the rehabilitation of 'Ipukaiole fishpond on Molokai. This 3.2-acre pond will be the second fishpond on Molokai to be rehabilitated.

In addition to these special fund grants, the 1991 Legislature appro-

riated moneys to three other preservation projects: Ka Ohana O' Kalae to undertake preservation of the Hawaiian cultural and archaeological sites at the South Point National Historic Landmark; Kona Historical Society to hire a project director to enhance their interpretive programming; and Bishop Museum to prepare plans for a satellite museum facility in Kona. ■

GREAT AMERICAN HOME AWARDS

Do you know of an old house or landscape that was recently renovated? If so, it could be a winner.

The National Trust for Historic Preservation is sponsoring the Great American Home Awards to recognize outstanding residential rehabilitation projects.

To qualify for these awards, the structures must have been designed as a single-family house and still serve as a home; be at least 50 years old; and have been renovated within the last five years.

Prizes include a \$2,000 gift certificate from Sears, certificates and brass plaques, and Sears paint. Winning projects will be featured in the January/February 1993 issue of Historic Preservation magazine.

Applications may be submitted by homeowners or by professionals, such as architects, contractors, and craftspersons. Work must comply with the Secretary of the Interior's Standards for Rehabilitation.

For information and an application form, send a self-addressed, stamped envelope to: Home Awards, National Trust for Historic Preservation, 1785 Massachusetts Avenue, N.W., Washington, D.C. 20036. ■

SHARK (From page 1)

Stop feeding with dog food; use fruit and vegetables or do not feed at all. Testing, chum sharks out to sea. Suspend for 60-90 days and get feedback.)

- Can you remove the more dangerous sharks and not the others? Yes, 14; Neutral, 4; No, 9.
- Do you think increased human activity will reduce the risk of shark attacks? Yes, 2; Neutral, 11; No, 14.

"Although we don't have hard data, the general consensus is that there are more sharks in Hawaiian waters than in previous years," Paty said. "We don't know why for sure. Some people speculate that this is because the State has not conducted shark control activities since the mid-1970s, or that the green sea turtle population has increased.

"Some people demand that DLNR take action. Others, such as Jean-Michel Cousteau, advise against hunting sharks because it could upset the ecological balance," Paty said.

"Most fisheries experts advocate research to help us learn more about shark behavior before we make any management decisions. For example, we could tag some large tiger sharks with sonar tracking devices to tell us their traveling habits," he said.

"If we learn that tiger sharks travel interisland, we might conclude that a hunting effort wouldn't necessarily make the nearshore waters safer for people.

"But if we confirm what many believe that tiger sharks stay in the same area, then we would be better able to make a decision to remove certain large sharks that may pose a threat to human safety," Paty said. ■

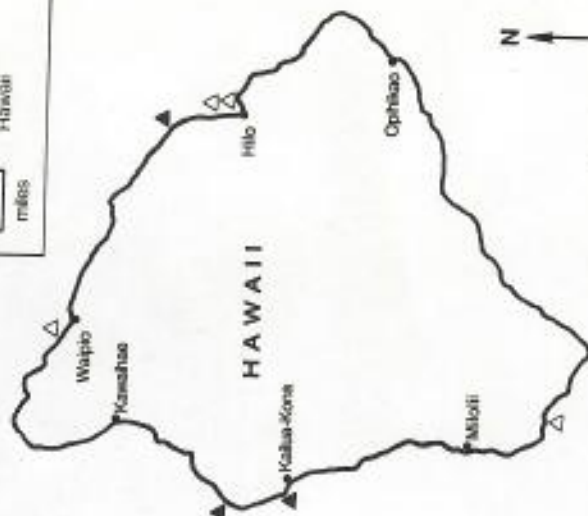
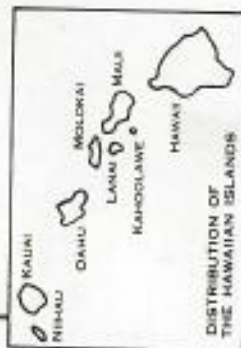
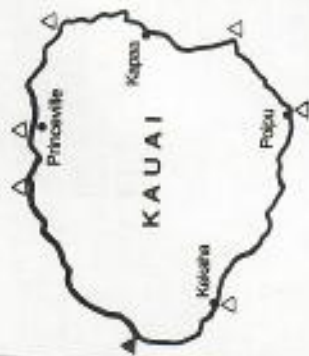


Tiger sharks can be selectively fished using large hooks and proper bait.

There are those opposed to deliberate removal of a few sharks for public safety, including Jean-Michel Cousteau, ocean explorer and conservationist. DLNR invited Cousteau to share his viewpoints with the Shark Task Force during a recent Hawaii visit.

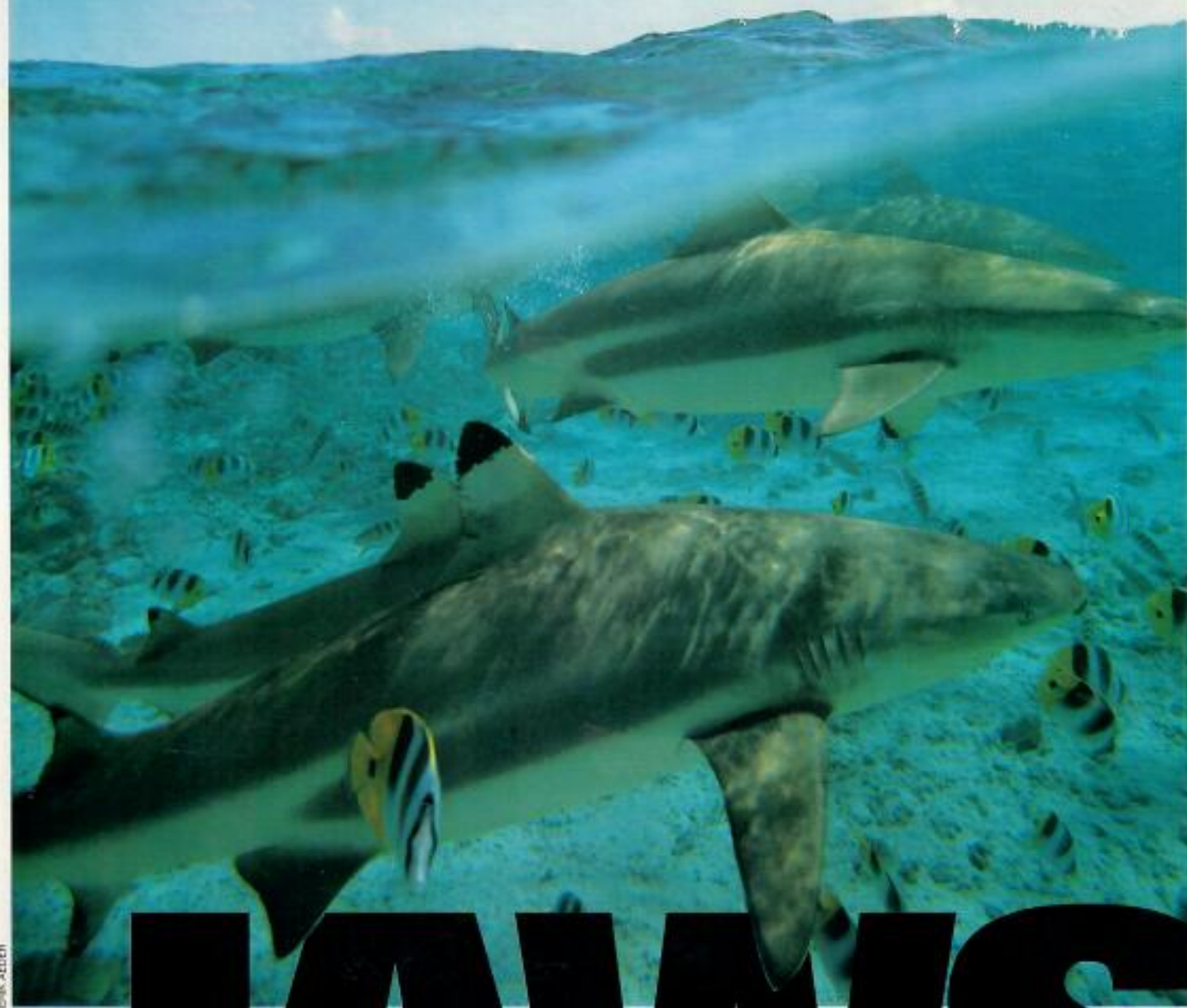
Some people believe that sharks are lured nearshore by people feeding fish, a common practice of tourists and commercial dive tour operators.

SHARK ATTACKS IN HAWAII 1778 - 1993



The attacks depicted are a conservative compilation of the shark attacks in Hawaii during the historic period. The cases are based on data compiled by George H. Balazs of the National Marine Fisheries Service. The attacks shown on the map are attacks in which the victim survived. Incidents where there was an absence of witnesses or an absence of sufficient body remains have been left out. Also omitted are cases where a fatality was likely attributed to another cause besides shark attack and was followed by mutilation by sharks. Shark bites sustained on boats or while trying to land or release a shark while fishing are also not depicted. George Balazs' complete list is included in *Tigers of the Sea: Hawaii's Deadly Sharks* by Jim Borg.

BEYOND



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JAWS

flesh, though tender shark pups are the delicacy of choice. In fact, while newly captured sharks generally refuse all offerings of food, they hungrily devour live baby sharks or hunks of fresh shark liver.

The tiger shark is particularly known for its indiscriminate eating habits. Dissections of tiger sharks have revealed stomach contents including nuts and bolts, coiled wire, lumps of coal, boat cushions, clothing, a tom-tom, an unopened can of salmon, garbage, driftwood, birds, other sharks, dolphins, seals and even the head of a crocodile. Not surprisingly, their stomachs also reveal an occasional human.

Of course, not all these objects can be digested by a shark. Hard objects that cannot be digested remain intact in the

stomach for quite awhile but finally are regurgitated. Much can be discovered about the circumstances surrounding an attack if the animal can be captured and cut open.

Sharks are virtually disease-free. Their greatest enemies are man, other sharks and killer whales.

The sharks that are most threatening to humans are the great whites and tiger sharks.

GREAT WHITE SHARKS

Father of all man-eaters, the great white is the second-largest shark. The biggest recorded specimens include a great white caught in 1978 off the coast of the Azores and measuring more than 29 feet, and a 21-foot great white near Cuba that was re-

ported to weigh more than 7,000 pounds.

The great white is the only shark that can hold its head above water to see what's happening on the surface. This shark is believed to be territorial, returning to the same location every year.

The size of its territory depends on available food and the number of other sharks present to help eat it. They frequently live near seal colonies, often in groups designated by size and sex.

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FOR THE RECORD

U.S. WEST COAST

Attacks on humans in northern California and Oregon have notably increased since 1959, paralleling increased attacks on seals and growth in the great white shark population. Attacks are expected to keep rising, along with shark and seal populations and with the number of humans venturing into the water.

Attacks rarely occur in southern California, where an absence of rivers and rocky headlands keeps down the local seal population. Perhaps also significant, southern California abalone divers are allowed to use scuba, while northern abalone divers must stick to breathhold-diving, which keeps them at the surface and thus increases their chances of being attacked.

There have been 67 great white attacks confirmed in California since 1926 (less conservative raw data, which may include attacks on ships and/or unsubstantiated accounts, puts the number of attacks closer to 120), 11 in Oregon, one in Washington,

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HAWAII

Since 1779, 102 attacks have been confirmed in the Hawaiian Islands, 44 of which were fatal. Per island, the distribution of attacks (numbers in parentheses indicate victims who died):

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When wavesailor Eric Welte crashed inside the surfline at California's Waddell Creek last summer, he was perturbed. His confusion changed to horror as he felt jagged teeth clamp through his neoprene bootie.

After receiving two chomps on the foot, Welte managed to climb on his board, only to see his assailant thrashing violently under his sail window. Fearing the worst, he jumped into the surf and high-tailed it to shore. The attacker turned out to be an ill-tempered seal!

No wonder Welte was frightened, though. With all the rumors going around, you'd think sharks have nothing better to do than lurk in the ocean underworld, lick-

BY ELISE MacGREGOR

Eric Larson was attacked by a shark at Davenport Landing Beach in Santa Cruz, California.

•On the same day that a northern California shark society assembled last spring to ban great white shark hunting along the California coast, a diver was bitten in Pacifica, California.

Over time, horrifying tales have sprung up around the shark, describing wild feeding frenzies and vicious unprovoked attacks. As with all tales of danger, these stories are accompanied by a stream of speculation on

Fact: Sharks and dolphins can and do kill each other, but they are often seen swimming together.

Myth: No windsurfer has ever been attacked by a shark.

Fact: Scott Shoemaker was attacked while windsurfing at Hookipa in 1982, suffering leg wounds that required 120 stitches.

SOME FACTS ABOUT SHARKS

Myths aside, here's a factual description of this infamous Hollywood monster:

There are 344 known kinds of sharks. The largest is the whale shark, which has been measured at more than 41 feet (21 tons) and is estimated to reach almost 60 feet. Despite its size, the whale shark feeds

[Everything You Ever Wanted To Know About Sharks But Were Afraid To Ask]

ing their chops and waiting for juicy windsurfers to fall in their path. Yet your chances of being attacked by a shark are relatively small ... especially if you're a windsurfer.

We've been hearing this shark talk for too darn long. With more and more sailors venturing into the ocean each year, it's time to dispel some of the myths surrounding the shark. Besides, there are some preventive tips that do bear mentioning.

MODERN-DAY MYTHS

Superstition about sharks dates to ancient times, when they were honored as powerful gods of the deep. Legend has it that *mano-kanaka*, or shark men, took on human form and created mischief among the island people. In Hawaii there is evidence that sharks were offered human sacrifices.

By modern standards, ancient superstitions surrounding the shark may seem farfetched. Nevertheless, the most hardened rationalists might wince at these recent coincidences:

•In 1991, on the same day the San Jose Sharks played their first home game of the season, surfer

how to avoid being attacked.

Myth: Sharks have terrible eyesight.

Fact: Sharks have excellent eyesight and see well in dim light. In fact, shark corneas have been used as transplants for human corneas.

Myth: Sharks are brainless eating machines.

Fact: Not only are sharks' brains physically large, but young nurse sharks have been trained to come, touch and retrieve objects on command.

Myth: "When dolphins are near, have no fear."

on plankton and is so harmless it can be ridden by humans.

Sharks grow throughout their lives. Their highly specialized teeth are continuously renewed and vary according to each breed's dining preference. Their skeletons are mostly cartilage, and their skin is covered with tiny toothlike denticles with the same internal structure as their teeth.

Most sharks' eyelids are fixed in their sockets. Sharks can hear well enough to detect prey at great distances, and their sense of smell, which improves with hunger, is exceptionally sharp. Even more prominent is their ability to detect other creatures' electronic fields—the greatest sensitivity of any animal we know.

Sharks normally cruise at speeds of less than 1 mph. They're capable of high-speed bursts but tire quickly. Warm-blooded sharks such as the great white, which is partially warm-blooded, are the strongest swimmers.

Sharks are predominantly meat-eaters, feeding on foods ranging from tiny plankton to large whales. While they prefer live, fresh food, hungry sharks have been known to eat decayed



LEFT: These blacktip reef sharks enjoy the warm, clear water of Tahiti. ABOVE: A tiger shark can munch right through the shells of large sea turtles.

flesh, though tender shark pups are the delicacy of choice. In fact, while newly captured sharks generally refuse all offerings of food, they hungrily devour live baby sharks or hunks of fresh shark liver.

The tiger shark is particularly known for its indiscriminate eating habits. Dissections of tiger sharks have revealed stomach contents including nuts and bolts, coiled wire, lumps of coal, boat cushions, clothing, a tom-tom, an unopened can of salmon, garbage, driftwood, birds, other sharks, dolphins, seals and even the head of a crocodile. Not surprisingly, their stomachs also reveal an occasional human.

Of course, not all these objects can be digested by a shark. Hard objects that cannot be digested remain intact in the

stomach for quite awhile but finally are regurgitated. Much can be discovered about the circumstances surrounding an attack if the animal can be captured and cut open.

Sharks are virtually disease-free. Their greatest enemies are man, other sharks and killer whales.

The sharks that are most threatening to humans are the great whites and tiger sharks.

GREAT WHITE SHARKS

Father of all man-eaters, the great white is the second-largest shark. The biggest recorded specimens include a great white caught in 1978 off the coast of the Azores and measuring more than 29 feet, and a 21-foot great white near Cuba that was re-

ported to weigh more than 7,000 pounds.

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out to the Farallon Islands, known as "the red triangle," is particularly well-known for its abundance of great white sharks. At almost any time, people visiting Año Nuevo, the Farallones or Guadalupe Island can observe seals with fresh or healing shark wounds.

Great whites feed infrequently, although their exact time between meals is unknown. (One 1982 study showed that a 15-foot shark can live for about 45 days on 66 pounds of whale blubber).

A great white attack usually consists of one massive bite taken from under or behind the chosen prey. (Attacks to the head are rare.)

As the shark's jaws open, its whole head changes shape: Its mouth moves to the

front, and its snout bends up out of the way. During the attack the shark cannot see its victim, instead relying on its electronic field sensors to keep track of the prey.

The moments after the initial attack are crucial: Humans who have been bitten once generally can escape if they get help from a buddy or make it to shore on their own. But sharks usually lose interest in humans after the first bite. (Maybe it's our fast-food diet.)

TIGER SHARKS

The next largest and the next most dangerous man-eating shark is the reef-dwelling tiger shark. Young members of this warm-water shark sport prominent tiger-like stripes that fade as they age.

Reports of two 21-foot tiger sharks caught

in Australian shark nets, and unconfirmed fishermen's reports of an 18.5-foot shark caught in New South Wales and a 12-foot shark caught in the Gulf of Panama, are among the largest sightings.

In addition to eating seals, sea lions and the variety of refuse listed above, hungry tiger sharks can munch right through the shells of large sea turtles.

Hunger probably prompted a tiger shark to attack speed sailor Roddy Lewis while he surfed a remote spot in Maui's Wailuaiki Bay last spring. Several elements were against Lewis—the water was murky, sticks and other objects floated nearby, and he and his buddy had paddled to an isolated spot to escape the crowd. In fact, Lewis says he thought, "This is perfect water for

Attacks have increased since 1950, with 14 attacks in the 1950s, 24 in the 1980s, and 14 since 1990.

Victims were enjoying the following activities before the attacks:

| | | |
|----------------------------------|----|------|
| Swimming/ snorkeling | 23 | (8) |
| Spearfishing while snorkeling | 6 | (1) |
| Scuba diving | 4 | (3) |
| Spearfishing with scuba | 2 | (2) |
| Hard-hat diving | 1 | |
| Surfing | 16 | (2) |
| Body boarding | 5 | (2) |
| Windsurfing | 1 | |
| Body surfing | 3 | (1) |
| Inner tube (w/ lobsters) | 1 | |
| Wading | 1 | |
| Fell/swept into sea from land | 16 | (16) |
| Fell off boat or capsized | 4 | (3) |
| Fishing/crabbing | 13 | (4) |
| Activity unknown | 5 | (1) |

U.S. EAST COAST

While a significant number of attacks have occurred along the U.S. East Coast, the vast majority have not been fatal. In fact, many East Coast and Florida attacks are thought to be caused by blacktip sharks and spinner sharks, 6-9 foot species that normally live on a diet of fish

and probably bite humans only by mistake.

The number of attacks, confirmed and unconfirmed, reported for each state is:

| | |
|---------------|----|
| Georgia | 6 |
| S. Carolina | 31 |
| N. Carolina | 4 |
| Virginia | 5 |
| Delaware | 4 |
| New Jersey | 28 |
| New York | 12 |
| Connecticut | 2 |
| Massachusetts | 7 |

FLORIDA

All told, 305 attacks have been reported in Florida, with at least 50 percent of recent attacks directed at surfers. There were 98 attacks in the 1980s, making an average of 9.8 attacks on humans per year, with 0.8 deaths per year; 11 attacks in 1990; 16 attacks in 1991; 12 attacks in 1992. (None of the attacks on surfers during the 1980s were fatal.)

THE GULF

Again in raw numbers, 30 attacks have been reported in the Gulf states:

| | |
|-------------|----|
| Alabama | 2 |
| Mississippi | 2 |
| Louisiana | 2 |
| Texas | 24 |



sharks ...," about five seconds before the attack.

As the 10- to 12-foot shark gripped his leg and tried to pull him under, Lewis beat it on the side of the head and drove it off, then managed to catch a wave and surf in to shore. Doctors managed to save Lewis's leg, and he reportedly is planning to resume surfing.

WHERE SHARKS HANG OUT

While cold-blooded pelagic sharks (sharks that reside in the deep ocean) tend to migrate north in the spring and summer, and south in the fall and winter (Northern Hemisphere), tropical sharks generally don't migrate when the currents turn cold—they just get less active.

THE MOMENT OF ATTACK

Contrary to what Hollywood would have us believe, the shark doesn't normally attack by launching a frenzied assault and immediately shredding its victim. In fact, multiple bites during the initial attack are rare. Sharks most commonly bite humans on the arms, hands, legs and feet, and the majority of human victims survive.

Also defying the stereotype, most sharks are not inherently vicious. Sharks generally attack for two reasons: for food and when they feel threatened. (It's conceivable that sharks view the speeding, sharp-nosed, sharp-finned windsurfing boards that slam into them as a threat.) However, sharks have had days like everyone else, as evidenced by occasional reports of sharks chasing swimmers onto the sand or beaching themselves in an attempt to bite passing beach strollers.

One such story was related to me by longtime surfer and avid windsurfer Mike Schechter. Several years ago when Schechter was surfing with his buddies down in Acapulco, a decidedly irate shark, swimming at an alarming speed, made his way toward the group. Everyone quickly paddled for the beach, but the shark popped up right beneath one fellow's board, chomping and snapping. Following a dramatic struggle, the surfer managed to catch a wave into the beach, followed by the shark, who unsuccessfully chased him onto the sand.

Frustrated, the shark turned away and headed down the coast, leaving the surfers with a premonition of bad things to come. Sure enough, a Canadian tourist was reportedly eaten later that day.

Much attention has been given to the theory that sharks can't recognize a proper meal when they see one, often mistaking a bony surfer for a plump, juicy seal.

The modern trend toward short surfboards has probably contributed to this resemblance. However, shark scientists are divided on the issue since recent evidence

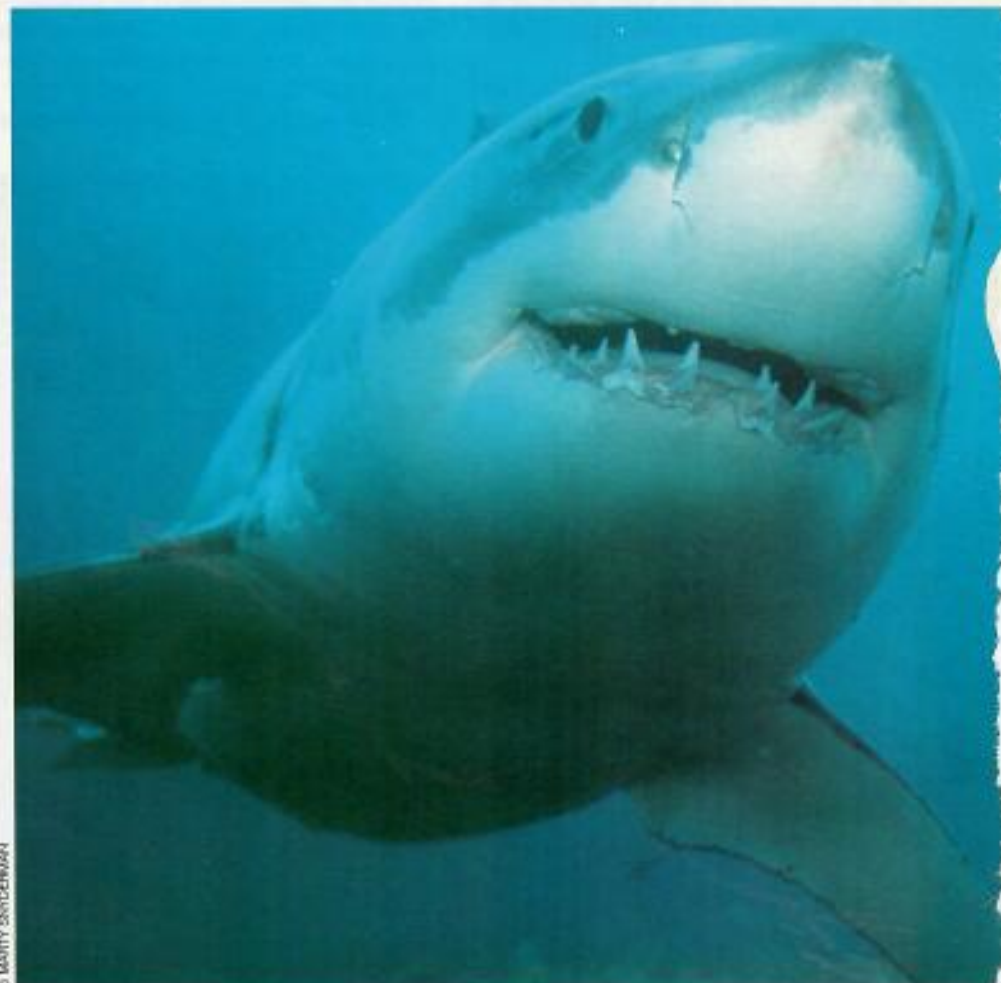
implies that sharks' senses are quite keen (making mistakes unlikely) and that one may attack indiscriminately simply because it's hungry.

When Scott Shoemaker was attacked at Hookipa, the shark's motivation was probably territorial rather than a hankering for a tasty meal. Shoemaker was sailing at full speed, well away from the shore, when a sudden impact caused his board to spin out, leaving him dangling from his booms with a 4-5 foot reef shark attached to one

thigh. He let go of the boom, pushed the shark off with his hand and crawled onto his board to await the next attack. When none came, he mustered his nerve, jumped in the water, rearranged his rig, waterstarted and sailed to shore. His friends whisked him off to the hospital.

Shoemaker says he felt no pain at the time of the attack, but the look of terror in his eyes must have been quite a sight.

(Reef shark attacks generally are more common among divers than surfers.)



WHAT ARE YOUR CHANCES?

Everyone knows the chances of being attacked by a shark—about the same as your chances of being struck by lightning, right? Actually, chances are that you won't be attacked by a shark. It's also true that you're not likely to be struck by lightning (although lightning kills more than 100 people in the U.S. each year).

On the other hand, just as the likelihood of being struck by lightning increases significantly if you live in Kansas or Oklahoma,

tack animals that are at the surface, or it may simply result from the fact that humans spend most of their time in the water on the surface.

About half of all divers attacked report having seen the shark prior to the attack; most other victims are caught unaware. More attacks occur during spear fishing or feeding fish—the blood in the water attracts sharks.

Attacks occur both in and out of the surf zone, at various depths and in clear or cloudy water, although sharks prefer cloudy water

to the chain mail worn by medieval knights). The resulting blood from some of these methods, however, may attract other sharks.

Underwater shark nets are an effective control in coastal swimming areas. The nets have been strategically positioned along many popular beaches in Australia to guide sharks away from the enclosed area. This is mostly to protect sharks from humans, not the other way around.

In South Africa, researchers have developed an electric shark barrier that keeps sharks outside the surf zone.

While these methods do prevent attacks, they are quite costly and are unlikely to appear along our coastlines any time soon.

SHARK NO-NOS

No method of protection has yet emerged that can be used by windsurfers or surfers, but there are ways you can reduce your chances of being attacked:

- Don't go into the ocean alone. Since great white and tiger sharks tend to retreat after the first bite, there's often time for a victim to escape—especially if he/she can get assistance from a buddy.
- Don't sail out to the horizon. You never know when you might discover a crack in your equipment and become stranded.
- Don't surf or swim where people are polefishing or spearfishing, or near ocean refuse dumps.
- Don't surf where the water is cloudy.
- Be wary of unusually large numbers of fish, especially if their actions are erratic.
- Don't surf near river mouths, inlets, piers, jetties, etc.
- Don't be in the ocean at dawn, dusk or after dark.
- Don't enter the ocean with an open wound. Sharks can detect the blood. (Although scientists seem to feel that menstruating women aren't at increased risk, it's better to err on the side of caution.)
- Don't wear shiny watches, jewelry or reflective clothing in the water. Sharks see contrast very well. (And although there is no evidence to substantiate the rumor, you might also want to avoid wearing "yum-yum" yellow.)
- Beware of glassy surface conditions.
- If you are stranded offshore, don't splash around more than you have to.
- And last but not least: Avoid places where people have been bitten before. Sharks, unlike lightning, do strike the same place twice.



© DOUG PEREIRA

TOP LEFT: Great whites are the father of all man-eaters, but in reality, sharks often lose interest in humans after the first bite.

BOTTOM LEFT: It was a tiger shark like this one that attacked speed sailor Roddy Lewis while he was surfing in Maui last spring.

ABOVE: The bull shark is a common coastal shark, but the species has been found in fresh water, like the Mississippi River and Lake Nicaragua.

your chances of being attacked by a shark increase if you spend five days a week in the ocean.

It's difficult to come up with a statistic for the probability of attack because it's hard to estimate how many people go to the beach each day, how many actually enter the water and for how long. Reader's Digest's book, *Sharks*, compares the likelihood of drowning to that of being attacked by a shark: Drownings are 1,000 per every one shark attack in the U.S., 600 to 1 in South Africa, and 50 to 1 in Australia.

Studies indicate that 79-90 percent of all attacks on humans occur at the surface. This may be because sharks prefer to at-

and areas near harbors, docks, jetties, bays, channels and rivers. Floating garbage may also be a factor in tropical shark attacks.

The likelihood of an attack increases significantly when the water surface is calm, especially in the evening and early morning, when sharks move closer to the shore in search of food.

SHARK CONTROL METHODS

Divers, among the most prominent of the targeted groups, have found varied success experimenting with gadgets ranging from simple spears to exploding spearguns, gas injection darts, electric shark repellents, and Kevlar fiber and stainless-steel suits (similar

ELISE MACGREGOR, a videographer, freelance writer and windsurfer in Santa Cruz, California, is most comfortable in the ocean when surrounded by people wearing yellow bathing suits and shiny jewelry.

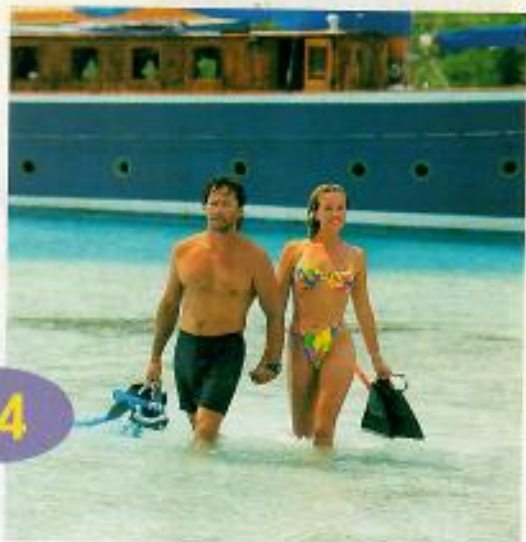
WIND SURFING

FEATURES

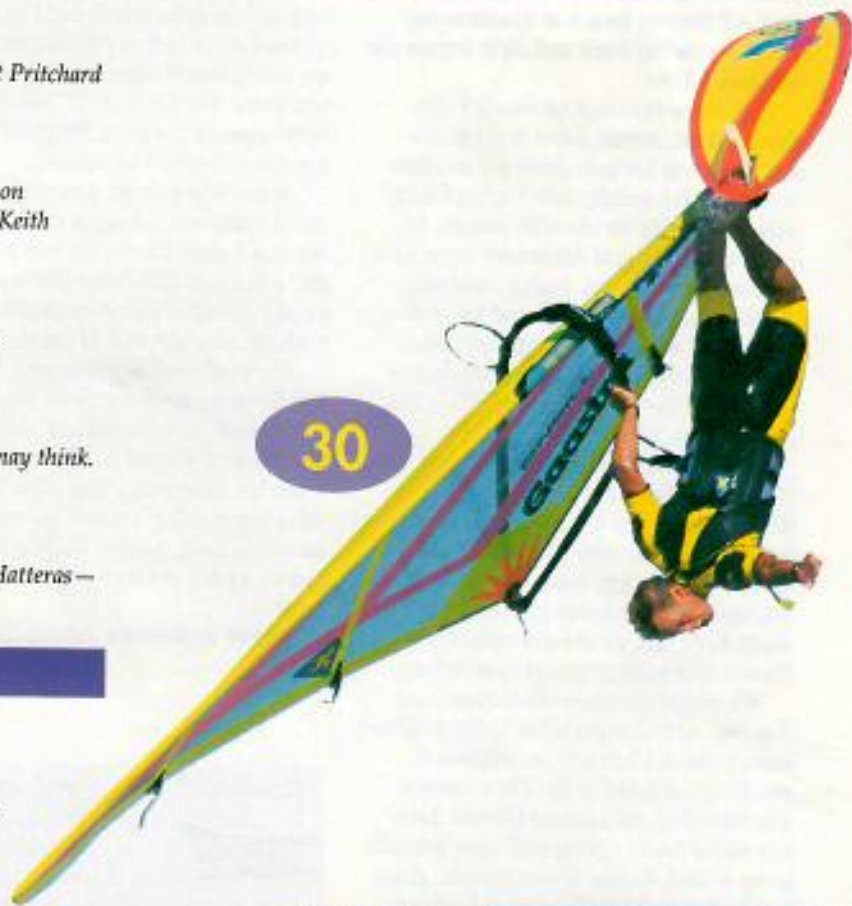
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One of the fleet boats from the HIHO in the British Virgin Islands
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Photograph by
Doug Hollenbeck



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WIND SURFING

SEPTEMBER/OCTOBER 1993

HEAD FOR PARADISE

Cruising The
British Virgin Islands

PAGE 24

USA \$2.95 CANADA \$3.95



Friday September 10, 1993

George,

As a direct result of your ~~the~~ help, I have reduced the shark population of the North Shore by Two Sharks. Saturday July 10, 1993 hooked and cooked one Tiger Shark, 13' 4" long 500lbs. male Tiger shark in very fat condition. 85% of the 250 shark attacks in this world annually are attributed to Tiger Sharks 10' or longer.

Just imagine how many young people, surfers, bodyboarders and children playing by the beach would have been attacked if this shark was allowed to continue his reign of terror on the North Shore. George thank you for your support as my brave friend till the end who gave me the opportunity to fulfill my destiny and catch this man eater. Also on Tuesday August 24, 1993 hooked and cooked one Lemon Shark 7' long 200 lbs Female Lemon Shark.

Thank you for helping me out.

Bradley Hara

68-036 Apuhii St. Apt. D. Wai'anae, Hawaii 96791

Sharks off Waikiki

Have we been inviting them?

By Rick Bernstein
Special to The Advertiser

HAVE we allowed a Jurassic Park to be created in Waikiki? Let us examine the facts. The "Jurassic" was a period of time approximately 144 million years ago characterized by dinosaurs and other reptilian creatures. The sharks, some of which have been seen in Waikiki recently, came into existence 350 to 400 million years ago, and are the largest and oldest vertebrate predators still in existence.

Mathematician Ian Malcolm, the character played by Jeff Goldblum in the movie "Jurassic Park," says in the film, "The lack of humility before nature staggers me. Don't you see the danger?"

IT IS difficult not to draw parallels between Jurassic Park and the tampering with the ecology of Waikiki. In 1988-89, Atlantis Submarines, with the blessings of the state Department of Land and Natural Resources, created a theme park on the ocean bottom off Waikiki.

Quietly, Atlantis buried a 380-ton Navy oiler and two Mid-Pacific jet planes and numerous concrete and fiberglass fish aggregating

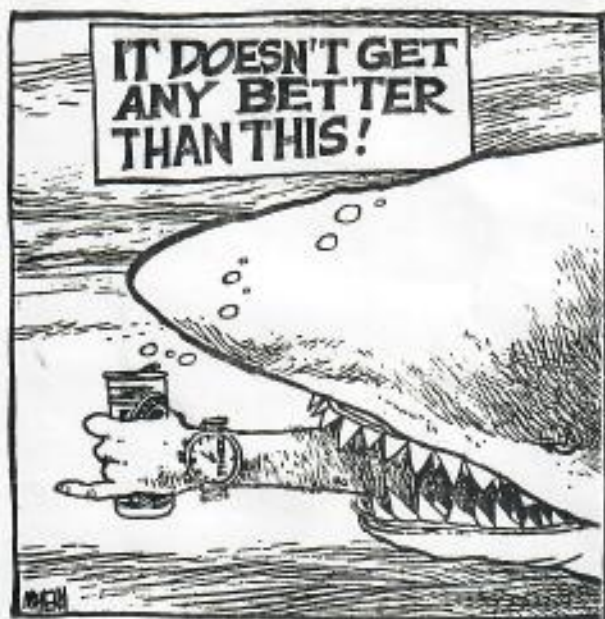
devices. The company did this with an environmental impact statement. However, the EIS did not mention fish feeding. Atlantis then began feeding tons of dog food monthly to attract fish to the artificial reef.

(Atlantis says it has voluntarily halted the practice.)

It is important to note that this area is less than 1 mile from the shore of Waikiki, just opposite the Natatorium, in an otherwise barren area of ocean bottom. Dr. Richard Brock, a University of Hawaii scientist who was involved in the building of the artificial reef, has been quoted as saying that before the Atlantis reef, there was one-thirtieth of an ounce of fish per square yard in the area.

Now there are 30 ounces of fish per square yard. This is an increase of more than 1,100 percent and represents a major skewing of the natural ecological balance of the area. An average Hawaiian reef contains 7 ounces of fish per square yard. As evidenced by a film of the sharks and whales in Australia on the TV news two weeks ago, sharks are attracted to large populations of fish.

In March of 1992, I was warned not to swim near the Atlantis reef. I was told that there were numerous sharks frequenting the area. My wife and I took the Atlantis ride and filmed three 8-foot sharks. We were told that six sharks were at the reef site that day.



From that time on, Atlantis admitted that sharks were at the reef but claimed that they were harmless and that they had named them Spot, Scar and George. These sharks were identified as Oceanic Black Tips, or *Carcharhinus limbatus*. According to George Burgess of the International Shark Attack File, they have been known to attack humans.

Atlantis took another step in its Jurassic Park odyssey by advertising "the awesome nature of the circling sharks" in its printed advertisement showing a photo of Diamond Head and Kaimana Beach in the background.

The DLNR is in the process of giving Atlantis a 40-year lease for 5.814 acres of the ocean bottom in Waikiki. The annual lease rent will be \$750 for the first 10 years and 1 percent of the gross sales for years 10 through 15.

This lease makes a travesty of submerged conservation lands; it represents the despoiling of our precious Waikiki and a financial arrangement made in hell. In 10 years, Atlantis will make \$400 million while the state will make \$7,500.

The lesson of "Jurassic Park" is that humans cannot contain or control nature. As Dr. Malcolm said, when he discovered that the genetically-engineered, all-female dinosaur population was breeding, "Nature finds a way."

Should a shark attack occur in Waikiki waters, the tragic consequences will be enormous. Not only will the families of the victim suffer, but the whole state will suffer the financial hardships of a downturn in the already fragile and depressed tourist industry.

The state's denial and refusal to acknowledge any problem with sharks in Waikiki parallel the denial of the creator of Jurassic Park, who could not see that "nature would find a way."

Let us hope that our state leaders will awaken to the dangers of (those) who would exploit nature and endanger human life.

The simple solution is to move these operations to a location away from the friendly waters of Waikiki.

□

Rick Bernstein is a yoga instructor and swimmer who frequents waters off Waikiki.

October 15, 1993

George:

I know my position seems a little confusing but it is really quite straightforward. Let me summarize:

I feel we had a shark "problem" in Oahu waters recently with an abundance of tiger sharks, probably because of no directed fishing effort since the early 70's. Based on our present knowledge about the tiger shark, I advocated a selective fishing program to remove several big animals from a specific area after an attack or after consistent sightings of a large tiger shark in a particular area. I was, and still am, strongly against a large scale control program as was conducted in the 1950's and 60's. (These recommendations were made in my testimony on HB2878, Feb. 3, 1992). This policy was implemented by the Shark Task Force with, I feel, satisfactory results.

However, things have now gotten out of hand with independent fishermen removing numerous large tiger sharks from waters around Oahu. My records indicate 54 big tigers taken off Oahu in the past year, which surpasses the number taken in at least one prior large scale control effort; the 1971 program when 28 were removed from Oahu coastal waters. This is particularly wasteful since the majority of these sharks are dumped at sea.

The problem is, when do we stop? I feel at the present time we should continue with the Task Force's policy of selective, site specific fishing, with the expansion of this policy to the outer islands. Basically, my position is "middle ground" which the media often has a hard time comprehending.

With regard to the turtle situation I'm not sure what Bill was referring to. The only handout I mentioned was the "Sharks of Hawaii" brochure. What I stated was that there is an indication that tiger sharks may be consuming more turtles (as we discussed recently). My records indicate that of 24 tigers recently examined with food in their stomachs, 10 had turtle remains, for a 42% occurrence. As you know, in Tester's program it was around 20%. Although these new data are not the best, there is an indication here which would be interesting to continue investigating. (Perhaps through a NMFS research effort!). If tiger sharks are taking advantage of a more abundant turtle prey they may also be patrolling at dusk and dawn nearshore, thereby putting them in contact with surfers as they scan the surface from below. This is certainly only an idea which needs to be investigated further, particularly since we know that tiger sharks will alter their behavior or feeding strategy to take advantage of an increase in a specific prey item, i.e. albatross fledglings in NWHI, sea snakes in northern Australia, etc. Possible interesting research project - let's discuss.

John

The Honolulu Advertiser

Wednesday,
Sept. 15, 1993

Trial Edition

A Gannett Newspaper

On Oahu 50¢

Killing of 53 large tiger sharks off Oahu seen cutting both ways

By Walter Wright
Advertiser Staff Writer

Widespread fishing of large tiger sharks may have made Oahu waters safer for swimmers, a top shark expert said last night.

But, ironically, the taking of the large tigers may also be disrupting research intended to lead to a safe balance between people and sharks in Hawaii.

John Naughton, a member of the state's shark task force, said last night the taking of four large tigers yesterday by private fisherman Perry Dane brings to 53 the total number taken out around Oahu since a rash of shark attacks last year.

Dane caught four sharks measuring 13 feet, 6 inches; 12 feet, 7 inches; 10 feet, 2 inches, and about 8 feet. The sharks were pulled in about a half mile off Mokuileia yesterday morning near a surf site called Rock Crushers.

Two of the sharks were said to be pregnant, carrying a total of 43 shark

"pups."

Dane provided information on the catch to Naughton, saying he made the expedition because akuia fishermen in the area reported having problems with several tiger sharks.

The shark task force has taken out 11 large tigers, responding only to locations where there had been reported attacks or sightings of large and menacing sharks.

The other 42 sharks have been taken by private fishermen, many of whom have acted independently in hopes of reducing shark attacks, and some of whom fish the large animals as a business enterprise.

Naughton said the task force has been in the middle between persons demanding more sharks be caught to make the waters safer, and others worried that upsetting the ecological balance can harm the environment, and even disrupt the food chain.

Large tigers prey on eight or nine other near-shore shark species that themselves can be a problem for

surfers and swimmers, he said.

The task force specifically decided against launching a shark population control effort, Naughton said, but the combination of task force fishing and private fishing of tigers this year has created a control effort at least as extensive as those of past years.

As a result, Naughton said, "there are probably not a whole lot of them (big tigers) out there" around Oahu.

Naughton stressed there is nothing illegal about fishing for sharks, and that the task force encourages anyone who catches a shark to make use of the animal and report the stomach contents to the task force.

Dane told Naughton he was making use of all of the shark.

The population of large animals is so thin now, Naughton estimated, that it may be difficult to tag a sufficient number of large tigers around Oahu to carry out research efforts.

As a result, the tagging and tracking program may have to be undertaken off a neighbor island, he said.

Fishermen can't stomach requests

□ Bagging of sharks' innards is a turnoff

FISHERMEN aren't giving State Shark Task Force member John Naughton much help in determining what tiger sharks eat.

"I want them to bag the stomach contents. It's a pretty terrible job, that's why I think they're not doing it."

Shark fishermen have been slightly more helpful by sending tissue samples to University of Hawaii marine biologists Gerald Crow and Steve Palumbi. But the shark researchers need even more cooperation if they are to answer some important questions about tiger shark behavior.

Crow is trying to find out how often tiger sharks bear pups, while Palumbi wants to know whether the tiger sharks of the Northwest Hawaiian Islands are genetically related to the tiger sharks in local waters.

If tiger sharks don't reproduce very often, an eradication program could make it difficult for them to maintain a sustainable population. "It looks like they only bear young every three years," says Crow.

Unfortunately, he has many more questions than answers about tiger shark reproduction. "It's taking longer because I have no information, I don't know when they ovulate, when they mate," Crow says.

And information is difficult to come by. The UH killed 131 tiger sharks in a research and control program around Oahu in the late '60s, and scientists got a wealth of data out of it. A similar program in 1971 provided more information, though some scientists disdained the programs as not scientifically controlled.

But such programs are expensive, and unthinkable during times of tight budgets, so Crow spends hours studying the old information to build up a data base.

He's working with data on 18 pregnant females, getting a fix on how long the pups remain in the womb, and how many pups the sharks have. But he's hoping to get information from fishermen willing to let him study the females they catch.

The researchers also assist each other. "I've been taking tissue samples from Task Force sharks to help Steve out. We've gotten samples from French Frigate Shoals sharks to see if the two groups are genetically separate, or if they intermingle. "We're trying to see what the distribution is, how much they move," Crow says.

If the local population is being replenished by sharks from the Northwest Hawaiian Islands, eradicating the sharks here might be a waste of time.

9/27

George,

I think this is a pretty serious "attack" and a potentially dangerous subversion - especially inside Kahului Harbor!

I'll discuss it with Randy and try and get more info.

Also this is another example of an "attack" when someone is attempting to uncover or remove the "victim".

John

9/24/93
John -

UNDER CURRENT "GUIDELINES", IS THIS SUFFICIENT REASON TO FISH FOR THE SHARK ON MAUI?

DEPARTMENT OF LAND & NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES - MAUI
70 South High Street, Room #201
Wailuku, Hawaii 96793
Phone # (808) 244-2072

(KAHULUI AREA)

PLEASE RETURN

September 22, 1993

To: Paul Kawamoto, Program Manager
Through: Randy Honebrink, Education Coordinator
From: Brooks Tamaye, Information Specialist - Maui
Subject: Turtle Recoveries

George

On 9/17/93 at 8:30 a.m. DOCARE Officer C. Ah Loy notified our office that County Lifeguards had a dead sea turtle at Baldwin Beach Park. At 10:30 a.m. I arrived at Baldwin and retrieved the turtle from Water Safety Officer Rowen Hayes. The turtle had been brought to shore by some fishermen. It had apparently gotten entangled in their lobster net. The Lifeguards had tried to resuscitate it but were unsuccessful.

1

No tags, tumors or external injuries were observed. The small green sea turtle was frozen and NMFS notified. The turtle was shipped to them this morning.

9/21/93 at 7:45 a.m. an employee (Darrin) of McCabe Hamilton & Renny Co. at Kahului Harbor reported to our office that he saw a turtle entangled with what appeared to be some kind of floater. The turtle was in the water, on the inside of the Kahului Harbor Breakwater at the end of Pier 1.

(The State Marine Patrol had been notified through DOFAW)

I arrived at Kahului Harbor at approximately 9:00 a.m. and searched for the turtle around the breakwater. It could not be found. As I was discussing with employees the last known location of the turtle and its situation, Marine Patrol Officer Fabrizio drove up and informed me that the turtle had been picked-up and was at the ramp.

2

Harbor Patrol Officer Koa and Marine Patrol Officer Kendricks had gone out on a zodiac and retrieved the turtle. When they first came upon it the turtle was alive and swimming. As they attempted to cut away the floater and rope they saw something white below it. Before they could cut the turtle free a large tiger shark came up and attacked the turtle. The two men backed-off. The shark consumed all four flippers. The shark was estimated to be about 13 feet long.

Turtle Recoveries

Page 2

The turtle was subsequently brought back to the ramp. It had expired by the time I arrived. With the assistance of Officer Fabrizio and a DOT truck the turtle was taken to the Central Maui Landfill.

The turtle was a female green sea turtle (Chelonia mydas) it had a curved carapace length of 95 cm and a curved carapace width of 90 cm. Numerous tumors (some quite large) were observed on its neck and what was left of its front flippers. No tags were found. No photos were taken.

c: George Balazs, NMFS

State may OK canoe plan for Kahului Harbor

By Edwin Tanji
Advertiser Maui County Bureau

KAHULUI, Maui — The State Harbors Division can consider allowing Hawaiian canoe races in Kahului Harbor, although it's not technically the division's responsibility, harbor chief David Higa said.

After a presentation to the state Commission on Transportation last week, Higa said he plans to revise the Kahului Harbor master plan and could consider provisions for canoe use of the harbor.

A public meeting to discuss updating the Kahului Harbor master plan will be held before the end of the year, he said.

The current harbor master plan does not provide for Hawaiian canoe activities, although two canoe clubs have been using the harbor for training and racing for more than 20 years.

Current plans for upgrading

the harbor include taking over a shoreline strip that the clubs use for canoe *hale* (houses).

Higa said the state is negotiating with landowner Alexander & Baldwin to acquire the canoe club sites, but also is discussing allowing the clubs to move to a site in Hoaloa Park farther down the shoreline.

"The expansion of the harbor would mean at some point the

canoe clubs would be relocated," Higa said.

Na Kai Ewalu Canoe Club member Mahina Martin also argued that plans for expansion would eliminate the course now used by canoe paddlers in training and for regattas.

A plan to fill in a portion of the harbor to increase barge berthing space "cuts into a portion of the course," she said.

Higa said the Harbors Division is responsible for commercial harbor operations. Recreational activities are the responsibility of the Department of Land and Natural Resources.

But the harbor master plan does provide for a small boat launching ramp that is another recreational activity transferred to the land department.

HAWAII

Thursday, September 30, 1993

■ Star-Bulletin ●

■ Counsi
■ Canadi
■ Symph

UH team listens in and tails tiger shark

□ Scientists trace its trip from Ewa to Penguin Bank

Star-Bulletin staff

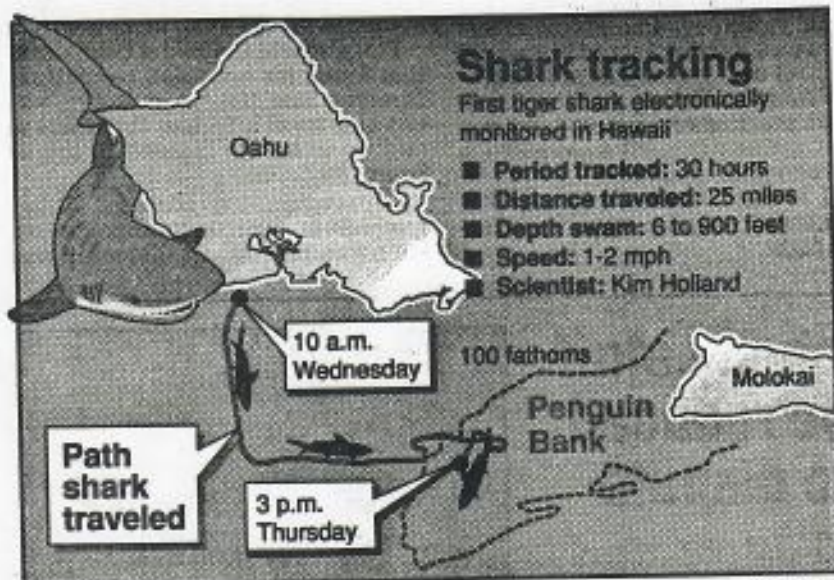
The first tiger shark tagged electronically in Hawaiian waters zigged when researchers expected it to zag.

On the fifth day of a fishing expedition, a University of Hawaii research team finally hooked a 7-foot male shark at 10 a.m. Sept. 22 in 120 feet of water about 1 1/4 miles off Ewa Beach.

Scientists, led by Kim Holland of the UH School of Ocean and Earth Sciences and Technology, harpooned a sonic transmitter into the shark's back. Working from a tracking vessel on loan from the National Marine Fisheries Service, the team followed the shark continuously for 30 hours.

"The movements of this shark surprised us," Holland said.

"Most people believe that these are predominantly coastal sharks which live at varying depths around our coastline." Instead, the shark moved offshore almost as soon as it was released. Twenty hours later, it had crossed the deep waters of the Molokai Channel and was moving in Penguin Bank, some



Star-Bulletin

25 miles from where it was freed.

Penguin Bank is a shallow area similar to an underwater mesa with steep sides and a flat top, and is known to local fishermen as a prime fishing area, Holland said.

The shark swam between 6 and 900 feet below the surface in waters up to 1,500 feet deep during the track, which researchers broke off due to threatening weather.

"Good science requires that you repeat experiments many times before you draw conclusions about what is normal or typical," Holland said. "Nevertheless, even though this is only our first track, it showed us that our techniques work and what these sharks are capable of doing."

"I think this will really give people something to think about."

This is the first track of a two-year project funded jointly by the state Division of Aquatic Resources and the UH Sea Grant program.

One of the main objectives of the

study is to obtain information with which to assess the feasibility of various possible shark control strategies.

"As usual, when you actually see animals in their natural environments you can't help but be impressed by them," Holland said.

"The direct path the shark took from Ewa Beach to the Penguin Bank is highly suggestive that the shark knew where it wanted to be and how to get there. This in turn suggests that Ewa Beach and the Penguin Bank are both a part of this animal's normal movement patterns."

Future tracks will use transmitters with a life span of several months, which will produce a more-complete picture of tiger shark movements. Holland hopes to compile the world's most advanced data base on shark movements to assist fisheries agencies worldwide to make better decisions about shark management.



AP photo

The Spirit of Miami is lowered into the water. *THA D6 9/19/93*

Miami launches a new reef, with wings

A hulking, gray Boeing 727-100 — nicknamed The Spirit of Miami, for its ties to local airline history — was lowered into the Atlantic Ocean earlier this month, becoming the 24th reef off Dade County, Fla., shores.

"This is the first time a fully intact jet aircraft has ever been sunk as an artificial reef," said Ben Mostkoff, head of Metro-Dade's artificial reef program. "I expect this to become an important attraction for divers within days."

The county spent \$45,000 to prepare the jet and sink the reef about 3½ miles east of Miami, Mostkoff said.

Atlantis Submarines has our blessing, but not in Waikiki

We are the surfer and the yoga instructor referred to by Rick Shafer, president of Atlantis Submarines, in his View Point column Aug. 23.

Shafer questions our credentials. Our credentials are that we are long time and lifelong residents who love Waikiki and use it daily for surfing and swimming.

Nowhere in his weak defense of the Atlantis reef and fish feeding practices does Shafer mention that both the state Senate and the House passed a concurrent resolution calling for a study of artificial reefs and fish feeding in Waikiki as they relate to attracting sharks to the near shore waters.

Shafer claims Atlantis employees have never seen dangerous sharks at the reef site. Yet on June 12, Dr. Art Kamisugi caught an 8-foot tiger shark near the Atlantis reef.

Shafer's claim that Atlantis only ever fed 8 ounces of dog food per dive is ludicrous. Employees, constrained by a confidentiality clause in their contract not to talk to the media concerning shark sightings and other related public safety matters, have told us that Atlantis dumped tons of dog food monthly for several years. This would account for the large population of fish at the reef site.

Jean-Michel Cousteau said it best at a 1992 shark task force meeting: "When you have an artificial reef with thousands of fish being fed dog food and sharks coming to feed off of these fish, and this is just one mile from the beach at Waikiki, with hundreds of people in the waters, it is a disaster waiting to happen. This is a case of putting industry even before human life."

We are on a "vendetta," as Shafer claims. Our vendetta is to reclaim the natural environment of the ocean at

Waikiki and to render it safe for all people. We are not against Atlantis or business. On the contrary, in another location away from Waikiki and people, Atlantis has our blessings.

George Downing, Rick Bernstein

*9-18-93
H56 A7*

ALOHA!

TODAY'S WEATHER
Mostly sunny. High near 90. Trades 10-20 mph — Page A4



Nation:

S. Carolina new Miss America

— Page A20



Living:

Battling 'chore wars'

— Page F1



Sports:

Rainbows clobber Kent State

— Page C1



The Honolulu Advertiser

Sunday, Sept. 19, 1993

On Oahu St 51

SHARK

A wave of shark attacks pits Hawaiians who revere sharks against those who think the animals should be weeded out.

The world can expect about 37 shark attacks in the coming year — and about six deaths from shark attacks. And the world still isn't sure how to respond.

In the South Pacific, islanders have been known to kill and eat rogue sharks. Mainland coastal states mostly prohibit shark hunting, even after shark attacks, because the animals are considered endangered.

Here in Hawaii, a widely publicized series of shark attacks in the past few years has provoked a unique controversy — unique because sharks have a special place in the cultural and religious landscape of native Hawaiians.

During the 1960s, 24 shark attacks were documented here. Since January 1990, 18 attacks were reported with two certain fatalities and three disappearances attributed to sharks.

The dentist (the first since 1959) and the apparent increase in attacks have alarmed ocean users as well as the tourist industry.

Some say the ocean, intensely used here for recreation and commerce, must be kept safe, and that the state should hunt and kill sharks.

Others — including native Hawaiians who revere sharks as gods, and others who say hunting sharks is fruitless — say leave the sharks alone.

In March 1992, the state formed a Shark Task Force to decide how to deal with shark attacks. Four months before, a woman

See Sharks, Page A2



Sharks: An ocean dilemma

FROM PAGE ONE

had been fatally attacked on Maui, in February, a surfer disappeared near Waimea Bay and his bodyboard turned up with a crescent-shaped bite taken out of it. Both stories were front-page news.

The Shark Task Force's task was tough. Besides balancing public safety against environmental concerns, they had to respond to the Hawaiian community.

After the fatal attack on Maui, several Hawaiians threatened a fisherman hired by the state to catch the shark. They agreed to the hunt after Bill Filly, chairman of the Department of Land and Natural Resources and eventual head of the task force, participated in a ceremony honoring the shark. Shortly after, a 13-foot tiger was taken.

This month, the task force disbanded. During the group's 19-month tenure, Hawaii saw one fatal attack and seven injuries. Shark hunts caught 11 large tiger sharks off Oahu, while independent fishermen caught about 50 others.

The policy developed by the task force emphasizes public education and safety, shark research, and in the case of attacks or frequent sightings, limited control fishing — but only after consulting Hawaiians in the affected area.

Is there a tiger shark problem?

Steve Kaiser, who caught many of the tiger sharks brought in by the task force, is not convinced the sharks are truly a problem. For one thing, tigers are relatively rare in Hawaiian waters.

Kaiser, a shark researcher and task force member, has been surfing, fishing and diving in Hawaii since childhood, and has seen other species of sharks in the water, but never a tiger. There is also no data supporting claims that the tiger population has exploded, he says.

The reason for the increase of shark sightings and encounters is simple, Kaiser says. More people are spending more time in the ocean.

"One of the problems people have is the sense that the state has got to make the water safer," Kaiser says. "Like we can really go out and manipulate the environment to the point where no one is going to get eaten by a shark and no one is going to get stung by a jellyfish, or we're never going to close a beach because of high surf!"

The real problem underlying the shark controversy is a lack of solid information. It's thought that tigers are territorial, staying in deep water during the day, then coming near shore to feed at night. Beyond that, even experts know little about sharks' reproductive cycles, how often they eat, where they go to spawn, why they attack people, or why some of them suddenly become aggressive.

"The way you cure something, you really need to study the disease, and not the symptoms. You just can't go out there and randomly decimate a whole population of animals because you think they might give you a problem," said Kaiser.

On the other side of the fence from Kaiser is Al Laguarda.

Like Kaiser, Laguarda grew up on Oahu, learning to fish and dive on the North Shore's reefs. He lives in Pupukea, spearfishes several times a week, and is president of the North Shore Spearfishers and a writer for Hawaii Fishing News, has contact with dozens of divers.

"If you don't think there's a serious shark problem, something's wrong with your brain," he says. He says divers who never before saw a shark in the water are now coming across big grays and hammerheads every time they go in.

Divers are changing their habits to cope with sharks. Instead of straining fish half-dead on lines, they're killing them immediately. "Bung sticks," or



Ka-ehu-'iki-mano, a shark's tale

Ka-ehu-'iki-mano — "the little reddish shark" — was born in Paeau, Paeu, on Hawaii island, to human parents. His father, Kapakapu, was an avia farmer. His mother's name was Holo. They named Ka-ehu-'iki-mano after Kaupohaku, the blond shark godson of Paeau (Paeu Harbor), who protected Oahu from man-eating sharks.

After feeding was done with breast milk for ten days, Kapakapu and Holo take him from the uplands to the sea. After feeding their son at his sea-cave for ten more days, the couple is satisfied that he can care for himself, and they return inland.

Several days later, Ka-ehu-'iki-mano comes to his parents in a dream to ask if he can take a tour of the Hawaiian Islands. With their permission and blessing, Ka-ehu-'iki-mano departs, but only after winning the support and company of Hawaii island's shark kings.

Ka-ehu-'iki-mano impresses the shark kings because he is well-mannered, respectful and humble. And though the youngster is only four-and-a-half feet long, he is fierce in battle and cannot tolerate evil.

On Ka-ehu-'iki-mano's tour of the islands, he wins the support and friendship of Hawaii's great sharks. Kaupohaku gives her namesake a whale's tooth — a sign of oil — to ensure safe passage for the party.

— Based on William Uema's story, serialized on the front page of a Hawaiian-language newspaper from November 1870 to January 1871.

Ka-ehu-'iki-mano and his friends then tour the South Pacific, from the Marquesas in the east, to Australia and Indonesia in the west. They visit many of their relatives before returning to Hawaii.

In Waikiki again, the party encounters Pehu, a Maui shark who is there to satisfy his desire for human flesh. The surfer was big in the arm now known as Castle, with many surfers out. Pehu tells Ka-ehu-'iki-mano that he wants to pluck a man from his board as he rides a wave.

Ka-ehu-'iki-mano and his friends agree to help. When two surfers catch a large wave together, the sharks ride in beneath them. Instead of letting Pehu snatch a surfer, though, Ka-ehu-'iki-mano and his friends drive him into the shallow reef near shore. Pehu dies, his head wedged in the coral and his tail high in the air.

When the frightened people on Pehu open, they find human hair and wrist bones, evidence of his evil nature. They then burn the shark's body near Kakaia.

— Based on William Uema's story, serialized on the front page of a Hawaiian-language newspaper from November 1870 to January 1871.

and 16 feet, where he sets his traps and he puts them," says Laguarda. "The thing is, whenever someone comes out to take videos or something, they won't come close. It's like they can sense the cameras and they don't want to be filmed."

"It's like they can feel the vibes we put out when we're hunting them. They're a lot smarter than we think."

If Laguarda's story seems far-fetched, that may be because we have so little contact with the natural environment. For the Hawaiians of old — and many contemporary Hawaiians — the natural world is sentient and filled with consciousness. If you perceive, as they do, that the entire creation is one family, communication between humans and nature becomes a reality.

Liliana Kame'eletewa, a historian who teaches Hawaiian mythology at the University of Hawaii-Manoa, says the Kame'eletewa, one of Hawaii's 15 or so surviving cosmogonic genealogies, traces human descent from plants and animals.

Thus, sharks are elder siblings to humans, and should be treated with respect. Kame'eletewa says.

In contrast to Western mythology, in Hawaiian mythology, sharks can be villains or heroes, as in the story of Ka-ehu-'iki-mano (see this page). They can also be ancestors, or ancestral spirits (see story this page).

Are the aumakua still among us?

There's a story Steve Kaiser tells about a tiger shark that frequented the reefs of Diamond Head. The shark was well-known to local surfers and fishermen, and when it got stuck on the reef at low tide, they lifted it up, put it back in the water and pushed it out — a sort of modern-day aumakua story.

Still, he says, "I don't think we should let the aumakua issue override people's safety. I mean, they're not sacred animals. Basically, users are not sacred sharks, and I've been told by others, too, that you can't catch an aumakua; it's impossible."

Kaiser points out that pre-contact Hawaiians did kill sharks that harassed people and that they used shark products for many things.

Charles Maxwell, a Hawaiian cultural expert from Maui, was a member of the task force until he resigned in January.

He charges that the task force killed sharks to create a false sense of safety, and encouraged those who fished privately for them. Maxwell strongly opposed fishing for sharks after the fatal attack on Maui in 1991.

Although he is a Christian himself, Maxwell believes he must protect the sharks of Oahu and Maui because his ancestors worshipped them. "My grandmother used to insist on care for these sharks. I just want to protect some remnants of our past. Killing these sharks is an insult to our culture."

Ulrich Helemann, a wood carver who practices the Hawaiian religion, seeks shark hunting as an act of religious genocide.

Hawaiians are often told that their culture is dead or has little resemblance to how it was practiced before contact with the West, says Helemann, and that is false.

"A few months ago four North Shore children caught a huge shark and let it go. When asked why, they said, 'Because it's our aumakua.' That's a classic example of the perpetuation of the Hawaiian beliefs."

"In Hawaii, it's really a matter of religious belief, of religious freedom."

underwater guns, are now standard equipment for many divers, says Laguarda.

While tiger sharks are getting the publicity, Laguarda has had more encounters with gray reef sharks. During a spearfishing contest in March, an 8-foot gray followed Laguarda for a mile and a half, then went after his catch.

It was an awesome sight, Laguarda remembers, the shark thrashing at the bag, twisting and turning at incredible speed, only 40 or 50 feet away.

"After I saw that shark go after my bag, I understood that the ocean is their ocean. They get their trip wired, put it that way."

To reduce the risk of shark attacks, Laguarda would like to see the state catch specific animals, both tigers and grays, instead of fishing only after an attack is reported.

And there should be research: "When commercial fishermen go into an area and take out all the reef fish, more than don't migrate in and out of a place like pelagic fish, are we making ourselves shark bait? Everything we do out there has a repercussion."

Should we hunt?

If the community at large is split on the subject of hunting tiger sharks, so are the ocean experts.

Richard Grigg, a professor of oceanography at the University of Hawaii-Manoa, thinks a fishing program could restore eco-

logical balance to the ocean and prevent more attacks.

Nearshore fishing, long-line fishing, a larger shark population and more people in the water may all be factors contributing to the shark problem, Grigg says.

He doesn't believe fishing sharks would harm the environment; during the '60s and '70s, the state paid bounty hunters to keep the shark population down, without repercussions, he said.

Grigg believes the state should:

● Generously fund shark research.

● Initiate shark control programs on the Neighbor Islands.

In contrast to Grigg, John Naughton of the National Marine Fisheries thinks a control program may impact the ocean ecosystem, as well as the land economy.

"My fear is that by fishing tiger sharks out, the smaller sharks will increase," Naughton says. He says there's evidence that, after the fishing program of the late '60s, smaller sharks increased — and these are the ones that damage fishermen's gear and catches.

Al Laguarda doesn't think sentences give sharks enough credit for intelligence. Take the sharks who have befriended a crabber he knows.

"There's two tigers, 24 feet



Kame'eletewa

Thus, sharks are elder siblings to humans, and should be treated with respect. Kame'eletewa says.

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"In Hawaii, it's really a matter of religious belief, of religious freedom."

TTH 9-19-93 A2

Aumakua can take the form of the shark

Although many of the rituals associated with *aumakua* worship have been lost, says UH professor Lilikala Kame'eleihiwa, some Hawaiians still honor and practice that aspect of the old religion.

As family elders, *aumakua* are concerned with the welfare of their offspring and work in the immaterial realm to aid, influence and admonish their living relatives.

When necessary, *aumakua* could take *kino lau*, or body forms — animal, plant,

or mineral, including sharks.

According to the 19th-century Hawaiian historian Samuel Kamakau, shark *aumakua* might be gods, or they might be created by a family, using prayer and ceremony to transfigure an ancestor or recently deceased relative into a shark.

Kame'eleihiwa says the shark *aumakua* in Hawaiian myths, like Ka-chu'iki-mano in the story on this page, are born of human mothers, either as sharks or as human beings who later become *aumakua*.

Those born as sharks usually love and protect people, while those born as humans have an uncontrollable desire for human flesh.

Like other *aumakua* during traditional times, sharks were actively worshipped and cared for by families. By calling the shark's name, chanting, or praying, the *aumakua* was summoned to the shore, or a spot in the ocean, then given food, and sometimes *'awa* (an intoxicating drink).

THA 9-19-93 A2



Devices, tagging may aid research

□ Experts seek where sharks come from and where they go

SHARK experts Kim Holland and Steve Kaiser are taking different paths to answer the same questions about tiger sharks: Where do they come from, and where do they go?

Armed with \$60,000 in research grants, Holland has equipped the research vessel Kaahela with electronic monitoring devices to keep an eye on sharks 24 hours a day.

The tricky part is finding the tigers and getting close enough to attach a transmitter to them. Holland plans to hunt for tiger sharks off Oahu between Koko Head and Kaena Point, hook one, drag it close and harpoon it with a transmitter.

With luck, the transmitter will allow Holland to track a shark for up to a year. He'll monitor the first shark continuously for three or four days, abandon it to process the data, then find it again.

After a few days, he'll try to hook another one, until he has a population of five under intense scrutiny. Holland wants to pry from the sharks the secrets of when they feed, where they feed, where they mate, when they mate, and what sort of relationship they have with an area.

"The working hypothesis is that they have a home range that they patrol on a regular basis, that they do it day after day, in shallow water at night and move to deep water during the day."

Holland also is trying to determine whether tigers have a territory that they defend against other animals, or a home range that they occupy in harmony with other creatures.

Kaiser is using his own resources to solve mysteries about tigers that intrigue him. "Long-liners 300 miles out to sea catch tigers, yet they're a near-shore species. January through February they find them in the middle of the ocean. Why do they go out there? When they come back home they come back hungry because there's not much to eat out there," Kaiser says.

He's also trying to find out if they're coming from as far away as the Northwest Hawaiian Islands, or sticking close to the main islands, something that Holland's intense but short-term monitoring might not be able to determine.

Kaiser has spent his own money for 300 tags, and hooking and tagging the sharks is a tedious process. "In nine months of fishing, I have only tagged 30. I'd like to get all 300 out there."

The 12-inch tags attach under the shark's skin with a barb, and trail fluorescent spaghetti-like streamers. They are color coded to show where on Oahu the shark was tagged, and have a serial number and Sea Life Park's phone number on them.

Kaiser is hoping local fishermen, divers and other ocean users will call him with details when they spot a tagged tiger.

"The colors are so they don't have to take the animal to report it. If you remove the animal, you remove your data collection, he's of no further use. I would rather have them spot it, record the information and cut the leader and let them go," Kaiser says.

Of the 30 sharks tagged, only two have been spotted, one off Lanai and the other off Molokai.

Stories by
Gregg Ambrose
Star-Bulletin



By Terry Latta, Star-Bulletin

A crowd gathered when this shark was pulled onto the Waianae Boat Harbor last November, above. Below, Kim Holland shows a transmitter to be attached to a shark. Using the boat equipment next to him, Holland will be able to track shark movements.



By Dennis Ode, Star-Bulletin

Despite shark catches, sea may still be unsafe

By Walter Wright
Advertiser Staff Writer

The removal of 53 large tiger sharks off Oahu "probably has put a dent in the population," but may not have made island waters safer, a state official says.

"The fact that a single fishing effort (by a private fisherman off Mokuleia last week) could result in five sharks being taken (one got away) on 18 hooks is a very good indication that there are still a lot of sharks out there, at least in certain areas," said a member of the state Shark Task Force. He cited the waters off areas such as Kaena Point, Barbers Point and Mokuleia.

Randy Honebrink, education coordinator of the Department of Land and Natural Resources Division of Aquatic Resources, on Friday disagreed with marine biologist John Naughton's assessment of the impact of public and private fishing of large tiger sharks the past year.

Honebrink said he was concerned that an Advertiser report on the matter "might create misconceptions and a false sense of security."

Naughton and Honebrink are both members of the state Shark Task Force, which was deactivated recently but whose scientific members are still receiving information about shark sightings and captures

"We believe that there are still sizable populations in waters off areas such as Kaena Point, Barbers Point and Mokuleia."

— **Randy Honebrink**
Department of Land
and Natural Resources

through a telephone hotline, 58-SHARK.

Naughton said he personally believes the documented removal of 53 large animals may have made island waters safer, but may also have disrupted scientific research by reducing the number of large sharks available for a tag-and-release monitoring program.

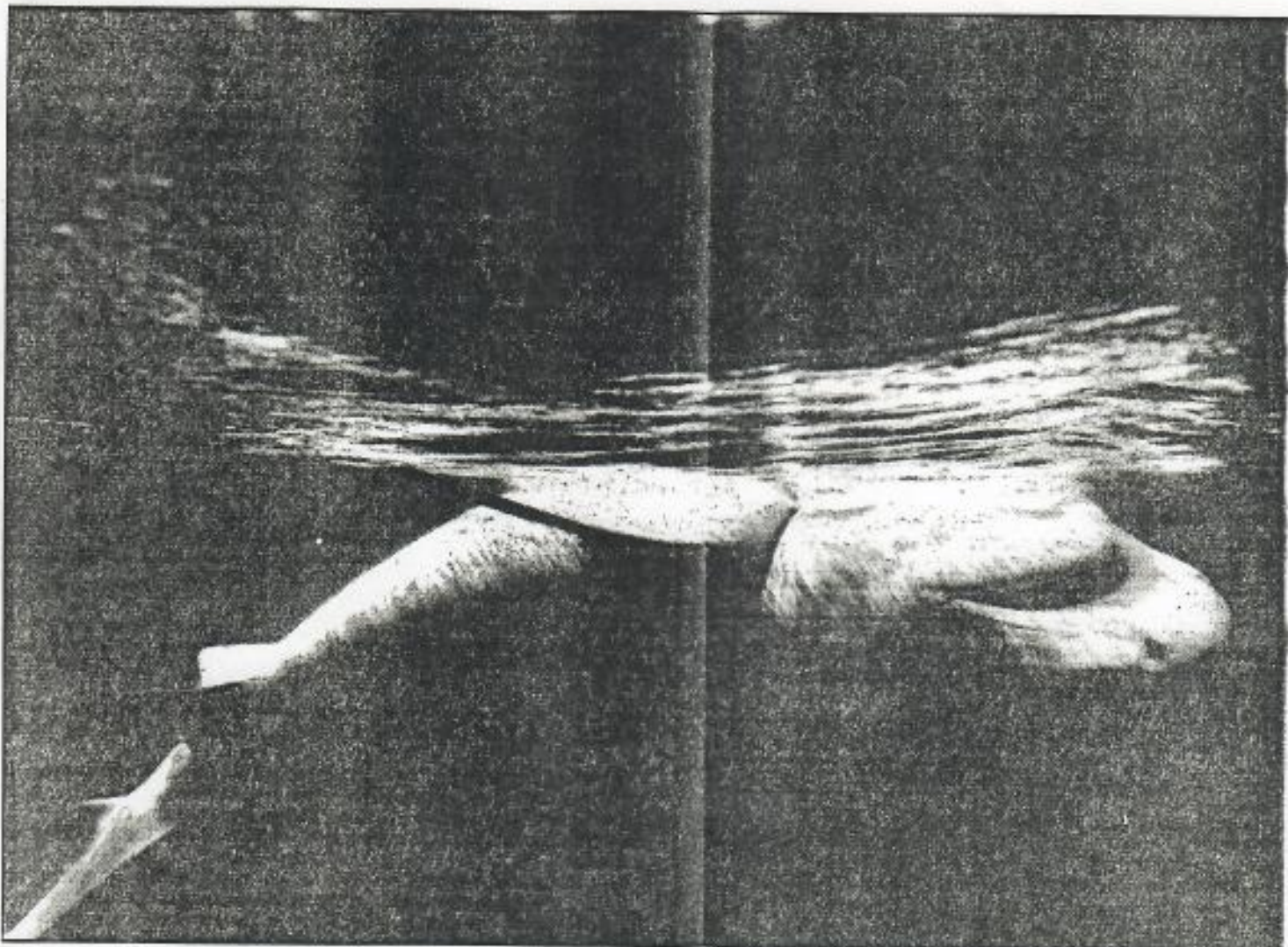
Naughton's comments were triggered by the catching of four large tiger sharks by a fisherman off the Mokuleia coast last week.

But Honebrink said the catch

Hawaii

MONDAY, Sept. 20, 1993
The Honolulu Advertiser

CITY EDITOR:
Mark Matsunaga, 525-8090



Warren Bolster photo

A hooked 11-foot, 6-inch tiger shark tries to fight under the boat of its captors in waters off Kailua in June.

could indicate a heavy shark population in certain areas.

Honebrink made these points:

■ Most private catches were on the windward coast. "We believe that there are still sizable populations in waters off areas such as Kaena Point, Barbers Point and Mokuleia."

■ Sharks are capable of mov-

ing great distances. "We have no idea whether these animals tend to stay in one area, or move around the island."

■ "The relationship between removing sharks and increasing safety is questionable." More than 40 large tigers had been removed when Jon Mozo was attacked at Malaekahana on

June 10.

The 1958 attack on Billy Weaver occurred during a control program, as did attacks in 1967-69, when 139 sharks were taken from Oahu waters.

"The public needs to understand that no matter what the population of sharks may be, people who use the ocean can't

take it for granted," he said.

"They need to observe the basic safety precautions that we have always encouraged."

Those precautions include avoiding swimming or surfing at night, dawn or dusk, or avoiding swimming near river mouths or other places where the water is murky.



By Kathryn Bender, Star-Bulletin

Steve Kaiser of Sea Life Park holds tags which will be used to keep track of sharks.

Experts plunge into tiger shark data

□ Little is known about the scary predators that enjoy isle waters

By Gregg Ambrose
Star-Bulletin

WHEN marine biologist Kim Holland and his crew sail the research boat Kaahaleale out of Snug Harbor, they go fishing for answers to one of Hawaii's most enduring enigmas: tiger sharks.

When the University of Hawaii researchers return to shore, they share their "catch" of data with other shark experts envious of the state and



Inside

- Keeping track of sharks with transmitters.
- Pondering the mysteries of tiger shark behavior.

Page A-6

federal money that makes such research voyages possible.

After decades of relative inactivity, in 1991 tiger sharks began attacking people with mystifying regularity, prompting the 1992 state Legislature to set aside \$50,000 for a program to hunt sharks.

Of that money, the State Shark Task Force gave Holland \$20,000 to fill in some of the many gaps in knowledge about tiger sharks. The federal government matched that \$20,000 and added another \$20,000 to allow Holland to ultrasonically track them.

Although tiger sharks have always attacked people, this time it was different. People were being killed, with at least two deaths nearly a year apart.

See SHARK, Page A-6

SHARK: Researchers want more data about the dangerous tigers in island waters

Continued from Page A-1

Some people, horrified by the fatal attacks, have a simple solution: Kill all tigers. While equally appalled by the human deaths, the scientists believe such wanton slaughter would be a mistake.

"If you take out more tiger sharks, the consequences down the road are unimaginable," says UH marine biologist Gerald Crow.

That warning is echoed by National Marine Fisheries Service shark expert John Naughton. After 131 tigers were killed from 1967 through 1969 around Oahu, researchers noticed that the smaller species of sharks multiplied dramatically because the larger sharks had been preying on them. "The smaller ones, Naughton says, they soon became a nuisance to fishermen, damaging their nets and destroying catches."

"Even if we went out and killed 1,000 tiger sharks tomorrow, it wouldn't have an effect on shark attacks," says Crow. "There are just too many beaches to cover. It's only with knowledge and information on the animals that we can alter our own behavior."

It's a daunting task. For a creature that holds such fascination for humans, tiger sharks remain a mystery. "The only thing we know

about tigers is how big they get, that they occur around the islands, and what they eat," Crow says. "There is so much we have to learn."

Adding to the info pool

Waikiki Aquarium curator Bruce Carlson did his part to add to the slim body of knowledge about tiger sharks years ago when he tagged them in the Northwest Hawaiian Islands.

"If anything is needed, it's not simply to go out and exterminate them, it's to find out what they're all about," Carlson says. "Where they go, where they travel, how many there are."

But it takes money to study these top predators, and while many people agree that headlines about sharks attacking people in Hawaii are bad for business, no one is coming forth with money for research.

Taken separately, the specialties of five shark experts cast some light on these fearsome creatures. But by sharing their information, they hope to cast a spotlight on the tigers that will reveal their most intimate secrets.

Crow is an authority on shark reproduction, while Naughton is interested in what tiger sharks

eat. Holland wants to know what sharks do every hour of every day and night, while Sea Life Park shark expert Steve Kaiser wants to find out where they go on a long-term basis. And UH marine biologist Steve Palumbi is studying their genetic makeup.

The researchers impressed state Rep. Ken Hiraki's Ocean Recreation and Marine Resources Committee with their shark research proposal last session, and the committee deemed the project a worthy cause. The committee sent the request to the House Finance Committee, hoping to shake some funding loose, but the proposal never made it to the House floor.

Disappointed, the researchers still devote time and money to studying tiger sharks. While Sea Life Park makes Kaiser's work time available for shark research, he uses his own boat, gas, bait and days off to tag tiger sharks.

He also paid for the 300 tags he is using. Without outside funding, "I do it when I can, not when I want to," Kaiser says. He also has donated many hours to the State Shark Task Force, which even though it is no longer meeting, has done a tremendous job of pulling people together and keeping them together, he says.

Crow's duties at the Waikiki Aquarium keep him from his research. "About 90 percent of my tiger shark research I spend on my own time. To do it right takes a lot of time and energy," but it has to be done right.



Gerald Crow

It's a frustrating situation for the scientists, who are eager for answers to all their questions about these intriguing beasts to help determine how best to deal with them. "The paradox is that we have to wait for something we don't want to happen to happen before we get funding," Crow says.

"If it weren't for the two deaths (in November 1991 and 1992), we wouldn't have any funding. We're doing research out of our own pockets, and on our own days off," Crow says. "I really can't blame the Legislature, because the money has to come from somebody else's budget."

Kaiser has another perspective on the question of cash. "To the

residents who want to go into an eradication process, we're talking a half million dollars, statewide."

Besides, adds Naughton, there already has been an unofficial eradication program that has caught more large tiger sharks than the last eradication effort in 1971, which eliminated 27 tiger sharks from waters around Oahu.

To hunt or not to hunt

Responding to each attack in the past nearly two years, the state Department of Land and Natural Resources has caught 11 large tiger sharks. And fishermen have reported catching 49 longer than 8 feet during the same period. The state intends to continue hunting tiger sharks on a specific basis, and the fishermen still hunt them on their own.

While the scientists aren't pleased with such efforts by fishermen, they appeal to the shark hunters to call them with details of their catches to help their research. The state hunts tiger sharks after attacks or when an aggressive shark becomes a nuisance in an area. Each tiger that is caught is used scientifically, but even though it benefits our research, we don't want more fishing," Naughton says.

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 Honolulu
 STAR-BULLETIN

Calling all sharks

Marine biologists are counting on the public to help them get a clear picture of what tiger sharks are all about. If you can help, call:

■ John Naughton at the National Marine Fisheries Service, 955-8831; To give information on a shark you have caught, including length, sex, whether it's pregnant, its stomach contents, and when and where it was caught.

■ Steve Kaiser at Sea Life Park, 258-7933; To report a shark tagged with one of his colorful streamers, if possible, include tag serial number, colors of streamers, and when and where you caught/saw the shark.

■ 58-SHARK (587-4275): To report large sharks acting aggressively.

Savage sharks add deadly edge to surfing in Somalia

By Alden Hartley

Special

MOGADISHU — Surfing the shark-infested waves off Somalia's capital of Mogadishu is a run with death in what is already one of the most dangerous places on earth.

The sandy white beaches off the city, where hundreds have died in clashes between U.N. troops and clan militias, are patrolled by one of the five most vicious species of sharks.

The Zambezi River shark, or *Carcharinus Zambenzensis* by its scientific name, is a 2.2-meter, 300-pound predator that will attack anything that moves with its razor-sharp teeth.

These scavengers drawn up the east coast of Africa by the stink of camel guts dumped in the sea by city butchers are probably as unpredictable and dangerous as the Great White shark of "Jaws" fame, fishermen say.

"You must be joking," says a South African, who works at Mogadishu's U.N.-controlled airport runway which hugs the rocky coastline, when asked if he has tested the waves.

Gazing longingly out at the rollers foaming in across an azure sea, the native of Africa's surfing capital Durban adds: "You'd be out of your mind if you even put your big toe in the water."

Life on the beach was not always like this in "The Mog," as Somalia's war-torn capital is known to thousands of United Nations peacekeepers.

Soon after thousands of American-led troops hit Mogadishu's coast at the start of "Operation Restore Hope" to end famine and lawlessness last December, U.S. soldiers found a little chunk of California on the edge of Africa.

The beach where the first American troops landed next to the airport was renamed "Arroyo Beach" after a U.S. Marine killed in a firefight with Somali gunmen.

In those days, U.S. Marines sat tanning on the porch of a beach hut made from plywood freight cases listening to rock music on their portable stereos.

Lifeguards with white zinc sunblock on their noses sat watchfully in their high chairs, distracted only by passing female soldiers in bikinis with their M-16 rifles slung over their shoulders.

Inflated truck tire inner tubes or bits of plank served as surfboards for the swimmers.

During those few months of relaxation before the storm of violence which hit Mogadishu, soldiers would sit about in the sand, telling stories and trading bits of their uniforms for smuggled alcohol or other items of barter.

Then in May, a French diplomat's secretary was savaged in the waves off Arroyo Beach and she later died of shock.

Arroyo was deserted and a shark warning sign was erected. Weeks later, 24 Pakistani U.N. soldiers were gunned down by Somali militias in Mogadishu and the capital spiraled into a guerrilla war that confined peacekeepers to base.

Over the next four months, only the hardy visited Arroyo beach and took a swim in the waves — perhaps tired of the heat, the incoming mortar bombs and the carnage of the U.N.'s fruitless search for the warlord Mohamed Farah Aidid.

Last month, a Russian from one of the teams which run civilian transport helicopters for the United

into the ocean.

Between 1978 and 1985, some 30 people are estimated to have been killed in the waters off Mogadishu, the aid workers remember.

During the 1980s, a shark-net was strung along the Lido beach, favorite spot of the expatriates who thronged Mogadishu at that time, which lies adjacent to what is now the "Green Line" of bombed-out buildings that marks the boundary between rival clans in the city.

After 18 months, the buoys holding the net up were stolen by Somali boatmen — apparently because they made good water containers — and the shark attacks started again, United Nations sources say.

Last month, the United Nations called off its hunt for Aidid and most of the nearly 20,000 U.N. and U.S. troops in the city are holed up in their massive bases with little to do.

The militia men take to carrying their guns on the streets and Mogadishu spirals into banditry and chaos again — with no U.N. troops venturing out onto the streets for fear of casualties.

But after what many see as the failure of the United Nations peacekeeping operation in Somalia, the world body has once again turned its attention to the beach — and invested in a \$60,000 shark net to string across the coral bay which encloses Arroyo beach.

"Surf's up — Aloha!" says a U.S. soldier ready to test the waves again.

“
You'd be out of your
mind if you even
put your big toe in
the water.
”

Native of Durban, Somalia

ed Nations, was standing waist-deep in the waves at Arroyo when a shark bit him.

Yuri, a pilot comrade of the victim, snaps his hands together to imitate the vicious shark bite from which the swimmer died hours later.

Reports say at least one American soldier and several Somali children have been taken by sharks along Mogadishu's beaches in the same period.

Veteran aid workers say that Mogadishu has seen one of the highest rates of shark attacks in the world for years.

Many blame the infestation of sharks on the construction of a foreign aid-funded abattoir in Mogadishu during the 1970s, when the offal from camels — the Somalis' favorite meat — floated freely



BXA UPDATE CONFERENCE: Bureau of Export Administration held its 7th annual Update Conference at the J.W. Marriott Hotel near main Commerce building in Washington, D.C. Here, Under Secretary (Designate) William Reinsch speaks at the opening session of the conference. Other speakers included Deputy Secretary David Barrum and Robert Rubin, assistant to the president for economic policy. Some 600 business executives and BXA staffers learned of new developments in the agency's regulations and licensing policies.

Photo: Ron Bell/OPA

NOAA Sailor Recovering From Savage Shark Attack

The Marines, Army and Air Force pitched in to save the life of a NOAA employee whose leg was bitten severely by a shark as she swam in the south Atlantic. A shipmate on the NOAA vessel *Discoverer* also suffered bites from the fish.

Heather Boswell, a mess steward, and Philip Buffington, a deckhand, were in the water for a recreational swim as the NOAA vessel was conducting oceanography experiments 230 miles off Easter Island.

"All normal precautions were being observed," said a NOAA spokesman in Seattle, home port of *Discoverer*. "Lookouts were posted, watching all points of the perimeter. Sharks almost always circle and observe their intended prey for some time before attacking and swimmers have an opportunity to clear the water. But this animal unaccountably shot up straight from below and attacked immediately."

A letter of thanks from Commerce Secretary Ronald H. Brown to Defense Secretary William J. Perry tells the rest of the story.

"The attack occurred approximately 3,000 miles from the nearest medical facility equipped to deal with this kind of emergency.

"The response of the Department of Defense to our request for assistance was both unhesitating and exemplary. I wish to thank the armed forces personnel who so ably assisted in coordinating efforts to evacuate (the victims), particularly Col. Robert P. McAleer, USMC, of your staff who provided direct liaison with NOAA's Pacific Marine Center during this crisis. I also wish to cite the outstanding performance and heroic efforts of the United States Air Forces' 24th Medical Squadron, Howard Air Force Base, Panama, under the command of Brig. Gen. David A. Sawyer, USAF, and the staff of the United States' Army's Gorgas Army Hospital, Panama, under the command of Col. Michael A. McConnell, USA.

"Both are recovering and doing remarkably well. This is due in large measure to the efforts of those members of the armed services involved in the evacuation, transportation and treatment of both patients. I wish to convey . . . my highest professional esteem, personal admiration and most sincere gratitude."

The NOAA spokesman said Ms. Boswell is out of the hospital and ambulatory in a wheelchair.

He said fast and excellent work by a medic aboard the NOAA ship combined with swift reaction by aerial and sea rescue teams from the military saved Boswell's life and prevented Buffington's wounds from becoming seriously infected as frequently happens with shark bites.



MINORITY CONTRACTORS: Executives of Amwest Surety Insurance Co. met with MBDA officials to sign an agreement providing up to \$300 million in surety bond credit to qualified minority owned construction companies. This will enable contractors to obtain surety bonds needed for bidding on public construction jobs. Historically, it has been more difficult for small, minority contractors to obtain surety bonds than it has for larger, more established builders. At the signing ceremony, seated from left, are Richard Savage, chairman of Amwest and Gilbert Colon, acting director of MBDA. Standing from left are Howie Hodges, assistant director MBDA; John Savage, vice chairman Amwest Surety; Michael Johnson, national coordinator for Amwest; and Don Jacobs, National Sales Manager, Amwest. (In cover photo, Richard Savage and Gilbert Colon seal the agreement with a handshake and a smile).

Photo Ron Bell, OPA

Dead whale buried in Kealia sands

Advertiser Staff

KAPAA, Kauai - A dead sperm whale that washed up on a Kapaa reef April 26 was hauled ashore and buried yesterday.

The whale was buried in the sand pits at Kealia, according to guidelines issued by the National Marine Fisheries Service for disposal of marine mammals.

When the flesh has completely decomposed, the bones will be exhumed and used for educational purposes, said Kauai County public works director Russell Sugano.

The carcass, which was missing its skin and sections of flesh - perhaps because of shark attacks at sea - was first spotted on the reef below Kaiakea lookout. It slowly washed in closer to shore over the past month.

Don Heacock of the state Division of Aquatic Resources on Thursday urged the county to dispose of the decomposing carcass because the smell was creating a nuisance. He was also concerned predators might be attracted to the area.

Several swimming beaches are located along that stretch of eastern coastline.

The county contracted out the job for \$9,750 because it did not have the appropriate equipment, Sugano said.

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A5



THE CHUNK TAKEN FROM GRUZINSKY'S BOARD FIT PERFECTLY INTO THE BIG SHARK'S MOUTH. PHOTO: BERNIE BAKER.

sections

nuggets

The attacks have set off a tidal wave of concern and controversy, as opposing groups argue whether to hunt the sharks or let them be. Even hard-core surfers have become cautious, but only to a point. While authorities try to figure out what to do next, the sites of the attacks are beginning to fill once again with surfers and bodyboarders.

State tourism officials are keeping their fingers crossed. They know that another shark attack could take a bite out of the state's tourism industry.

MORE BAD SHARK NEWS

Going to the North Shore this year and want to live to tell about it? **Do your best not to look like a Green sea turtle.** At 8 a.m. on

October 15, 26-year-old Rick Gruzinsky was out alone in small surf at Lanikaea when life suddenly got thrilling: "I felt some turbulence around me, then a thud, and the nose of my board lifted up. I saw this snout clamped down on the deck, thrashing back and forth. A big chunk of my board finally broke away and the shark rolled down and under with it. I started paddling for shore, thinking: 'He's gonna get me, he's gonna get my feet,' but I kept paddling for that inside water..." Gruzinsky survived the attack with only a few scrapes, but his surfboard had a nasty 16-inch bite taken out of the rail.

That night, a state-sponsored hunt yielded three big tiger sharks, which went on display at Haleiwa Harbor the next morning. The female was a full-figured gal, measuring in at 13'10". Russell Pereira, who found the bite-size piece of Gruzinsky's board floating near his house, did a Cinderella-style test, inserting the severed chunk of foam into the dead shark's mouth. It fit perfectly.

Two weeks after Gruzinsky's attack, a bodyboarder was killed near Makaha by yet another tiger shark. Aaron Romero, 18, was bodyboarding with friends just 20 yards from shore at Keeau Beach Park when the shark bit into his thigh. He managed to get to shore but died from massive blood loss on the way to the hospital. Two days after Romero was killed, a state Shark Task Force caught four tiger sharks, including one 11-footer and one 13-footer.



GRUZINSKY AND BOARD. PHOTO: BAKER.

THIS LITTLE PIGGY WENT AIEEEEE!

Fred Hemmings saw the blood, and then the humor. In October, the former world champ and candidate for governor of Hawaii accidentally sliced off three toes on his right foot while mowing the lawn of his Oahu home. "The piggie that had no roast beef, and the one that went wee, wee, wee all the way home were completely gone," Hemmings said. The third piggie was mostly gone, and blood was gushing everywhere. Doctors were unable to save the toes but said Hemmings should be able to do everything he did before the accident—including crack sick jokes and fend off sarcastic comments from his friends. "I'm thinking of putting out a new line of sportswear called 'Hang Seven,'" Hemmings told a reporter for the Honolulu Star-Bulletin. Hemmings, a former state representative turned talk show host, is a well-known political conservative. As a result of the accident, he said, he now leans even further to the right.

MOON OVER GEORGIA

SURFER Tip #2,334: If you're going to strip off your shorts and surf butt-naked, don't do it in front of the mayor. While surfing off Tybee Island, Georgia, Michael Benson, Kevin Black and Matt Crawley ran into a problem—the choppy waves were dragging down their trunks. The logical solution: ditch the drawers. "Riding down a rolling, high-speed wave with nothing on, with the wind in your hair, so to speak, was euphoria," admits Benson. None of the other surfers in the lineup seemed to notice or mind the exposed assets of three healthy males, and the beach was pretty empty. "Except for the mayor and his wife, who were sitting in a parking lot," Benson adds. Soon, the three stitchless surfers were sitting in a police car. "We were released on a \$1,100 bond and later had the charges dropped from public indecency to disorderly conduct," says Benson. All three still had to pay \$500 fines and do 80 hours of community service, such as mopping jail floors and washing police cars. "The fine for this is the same as the fine for driving under the influence. It seems a little ridiculous," says Benson. "We weren't trying to impress the girls or anything, we were just hanging out." Literally.

EXECU-SURF

Calling all big shots. Calling all big shots. The Surf Industry Manufacturers Association has put out a call to all successful executives (CEOs, presidents, VPs and directors) of companies outside the surf industry. The more widely known the company, the better. SIMA is trying to counteract the negative image often foisted upon surfers by locating surfing business executives who can help make the sport look respectable. "Men and women who are as comfortable on a board as they are in the boardroom," you could say, if you wanted to be really corny. The ideal candidate is articulate, a lively interviewee and should welcome national media exposure. Phone Jimmy Olmes at 805-388-1001 (fax: 805-388-3084), or Mike Kingsbury at 714-374-0106 (fax: 714-374-0108).

Assembled by Bernie Baker, Charles Memminger, Ben Marcus and Amy Vansant



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Please, I don't need a free subscription. I NEED A JOB!

Sam Nikoomanesh

Latherville, Maryland

Sorry, Sam, we don't have any openings. But we did pass your letter along to the Clinton campaign. Ed.

BART GETS LUCKY Good Karma or what? Ventura Freeway at 70 mph, my 6' 3" Rusty blows off the racks. I don't realize it until I get home. History for sure. Visions of foam littering the freeway. But wait! The phone rings: "Hey, dude, you lose something?" Expecting the worst, I ask, "How many pieces?"

Laughing, he says, "Except for 1/8" ground off the two outside skegs, not a scratch. I found it right on a white line between the third and fourth lanes. Cars blowing by, no harm, no foul. Must have glided in for a perfect three-point landing!"

Amazing, but true.

A thanks to Steve Marley.

Bart Yarnold

Los Angeles, California

ANOTHER LETTER *THE NEW YORKER* WOULDN'T PUBLISH

Let's get something straight: San Francisco is a lousy place to surf.

The wind blows onshore every day. The water is so cold it cracks fiberglass. Sharks breed just offshore and feed on anything that moves. There is only one surf shop in town and its selection of lifestyle wear is nil. The beach is so cold and gray and damp that residents have been known to take hostages and use automatic weapons. The only surfing that happens up here consists of barneys on teabags swarming closeout mush. Naturally, all their kicking and splashing attracts the aforementioned sharks. You are left with an icky, savage mess.

If good waves do happen, it takes an hour to paddle out—if you can ever find a channel. The winter big-wave stories are bogus. They were made up by a bunch of hoax-loving fishermen who hang out at Jose's Cantina and Tool Rental. The pictures that have made it into the mags have been digitally altered using "Photoshop" on a Macintosh computer. That two-part article in *The New Yorker* magazine was a complete work of fiction. I repeat: a work of fiction. The Mark Renneker listed in the phone book up here claims to be a cement truck operator and thinks a rhino chaser is a type of drink.

Wait, there's more. The schools are overcrowded and underfunded. The job market sucks. The cost of living is outrageous. There are no good restaurants. The pro sports scene is a disaster of biblical proportions. Cable TV is considered nightlife. The girls only like other girls. Everyone is a born-again Republican.

DON'T BOTHER COMING HERE! The fishermen just want more fish food for the sharks. Don't say I never did you any favors.

Matt Shelley

San Francisco, California

SURFER NOSE BEST Not too long ago I got hurt pretty bad while surfing on Oahu's South Shore. I dropped into a left, tried to kick out, and got dusted. As I was going down, the nose of my 6' 4" rammed me in the face. This severe blow caused me to get several stitches below my eye and broke my cheek bone in three places. I received a few more stitches on the side of my

SURFER

[march 1993, volume 34, number 3]

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3⁶ OPEN OCEAN More than 100 miles from shore, Shane Herring, Mike Rommelse and a crew of hot Aussies find fresh power on Australia's Great Barrier Reef.

4² CLOUD NINE Is it actually possible to get bored with perfection? Ask Taylor Knox and Ivan Slater after they spent two weeks at a flawless secret spot in the Philippines.

5² SOME STOKE A traveler's dreamscape: J-Bay, G-Land and a spot in Costa Rica that will make your joints tingle.

6⁴ TAHITI At Tahiti's outer reefs, most surfers are happy just to drop in and survive. Not Vatai David and friends.

7² KELLY SLATER, WORLD CHAMPION Everyone knew it was going to happen sooner or later. They just figured it would be later. In his first full year on the tour, the wizard from Florida extends expectations—and changes the face of professional surfing forever.

7⁸ THE BUD TOUR CHAMPIONSHIPS The fight for the U.S. title comes to a dramatic finish in Ventura.

8⁶ AIRLINES AND THE HIGH COST OF BOARD FEES Why do airlines soak surfers who fly with their boards? What can you do about it? Plenty.

[content] Another empty spinner, Majestic, Kasulu, of the Philippines. Photo: Chris Knoll.

[COVER] KELLY SLATER, 1992 WORLD CHAMP. PHOTO: TOM SERVAIS. INSET PHOTO: JOHN CALLAHAN.



More shark control needed

William Pate and the state Shark Task Force should be commended for their courage in finally starting a shark culling program to reduce the number of large, predatory sharks that have been attacking and killing our friends and neighbors the past two years.

I was shocked and dismayed when I called the Task Force before Christmas and was informed that the new culling program had been suspended. I was told that the situation was under control and no further efforts appeared necessary. A few days later, a surfer at Chun's Reef was attacked by a shark.

People who care about protecting their friends and family from this dangerous threat should call the state Shark Task Force at 587-0320 and demand that a permanently-funded culling program and that monetary compensation be offered to private fishermen who cull large sharks, to make our waters safe again.

TROY SMITH

Sharks are part of nature

I think sharks have been attacking people because, when they go out on their Boogie boards and surfboards, they look like sea turtles. I think you should do some thinking about what you are doing to sea life in the ocean.

Some of the shark attacks that happened were pretty nasty. The problem with sharks is getting a little out of hand and we need everyone's help. But I don't see why you are killing the sharks because we are the ones who are going out into their territory.

I really hate to see people killing sharks because it's Mother Nature and we are killing it.

VALERIE NAKAMURA, age 9

January 14, 1993
992-A Awaawaanoa Place
Honolulu, HI 96825
Tel. 395-6409

OR 943-1240

Editor (Letters)
Honolulu Weekly

May I please provide some clarification to statements made in a recent letter (12/23/92) expressing the "fisherman's point of view" on sharks and shark attacks in Hawaii. The letter stated that "...in some fisheries in the Pacific, 60 -70% of the tiger sharks that were examined are found to have turtle remains in their stomach contents." Taken by itself, readers might easily get the flawed impression from this statement that turtles are the overwhelming component of the tiger shark's diet. And that's simply not the case. As often happens with statistics, numbers don't always tell the whole story. In this instance some basic knowledge of tiger shark and sea turtle biology is required.

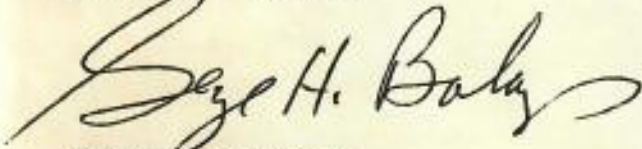
The digestive tract of tiger sharks functions in such a way that only paste-like material-- that is, the broken-down remains of prey items subjected to strong stomach acid-- can pass out of the stomach into the intestines. Objects of any size that can't be broken-down in the stomach are retained there for an unknown and likely extended period of time before being ejected by regurgitation. The outer surface of sea turtles, consisting of scales and scutes of the shell, are 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. The protective scales and scutes covering the turtle also lengthen the amount of time needed to digest the turtle's body.

These factors serve to overrepresent turtles in tiger shark stomach contents, and give a biased picture to persons cutting open the animals to see what they eat. In contrast, soft-bodied prey with far fewer and smaller indigestible parts, digests quicker and can be easily underestimated in stomach contents.

It is a biological fact that tiger sharks eat a wide variety of prey items, more so than any other shark. In a 2-year study

conducted by the late Dr. Albert Tester of the University of Hawaii, tiger sharks in Hawaiian waters were found to prey upon the following items (in descending order of % sharks containing these items): fish; crabs and lobsters; garbage; birds; sharks and rays; squid and octopus; turtles; porpoise or whales; and humans. Explorer Jean-Michel Cousteau summarized the situation correctly when interviewed last year following the tragic death of Mrs. Morrell at 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."

GEORGE H. BALAZS



DEPUTY CHAIRMAN
IUCN MARINE TURTLE SPECIALIST GROUP

January 16, 1993
992-A Awaawaanoa Place
Honolulu, Hawaii 96825
Tel. (808) 395-6409

Surfing Magazine- Letters
950 Calle Amanecer, Suite C
San Clemente, CA 92672

Your interesting article "Shark Attack" (March 93) stated in bold type that attacks on surfers by tiger sharks are "believed by some to start as cases of mistaken identity" for sea turtles. This is a misguided belief. There is no scientific information to support such an idea. Unfortunately, the news media in Hawaii has repeatedly voiced this speculation, thereby causing many to believe it is true.

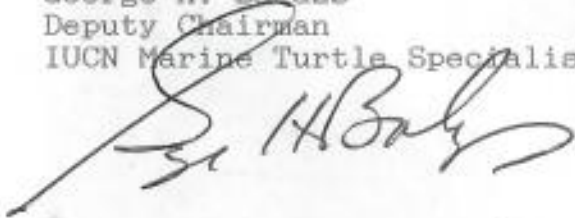
The fact is that tiger sharks don't have to "mistake" anything floating at the surface in order to strike, bite, or eat it. Taking things at the surface is a natural part of the tiger shark's feeding strategy. The theory by some scientists that great white sharks mistake surfers for seals off California simply can't be logically transposed to tiger sharks and sea 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 fashion. A surfer on a 6-to-7 ft board 2 ft (or less) wide bears little if any resemblance to a 1-to-3 ft oval sea 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 in Hawaii on surfers, as well as a fatal attack on a boogie-boarder, took place during daylight hours in

reasonably clean, clear water. It's hard to imagine that the sharks involved mistook the victims for something else. Several months ago there even was an eye-witness account (with photos) of a 2000 lb steer swimming in waters off Maui being attacked by tiger sharks. Certainly the steer wasn't "mistaken" by the sharks for a turtle.

Explorer Jean-Michel Cousteau summarized the situation correctly when interviewed a year ago following the death of a swimmer attacked by a large shark at Olowalu, 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 H. Balazs
Deputy Chairman
IUCN Marine Turtle Specialist Group



January 23, 1993
992-A Awaawaanoa Place
Honolulu, Hawaii 96825
Tel. 808-395-6409

SURFER MAGAZINE- LETTERS
33046 Calle Aviator
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.

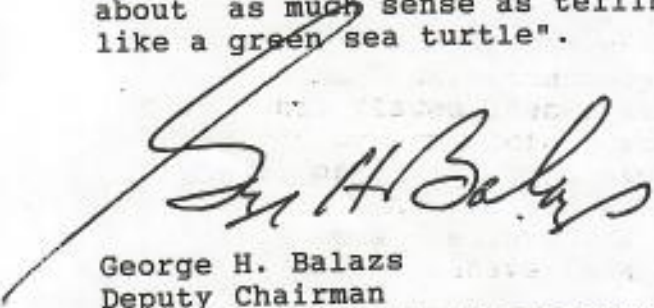
Do tiger sharks have to "mistake" surfers for turtles in order to attack them? Of course not. There is absolutely no scientific evidence of substance to show that mistaken identity is involved in such attacks. Unfortunately the news media in Hawaii has repeatedly voiced this flawed speculation, causing 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

SURFER MAGAZINE

NOVEMBER 1989

VOLUME 10 NUMBER 11



(On the cover) Mike Lattin is something of a V-Junk devotee—he can check the finicky spot from the head of his torso—and has been a regular face in a rather treacherous lineup for more than a decade. Photo: John Birkbeck. (Above) Approximation of what a Cav of White sees just as his lower jaw strains downward for maximum clamp capacity. Photo: Dan King/Lightwaves.

February 6, 1993
992-A Awaawaanoa Place
Honolulu, Hawaii 96825
Tel. 395-6409

Environment/Letters
H30
91-1052 Pohanhawai Street
Ewa Beach, Hawaii 96706

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 factors 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 sharks 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 supposed 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 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.

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

MAPS from
John Clark

Ancient sites of Oahu

by VANJAMES

March 4, 1993

Dr. George Balazs
Honolulu Laboratory
NATIONAL MARINE FISHERIES SERVICE
2570 Dole Street
Honolulu, Hawaii 96822-2396

Dear George:

I need your help in testing a hypothesis:

Ho: Pōhaku Pa'akiki was sacred to local sweet potato farmers who offered 'awa (a natural narcotic drink) daily to Kamohoali'i, their shark god. Legend holds that a fisherman, trying to annoy the farmers, caught sharks and threw their severed tails into the water by this pōhaku. Naturally, this annoyed Kamohoali'i, who caught the fisherman in the water one day and began to devour him, beginning with his feet. The shark god stopped at the fisherman's buttocks because of the smell of excrement, and the spirit of Kamohoali'i revealed to one of the farmers his pledge to never again eat human flesh or allow other sharks to harm anyone between Makapu'u and Waimānalo. For many years thereafter no shark-related injuries were reported in this area.



Pōhaku Pa'akiki

I've enclosed a map of how Kamohoali'i might view "between Makapu'u and Waimānalo." Zone A encompasses the waters between Makapu'u Point and Wailea Point connected by a straight line. I've added on Zone B to give the offshore area some curvature.

Please check your shark attack file and see if there are any attacks in either Zone A or B.

I say that the odds are on the side of Kamohoali'i on both scores. Some sharks do grind on humans in some areas, but I have done a thorough search of the scientific literature and I have not found even a single reference to ass kissing sharks.

Please let me know what you discover.

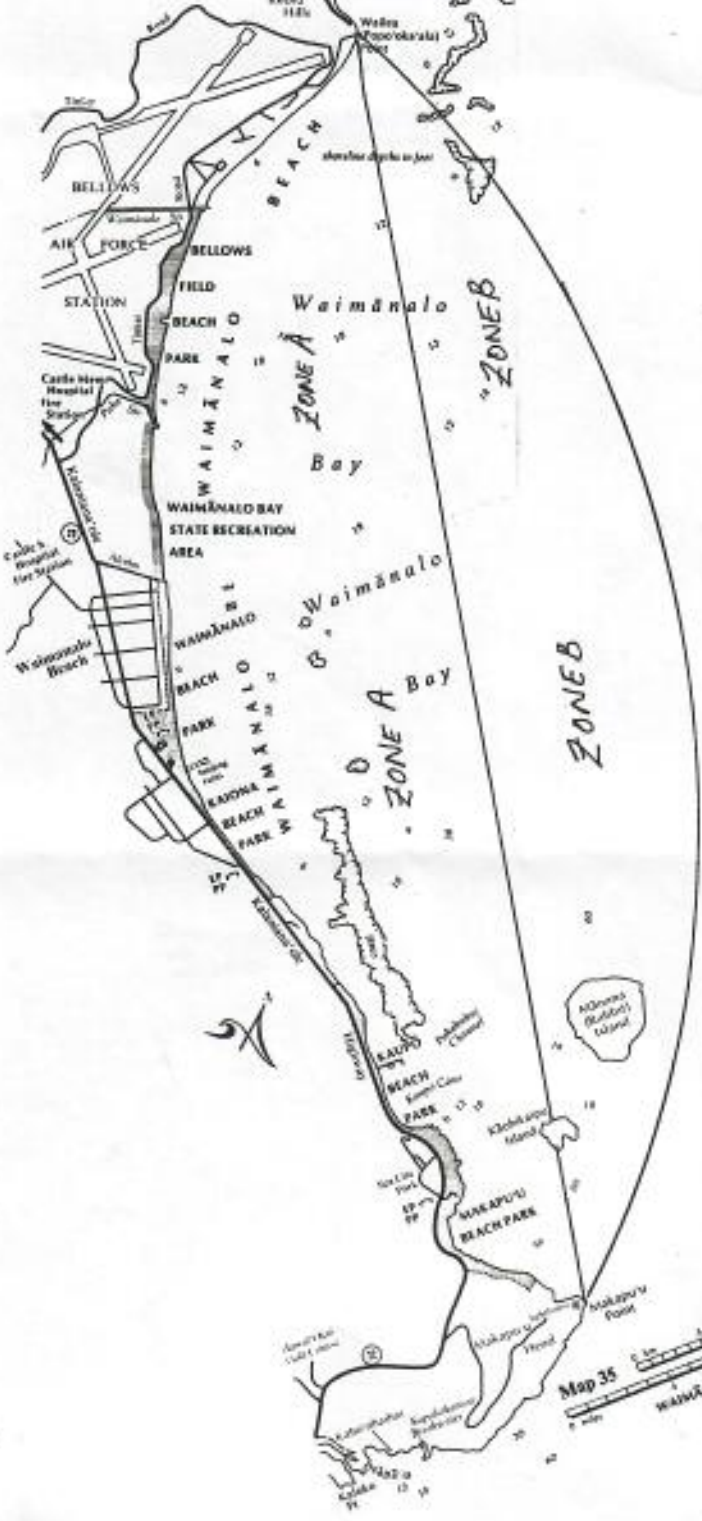
Sincerely,

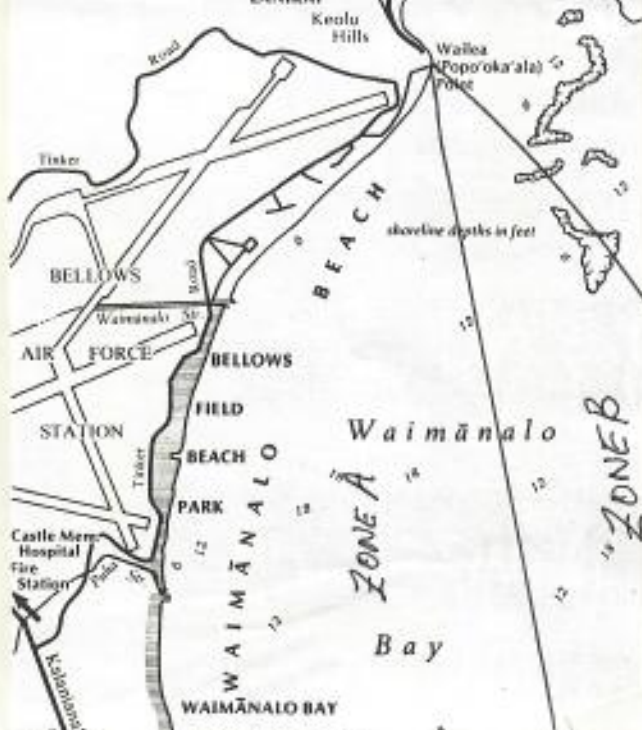
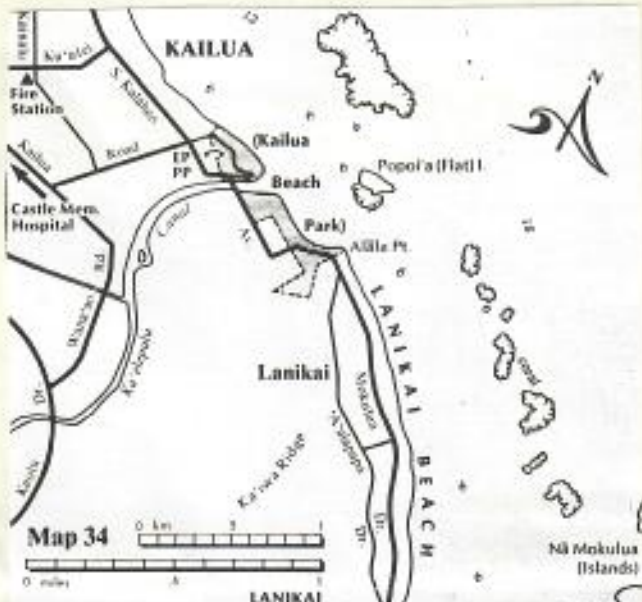
Justin Rutka

Justin Rutka
378 Hanamaulu Street
Honolulu, HI 96825

Enclosure: Map of Zone A and Zone B

P.S. Since this legend predates Captain Cook,
I'm assuming that haulies are fair game.





ZONE B

ZONE B

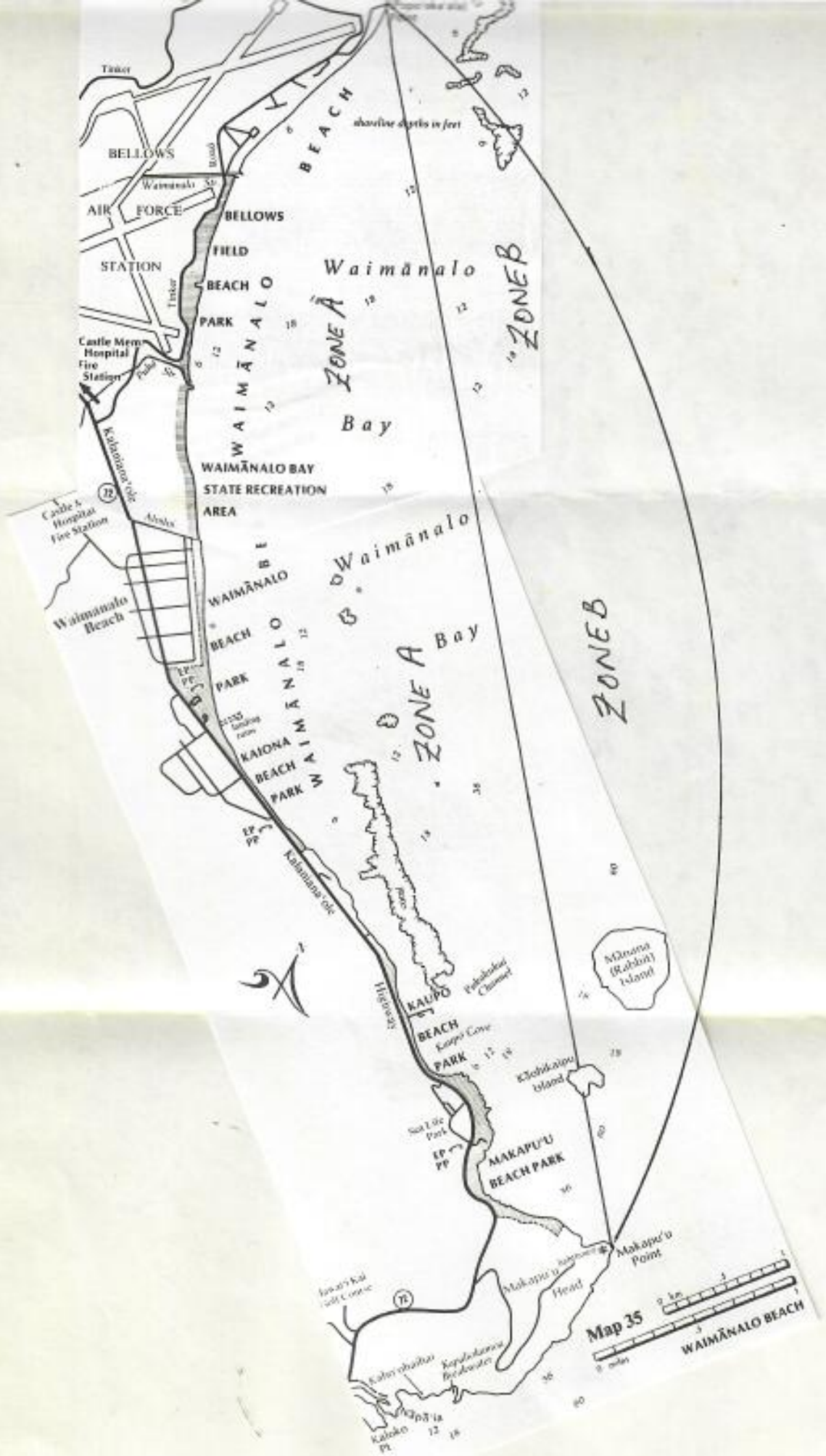
Waimanalo Bay

ZONE A

Waimanalo Bay

ZONE A

Mānana (Rabbit) Island



Tinker

BELLOWS

AIR FORCE STATION

Castle Mem Hospital Fire Station

Castle Memorial Hospital Fire Station

Waimānalo Beach

BELLOWS FIELD BEACH

WAIMĀNALO BEACH

PARK

WAIMĀNALO BEACH

PARK

WAIMĀNALO BEACH

PARK

WAIMĀNALO BEACH

PARK

WAIMĀNALO BEACH

PARK

KAIONA BEACH

PARK

WAIMĀNALO BEACH

PARK

shoreline depths in feet

Waimānalo Bay

Waimānalo Bay

Waimānalo Bay

Waimānalo Bay

KALUPO BEACH

PARK

MAKAPU'U BEACH

PARK

MAKAPU'U BEACH

PARK

ZONE B

ZONE A

ZONE A

ZONE A

Mōnana (Rabbit) Island

Kohala Island

Makapu'u Point

Map 35

WAIMĀNALO BEACH

Kaloko Pt.

Kaloko Pt.

Kaloko Pt.

Kaloko Pt.

Kaloko Pt.

BISHOP MUSEUM



CELEBRATING A
CENTURY OF DISCOVERY

Feb. 14, 1993

Dear George:

I just returned from 2 1/2 months in Seychelles, Red Sea, and Oman to find your revised Hawaiian shark attack file (many thanks) and the two items from a tiger shark stomach to identify. These appear to be the external spines (and roots) of *Diodon*.

Still much more mail to plow through.

Aloha,

Jack
John E. Randall

Thanks George,
I thought they
were *Diodon* spines.
John



Sharks are terrorizing swimmers in Hawaii

BLOODBATH IN PARADISE

THE BRIGHT blue tropical waters off Hawaii are turning blood red with man-eating sharks in a mad feeding frenzy — and tourism officials are desperately trying to cover it up!

In recent attacks, three people suffered hideous deaths as they were ripped limb-from-limb, often just a few yards from shore.

Hawaii tourist honchos are frantically scram-

bling to paint the attacks as isolated cases, but the horrifying reports continue. Among frightening examples:

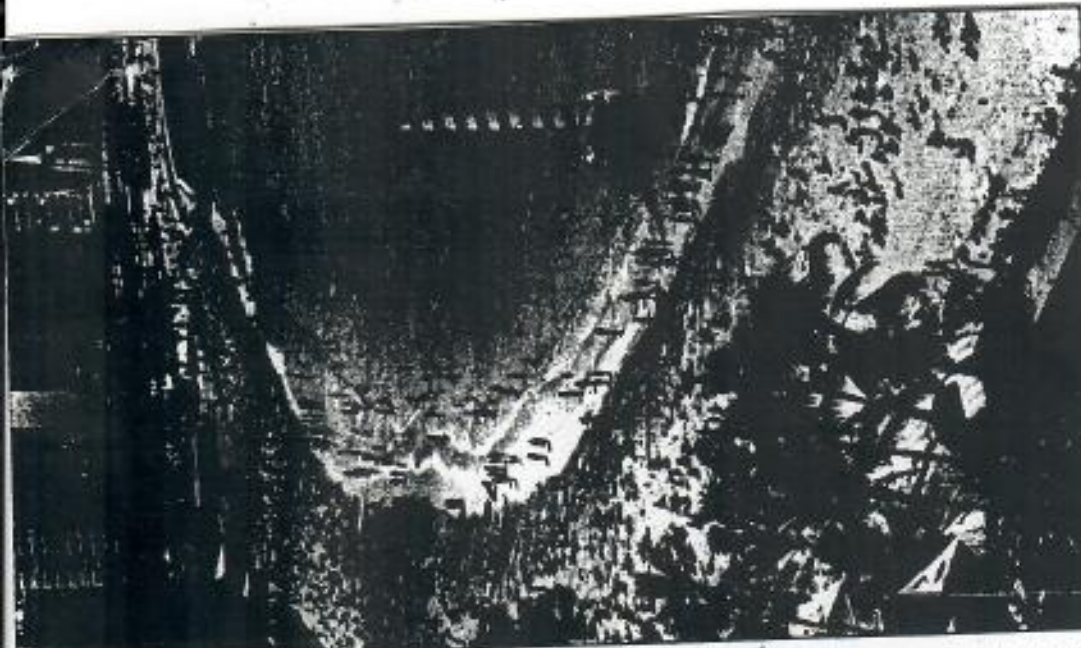
- In the latest attack, 18-year-old Aaron Romero, of Oahu, was killed while surfing in 6 feet of water about 10 yards offshore. It happened just 40 miles from Honolulu's famed Waikiki Beach.
- Two weeks earlier, Ricky Cruzinsky, also of Oahu, was attacked by a 12-foot shark that tore a chunk out of his surfboard. He barely made it to shore.

- In February, a surfer disappeared near Waimea Bay moments after a shark was spotted in the area. Only his surfboard was recovered, shattered by the incredible power of a shark's jaws.

- In December 1991, Martha Morrell was snorkeling with a friend near her Maui home when a 15-foot tiger shark lunged at her, instantly severing her legs and right arm and sending her to a horrifying death.

So far, all of the victims have been island residents. "Had any of these attacks happened to visitors, it would have been front-page news in every newspaper in the U.S. and Japan," says Lynn Britton, president of the Maui Hotel Association.

And some insiders maintain



HONOLULU'S famed Waikiki Beach: Disaster waiting to happen

up all the attacks in the islands over the past few years, it's close to 20. Instead, they're reporting the incidents as isolated and unrelated."

Hawaii's legislators, panicking over the impact on tourism, are forking over \$150,000 for a shark control program.

But many islanders stubbornly insist the shark threats have been over-blown.

Shaiff marine biologist John Naughton, a member of Hawaii's new task force on shark attack problems: "Our waters are still very safe!"

— PAUL FRIEN

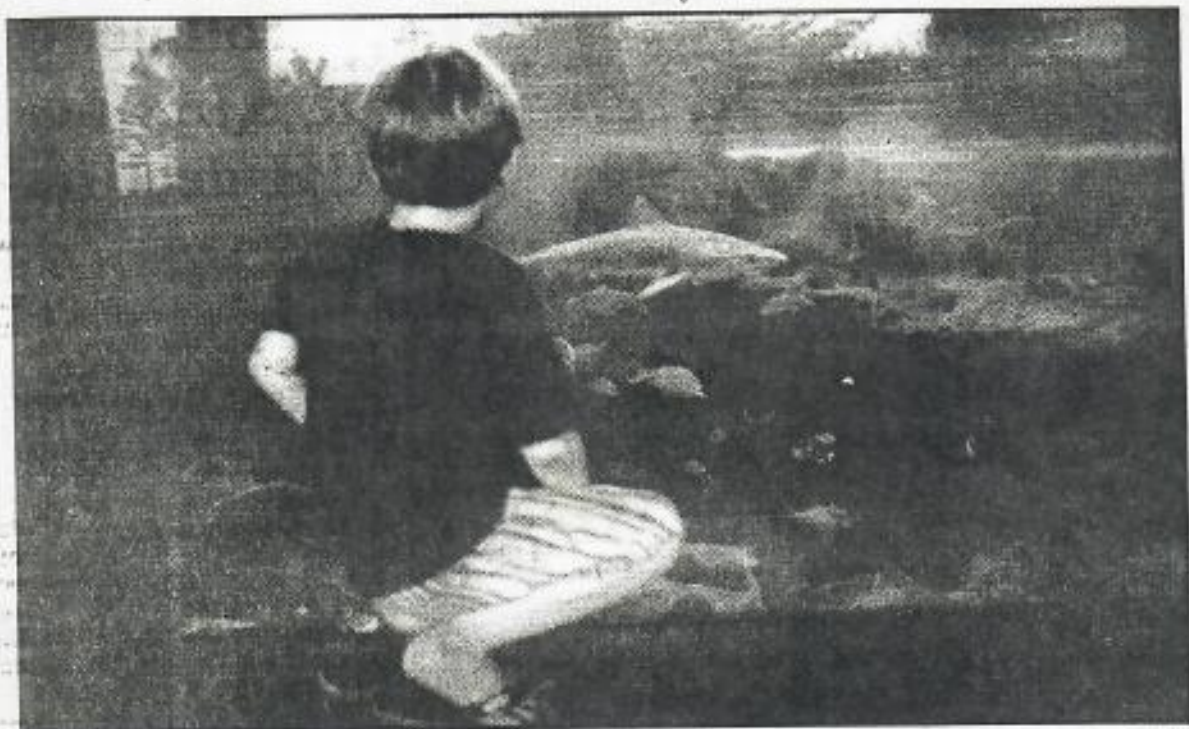
3 killed as officials try to hush it up

there have been far more attacks than officials admit.

"They've definitely cooking the figures on this one," charges a fisherman with extensive experience in Hawaii's offshore waters.

"We're seeing attacks every two or three months. If you add

The Honolulu Advertiser 3/21/93 AS Sunday



Advertiser photo by Carl Viti

Tiger (shark) in your tank

Five-year-old Sean Lister Murphy watches the new 5-foot-7-inch female tiger shark in Sea Life Park's reef tank. Park researchers caught the shark Friday as part of a study on tiger sharks' territorial habits.

Shark victim recovering in hospital

^{HSB}
□ The Maui surfer
was attacked while
paddling near Hana

By Kelly Arbor

Special to the Star-Bulletin

TUESDAY
3/16/93

WAILUA, Maui — Surfer Roddy Lewis, his right leg gashed by a shark bite and his left leg cut, sang praises to God while waiting an hour and a half for help.

"He had total peace. He's a born-again Christian. If he died on the beach, that was fine," said John Gangini, Lewis' surfing partner during the Sunday afternoon attack in East Maui.

Lewis, 35, had leg surgery Sunday night at Maui Memorial Hospital and was in stable condition and recovering well this morning.

The State Shark Task Force, after consulting Maui's Hawaiian community, will decide whether to hunt sharks in East Maui, task force chairman Bill Paty said.

The two surfers were paddling into a remote spot called Wailua Two, between Keanae and Hana, and were about 40 yards from shore when Lewis screamed. Gangini turned and saw a tiger shark dragging Lewis out to sea through murky water.

"That's when he got it together and started punching the shark in the head," Gangini recalled. Lewis hit the shark right in the eyeball, he said. "I saw him take command even in the midst of his terror."

Lewis paddled to shore, trailing blood. The shark, which Gangini estimates was more than 12 feet long with a 32-inch wide mouth, did not appear to follow them.

"I was just scratching for the beach," he said. "I was afraid the blood would attract that shark and all his brothers."

Lewis, who declined interviews, thought the shark was bigger than 12 feet, Gangini said.

At the rocky shoreline, Lewis turned his surfboard leash into a tourniquet, tying it below his right kneecap. The bleeding stopped after about 20 minutes, Gangini said.

Another surfer who saw the attack from the shore, ran to Wailua village to summon help.

Lewis, a Paia resident originally from Kaneohe, is a top-ranked professional windsurfer who has been around the ocean his whole life. Gangini described him as 6 feet 4 inches tall and in top shape.

Hana Police Sgt. Robert Stuhr and Dr. Michelle Taube of Hana Medical Center found trees downed by winds blocking the road to Wailua. The surfers, who could not be reached by road or trail, were taken by helicopter to Central Maui within 68 minutes of the emergency call, Stuhr said.

Taube said Lewis "had a very extensive wound. As far as bleeding, it was pretty stable. He did a lot of the work himself."

Sharks were feeding

Surfer didn't know dead cow, pig were in

By Edwin Tanji

Advertiser Maui County Bureau

WAILUKU, Maui — A man whose legs were mangled by a shark Sunday afternoon was surfing unknowingly in an area where sharks had been feeding recently, his friend said yesterday.

"I guess we were full-on prime targets," said John Gangini, a Makawao man who had been surfing with Roddy Lewis, 35, of Kuau.

Lewis, a carpenter, professional speed board sailor and diver, was attacked by what is believed to be a 12-foot tiger shark. The shark struck both of his legs as they hung off his surfboard and gripped his left

calf while he punched it to knock it away, Gangini said.

The attack occurred sometime after 3 p.m. on the east side of Wailua Bay, near where the East and West Wailua Iki streams flow into the ocean. Gangini said he learned after the attack that there had been a dead cow and a dead pig in the streams.

Gangini said he and Lewis — who grew up on Oahu — had been surfing in the larger section of the bay, but were joined by a number of young surfers and the pair went to check the waves off Wailua Iki.

Lewis was on the outside when he heard a yell and saw Lewis striking at the shark hanging onto his leg, Gangini

said.

He said the two of them were not warned about the danger of sharks by several men who stayed on shore while he and Lewis went into the water.

The state Shark Task Force is reviewing the attack on Lewis, but two Hawaiian cultural leaders said yesterday they are recommending against any attempts to hunt for the shark at Wailua Bay.

Keanae-Wailua residents who live and dive in the area said there were prime conditions for sharks in the bay, said Charles Maxwell, who quit the Shark Task Force in protest over shark-hunting efforts on Oahu.

"There were dead animals washing down the stream, it

Hawaii

WEDNESDAY, March 17, 1993
The Honolulu Advertiser

at Maui attack site

streams leading to Wailua Bay

was murky water and late afternoon. They invited a shark attack," Maxwell said.

He and Parley Kanakaole, a Hana cultural specialist and teacher, said the state Shark Task Force should not move to catch the shark that attacked Lewis.

"You know there are sharks there," Kanakaole said. "The local surfers sitting on the beach know it. That's why they were sitting on the beach and not in the water."

"The problem is when you have guys who are surfing in areas they are not familiar with."

Gangini said he understands and respects the feelings of Hawaiians, but still thinks some-

thing should be done about the shark that attacked Lewis.

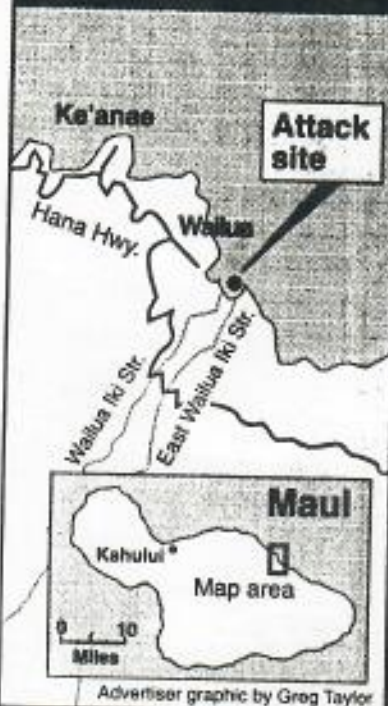
"It's the first shark I've ever seen in the water in 18 years of surfing in Hawaii," he said.

He said he would not try to guess what Lewis thinks. He said Lewis, who has declined to talk to reporters, "is a quiet guy" who doesn't like to talk about himself.

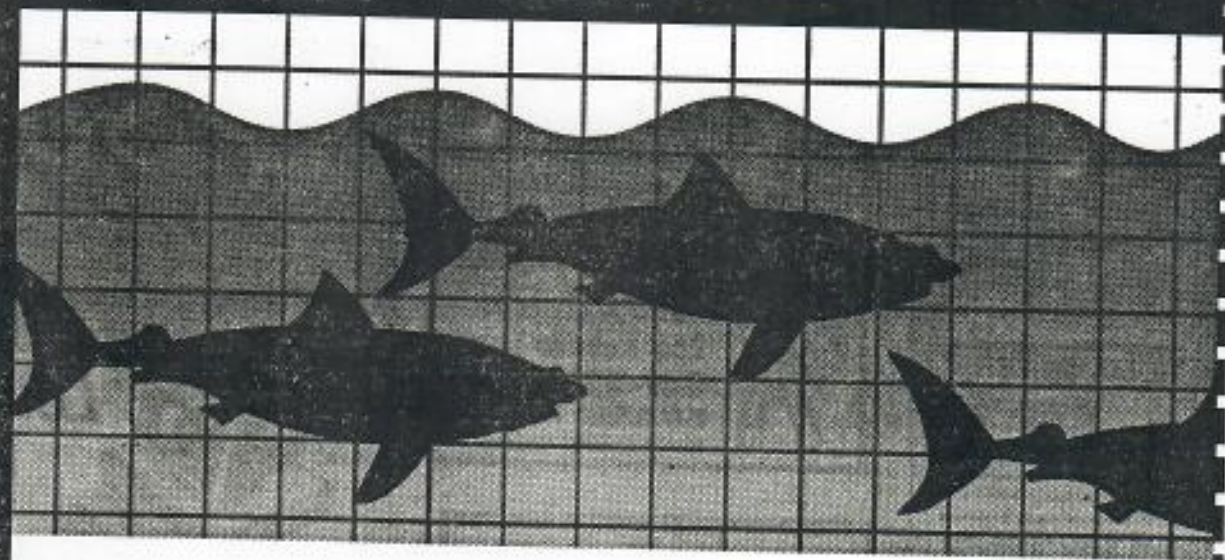
Shark Task Force Chairman William Paty said he will consult with other Task Force members, but "my offhand inclination is, we'll hold off."

He said he based his inclination on the conditions at Wailua Bay and the feelings of Hawaiian residents of the area who say there is no need to hunt for the shark.

Maui shark attack



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h
Bank of Hawaii
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MEMBER FDIC

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 factors 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 supposed 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.

Sherman's Lagoon





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.

Letters

*(continued from page 16)***MERELY A VICIOUS RUMOR**

Your interesting article "Shark Attack" (March '93) stated in bold type that attacks on surfers by tiger sharks are "believed by some to start as cases of mistaken identity" for sea turtles. This is a misguided belief. There is no scientific information to support such an idea. Unfortunately, the news media in Hawaii has repeatedly voiced this speculation, causing many to believe it is true.

The fact is that tiger sharks don't have to mistake anything floating on 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. The theory by some scientists that great white sharks mistake surfers for seals off California simply can't be transposed to tiger sharks and sea turtles in Hawaii. Very different species of sharks and prey items are involved.

Explorer Jean-Michel Cousteau summarized the situation correctly when interviewed a year ago following the death of a swimmer attacked by a large shark at Olowalu, 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 H. Balazs*Deputy Chairman**IUCN Marine Turtle Specialist Group***OK, YOU CAN HOG THE WAVES**

I'm writing to thank you for being here for us. I'm speaking for a handful of Marines and sailors in Somalia.

We left on float from San Diego hoping for the possibility of finding some serious surf during our journey. So far nil.

Most of us were the first guys to come out of the surf zone that you may have seen on CNN. Anyway we're not getting any time on our sticks. So we're relying on your mag that my wife has been so gracious to send.

We're still hoping we'll hit Australia before we head home. Either way we can't wait to hit the SoCal coast this summer. Don't be surprised if we hog the waves though, we're just making up for lost time. Thanks *Surfing*.

Doc*USS Junco*



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
TEL (310) 980-4000; FAX (310) 980-4018

May 27, 1993 F/SW023:JJN

Ms. Jean Sandelin
Third Grade
Aikahi School
281 Ilihu Street
Kailua, HI 96734

Dear Third Grade Class:

Thank you very much for the 22 letters you sent me concerning sharks and shark fishing in Hawaii. Your opinions presented in the letters are greatly appreciated and, for the most part, represent the opinions the State Shark Task Force has received over the past year from people throughout the State of Hawaii.

Many of you are correct in stating that sharks are an important part of the ocean ecosystem. They are at the top of the food chain and function much as wolves, bears, and lions do on land. We therefore have to be very careful when we attempt to control shark populations so we do not upset the ecological balance of a particular part of the ocean.

The problem in Hawaii is that we do not presently have an active shark fishery for inshore sharks, such as occurs in most places in the world. Therefore many of us in the scientific community feel that the nearshore shark populations have increased in Hawaii since shark fishing was stopped in 1976. This appears to be particularly true for the large and most dangerous inshore shark, the tiger shark. The results are the dramatic increase in shark attacks during the past 18 months in Hawaiian waters.

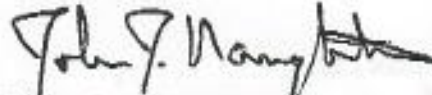
We have scientific data indicating that each tiger shark has a home-range in which it lives and hunts for food. Therefore, if a tiger shark attacks or attempts to attack a person, or a big one is sighted many times in a popular surfing or swimming area, the Task Force believes the shark should be caught and removed from the area. However, only a few big tiger sharks should be caught and killed. All other sharks caught should be tagged and released so we do not damage the ecological balance of the area.

This is the approach that we on the Task Force are taking around Oahu. We call it selective, site specific fishing, targeting only large tiger sharks. We are also conducting research to learn more about sharks in Hawaiian waters. Recently, educational materials have been prepared to teach people more about our shark populations. I am sending your teacher a shark poster for your classroom as well as a brochure for each of you.



Again, thank you for your letters. I will share them with other Task Force Members. Study hard in school and have a great time at the beach this summer!

Sincerely,

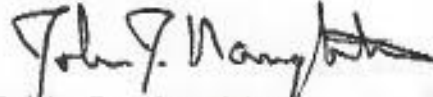


John J. Naughton
Pacific Islands
Environmental Coordinator
Hawaii Shark Task Force member

cc: F/SW, Long Beach, CA
Hawaii State Shark Task Force

Again, thank you for your letters. I will share them with other Task Force Members. Study hard in school and have a great time at the beach this summer!

Sincerely,



John J. Naughton
Pacific Islands
Environmental Coordinator
Hawaii Shark Task Force member

cc: F/SW, Long Beach, CA
Hawaii State Shark Task Force

were considered as elder to the clans of commoners.² Both chiefs and commoners venerated their more illustrious ancestors as *aumakua*, and sought their aid.

Aumakua were invisible to the living, but able to possess or inhabit many visible forms, animate or inanimate. A rock or a small carved image set up in a family shrine within the home might serve as a seating place for *aumakua*. The *momoa*, the small rear point of a canoe hull which projects below and behind the stern cover of a Hawaiian canoe, was regarded as the "seat" for the invisible *aumakua* of the canoe's owner.³ The war club of a famous warrior ancestor might be powered by his *mana* when wielded by a descendant in battle.

Aumakua could also take possession of living creatures. Unusual experiences with certain fish, birds, reptiles, insects or mammals may have led some Hawaiians to regard certain animals as forms favored by their *aumakua*. Thus it was believed that ancestral spirits could make appearances to express parental concern for the living, bringing warnings of impending danger, comfort in times of stress or sorrow, or in other ways being helpful. This is not to say that an entire species was regarded as *aumakua*—only that an individual animal might be possessed by an *aumakua*, and then only as the occasion might demand.

Some families, for example, believed that the spirit of an ancestor could appear as a shark, perhaps to chase fish into their nets, or to guide a lost canoe to safety. This does not imply that these families regarded all sharks as their *aumakua*, nor does it mean that a particular shark was an *aumakua*. To be precise, it means that an *aumakua* had chosen to take possession of a particular shark for a particular purpose. But for these families, the killing or eating of any shark was an act of filial disrespect, for which the *aumakua* might punish them by bringing sickness upon

² Of the five classes of Hawaiian chiefs, the highest ranking (*ni'auipi'o*) were those with the most perfect genealogies—clear channels for the flow of *mana*. This was vital to everyone, chiefs and commoners alike; all believed that success or disaster for the entire community rested on the capacity of their ruling chief to receive chiefly *mana* from the gods and his ancestors.

Commoners had chiefly ancestors, but they were commoners because their genealogies had become lost or obscured; thus the flow of chiefly *mana* was blocked and could not descend to them.

This belief formed the rationale for Pa'ao's conquest of Hawai'i. Arriving from Ra'iatea (then Havai'i or Havaiki), he found no chiefs eligible to rule. He returned to the South Pacific, recruited Pili Ka'aiea, a prince of the highest blood lines. With their champions they sailed north and made their conquest, installing Pili Ka'aiea as the progenitor of the dynasty of ruling chiefs from which Kamehameha I was descended 22 generations later.

³ The distinctive *momoa* is omitted by some modern canoemakers who are unaware of its significance. According to one story, the tradition originated when Mo'ikeha was leaving "Kahiki" (probably the Tahitian island of Ra'iatea) on his return voyage to Hawai'i, and a spirit (*aumakua*) asked to accompany him. There being no room in the canoe, the spirit said "I will ride upon the small projection I see at the stern end of the hull."

the transgressors.

Some minor deities, in particular Laka, Pele, and Hi'iaka, were—and still are—regarded as *aumakua* by certain families.

Both *aumakua* and *akua* dwelled in the Po, the timeless, measureless, eternity which existed before the universe was created, and to which spirits of the dead returned. But some *aumakua* maintained a protective and beneficial parental interest in the welfare of their living descendants. However, if the *aumakua* were not paid acts of respect, they might, as indignant parents, visit some punishment upon the living, or they might simply lose interest and drift away into the limitless Po, beyond the call of their descendants. One showed such respect by living in a manner which emulated the virtues of one's ancestors. One showed appreciation for having received an inherited talent by submitting to rigorous training, and by industriously applying one's skill. Such acts would attract the proud parental interest of ancestral spirits, who would reward their respectful descendants with *mana*.

Respect was also shown by offering prayers in which certain ancestors were specifically addressed by their names. Before the abandonment of the official religion in 1819, and the subsequent acceptance of Christianity, prayers to the major gods were often directed first to named *aumakua*, enlisting their aid to pass these communications up the line of seniority. That Hawaiians knew many of their *aumakua* by name well into the 20th century (Mary Kawena Pukui learned the names of 50 *aumakua* as a child) is evidence that the acceptance of Christianity did not force the abandonment of *aumakua* beliefs.⁴ The explanation is found in the words of Christian doctrine. References to God as "Father," and the commandment to "honor thy parents all the days of thy life" found immediate acceptance from Hawaiians who perceived an area of agreement between the new religion and the more family-oriented viewpoints of their own.

Another act of respect was the sharing of food. All Polynesians propitiated ancestral spirits by ritual feeding; spirits who were not fed would fade away beyond call. Foods were placed before small domestic shrines to the *aumakua*, as well as upon altars of chiefly chapels and the altars within great temples to the major gods. As a boy, I knew a fishing family in Puna whose elder male carried

⁴ In old Hawai'i, it was believed that words had a power of their own; prayers or invocations that were not delivered word-perfect would bring no benefit, and might indeed bring harm. The requirement that *aumakua* be addressed in prayer by their names has unhappy implications for Hawaiians who may wish to revive this aspect of their heritage, but who do not know the names of their ancestors or the correct rituals.

food down to the shore every evening, where he called to a shark, and fed it⁵

A charming folktale describes how two children, a brother and sister, were captured by enemies of their chief and tied to a stake. That night an *aumakua* came to them as an owl, and unfastened their bonds with its beak. Then it led them away, but cautioned them to walk backwards. The next day, their enemies could find no footprints except those that seemed to lead toward the place of their captivity, so the search had to be abandoned.

SUGGESTED READING:

Nana i ke Kumu, Pukui, Haertig, & Lee (Queen Liliuokalani Children's Center, 1972)
Ka Po'e Kahika, Kamakau (Bishop Museum Press, 1968)

Prayers by which men and women may contact male or female *aumakua* were recorded by SM Kamakau. Originally published in a Hawaiian language newspaper in 1870, they may be found with translation in *Na Pule Kahika*, Gutmanis, (Editions Limited 1983, pp. 16-17). Major gods (*akuā*) are called upon first, then certain *aumakua*, then the supplicant identifies himself or herself by name and the request is made. Another prayer is found in *Nana i ke Kumu*.

⁵ "The gods are dead," an elderly Maori said in a New Zealand Land Court hearing.

"But gods cannot die," said the judge.

"They will die if there is no one who feeds them" said the old man.

For your interest:

The first documented observation of a shark attack in Hawaiian waters:

From Edgar's journal, Cook Expedition, 23 December 1778, off the Hilo coast of Hawaii Island.

Much to the displeasure of his "mutinous and turbulent crew" Cook had avoided landing, but kept offshore, beating slowly to windward along the Hawaii coast, occasionally backing his mainsail to stop and trade with canoes which brought out "hogs, fowl, fruit and roots."

"... saw three very large Sharks about, the Men & Women Swimming to and from the ship at the same time About 1/2 past 11 a large shark attackd A man in the water, as Soon as he saw him Opening his Mouth & turning on his Side to lay hold of his Thigh he struck him on the Head with His Hand. Immediately the shark swam off. the Man who was rather Elderly seem'd very much alarm'd for a little time altho many Indians saw this and Made a Hallowing at the time, they do not seem to fear them as they Kept swimming abt as if there had been None seen."

Herb Kawainui Kane
Box 163 Captain Cook, Hawai'i 96704
(808) 328 9126

May 15, 1993

Memo to: Randy Honebrink

Subject: Recent Shark sightings, Kona

Informant: Charles Nahale (DLNR fish/game enforcement) 323 3141)

December 17 ... Jason Verity, surfing near "Pine Trees" (S. of Keahole Pt.) ... his board was bumped by what appeared to be an 8 to 10 foot shark, "gray or tiger," which pursued him to shore, into shallow water.

March 13 .. same area... Leslie Huihui and Scott Taira, two divers trailing their stringer behind them (!)...encountered a 6' to 8' shark which began following, circling, acting strange, actually nudged the divers. Didn't touch the fish on the stringer. Followed divers into ankle depth water.

Nahale's informant on the above two incidents is Angel Pilago (I gave you his phone and address earlier).

April 7th, Kailua Bay. Joe Dettling, paddling kayak toward his moored vessel "Double D" was bumped several times by what appeared to be a tiger shark, until he was noticed by a passing boat which picked him up.





STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF CONSERVATION AND RESOURCES ENFORCEMENT

P. O. BOX 535
HILO, HAWAII 96721-0535

April 27, 1993

Mr. William Paty, Chairperson
Statewide Shark Task Force
1151 Punchbowl St.
Honolulu, HI 96813

Dear Mr. ^{Paty} Paty:

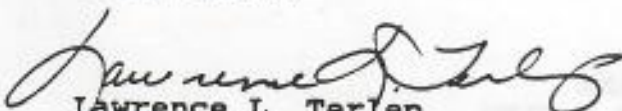
Please find attached two separate investigation reports dealing with "Kolohe" sharks in Kona. Kohanaiki or "Pine Trees" and Kailua Bay FMA are the areas of concern.

Mr. Angel Pilago, a Kona resident and spokesperson for "Protect Kohanaiki Ohana" called me personally to report and express safety concerns for our community.

Our DOCARE investigators confirmed witness' statements of a potentially dangerous shark in both instances. I would like to recommend the posting of warning signs as suggested by Mr. Pilago for public awareness.

Your prompt attention is appreciated. I may be reached at 933-4291.

Yours truly,


Lawrence L. Terlep
Hawaii Branch Chief

LLt/mjy

CC: A. Pilago
M. Matsuzaki

Attach: HA 93-234 Misc. Public
HA 93-241 Misc. Public-Shark

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF CONSERVATION AND RESOURCES ENFORCEMENT

P. O. BOX 536
HILO, HAWAII 96721-0536

April 27, 1993

MEMORANDUM:

TO: DOCARE Staff, Hawaii
FROM: Lawrence L. Terlep, Hawaii Branch Chief
SUBJECT: Shark Task Force Information

LL 4-27-93

Public awareness regarding sharks has become increasingly noticeable. The following information may be helpful to you.

State Shark Task Force

Mr. William Paty, Chairperson
1151 Punchbowl St.
DLNR 587-0404

Mr. John Naughton
National Marine Fisheries Service
2570 Dole Street
Honolulu, Hawaii

Mr. Randy Honebrink
Aquatic Resources - DLNR
1151 Punchbowl St. 587-0111

Neighbor island residents are asked to call 1-800-468-4644 and ask operator to dial "SHARK".

LLT/mjy

CC: G.Moniz

KOFA 1/19/23
 HONOLULU
 MAUI
 KAUAI
 OAHU
 MOLOKAI
 STATE OF HAWAII
 PROBATION

DOCARE-6

Dept. LNR
 Div. Enforcement

INVESTIGATION REPORT

1. REPORT NUMBER
HA 93-241
 2. INVESTIGATOR
John P. KALUA'U
 4. DISTRICT
West Hawaii

CLASSIFICATION PUBLIC SAFETY (SHARK HARASSMENT) 3. ISLAND Hawaii
 5. COMPLAINANT (Firm Name, if Business) Joe DETTLING 6. SEX M RACE Caucasian AGE 48 7. D.O.B. 07-17-45 8. OCCUPATION Commercial Fishir
 9. ADDRESS 74-4950 Palani Road K.K. 10. SCHOOL EMPLOYED/SCHOOL ATTENDING _____ Res. Ph. 329-8417 Bus. Ph. _____
 11. LOCATION OF OFFENSE AND CLOSEST INTERSECTING STREET Kailua Bay 12. DATE/TIME/DAY OCCURRED 04-07-93 Wed. 1600 Hrs. 13. DATE/TIME REPORTED 04-08-93 1320 Hrs.
 14. DESCRIBE LOCATION OF OFFENSE OR TYPE OF PREMISES Open Ocean 15. HOW REPORTED Memorandum

16. VEHICLE INVOLVED () Year Make Model Color(s) License No. I.D. Characteristics
 17. BOAT INVOLVED () Length Make Model Color(s) Name HA No. I.D. Characteristics
 18. REGISTERED OWNER Address Res. Phone

CODE: W = Witness S = Suspect (Fill in Composite Description) R = Reporting Person
 19. NAME Age Sex Code Address Res. Phone Bus. Phone
 20. SEX Composite Description Race Age Wt. Build Hair Eyes Complex Clothes/I.D. Characteristics

21. INVESTIGATION: 1. Insert a synopsis of the crime or incident. 2. Summarize details of the crime or incident. 3. Denote persons from whom statements taken and who took them. 4. Identify additional suspects and witnesses. 5. Identify additional investigators. 6. Use opposite side for continuation of report, if necessary.

Synopsis

Complainant reported to MPO officer Clyde TAMANAHA, that he was harassed by a shark while paddling his kavak in route to his vessel the 'DUMIE N' 4-7-93...

22. REPORTED BY: John P. Kalua'U Badge No. _____ Date/Time _____
 23. SUPERVISOR APPROVAL: Charles Mahale Supervisor West Hawaii
 24. DISPOSITION: Repaired - I.R.
 25. Date/Time Reproduced: _____
 26. Distribution: () Citizen/No () Adult () Juvenile () Arrested/Released () Other/No Arrest
 27. Connecting Report No. _____

HONO KAUAI STATE OF HAWAII
 KONA
 HONOLULU
 MAUI
 KAUAI INVESTIGATION REPORT
 OAHU
 LAND DISTRICT
 ST. P.
 DISTRICT
 AQUATICS
 PROSECUTOR
 PROBATION

DOCARE-6

Dept. LNR
 Div. ENFORCEMENT

CLASSIFICATION
 MISCELLANEOUS PUBLIC (SHARK HARASSMENT)

3. ISLAND
 Hawaii

1. REPORT NUMBER
 HA-93-234
 2. INVESTIGATOR
 Reggie LEE
 4. DISTRICT
 West Hawaii

5. COMPLAINANT (Firm Name, if Business)

(Mr.) Angel PILAGO

6. SEX RACE AGE
 M Pt. Hawn. 47

7. D.O.B.
06-08-45

8. OCCUPATION State
 Employment Agent

9. ADDRESS

P.O. Box 592 Kealahou, Hawaii

10. SCHOOL EMPLOYED/SCHOOL ATTENDING

State Employment Services

329-4685

326-2855

11. LOCATION OF OFFENSE AND CLOSEST INTERSECTING STREET

Oona Beach Road/OTEC Rd.

12. DATE/TIME/DAY OCCURRED
03-27-93 Unk. Saturday

13. DATE/TIME REPORTED
04-07-93 1355 Hrs.

14. DESCRIBE LOCATION OF OFFENSE OR TYPE OF PREMISES

Ocean waters outside of Pine Trees

15. HOW REPORTED
Telephone

| 16. VEHICLE INVOLVED () | Year | Make | Model | Color(s) | License No. | I.D. Characteristics | |
|--------------------------|---------|------|-------|----------|-------------|----------------------|----------------------|
| 17. BOAT INVOLVED () | Length | Make | Model | Color(s) | Name | HA No. | I.D. Characteristics |
| 18. REGISTERED OWNER | Address | | | | | Res. Phone | |

CODE: W = Witness S = Suspect (Fill in Composite Description) R = Reporting Person

| 19. NAME | Age | Sex | Code | Address (Mongoose Lane) | Res. Phone | Bus. Phone |
|---------------|-----|-----|------|--|------------|------------|
| Leslie HUIHUI | 24 | M | W | P.O. Box 390987 Kailua-Kona, Hi. | 329-5658 | |
| Scott TAIRA | 24 | M | W | (Mongoose Lane) P.O. Box 390987 Kailua-Kona, Hawaii | 329-5658 | |

| 20. SEX | Composite Description | Race | Age | Wt. | Build | Hair | Eyes | Complex | Clothes/I.D. Characteristics |
|---------|-----------------------|------|-----|-----|-------|------|------|---------|------------------------------|
|---------|-----------------------|------|-----|-----|-------|------|------|---------|------------------------------|

21. INVESTIGATION: 1. Insert a synopsis of the crime or incident. 2. Summarize details of the crime or incident. 3. Denote persons from whom statements taken and who took them. 4. Identify additional suspects and witnesses. 5. Identify additional investigators. 6. Use opposite side for continuation of report, if necessary.

Synopsis

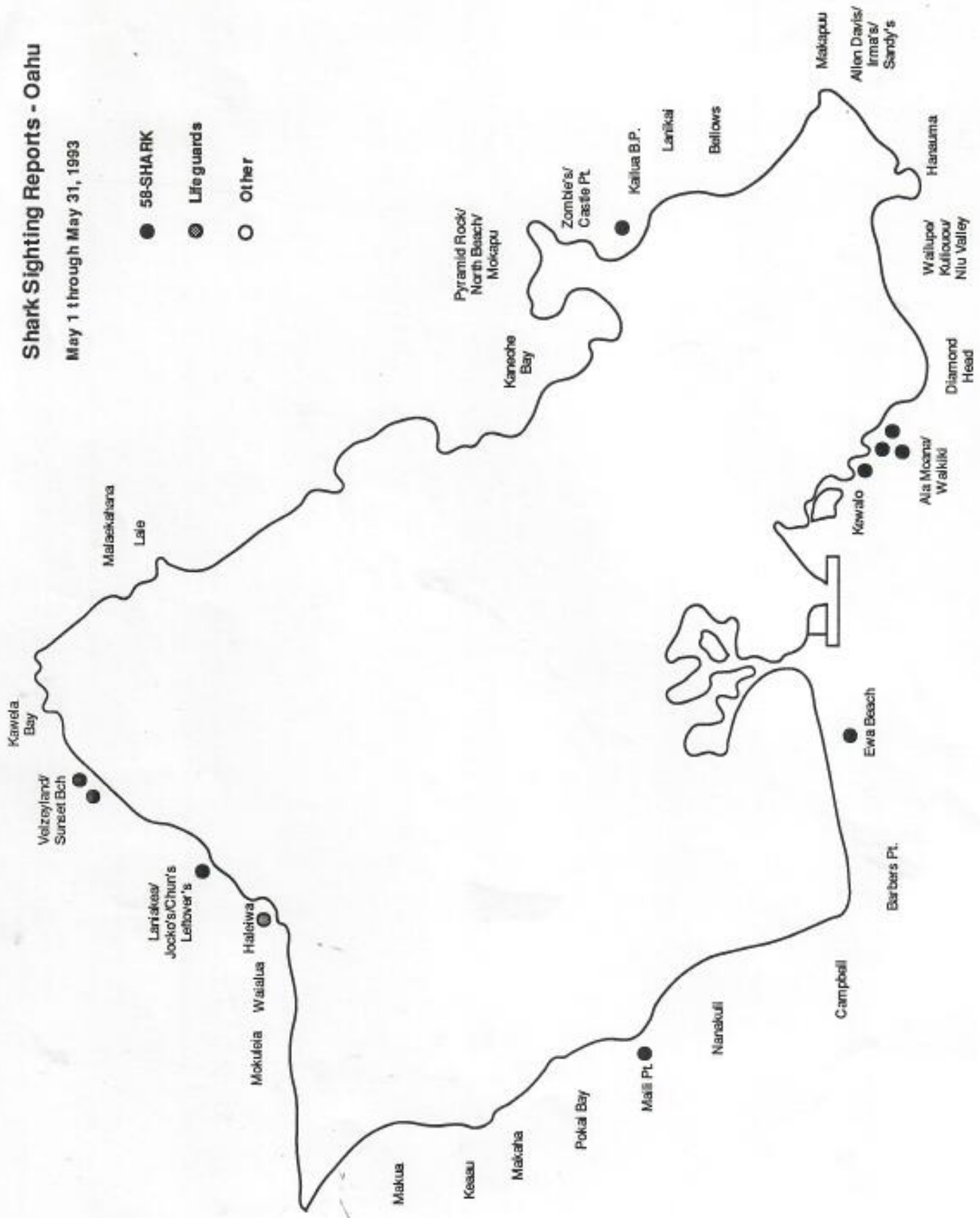
Complainant reported that both witnesses reported to him that they were harassed by a 6/8 foot shark, while diving off the shoreline of "Pine Trees".

THIS IS A CONENCT UP REPORT WITH REPORT NUMBER HA-93-233, MISCELLANEOUS PUBLIC CASE. For further information refer supplementry submitted to this report.

Shark Sighting Reports - Oahu

May 1 through May 31, 1993

- 58-SHARK
- ⊗ Life guards
- Other



58-SHARK Reports

May 1 through May 31, 1993

Oahu

Windward

Kailua

5/23

1

no size given; 20-30' offshore (HPD report)

North Shore

Haleiwa

5/5**

1

8-10'; beaches cleared

Chun's

5/27

1

unknown size; inside break in 3' of water

Sunset Beach

5/11

4

10'+; 2 tigers, 2 unid.; 100 yds offshore

5/15

1

10' tiger; swimming toward surfer at Backyards

Waianae

Maili Pt.

5/16

1

8'; close to shore

South Shore

Ewa Beach

5/15

1

size unknown; Iroquois Pt.

Kewalo

5/6 (report)

several

lg hammerheads, 100' W of channel

Waikiki/Ala Moana

5/13

1

8-10' at Ala Moana Bowls; followed surfer

5/25

1

6-8' at Ala Moana Bowls

5/28

1

8-10'; various Ala Moana breaks, last 3-4 weeks

Maui

Kahului Harbor

5/12

1 big tiger; eating trash bags at harbor entrance

Makena

5/6

2 6-8'; killed & ate turtle; S end of Big Beach

Big Island

Anaehoomalu Bay

5/15

1 10-15' tiger; 1/4 mi. offshore

** reported by lifeguards

* source other than 58-SHARK

AK



FLORIDA MUSEUM OF NATURAL HISTORY

RECEIVED

MAY 13 8:35

Department of Natural Sciences
Museum Road, University of Florida
Gainesville, FL 32611-2035 U.S.A.

904/392-1721

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

6 May 1993

Mr. William Paty
Chairperson
Dept. of Land and Natural Resources
PO Box 621
Honolulu, HI 96809

| DIVISION OF AQUATIC RESOURCES | |
|-------------------------------|-------------------------------------|
| DIRECTOR | <input checked="" type="checkbox"/> |
| COMMISSIONER | <input checked="" type="checkbox"/> |
| AD. DIR. (1) | <input type="checkbox"/> |
| AD. DIR. (2) | <input type="checkbox"/> |
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Thank you for Kahne

for Task Force Mtg.

Dear Mr. Paty:

George Balazs was kind enough to send me copies of the "Sharks of Hawaii" leaflet and poster recently published by the Division of Aquatic Resources. I congratulate you and your staff for producing well-balanced and informative public-outreach material. When I last wrote (April 1992) I suggested that public education is the best way to address the Hawaiian shark attack issue, and I am delighted to see that this has become a major component of your agency's initiative.

As indicated previously, while shark attack certainly creates an uproar, there is no indication that the Hawaiian attack rate is on the rise. The enclosed graphs document historical unprovoked attack rates for Hawaii and Florida, and compare these rates to trends in population growth for their respective states. It is clear that attack rates simply reflect the increased utilization of our states' inshore waters by in-state residents; if tourist data were added, we would see that attack rates are actually declining relative to the man-hours in the water. If these data are useful, feel free to use them as you see fit (see my earlier letter for explanation of our rationale for inclusion as "unprovoked attack").

My best wishes on your efforts to develop a strategy that addresses public interest and conservation.

Best wishes,

George H. Burgess
George H. Burgess
Director
International Shark Attack File

RECEIVED

MAY 17 1993

Div. of Aquatic Resources



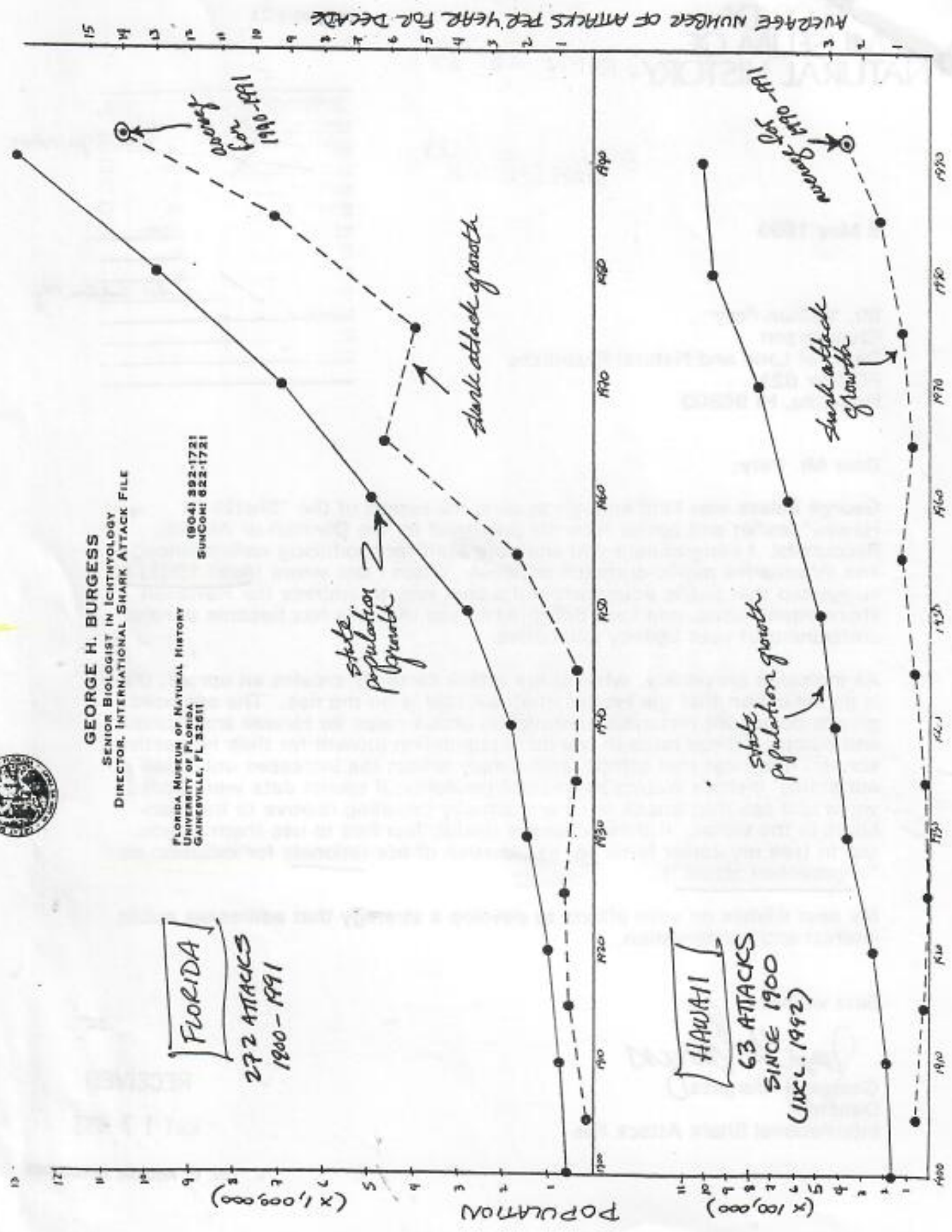
GEORGE H. BURGESS
 SENIOR BIOLOGIST IN ICHTHYOLOGY
 DIRECTOR, INTERNATIONAL SHARK ATTACK FILE

FLORIDA MUSEUM OF NATURAL HISTORY
 UNIVERSITY OF FLORIDA
 GAINESVILLE, FL 32611

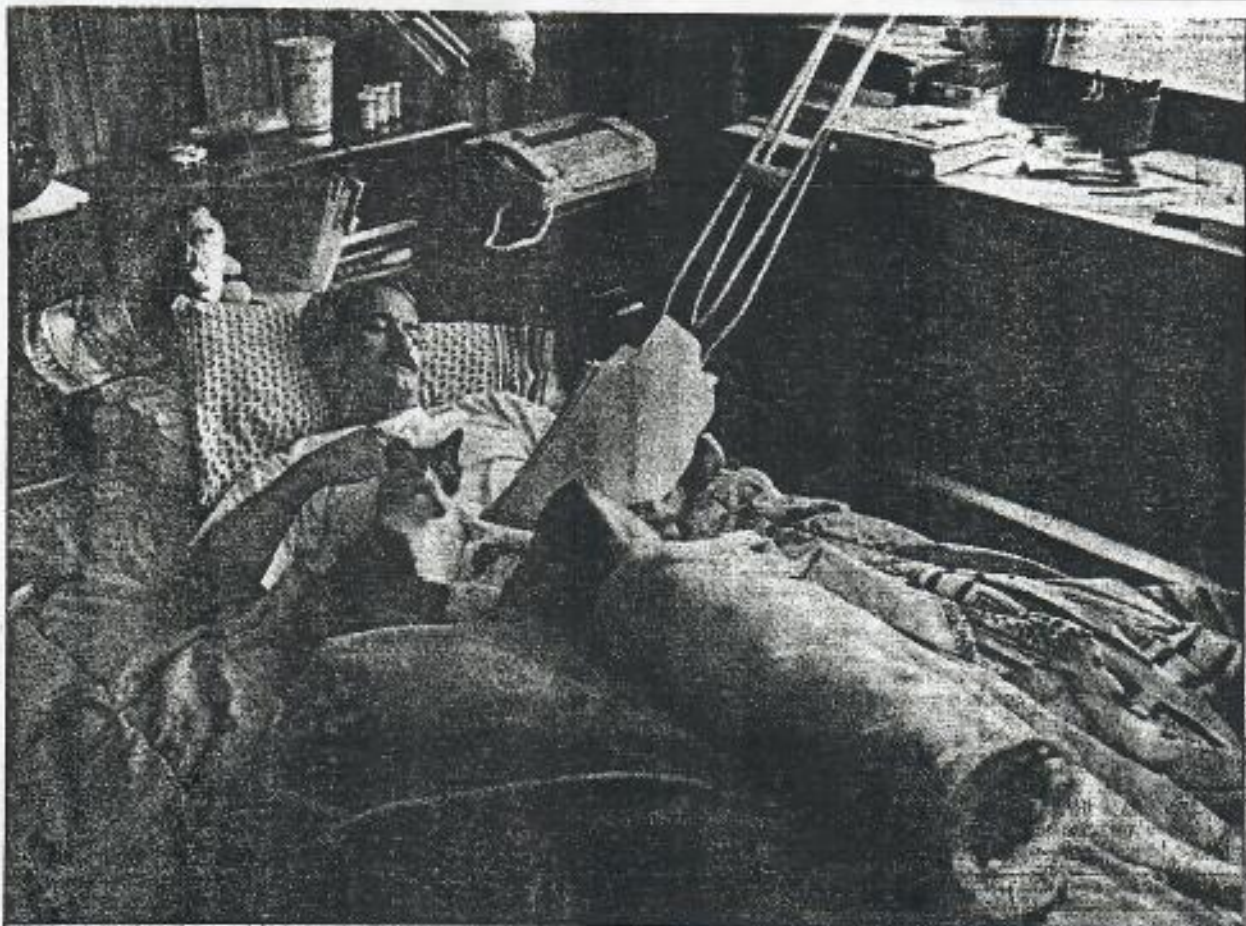
(904) 322-1721
 SUNCOM: 822-1721

FLORIDA
 272 ATTACKS
 1800 - 1991

HAWAII
 63 ATTACKS
 SINCE 1900
 (INCL. 1992)



"THE MAUI NEWS"
 THURSDAY, APRIL 1, 1993
 Pg. A-1, A-12



The Maui News / MATTHEW THAYER photo

Roddy Lewis scans a report on shark attacks in Hawaii while lying in bed at his Kuau studio Wednesday morning. Lewis is still recuperating after being attacked by a tiger shark March 14 in Waialiki Bay.

Surfer saw a chance, took it

Recovering victim of shark recounts attack

By LAUREL MURPHY
 Staff Writer

KUAAU — There was a moment 17 days ago when surfer Roddy Lewis felt totally abandoned to the will of God. Out there in paradise, afloat on his surfboard in the secret beauty of Waialiki Bay, a tiger shark surfaced without warning and clamped onto his right leg.

As the 10- to 12-foot shark shook him, trying to pull him under, sawing his leg to the bone, Lewis spotted his surfing companion veering away in shock. As the shark hunched its awful back out of the water to better its grip, words from the Bible floated through Lewis' mind: "I will never leave you, nor forsake you."

"That gave me strength," he said. Strength to seize what he says was a God-given "window of opportunity" to hit the shark on the



Photos taken at Maui Memorial Hospital shows Roddy Lewis' leg after five hours of surgery. "This is nothing compared to what his leg looked like on the beach," said Bobo Pahukoa, who witnessed the shark attack.

side of the head — perhaps near the eye — with everything he had, driving it away. Then, looking back to see if his foot was still there, cheered to discover that it was, Lewis caught a wave to shore, gushing blood.

And lived to tell the tale.

Which he did Wednesday morning at his studio in Kuau, surrounded by some of the new friends who helped him survive the late afternoon March 14 attack near Keanae.

They lauded his cool in the crisis and how he didn't flinch with the pain. They talked about how he

made a tourniquet out of his own board leash. How they huddled together and prayed on the rocky little beach while waiting an hour and a half for a medical helicopter to

See VICTIM on the last page of this section

Nominee to court has Maui roots

Paula Nakayama's parents raised

"She called us and said, 'Bring my jacket, I'm having a press conference.'" Mrs. Nakayama said when

'She called us and said, "Bring my jacket, I'm

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By JIM L
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Victim of shark attack says he saw a chance and took it

Continued from Page A1
come. How they talked about what it must be like to lie wet-wounded and forsaken in some faraway land.

It was a situation, in a way, where they all showed what they were made of. "Every step of the way was a miracle in motion," Lewis said. And what they were made of was good.

"Papaya John" McCollum of Pua, 46, who was surfing nearby and saw the shark strike. McCollum raced over the beachside to Wallius Bay to get help. "Every step was a prayer," he said.

Bobo Puhukoa, 24, a Keenae construction worker, who jumped in his truck to make the 911 call when the breathless McCollum appeared at the bay. He then dashed through the

waves breaking over sea caves to bring Lewis a surfing bag for warmth and news that help was on the way.

Brian Murphy, 47, a Keenae farmer, who had been surfing with McCollum and held Lewis during the long wait. A week later, with Wallius fishermen Douglas Cummins, he caught a 10- to 12-foot tiger shark he believes was the same. (A fragment of a shark tooth embedded in Lewis' leg fits a tooth in the dead shark's jaw, Murphy said.)

But let Lewis, 35, a professional windsurfing speed sailor who grew up on Oahu, tell the story. He is a tall, blond man, quiet and stoical, with deep blue eyes and a strong chin, the kind of person who chooses his words carefully before he speaks.

The ordeal began, Lewis said, when he and his surfing buddy, John Cangial of Makawao, decided to paddle around the headland to the adjacent bay to get away from some of the aggressive, young surfers at Wallius Bay. It was a place he'd never been before.

"The bay opened up, the scenery, the vegetation, was something out of a picture book," he said. "I looked into this bay, and I thought, 'This looks like paradise.' ... Shortly after that the water became murky. I saw sticks and things floating in it. You couldn't see but 5 feet down. I remember thinking, 'This is perfect water for sharks.'"

"No longer than five to ten seconds after that the thing hit my back

leg. In full stroke, this thing hit. I felt the pain and power and impact and what it was all in one brief instant. You know that's what it has to be, but you don't want to think that's what it is. I turned to the beach and I saw my leg in this shark's mouth.

"All of a sudden, the thing jerked me out and down. I tried to hold onto my surfboard. When it couldn't pull me completely underwater, its back bulged out of the water. I saw it clamp onto my leg and try to tear off a piece. I saw the dorsal fin sticking up. I saw the head grinding into my leg. His whole back was wanting to take my leg off ...

"His head was a little underwater. I knew I had one chance. With everything I had I hit him on the side of

the head. It was enough to make him let go. Every stroke back in, I knew the thing was down there. I knew he could be waiting to grab me again.

For a week, Lewis thought he might lose his leg. He praises his surgeon, Dr. George Zakath, who stitched together Lewis' right calf, which the shark had filleted open to the bone from knee to ankle.

Now, his medical prognosis is good. Lewis is planning to surf Walluisaki again with McCollum and Murphy when he's fully recovered. "Got to," he said.

He thinks the state should mount a shark control program so no one else gets hurt. "How long do you want to wait? How long do you want to see people eaten before you take some

kind of control measure?" he asked. Lewis cited shark attack statistics from a December 1992 National Marine Fisheries Service report showing a steady rise in attacks from 14 in 1980-89, and 15, including his, since 1990.

He fell silent and lowered his head, a characteristic gesture these days. "If it had to be someone, it was fortunate it was me," he said. "I just view getting through it as God's grace."

Roddy Lewis has no medical insurance, and a fund has been set up to help pay his medical bills. To contribute, write to: Friends of Roddy Lewis, care of Island Hope church, P.O. Box 670, Pua 96779.

Researchers want to put one over on flies

WASHINGTON (AP) — Who says you can't fool Mother Nature?

Agriculture Department researchers have a trick up their sleeves to play on the pesky fruit fly — fruit that is green on the outside and ripe on the inside. They have been treating citrus fruit with a natural plant hormone called gibberellic acid, or GA, that slows the aging and softening of the peel.

That tricks female fruit flies into bypassing those fruit when they're looking for a place to lay their eggs.

But although green on the outside, citrus sprayed with GA is fully ripe and ready for humans to enjoy. And the researchers say if the green-looking fruit causes customers to give it a pass, it can

The treatment is under consideration by the Florida citrus industry, Greany said.

GA occurs naturally in growing plants and is commercially derived from a fungus. Citrus growers now use it to extend the harvest season and to improve shipping quality, because it keeps the peel tough and resistant to post-harvest molds and mechanical injury.

But it is not yet certified for controlling fruit flies, Greany said.

He and colleagues found in field studies that spraying GA on citrus trees just before the fruit turns from green to orange or yellow can extend by at least two months the fruit's inherent resistance to fruit flies.

This entry from a college notebook.

FCC votes to force reductions in cost of basic cable TV service

By JAMES ROWLEY
The Associated Press

WASHINGTON — The Federal Communications Commission today voted to cut the cost of the most basic cable television service by at least 10 percent and to tightly rein in future increases.

By a 3-0 vote, the FCC adopted regulations that will control the rates that the nation's 57 million cable television subscribers pay to local cable operators franchised by municipalities.

The 10-percent cut will apply to subscribers of basic service, which includes all three broadcast networks plus local government and public-access channels.

The new rates will not apply to so-called expanded basic service or to pay-per-view or premium channels available to many subscribers.

Even so, commission officials said

That could result in a 15 percent cut in monthly cable bills for basic services for many subscribers.

Many cable companies increased their rates 5 percent to 7 percent since last fall, when Congress passed legislation authorizing the FCC to regulate cable service rates.

The commission also voted 3-0 to freeze further rate hikes for 120 days while the new rules are being implemented.

The new rules will apply to so-called expanded basic service once the commission receives complaints from consumers that their bills are too high.

Such complaints are needed to trigger enforcement of the new rates for service that includes CNN, the super stations and C-Span.

Commission staff attorneys also promised further study of cost data

The new rules will apply in communities where the FCC has found there is no meaningful competition among cable operators. The staff estimated that two-thirds to three-quarters of the cable systems do not operate with substantial competition because they are franchised by local governments.

The new regulations also require cable operators to justify the costs of charging subscribers for equipment such as remote control devices, wiring and hookups.

The commission also adopted on a 3-0 vote new rules to make it easier for companies seeking to compete with cable operators to purchase the same programming channels, such as CNN, ESPN, USA Network and the Discovery Channel.

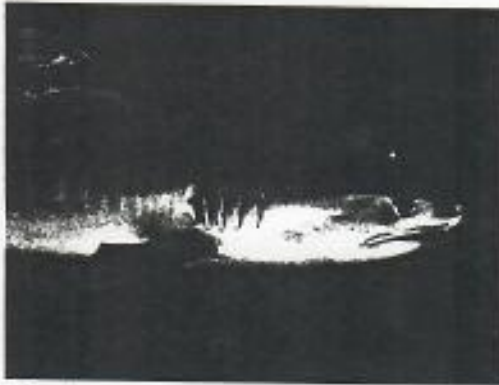
The regulation eliminates any price discounts that these channels

Commonwealth status for Guam proposed in bill

WASHINGTON (AP) — Saying the people of Guam want a partnership with the United States that brings dignity to them, freshman Congressional Delegate Robert Uderwood has reintroduced legislation to bring commonwealth status to the Western Pacific territory.

The Democrat said the Guam Commonwealth Act, which has languished in Congress for several years, if approved, would give the people of Guam "stability and status" over its political status with the United States.

The bill has about 50 co-sponsors including Congressional Delegate Eni Faleomavaega from American Samoa, a U.S. territory, and U.S. Rep. Neil Abernethy from Hawaii. The sponsorship also includes several



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.

February 6, 1993
992-A Awaawaanoa Place
Honolulu, Hawaii 96825
Tel. 395-6409

Environment/Letters
H30
91-1052 Pohanhawai Street
Ewa Beach, Hawaii 96706

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 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.

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

12-12-91 HSB A3

Shark yielded lone lobster

□ But the state says the predator could have been the Olowalu killer

By Lila Fujimoto
Maui Correspondent

LAHAINA — Fishermen dissected a 13-foot tiger shark caught off Olowalu but found only the partial remains of a lobster in the creature's otherwise empty stomach yesterday.

However, a state official was not ruling out the possibility that the female shark was responsible for attacking and killing Marti Morrell, 41, as she swam in the ocean fronting her house in the West Maui community of Olowalu on Nov. 26.

"Tiger sharks have been known to extrude their stomach contents when stressed, which could have happened while it was fighting the fishing gear," said Bill Paty, state Department of Land and Natural Resources chairman. "Or it could have digested its meals."

Paty said the department has no plans to continue the shark-hunt-

ing expeditions begun last month to try to catch the shark responsible for the woman's death.

But he said he would consult with his staff, community members and shark experts before deciding what to do if other shark attacks occur.

Yesterday, the captain of the three-man crew that hooked the tiger shark said he believes the waters off Olowalu are safe from shark attacks.

"I would dive there in a flash," said Capt. Steve Kaiser, who piloted his 26-foot boat, Hiolani, for four nights of shark hunting in the Olowalu area over the past two weeks. "There really are very, very low numbers of sharks in that area."

The state hired the Kaneohe crew after Lahaina fisherman James Stegmuller quit, saying he received threats from Hawaiians who opposed the shark hunt because some sharks are considered aumakua, or family gods.

The new crew started fishing after Paty participated in a healing ritual off Olowalu with members of the Hawaiian community.

The crew found the tiger shark caught on one of its long lines yesterday morning in about 35

feet of water just outside the reef about one-quarter mile off Olowalu, Kaiser said.

A small black-fin shark was also hooked on a line, Kaiser said.

But that shark was released after crew members saw it was in good condition, he said.

The lines had been baited with ahi and set overnight.

Kaiser said the tiger shark, which weighed more than 1,000 pounds, was barely alive after struggling overnight on the line.

Crew members shot the shark three times with a bang stick before hauling it into Lahaina Harbor yesterday morning. There, crew members Daniel Mahiko and Ron Johnson took turns hosing down the animal to keep down its strong odor.

Accompanied by Keith Keau, the Department of Land and Natural Resources' Maui enforcement chief, and Neil Endo, a Maui police detective, the crew then took the shark out to sea to cut open its stomach.

The shark's flat, broad head was to be brought back to Oahu for scientific research.

Its skin was kept for Hawaiian hula halau to use to make traditional pahu, or drums, Kaiser said.

Monday, February 3, 1992 □ A-15

Shark 'experts' should get their feet wet sometimes

Regarding the article on shark fishing in the Jan. 20 issue, the self-anointed, so-called "experts" quoted, John Naughton and Brad Wetherbee, should climb down from their ivory towers and get into the water.

Anyone who has logged significant water time in Hawaii will confirm that sharks are seen by all of us, especially at Point Panic and anywhere from Pearl Harbor to Makaha, on a regular basis (2-3 times a week).

The number of attacks has been grossly underreported for obvious reasons. When I was a lifeguard at Kaimana Beach (Waikiki) there was a 8-10 foot tiger shark that frequented the area at the mouth of the channel near the windsock. If their population is increasing, as it seems to be, there will inevitably be a fatal attack in town unless something is done to control their numbers.

Contrary to the "substantial feeling" among the bleeding heart academics and their fellow nature-freaks that sharks "balance things out" in the ecological chain there is absolutely zero empirical data to support this ridiculous assumption. A shark hunt may not be the answer, but head-in-the-sand philosophizing by ignorant academics is certainly not helpful.

Chuck Staten



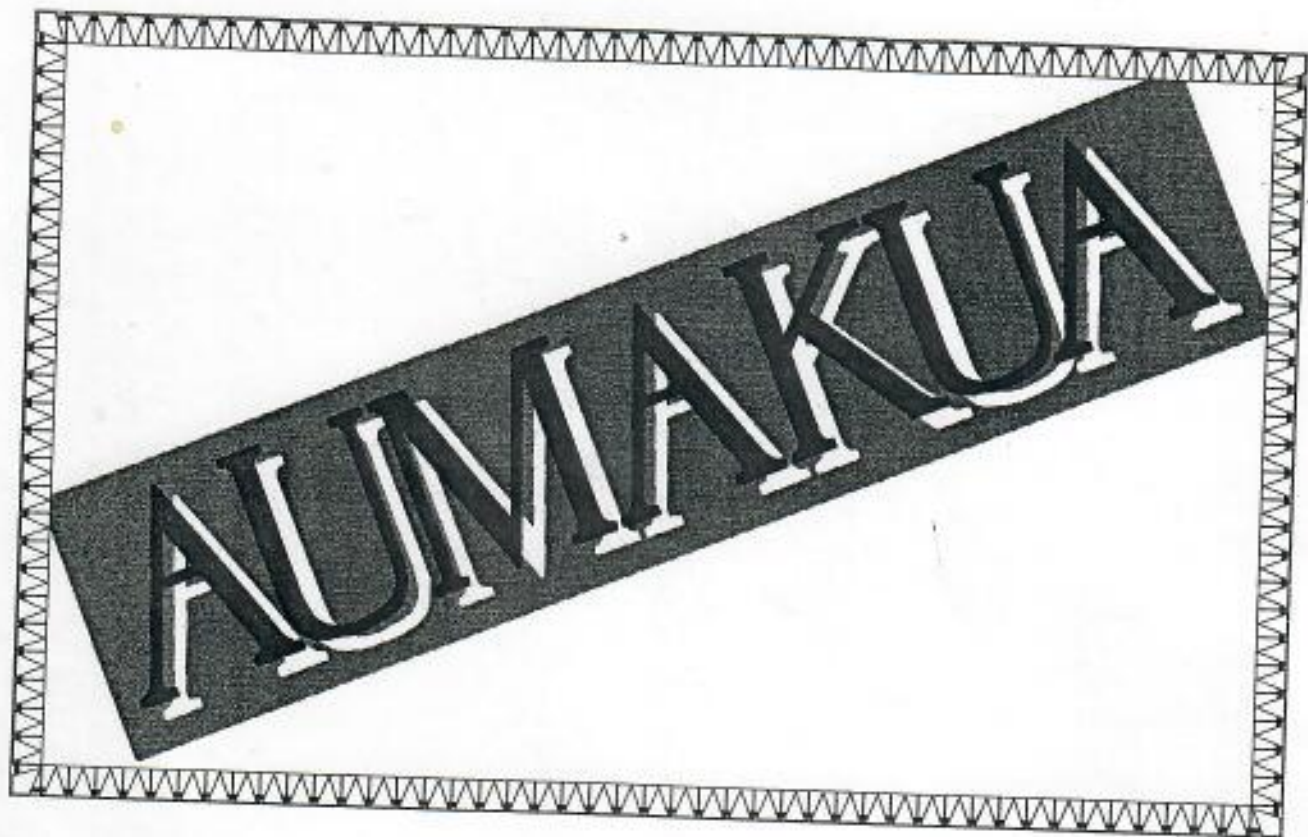
The Maui News / MATTHEW THAYER photo

Sea turtle dies after suspected shark attack

Kainoa Bright turns a green sea turtle over on its belly Friday morning on the shore on the Paukukalo side of Kahului Harbor. The badly injured turtle swam to shore after apparently being attacked by a shark. "When I saw him coming in he was trailing blood," Bright said. Fisherman Andrew Wallace said he spotted a large shark following the turtle and circling offshore after it beached. "When I saw it, I said, 'What is that thing?'" Wallace said. "That shark was

at least 12 feet long." Bright and his uncle, Bernie Tuniensu, pulled the turtle up on the beach. The turtle sported a University of Hawaii research tag. Both front flippers were badly chewed and half of a back flipper was missing. The turtle did not survive, and state aquatic resources officials shipped the carcass to the National Marine Fisheries Service laboratory on Oahu for study.

5/3/93 THE MAUI NEWS



KEVIN CALLAHAN
APRIL 15, 1993

Kevin Callahan

Eng 100 T - TH 3:30 - 4:45

Sect 5675

"AUMAKUA"

Stop the killing!! Stop the senseless killing of sharks and people!! Stop it now!! Leave the turtles out of this!! When is the Shark Task Force influenced by politics and emotions going to wake up! They should pull their head out of their rear ends and look at the facts!! What started this whole frenzy of senselessness?

On February 19, 1992, Brian Adonna was missing after last being seen body boarding at a surf spot called "leftovers" on the North Shore of Oahu. His body board was later found at Waialae Bay with a large bite out of it, presumably that of a tiger shark. Did he drown and his board later bitten? *unknown*
Highly unlikely since he was an avid body boarder, who in 6' surf would have his board attached to him by a leash. If the leash broke he could have easily swam to shore. He was ATTACKED by a large shark! (PR-2) Should we lay hooks at "leftovers" and attract more sharks? I think not!

On November 26, 1991 a lady was devoured by a large shark while swimming off of Olowalu on Maui, which was witnessed by her swim buddy as a large shark. She certainly did not look anything like a turtle. (PR-2)

On October 22, 1992, Eric Ruzinsky was attacked by a large shark while surfing on a clear day in clear water at Laniakea on the North Shore of Oahu. He escaped with superficial scratches and a large bite out of his surfboard, again presumably that of a Tiger Shark. A long narrow pointy surfboard I might add. (PR-2)

On November 5, 1992, Erin Romento was fatally attacked while body boarding near Keaou beach Park on the Waianae Coast of Oahu. Attempts to save him were unsuccessful. (PR-2)

On December 23, 1992, Gary Chun was attacked while surfing at "Chun's Reef" on the North Shore. He also escaped with minor scratches and a large bite out of his, yes; long pointy surfboard. (PR-2)

On March 28, 1992, Jude Chamberlain was attacked while surfing off Kauai's North shore at a place called "Cannon's". She also escaped with minor scratches and teeth marks in her long pointy surfboard. (PR-2)

There is also a story from Hawaiian Fishing news and Video of a 2,000 lb. bull being attacked by Tiger Sharks off Maui. This was no mistake in identity, these sharks were hitting a large piece of bait because it was there! (MR-1) Tiger Sharks like surface prey, it is part of their natural eating strategy.

Let's look at the issues and some of the facts. Why has there suddenly been a rash of attacks here in Hawaii. Why is there an appearance of Tiger Sharks hunting near our shores when there has not been any in several years. The number one issue in my opinion is that the long line fishing has not only fished out the outer waters, but is killing tons of sea life that is not meant to be caught. These fisherman set several miles of net that ~~catches~~ and ~~kill~~ everything! There has got to be some control on this type of fishing. It kills everything in the food chain: turtles, porpoises, sharks, whales, add infinitum. The sharks quite possibly have had to come in to our shores. (PR-2) As noted previously, there were attacks on Maui and Kauai. This blows the theory of territorial sharks unless that shark's territory is the Hawaiian Islands. It also blows the theory of a "Rogue" shark who is perhaps old with failing eye sight unless that shark is taking Interisland overnights. The attention to attacks off Oahu has an obvious answer. There are far more

people playing in our waters, especially on various water toys. There are ~~several~~ sometimes more than 50 surfers and body boarders at various surf spots around Oahu on the average day. This gives these sharks who have been forced into our shores to eat a virtual smorgasbord. Fishing sporadically for sharks by attracting more is NOT the answer! Control the long line fishing! NOW!

Let's look at the Turtle issue. Poor Mr. Turtle got a BAD RAP! I too am guilty of this blame on the turtles and the theory that the sharks were attacking by a mistake in identity. After doing research for this paper I am convinced that the Turtles have nothing to do with this and I'll tell you why. Originally ~~my~~ feelings stemmed from emotions and speculation having been an avid surfer for over 25 years. I myself clung to the idea that surfers on the surface looked like a turtle, hence the attacks. This bogus theory comes from two sources. Good scientific research, documentaries and surfer magazines convinced us all that the reappearance of Great White Sharks on the Northern California Coast was due to the return of the California Seal population once they were protected. The uncanny resemblance of a seal and a surfer was well proven and several surfers were attacked. This theory was easily transferred to Hawaii when the attacks began here. Come on folks! A little oval 50 lb. Turtle does not look anything like a surfer on a 6' to 8' long narrow, pointy surfboard. (MR-1) This was supported by the fact that when the Shark Task Force caught large sharks there were Turtle parts inside; shell parts and Turtle anatomy made up mostly of Kerratin that takes up to several months to digest. While Turtles are part of the Tiger Shark diet they are far from being the main stay of their diet and near the bottom of the list of things found in these Sharks. (PR-3, MR-1) Mr. Turtle got a bad rap and the commercial fisherman are still out there.

The University of Hawaii studies show that Tiger Sharks will eat anything and everything including Fish, Crabs, Lobsters, garbage (often floating garbage) birds, sharks and rays, squid and octopus, turtles, porpoise, whales and humans. (MR-1)

The Shark Task Force was formed in response to the first attacks and prompted by a visit from Jean-Michel Costeau around March 3, 1992 at the invitation of Bill Hady. Costeau said "Tiger Sharks are particularly dangerous to swimmers." So why are we fishing for them in these swimmer-surfer areas right after an attack? (MR-1) The first meeting on April 13, 1992, was attended by approximately 50 people when a questionnaire was handed out; this was the birth of the Task Force. I wonder now if the tactics they used were prodded by politicians who wanted to appease the public and not scare off the tourist industry. They came up with a Shark Hot Line 587-4275 or 58-SHARK. (PR-2) I called this number and the first time there was no answer. The second time, I got a recording, saying to leave a message as to: where, when, how many, and what type of shark. Is this really a HQI line? By the time this information is disseminated to anyone concerned, the sharks would be gone or someone would be attacked.

My concern and argument here is this. Number one, we must control the long line fishing, which has, in my opinion, forced more than the usual amount of Tiger Sharks to come into our shores to feed. Second, the absolute ludicrous idea of laying hooks at the locations after an attack has got to go. This Steve Kaiser person who is a so called Shark fisherman seems to be interested in something other than a good idea. In my opinion, he's not an expert in catching sharks of any kind. Anybody can lay a bunch of baited hooks with bloody fish heads or whatever overnight and catch sharks. This does not take expertise, anyone who has ever spent any time around the ocean knows this.

The majority of the sharks they caught were small sharks and not Tiger Sharks and most of the small sharks were eaten in half by the big Tiger Sharks. Are we being stupid here or what? All this does is attract more big sharks right to the swimming or surfing area where we don't want them. The Shark Task Force did assure me that they never "CHUM" for sharks by pouring blood etc., in the water. This may prevent a shark feeding frenzy but laying hooks still attracts them. (PR-2) I was told that while Steve Kaiser is an employee of Sea Life Park, he in no way affiliates himself with Sea Life Park while doing this shark fishing routine for whatever reason he does it, nor does Sea Life Park agree with the idea. (PR-1)

In conclusion, the point here is this: After 20 years of not having any shark control program (MR-1) we may need one since the population may now be at its peak, ~~but~~ It must be regulated and NOT in response to, ^{should be} and in the location of an attack at a place frequented by humans. I do believe humans have some priority here. Catching sharks to look good on the news is wrong and will get more people hurt. Let's be smart about this and leave the turtles alone. The spirit of the shark must and will live on as must the rest of our precious sea life. No one I talked to agreed with fishing or hunting sharks the way it is being done now.

What I don't get is why there isn't a policy.

The state certainly has enough information to know a policy is needed. They need to get coordinated with the people who know.

98
Lee

"AUMAKUA"

BIBLIOGRAPHY:

Phone Resource #1: Mark Rausch, Education Department, Sea Life Park

Phone Resource #2: Randy Honebrink, Dept of Natural Resources, Shark
Task Force

Phone Resource #3: Brian ?, National Marine and Fisheries Bureau
(Assistant to George Balazs, Turtle Expert in Hawaii)

Mail Resource #1: Reprinted from "H30 Hawaiian Surfing Magazine" March
1993, "Sharks and Turtles" by George Balazs, Deputy Chairman Marine
Turtle Specialists Group, International Union for the Conservation of Nature

* PR = Phone Resource

*MR = Mail Resource

OK

P.S. Can this be my RESEARCH PAPER?
I'll do Critique #3 ANA go see the play
ANA DO A PAPER ON IT? 😊

Kevin Callahan
Box 4291
Miliiani, HI
'96789

Dear George Baloyis,

Here is your copy of my paper on Sharks & Turtles.
Hope you enjoy it. Once again you and your office's
help changed my perspective and my paper. I've been
diving + surfing all over the world for over 25 years and am
interested in the preservation of all sea life and the oceans.

You have to understand that this is a Persuasion-Argument
paper and may offend some if I sent it to the papers. I'm more
than willing to do so but will wait for your response.

~~Alotta~~
Kevin F. Callahan

P.S. Thought you may
enjoy the informative
wrapping from a Box a Candy
I received for Easter

Mr. Justin Rutka
378 Hanamaulu St.
Honolulu, HI 96825

Dear Justin,

Thank you for sending me that wonderful story of Kamohoali'i and the picture of Pohaku Pa'akiki.

Here's what I discovered from my shark attack file:

| Case # | Date | Location | Victim |
|--------|------|-----------|------------------|
| 1** | 1779 | Maliu, HI | Nu'u-anu-pa'a hu |

Circumstances: Young male gashed on one side of buttocks after being pursued while surf boarding. Subsequently suffered "great pain" and died at Pololu (Kamakau 1961; Anonymous 1983c).

| | | | |
|-----|---------------|-----------------------|----------------|
| 4** | July 14, 1900 | Makapu'u Point, O'ahu | Emil Uhlbrecht |
|-----|---------------|-----------------------|----------------|

Circumstances: Believed to have drowned when carried out to sea while hunting sea shells with companions. "A thorough search was made for the body for several days." Victim's foot with skin and flesh intact "in a fair state of preservation" was found in the stomach of an 11-foot 9-inch shark hooked on the night of 8-17-00 off Kaka'ako, Honolulu, by John Kinipeki. Positive identification of victim was made by Mrs. Uhlbrecht based on an ingrown toe nail. Human pelvis and femur, blackened and totally denuded of flesh, were also recovered from the shark's stomach. These bones were thought to be from a different person, probably one of several Chinese fishermen lost overboard in the harbor during the past months (Anonymous 1900; McMurray 1991).

| | | | |
|----|----------------|-----------------|-------------|
| 29 | Sept. 19, 1948 | Makapu'u, O'ahu | Noah Kalama |
|----|----------------|-----------------|-------------|

Circumstances: Bitten on leg while swimming (Anonymous 1948; Morse 1953; Gilbert 1963).

As far as shark attacks go, that's it for the area between Makapu'u and Waimanalo.

Sincerely,

George H. Balazs
Zoologist

P.S. Where did you find the legend of Kamohoali'i, and where did you get the map?

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

MY NAME IS GEORGE BALAZS AND FOR THE PAST 13 YEARS I HAVE BEEN THE COMPILER OF SHARK ATTACKS IN THE HAWAIIAN ISLANDS. IN COLLABORATION WITH MY FORMER COLLEAGUE, ALAN K. H. KAM, THIS WORK WAS INITIATED IN 1979 WHILE WE WERE EMPLOYED AS BIOLOGICAL RESEARCHERS AT THE UNIVERSITY OF HAWAII'S HAWAII INSTITUTE OF MARINE BIOLOGY (HIMB) ON COCONUT ISLAND. THE MAIN REASON WE STARTED COMPILING THIS LIST WAS DUE TO THE FACT THAT NONE EXISTED AT THE TIME. IT WAS OUR DESIRE TO FULFILL A LEGITIMATE SCIENTIFIC NEED AND WE SET ABOUT TO MEET THAT GOAL BY DOING EXTENSIVE LITERATURE SEARCHES USING LIBRARIES, NEWSPAPERS FILES, AND OTHER SOURCES. THE LIST HAS SUBSEQUENTLY APPEARED IN A NUMBER OF DIFFERENT PUBLICATIONS, MOST RECENTLY THE JANUARY 1992 ISSUE OF HAWAII FISHING NEWS. THE LIST IS REGULARLY UPDATED AS NEEDED, AND IS READILY AVAILABLE UPON REQUEST FROM THE HONOLULU LABORATORY OF THE NATIONAL MARINE FISHERIES SERVICE (TEL. 943-1221) WHERE I HAVE BEEN PROFESSIONALLY EMPLOYED AS A BIOLOGIST FOR THE PAST 11 YEARS. HOWEVER, IT SHOULD BE NOTED THAT THE TESTIMONY I AM SUBMITTING HEREIN IS NOT ON BEHALF OF MY AGENCY, BUT RATHER AS A PRIVATE CITIZEN. THE OPINIONS EXPRESSED ARE MY OWN, AND NOT NECESSARILY THOSE OF THE NATIONAL MARINE FISHERIES SERVICE.

THERE ARE PRESENTLY 94 CASES ON THE LATEST REVISION (2/4/92) OF MY HAWAIIAN SHARK ATTACK LIST. THE EARLIEST KNOWN CASE OCCURRED IN 1779, AND THE MOST RECENT ONE ON NOVEMBER 26, 1991. SINCE THE YEAR 1980 THERE HAVE BEEN 31 CASES, 12 OF WHICH INVOLVED MORTALITY. DURING THE PREVIOUS 12-YEAR PERIOD, THAT IS FROM 1968 TO 1979, THERE WERE ONLY 14 CASES, 4 OF WHICH

^{12/92} Footnote: Since this statement was made 9 months ago, there have been 4 more significant shark attacks in Hawaii, 2 of which were fatal.

INVOLVED MORTALITY. ADMITTEDLY THERE ARE DIFFERENT WAYS THESE DATA MIGHT BE ANALYZED AND INTERPRETED. AS OFTEN HAPPENS IN SHARK ATTACKS WORLDWIDE, THERE IS INSUFFICIENT INFORMATION FOR MANY OF THE CASES UPON WHICH TO DRAW FIRM CONCLUSIONS FOR VARIOUS CRITICAL ASPECTS. NEVERTHELESS, THE LIST THAT I CONTINUE TO MAINTAIN PROVIDES VALUABLE INSIGHT INTO SHARK ATTACKS IN HAWAII, IN SO FAR THAT IT IS BASED ON THE BEST AUTHORITATIVE INFORMATION AVAILABLE. AS IN THE PAST, I UNDERTAKE THIS WORK WITH DEDICATION, PROFESSIONALISM, AND OFTEN ON MY OWN PERSONAL TIME, REALIZING THAT CONSIDERABLE HUMAN SUFFERING AND MENTAL ANGUISH ARE INVOLVED IN SOME OF THE CASES THAT OCCUR.

IT IS MY OPINION THAT SHARK ATTACKS IN THE HAWAIIAN ISLANDS ARE NOT SIMPLY A MATTER OF "STATISTICS" ALONE, ALTHOUGH THE AVAILABLE NUMBERS CERTAINLY SEEM TO SHOW THAT MORE CASES HAVE OCCURRED IN RECENT YEARS, AND THAT SOME OF THESE CASES HAVE BEEN OF A MORE SEVERE NATURE. OF COURSE, AS WE HAVE ALL HEARD, MORE PEOPLE ARE KILLED BY BEE STINGS, LIGHTNING, AND ANY MANNER OF OTHER UNUSUAL MISFORTUNE THAN BY SHARK ATTACK. THIS IS UNDOUBTEDLY TRUE. BUT SUCH STATEMENTS COMPLETELY MISS THE POINT, IN MY VIEW. THEY UNJUSTIFIABLY SERVE TO DOWNPLAY THE ESPECIALLY GRUESOME NATURE AND TRAGEDY OF SOME SHARK ATTACKS IN HAWAII, AND THE VERY REAL AND EXTRAORDINARY FEAR PEOPLE HAVE FOR THIS TYPE OF INJURY OR DEATH. BEING "EATEN" ALIVE, OR KNOWING THAT AN UNCONSCIOUS PERSON OR DROWNING VICTIM HAS BEEN DEVoured BY A SHARK, IS A VERY REPUGNANT THOUGHT UNIVERSALLY SHARED BY ALL HUMANS. THIS REVULSION WAS CAPITALIZED UPON (BUT NOT INVENTED) BY THE MAKERS OF THE "JAWS" MOVIE. THIRTY-ONE ATTACKS DURING THE PAST 12 YEARS, WITH 12 INVOLVING DEATH (ALTHOUGH NOT ALWAYS DEATH DIRECTLY FROM THE ATTACK), IS STATISTICALLY A VERY SMALL NUMBER. BUT THE CRITICAL

POINT THAT MUST BE CONSIDERED HERE IS THAT THE STATE OF HAWAII, UNLIKE ANY OTHER COASTAL STATE OR PLACE IN THE WORLD, IS ECONOMICALLY FOUNDED ON TOURISM USING THE "HAWAIIAN" AND "ALOHA SPIRIT" OF AN OCEANIC ISLAND PARADISE AS ITS CENTRAL IMAGE. FURTHERMORE, DURING RECENT YEARS THE TOURIST INDUSTRY HAS INCREASINGLY FOCUSED ITS ENERGIES VERY SUCCESSFULLY ON THE MARINE ENVIRONMENT BY PROMOTING "MARINE TOURISM." ACTIVITIES LIKE SURFING, SNORKELING, SCUBA DIVING, FISH FEEDING, UNDERWATER PHOTOGRAPHY, MARINE EDUCATION, WHALE-WATCHING, AND EVEN SEA TURTLE WATCHING HAVE ALL GROWN IN POPULARITY. THE PREVAILING VIEW, SHARED BY TOURISTS AND LOCAL RESIDENTS ALIKE, IS THAT HAWAIIAN COASTAL WATERS ARE SAFE PLACES WHERE ONE CAN SWIM AND RELAX WITHOUT JUSTIFIABLE FEAR OF THE DANGER OF SHARK ATTACK. GIVEN THIS PERCEIVED SENSE OF WELL-BEING, IT IS MY VIEW THAT EVEN ONE SHARK ATTACK IN HAWAII, SUCH AS RECENTLY HAPPENED ON MAUI, IS TOO MANY. AND ESPECIALLY WHEN THAT ONE CASE HAPPENS AS IT DID AT A SITE LIKE OLOWALU, LONG FELT TO BE PERFECTLY SAFE AND THUS ACTIVELY PROMOTED (EVEN TODAY) AS A SERENE SNORKELING SPOT FOR TOURISTS.

IF THERE ARE REASONABLE AND PRUDENT STEPS THAT CAN BE TAKEN RIGHT NOW TO HELP REDUCE THE RISK OF SUCH A CASE FROM HAPPENING AGAIN, THEN I BELIEVE THOSE SENSIBLE STEPS OUGHT TO BE TAKEN. A WELL-PLANNED SHARK FISHING PROGRAM TO CONTROL, THAT IS, TO THIN OUT OR REDUCE, BUT NOT "ERADICATE," SOME OF THE LARGE TIGER SHARKS AT SELECTED SITES AROUND THE STATE IS A REASONABLE AND PRUDENT PROPOSITION. SOUND RESEARCH AND, WHERE FEASIBLE, UTILIZATION OF THE SHARKS FOR FOOD AND OTHER PURPOSES SHOULD BE INCORPORATED INTO THE FISHING PROGRAM. WHY WAIT FOR ANOTHER TRAGEDY, AND THE ACCOMPANYING ADVERSE PUBLICITY, TO HAPPEN AGAIN BEFORE UNDERTAKING SOME REMEDIAL MANAGEMENT STEPS ALONG THESE LINES? THE LAST SHARK CONTROL AND

NO ONE HAS FISHED FOR THEM, AND THEY HAVE FEW IF ANY NATURAL PREDATORS. WHILE IT IS TRUE THAT TIGER SHARKS FEED ON SEA TURTLES, IT IS ALSO A FACT THAT THEIR DIET ENCOMPASSES A VERY WIDE ARRAY OF PREY ITEMS, AND THAT TURTLES ARE ONLY A PART OF THAT DIET. FOOD ITEMS OF LARGE TIGER SHARKS INCLUDE SPINY AND SLIPPER LOBSTERS, RAYS, OTHER SHARKS, FISHES (SUCH AS SPINY PUFFERS), PORPOISE, WHALES, AND JUST ABOUT ANYTHING ELSE ALIVE OR DEAD DEEMED EDIBLE AND CATCHABLE IN THE TIGER SHARK'S COASTAL MARINE ENVIRONMENT. IF TIGER SHARKS HAVE INCREASED IN BOTH NUMBERS AND SIZE IN HAWAIIAN WATERS, AS MANY PEOPLE BELIEVE, IT IS BECAUSE FISHING PRESSURES FOCUSED ON THEM FOR MANY DECADES CAME TO AN ABRUPT HALT IN THE MID-1970'S. SEA TURTLES REPRESENT A COMPONENT PART OF THE TIGER SHARK'S DIET, BUT IN THE ABSENCE, OR SCARCITY, OF TURTLES TIGER SHARKS WILL SIMPLY TURN TO OTHER AVAILABLE FOOD SOURCES. THEY WILL NOT DIE OF STARVATION, NOR WILL THEY ABANDON THE COASTAL WATERS WHERE THEY ARE KNOWN TO RESIDE. THEY WILL SIMPLY EAT SOMETHING ELSE.

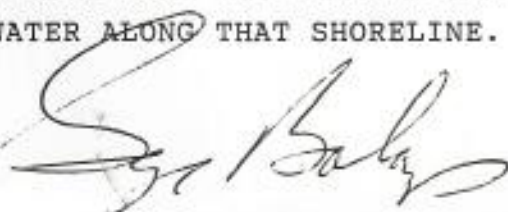
JULY 11, 1993.

DEAR BILL:

ALOHA IN YOUR NEW ROLE AS A NON-GOVERNMENTAL STATE "EMPLOYEE". CLEARLY YOU HAVEN'T RETIRED! MY REASON FOR WRITING AND SENDING THE ATTACHED ITEMS RELATES TO A TELEPHONE CALL I RECEIVED YESTERDAY FROM MY FISHERMAN FRIEND, BRADLEY HARA. BRADLEY SEEMED QUITE SUPRISED BY A STATEMENT HE UNDERSTOOD YOU TO MAKE TO HIM. THAT IS, THAT YOU FELT REDUCING THE NUMBER OF TURTLES IN HAWAII MIGHT BE A WAY TO FIX THE SHARK PROBLEM. GRANTED, BRADLEY MAY HAVE COMPLETELY MISUNDERSTOOD WHAT YOU WERE TRYING TO CONVEY. NEVERTHELESS, I'M PROVIDING YOU WITH THE ENCLOSED TO READ AND CONSIDER. THE ONLY THING THAT I MIGHT ADD TO WHAT'S BEEN WRITTEN HERE IS THAT THE PEAK POPULATION OF TIGERS THAT WE ALMOST CERTAINLY HAVE NOW (AFTER 20 YEARS OF LITTLE FISHING PRESSURE) MUST BE ADVERSELY AFFECTING THE CONSERVATION STATUS OF SEA TURTLES, ALONG WITH OTHER HIGHLY VALUED NEARSHORE HAWAIIAN MARINE LIFE. THAT IS NOT TO SAY THAT 12-FT TIGER SHARKS HAVE NO "VALUE". HOWEVER, I'M CONFIDENT THAT AN OVERWHELMING NUMBER OF OUR RESIDENTS AND TOURISTS WOULD MUCH PREFER TO SEE TURTLES, REEF FISH, HUMPBACK WHALES (ALSO KNOWN TO BE PREYED UPON BY TIGERS) AND OTHER HARMLESS MARINE LIFE WHEN AT THE BEACH, BOATING, OR SWIMMING. IN THAT REGARD, THE LATTER ANIMALS HAVE MORE "VALUE" IN THE REAL WORLD IN WHICH WE LIVE.

I'M VERY GLAD THE LARGE TIGER BRADLEY CAUGHT AT WAIALUA YESTERDAY HAD THE FLIPPER OF A TURTLE IN IT (ALONG WITH HUMUHUMU AND OTHER ITEMS I'LL NEED TO HAVE ID'ED). I'M GLAD FROM THE STANDPOINT THAT A BIG TIGER LIKE THAT LIVING CLOSE TO SHORE IN HAWAII HAD AVAILABLE A TURTLE TO HELP FILL ITS BELLY, AND MEET ITS NUTRITIONAL REQUIREMENTS. BECAUSE IF THE TURLE HADN'T BEEN THERE TO SERVE AS FOOD, MAYBE, JUST MAYBE, THE SHARK WOULD HAVE BEEN MORE INCLINED TO BITE ONE OF THE LITTLE KIDS PLAYING IN THE WATER ALONG THAT SHORELINE.

BEST REGARDS,

A handwritten signature in cursive script, appearing to read "Sgt. Balay". The signature is written in dark ink and is positioned to the right of the typed name "Sgt. Balay".

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Florida Museum of Natural History
University of Florida
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1 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.

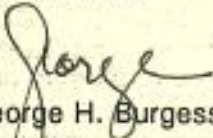
In answer to your question regarding Florida alligator harvest, I checked with the IUCN/SSC Crocodile Specialist Group which is housed here at the Museum. Their responses to my questions regarding the Florida alligator population and harvest, and my knowledge of alligators, lead to the following synthesis.

The estimated population size of Florida alligators is in excess of 1,000,000. The total annual allocated harvest in Florida is 8,000 individuals, including 3,500 in "wild hunts" and 4,500 as "nuisance captures". Allocations are formulated on a regional basis based on local population levels.

Alligators were formerly overfished in Florida and throughout the southeastern U.S., and were accorded E&T status. Thanks to cessation of harvesting and favorable biology (maturity at 6-8 years of age, 30-40 eggs/clutch, 30+ year lifespan, main predators are themselves) alligators have rebounded quickly. They are now extremely abundant, have been removed from E&T consideration, and managed harvest is allowed. Development in Florida has reduced natural habitat, but the addition of drainage and water management canals plus flooded phosphate pits has more than offset these losses.

Hope this answers your question. Keep in touch.

Best wishes,


George H. Burgess
Director
International Shark Attack File

The Mark A. Robinson Trusts

(Testamentary) (Inter-Vivos)

1088 BISHOP STREET • SUITE 910 • HONOLULU, HAWAII 96813 • PHONE 538-1662

Dear George

July 16

I wish W/O & son these days,
my word perfect skills are not yet there.

Bradley must be confused - I don't remember
talking to him at all about fossils. our
brief conversation was to assure that he was
going to hold the standard content for review
the idea of relying to fossil population
to minimize stock encounters is silly
at best & dumb in any case.

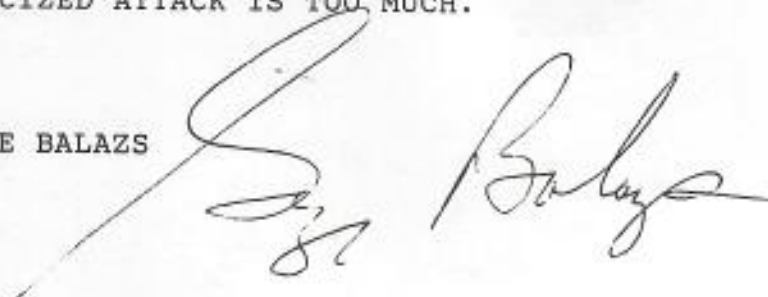
You do a great job George keep
it up. Call me if I can help at
any time. Mahalo & Aie!

5 July 1993
992-A Awaawaanoa Place
Honolulu, Hawaii 96825
Tel. 808-395-6409

THE LETTERS EDITOR:
OUTSIDE
1165 N. Clark Street
Chicago, IL 60610

REGARDING BUCKY MCMAHON'S INTERESTING ARTICLE ABOUT SHARK ATTACKS, (JULY 1993), YOU BET IT'S A "PROFANATION OF NEARLY RELIGIOUS TRUST" FOR NASTY BITES TO BE HAPPENING MORE FREQUENTLY IN THE HOLY SURF OF OAHU'S NORTH SHORE. BUT WHAT WOULD YOU EXPECT? THE STATE STOPPED SHARK CULLING PROGRAMS 20 YEARS AGO. IT TAKES ABOUT THAT LONG FOR A PEAK POPULATION OF BIG-BOY TIGER SHARKS TO REACH MAXIMUM DENSITY. NOW MANY IN HAWAII AND ELSEWHERE ARE SCRATCHING THEIR HEADS IN AMAZEMENT WONDERING WHY ON EARTH THERE ARE MORE HAIR-RAISING ENCOUNTERS. COMPLICATED THEORIES ARE MANUFACTURED- BLAMING DEPLETED FISH STOCKS, CLIMATE CHANGES, MILD RECOVERIES OF CERTAIN ENDANGERED SPECIES LIKE SEA TURTLES AND HUMPBACK WHALES, SHARKS VACATIONING IN HAWAII, AND ALL MANNER OF OTHER IDEAS-EXCEPT THE MOST OBVIOUS AND SIMPLE EXPLANATION. TIGER SHARKS ARE "APEX" PREDATORS. THEY EAT JUST ABOUT EVERYTHING. THEY ARE ESPECIALLY ATTRACTED TO THINGS FLOATING AT THE SURFACE. ONCE THEY REACH A CERTAIN SIZE NOTHING ELSE EATS THEM, EXCEPT OTHER SHARKS THAT ARE EVEN LARGER. LARGE NUMBERS OF FULL GROWN TIGER SHARKS, COUPLED WITH MORE SURFERS AND SWIMMERS IN THE WATER, EQUAL GREATER LIKELIHOOD OF DISASTER. THIS ISN'T A QUESTION OF STATISTICS. SURE MORE PEOPLE GET KILLED FROM BEE STINGS AND AUTO ACCIDENTS. BUT FOR WORLD-FAMOUS HAWAIIAN SURF SPOTS, EVEN ONE WELL PUBLICIZED ATTACK IS TOO MUCH.

GEORGE BALAZS

A handwritten signature in cursive script, appearing to read 'George Balazs', written in dark ink.

A shark swims in Enchanted Lake?

Associated Press

A Kailua resident says he saw what looked to be a shark swimming in Enchanted Lake.

Scott Sawicki has a videotape of the creature, which can be seen with its dorsal fin above the water.

Sawicki and some out-of-town guests were recently boating on the freshwater lake shooting video when they noticed something moving quick-

ly through the water.

"All of a sudden we noticed it was getting larger and cutting across the water opposite the wind," said Sawicki. "We just panned over and tried to get a shot of it, and it looked like a dorsal fin. I don't know what it was, but I knew it had a dorsal fin on it."

Marine biologist John Naughton, a member of the state's Shark Task Force, said it's not unusual for a shark or other

types of ocean fish to end up in the lake, since Kaelepulu Stream is often allowed to run into the ocean, letting sharks and other fish to swim in.

"When the stream's opened up, a number of fish will go up into the pond," said Naughton, who guessed that it likely was a hammerhead shark. "I don't think people need to be overly concerned. It will probably make its way back out of the pond."

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