

Shark Attacks during 1959

The conditions under which sharks attack man suggest what measures may be taken to reduce risk.

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During the calendar year 1959 the Shark Research Panel of the American Institute of Biological Sciences (1) initiated several projects (2), one of which was the establishment of a comprehensive and permanent "Shark Attack File" for the world, sponsored by the Biology Branch of the Office of Naval Research and the Smithsonian Institution. At present the panel receives news clippings from five different clipping services concerning shark incidents. When a shark attack occurs anywhere in the world, a physician or scientist (3) in the area is immediately contacted and his assistance in securing documentation on the attack is solicited. A two-page form requesting information concerning the location of the attack, environmental conditions, the kind of shark, the nature and treatment of wounds, the type of activity the victim was engaged in at the time of the attack, and so forth, has been prepared for the convenience of those who collaborate in supplying documentation. From reliable documentation of this type the panel members hope to learn more about the environmental conditions and the behavior patterns and activities of swimmers which provoke

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a shark to attack. The Shark Attack File, suitably cross-indexed, is under the direction of Leonard P. Schultz and is housed in the Division of Fishes, Smithsonian Institution, Washington, D.C. A duplicate working file is maintained by the chairman of the Shark Research Panel, Perry W. Gilbert, at Cornell University, Ithaca, N.Y.

Shark Attacks in 1959

Table 1 (4) reveals that during 1959 sharks were indeed active, for there were 36 unprovoked and three provoked attacks on man, of which approximately one-third were fatal.

In addition to the unprovoked shark attacks, we have set up in the Smithsonian file four other categories, as follows: (i) Provoked shark attacks. There were three instances during 1959 in which a shark was caught, trapped, speared, injured, or in some way provoked and subsequently made physical contact with the victim or the gear the victim was wearing. There was no fatality. (ii) Doubtful shark attacks. This category includes the 11 instances in 1959 in which unprovoked sharks approached swimmers but failed to make physical contact with them; it also includes those cases reported as shark attacks which subsequent investigation tends to discredit or place in some doubt. (iii) Air and sea dis-

asters. There were five instances during 1959 in which unprovoked sharks mutilated victims of such disasters; often there is no way of knowing whether the victims died before the sharks attacked or died as a result of the attacks. A total of 302 persons were involved, with only 80 survivors. (iv) Boat attacks. There were 12 instances during 1959 in which unprovoked sharks made physical contact with a boat, life raft, water ski, or accessory equipment. There was no fatality.

During 1959 only two of the 36 unprovoked attacks occurred in water colder than 70°F. This tends to substantiate V. M. Coppelson's belief that a close and measurable relationship exists between sea temperatures and shark attacks and that attacks generally occur in waters warmer than 70°F. It might also be pointed out that bathers and skin divers generally frequent waters warmer than 70°F in greater numbers and that a relationship probably exists between attack incidence and numbers of bathers and skin divers in the water at a given time. The fact that twice as many people were attacked by sharks after 1:00 P.M. as during the morning hours is also a reflection of the increase in the number of swimmers.

Swimming or diving alone, even in familiar waters, has long been discouraged by those who prepare safety rules for swimmers and SCUBA divers. The wisdom of the recommendation "never swim or dive alone" was pointed up during 1959 when five out of a total of 12 bathers attacked by sharks were bathers who were swimming alone or who were a considerable distance from their companions.

It is well established that sharks are frequently attracted to wounded and bleeding fish speared by skin divers. It is also generally agreed that the shark danger zone for a diver is at or near the surface, where movements are less likely to be rhythmic and coordinated. At least three of the nine divers attacked while spear fishing or diving for

shell fish in 1959 were attacked at the surface, and two of them were towing wounded fish at the time of the attack. Although male victims outnumbered female victims 12 to 1, this does not necessarily mean that sharks exhibit any preference as between men and women but probably should be correlated with the relative frequency with which males enter the domain of sharks.

With but six exceptions, all attacks occurred between latitudes 35°N and 35°S. January was the worst month for shark attacks south of the equator, and August was the worst month in northern latitudes. Thirteen unprovoked attacks, five fatal, occurred in Australian waters and 12 unprovoked attacks, five fatal, took place in U.S. and Mexican waters. South Africa ranked third in 1959 with four attacks, one of which was fatal.

Advice to Swimmers or Divers

The recommendations given below are based on numerous reports and publications (5) as well as on information solicited from several experienced skin and SCUBA divers and scientists familiar with the behavior of sharks. For the sake of clarity and brevity, the advice presented is arranged in outline form. It must be remembered above all that sharks are unpredictable. Moreover, we know relatively little about the behavior patterns of sharks and about the environmental conditions which stimulate a shark to attack.

The Shark Research Panel is currently gathering documentation on all shark attacks throughout the world and from an analysis of this documentation hopes to learn more about the conditions which provoke shark attack.

Advice to bathers and swimmers.

1) Always swim with a companion. Do not become a lone target for attack by swimming away from the general area occupied by a group of swimmers and bathers.

2) If dangerous sharks are known to be in the area, stay out of the water.

3) Since blood attracts and excites sharks, do not enter or remain in the water with a bleeding wound.

4) Avoid swimming in extremely turbid or dirty water where underwater visibility is very poor.

Advice to skin and SCUBA divers.

1) Always dive with a companion.

2) Do not spear, ride, or hang on to the tail of any shark. To provoke a shark, even a small and seemingly harmless one, is to invite possible severe injury.

3) Remove all speared fish from the

Table 1. Data on unprovoked shark attacks during 1959, including all cases in which unprovoked sharks made physical contact with the victim or the gear he was wearing. Cases in which a shark approached but failed to contact the swimmer are not included.

Date	Case No.	Locality	Victim	Age	Kind of shark and length (approx.)	Recovered (R) or fatal (F)	Comments
1/2	404	Lourenço Marques Bay, Mozambique	Sutti, Eric	31		R	In water 16 hr after boat sank; was 200 yd from shore when shark seized and shook him; shouted and hit snout; injuries to stomach and leg.
1/15	402	Melkbaai Beach, Cape Town, South Africa	Schreuder, Fanie	18	7 ft	R	Attack in shallow water; injuries to leg and hands.
1/17	383	Safety Cove, Port Arthur, Tasmania	Derry, Brian J.	22	20 ft	F	Naval rating; attacked in deep water about 100 yd from his ship.
1/17	394	Alexandra Headland, north of Brisbane, Australia	Neil, Peter John	18	6 ft	R	Right foot mauled; required 16 stitches; attacked while surfing 200 yd from shore at 9:30 A.M.
1/24	388	Whale Bay, King Island, Tasmania	Grave, John	16		R	Bitten on thigh by shark or large snapper while swimming with motor tube in shallow water.
1/27	408	Galapagos Islands, Ecuador	Swienty, Theodore C.	57	Several, 6 ft or longer	R	Cook on tuna clipper <i>Mary Barbara</i> ; deep bites in right leg and left foot; white plastic helmet knocked off and sharks went after it.
1/31	449	South Perth, Australia	Rudd, George E.	20	Whaler shark, 6 ft	R	Attacked while netting prawns at night; shark grazed legs and followed victim to shore.
2/1	407	Near mouth of Umzimkulu River, Port Shepstone, South Africa	Vermaak, Raymond	14	6 ft	R	Bathing in clear water in deep channel about 20 yd from shore; left leg severed below knee and right leg badly mauled.
2/2	378	Trench's Beach, Honiara, Solomon Islands	Battye, Donald	15		F	Bathing in shallow water with sister; no trace of body.
2/27	387	Margarita Island, Venezuela	Gerbeau, Roland			R	Fell into sea in deep water while attempting to land swordfish; left arm mauled by shark.
3/8	450	Mouth of Langoyon River, Davao City, Mindanao Island, Philippines	Sanchez, Leopoldo	20		F	Lifeboat capsized; victim devoured by sharks.
3/29	393	Marathon, Fla.	McKee, James	13		R	Bathing in murky water between 1 and 2 P.M. with 3 other boys; shark bumped victim and took bite on knee.
4/5	653	Thirroul, New South Wales, Australia	McAuley, Jeff			R	Shark lunged at spear fisherman, taking off half a flipper.
4/11	429	Coconut Island, Torres Strait, Australia-New Guinea	Pearson, James	43	Tiger shark, 6 ft	R	Diving for shells in 3 ft of water; attempted to drive off shark with bare hands; left hand badly lacerated.
5/3	374	Panama City Beach, Fla.	Grover, Ernest	19	10 to 12 ft	R	Spear fishing 0.5 mi from shore at 10 A.M. in black suit, towing 2 ling; water murky; was reloading gun at surface when sharp bit with great force cutting leg, cheeks, and back; forcibly pried jaws of shark loose; 30 stitches required.
5/7	372	Bakers Beach, San Francisco, Calif.	Kogler, Albert	18	Great white shark, 10 ft	F	Bathing 50 yd from shore at 5:30 P.M. with companion; treading water when attacked; entire left shoulder ripped and deep jagged lacerations to back, abdomen, and arms; died 2.5 hr after rescue by Shirley O'Neil.

Date	Case No.	Locality	Victim	Age	Kind of shark and length (approx.)	Recovered (R) or fatal (F)	Comments
6/14	376	Alligator Head, La Jolla, Calif.	Pamperin, Robt. L.	33	20 ft*	F	Diving for abalone with companion in clear water 25 ft deep, 200 ft north of Alligator Rock; pink swim trunks, face plate, flippers; victim rose high out of water with face plate missing and cried for help, then disappeared; companion dived and saw Pamperin's torso protruding from mouth of shark; body never recovered.
6/14	451	San Pedro Nolasco Island, Guaymas, Mexico	Topete, Francisco R.			F	Boat with 4 fishermen capsized 300 yd from island shore; attacked by shark while swimming to shore of island; body never found (?).
7/28	434	Between Alligator Head and Bloomer Beach, La Jolla, Calif.	Fleet, Verne S.	25	Hammerhead shark†, 3 to 6 ft	R	Skin diving in clear water, 30 ft deep, 200 ft from shore; wearing black "wet suit" covering head, torso, and arms; legs bare; had small fish cinched to waist and was reloading spear gun at surface when attacked; shark left 15 tooth marks in left thigh.
8/10	457	Savannah Beach, Savannah, Ga.	Fields, Elizabeth	15		R	Standing in 30 in. of clear water 35 ft from shore; felt shark (?) on foot, kicked it off and ran to shore; 28 stitches needed to close 4 in. wound on outer side of left foot.
8/11	671	Isonoura Sea Shore, Wakayama, Japan	Tuchiya, Akira	18	Blue shark	F	Dived off yacht; when 4 m away, shark bit left thigh; victim died from loss of blood.
8/15	439	Gulf of Mexico, off Panama City, Fla.	Neal, Lt. James C.	26		F	Scuba diving 7 to 8 mi offshore in 80 ft of water; followed guide cable down to rock formation and never returned; rescuer Gary Seymour found some gear and clothing bloody and teeth-marred. Rescuer saw 12-ft blue shark and 12-ft mako shark; both made passes at him.
9/26	509	Port Everglades, Fla.	Walker, Robert	29	Hammerhead shark†	R	Fishing boat capsized and sank 3 mi offshore; victim clung to seat cushion throughout night; wearing khaki pants, white shirt, socks, no shoes; shark circled then bit both hands, pulling victim 5 ft under water; after he shook shark loose it returned twice, followed by 8 to 10 others which he fended off by kicking at them; sharks were still circling when rescued; 60 stitches necessary to close wounds to hands and feet.
9/30	638	Leyte, Philippines	Daguinot, Francisco	28		R	Swam away from swimming party into deep water and was attacked by shark.
9/?	682	Acapulco, Mexico	Woman (French)			F	Shark took off one leg and mutilated the other; victim died from loss of blood.
July-Sept	639	Machgaon near mouth of Devi River, India	35 victims		6 ft	F—5 R—30	"a sixfoot shark killed five persons and 30 others were injured in the course of the last two months in Machgaon at the mouth of the Devi River" (6).
10/2	645	Levuka, Fiji	Fijian cook of vessel <i>Andi Tui Lomaloma</i>		14 ft	F	Dived overboard to retrieve a dinghy near a wall. Attacked immediately, body not recovered.
10/4	554	Bodega Bay, Calif.	Hay, James	30	White shark (?)	R	20 ft below surface hunting abalones with companion; swam to surface, dragged under by violent jerk; swim fin bitten.
10/7	581	Xefina Island, about 20 mi from Lourenço Marques, Mozambique	Soldier (European)			F	Died in Lourenço Marques Hospital.
11/10	620	Northern Los Angeles County, near Paradise Cove, Malibu, Calif.	Fryling, Duffie	21		R	Attacked on arm while swimming underwater through a school of 2.5- to 5-ft sharks.
11/22	625	Northcliffe Beach, Brisbane, Australia	Sachse, Jeffrey E.	19	Whaler shark? 10 ft	R	Attacked about 200 yd from shore during surf race, victim trailing the field. Shark tore away large portion of left leg muscle below knee; leg tendons and blood vessels badly damaged, also severe abrasions to right hand. Swimming underneath native house on piles; right leg torn off.
11/26	646	Kaparoka in the Rigo, Papua, New Guinea	Mari, Mauama	13		F	Standing in chest-deep water, about 7:30 A.M., when struck on right foot and leg; long cut.
11/28	647	North Burleigh Beach, Brisbane, Australia	Beaver, David	17		R	Attacked 300 yd from shore, swimming with 3 companions, victim farthest out; raining, about 3:00 P.M.; suffered severe injuries to legs and right hand.
11/29	619	Fairhaven Beach, near Lorne, Victoria, Australia	Holland, Chris	19	12 ft	R	Lost oar from dinghy in heavy seas, 1.5 mi offshore, dived off dinghy to retrieve it. Screamed and disappeared. Body recovered. Post-mortem left no doubt he had been attacked by a shark.
12/19	643	Wynnum, Moreton Bay, near Brisbane, Australia	Mullens, Stanley A.	29		F	One of 17 Maldivians who spent 31 days adrift in small open boat, rescued 400 mi southwest of Ceylon, had legs badly lacerated during an attack by sharks.
Nov-Dec	664	Maldivian Archipelago, southwest of Ceylon	Woman			R	Saved man; then leg was bitten by shark.
	396	Mid-Atlantic between England and Africa	Green, Chas.			R	

* Possibly *Carcharhinus*. † Probably *Sphyrna zygaena*

water immediately; do not tow them in a bag or on a line cinched to the waist.

4) As a rule, a shark will circle its intended victim several times; get into a boat or out of the water as quickly as possible after sighting a circling shark before it has time to make an aggressive pass. Use a rhythmic beat with the feet and do not make an undue disturbance in the water as you move toward the boat or the shore. If wearing SCUBA, it is best to remain submerged until you have reached the boat.

5) If a shark moves in and there is no time to get out of the water, try not to panic, and keep the shark in view. It is often possible to discourage a shark by releasing bubbles or, at close range, by deliberately charging it and hitting it on the snout with a club or "shark billy." Since the hide of a shark is very rough and may cause serious skin abrasion, hit the shark with your bare hands only as a last resort. Shouting underwater may or may not discourage a shark.

Advice to survivors of air and sea disasters.

1) Do not abandon your clothing when entering the water. Clothing, especially on the feet and legs, is your only protection against the rough skin of a shark.

2) Place wounded survivors in a life raft; all should use the raft if there is room.

3) Remain quiet; conserve energy.

4) If you must swim, use regular strokes, either strong or lazy, but keep them rhythmic.

5) Do not trail arms or legs over the side of the raft.

6) Do not jettison blood or garbage, for this attracts sharks.

7) Do not fish from a life raft when sharks are nearby. Abandon hooked fish if a shark approaches.

8) When a shark is at close range use "Shark Chaser" (U.S. Navy repellent) if it is available; the black dye will repel many species of sharks.

9) If your group is threatened by a shark while in the water, form a tight circle and face outward; if approached, hit the shark on the snout with any instrument at hand, preferably a heavy one. Hit a shark with your bare hand only as a last resort.

Advice to all.

1) Always swim with a companion.

2) Avoid swimming at night or in extremely turbid or dirty water where underwater visibility is very poor.

3) Keep your head when a shark is sighted; leave the water as calmly and quickly as possible.

4) If an attack does occur, all possible effort should be made to control hemorrhage as quickly as possible, even before the victim reaches shore. If the wound is serious, the victim should be hospitalized as promptly as possible.

5) Adopt a sensible attitude toward sharks. Remember that the likelihood of attack is less than that of being

struck by lightning. Attack, however, is almost assured when one deliberately grabs, injures, or in some other way provokes even a small and seemingly harmless shark.

References and Notes

1. The AIBS Shark Research Panel, composed of Leonard P. Schultz, Stewart Springer, and Perry W. Gilbert (chairman), was established on 25 June 1958. Subsequently, on 7 December 1958, the Shark Research Panel became affiliated with the AIBS Hydrobiology Committee and now functions as a panel of that committee. Broadly speaking, the Shark Research Panel is concerned with all aspects of the biology of elasmobranch fishes. It meets once every two months with its sponsors, the Biology Branch of the Office of Naval Research and the American Institute of Biological Sciences, in Washington, D.C., and to these meetings consultants from the United States and abroad are invited.
2. For a review of current Shark Research Panel projects → P. W. Gilbert, *Am. Inst. Biol. Sci. Bull.* 10, No. 1, 19 (1960).
3. Mr. Michael Lerner, president of the International Game Fisherman's Association, was especially helpful in securing information concerning shark attacks from nearly 200 IGFA club officers in all parts of the world. In addition, Dr. V. M. Coppleson and Dr. Gilbert Whitley (Australia), Dr. Tokiharu Abe and Mr. M. Hosina (Japan), Dr. Albert L. Tester (Hawaii), Dr. David Davies and Dr. J. L. B. Smith (South Africa), and approximately 15 scientists in the United States were most helpful in supplying documentation on specific shark attacks.
4. The assistance of Mrs. John D. Stelling and Mrs. Marilyn Malin in the preparation of the table is gratefully acknowledged.
5. The following sources were especially helpful: V. M. Coppleson, *Shark Attack* (Angus and Robertson, Sydney, 1958); I. Eibl-Eibesfeldt and H. Hass, *Sonderdruck aus Z. Tierpsychol.* 16, 739 (1959); G. A. Llano, "Airmen against the Sea," *Arctic, Desert, Tropic, Information Center Publ. No. G-104* (1955); S. Springer, "Sharks and Their Behavior," unpublished report in the files of Coordination Research and Development, U.S. Navy (1943); F. G. Wood, "Recommended Precautions and Procedures in Encounters with Barracudas and Sharks," unpublished report (1958).
6. *Times of India*, Bombay (11 Sept. 1959).