

Recommendation Rules: In accordance to the Shark Research Institute. Should you use these rules in public, publicly or commercially, please give credits to SRI.

Confrontation, Interception and Rescue Rules: In accordance with the Shark Research & Education Center, Headquarter of SharkSchool. Should you use these rules publicly or commercially, please give credits to SAVN / SERC. This set of rules are also collectively called “interception rules.”

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Recommendations

The following recommendations for swimming, snorkeling, spearfishing, and surfing should be used as general guidelines, since no situation will ever be textbook-like and the typical shark does not exist. Nevertheless, these recommendations, together with their respective explanations, will help to either defuse a risky situation or help individuals recognize an environment in which the likelihood of an encounter is increased.

Although the following descriptions may appear to indicate that any situation might turn dangerous just because a person finds himself/herself in such an environment or situation, that is not the case. Sharks rather, behave as described above. However, to highlight the circumstance under which a situation could end up in an incident, it is described in a rather “dangerous situation hence dangerous shark” manner.

Recommendation: Never touch, corner, or harass a shark.

Reason: Sharks can easily get stressed or feel threatened and might defend themselves should they not be able to escape or withdraw. Sharks always (!) look first for escape routes before they start defending themselves. However, if they defend bait they will likely not back off.

Recommendation: Don't swim between breakers.

Reason: Sharks often prefer oxygen enriched water (air gets trapped when waves break) to reduce the need for continuous swimming to maintain water flow through their gills (for oxygen uptake). The reduced visibility, shallowness, and human presence (unknown object) can cause stress for an animal. However, a shark will always first try to escape or withdraw, except should the sudden appearance of a person (visibility) startle the animal, and it might be a bite due to reflex.

Recommendation: **Avoid swimming or bathing close to sandbars.**
Reason: All natural structures attract marine life, and fish might patrol along them quite frequently, which also attracts sharks. Although sharks are very attentive to their environment, a human presence might be very surprising in low visibility, even more so during a hunt when a person might also be seen as competition. Likewise, a shark might be attracted by the sound of fish that are scared off by a person. However, the often present shallowness of sandbars can lead to reduced escape routes for sharks followed by a defensive reaction by the “trapped” sharks.

Recommendation: **Don't swim into the glare (towards the sun).**
Reason: It is rather difficult to see a shark below the surface should one have to look towards the sun (the same is true for lifeguards watching for swimmers). Furthermore inquisitive sharks often approach “with the sun at their back” to take advantage of the situation (such is primarily seen when diving right below the surface).

Recommendation: **Avoid swimming at night.**
Reason: There is evidence that sharks (some species at least) get closer to shore during evening or night hours. Despite their increased ability to see during crepuscular times (dusk, dawn), at complete darkness (no moon) they rely more on their hearing. However, since they can't know how loud a sound might be at its origin (human being), it may happen that they accidentally approach very close or even swim into a person.

Recommendation: **Avoid murky water.**
Reason: Some species prefer murky water to hunt in where they primarily rely on their hearing. They might then notice a person very late or be attracted by the person's sound pattern, leading to a potentially stressful situations for both.

Recommendation: **Never swim close to/at/in river mouths.**
Reason: Freshwater plankton dies in sea or brackish water, offering a prime food source for inshore fish species or species particularly adapted to brackish water. However, rivers also often carry larger animals with them. All this food, or the animals feeding on it (and making noise) attracts sharks. The low visibility, mixed with all the different sounds (feeding fish, etc.) may enhance the excitements of sharks, and encounters might get out of control.

Recommendation: **Carefully cross channels between sandbars.**
Reason: These areas are a preferred hangout for sharks. Increased currents are also a factor to be considered as they force a

person to swim harder, and possibly creating attractive sound patterns for the sharks.

Recommendation: **Docks and jetties should be avoided.**

Reason: Sharks prefer these areas because people always throw food overboard, which attracts a variety of fish. In addition, the sounds created around these areas can be intriguing. Additionally, sharks like to patrol along structures (hiding areas for potential prey) but can easily get stressed in tight areas should a person come too close, reducing the animal's escape routes.

Recommendation: **Avoid swimming or bathing down-current of active fishing piers.**

Reason: Hooked fish always release stress hormones and bodily fluids, which are carried with the current, and sharks then swim up-current towards the source. People swimming in these odor corridors do not just smell like something the sharks know but may also sound (splashing) like something known and may then get checked out further.

Recommendation: **Don't swim close to cliffs.**

Reason: Stronger currents may occur around cliffs, often connected to lower visibility and an accumulation of organisms (due to the increased current). Sharks can also get cornered in such areas due to surf and current, leading to potentially dangerous situations.

Recommendation: **Avoid pilings.**

Reason: Structures attract a variety of organisms for many reasons. Structures also "trap" a lot of food particles due to dead water (e.g., behind the pilings), which then lures in larger fish and sharks.

Recommendation: **Avoid areas where dolphins "jump" around the same spot.**

Reason: When dolphins or porpoise leap out of the water at one spot it indicates hunting. Sharks and dolphins often chase the same fish.

Recommendation: **Avoid swimming close to diving birds.**

Reason: Diving birds indicate fish below the surface. Sharks are likely to be present as well.

Recommendation: **Always be aware of what animals are in the area.**

Reason: The change in their behavior can indicate the appearance of sharks. They may swim more anxiously, look for cover (e.g.,

around or behind the person) or vanish. If a change in behavior is noticed, cease or at least reduce movement (noise) and look around.

- Recommendation:** **Don't chase off fish that swim in the vicinity.**
Reason: Exaggerated swim motions of fish create attractive sounds for sharks. Should the fish remain close to the person, an approaching shark may see him/her as a competitor. A shark may also try to compare the person with the created search image (based on sound) and start examining the person further.
- Recommendation:** **When fish start mingle around you, leave the water.**
Reason: Such fish look for cover because of the appearance of predators in close proximity. Since a person mostly moves around, the fish have to follow (creating different sound patterns).
- Recommendation:** **If the water starts to "boil" (fish jump and dart around at the surface), leave.**
Reason: Predatory fish and shark chase down food fish. If "boiling" water is noticed, try to leave the water in a slow and controlled manner, but keep looking around and stop immediately should the shark get inquisitive.
- Recommendation:** **Don't attach fish to the body while spearfishing.**
Reason: Sharks are attracted by such activities, and in trying to get the fish, might trying to bite it off.
- Recommendation:** **Be aware of your surroundings when getting a fish off the spear.**
Reason: Never take your attention off your surroundings (and always look behind as well) when spearfishing. Struggling/dying fish create the most attractive sounds for sharks.
- Recommendation:** **Often change the site up-current when spearfishing.**
Reason: Bodily fluids and stress hormones of speared fish are always carried away with the current, which can be picked up by a shark (smelled) that creates a search image (the shark makes an assumption what the source could be and tries to find it). Despite that such an image will not be confirmed when seeing a person, the human created sound pattern, together with the picked up smell, likely enhances a shark's curiosity.
- Recommendation:** **Never defend your catch (spearfishing) against sharks.**
Reason: Sharks will interpret such human behavior as legitimate competition and will try to fight for the fish. Trying to steal prey from another shark (kleptoparasitism) is common among these

animals. Despite the fact that they snap at each other, they hardly ever injure each other. That might not be the case should humans not wear thick wetsuits, but it was not the shark's purpose to hurt in order to get to the speared fish.

Recommendation: **Never surf close to a seal haul-out.**

Reason: Sharks do not mistake surfers for seals, but the shark's curiosity may be increased to further investigate this unfamiliar object.

Recommendation: **Avoid surfing in murky water.**

Reason: Low visibility reduces the chance for a shark to notice the presence of a surfer. As such, a shark may just follow a paddling surfer, assuming it to be a familiar object (based on the sound pattern) prior to visual contact.

Recommendation: **Stop moving on a surfboard when seeing a shark.**

Reason: Any motion creates sounds that may enhance a shark's curiosity, and sitting on a board often increases sound patterns (waves are hitting the board and a person compensates with his arms and legs). When seeing a shark close by, it is best to get off a board, and holding onto it by hovering in a vertical position, which will reduce sound to a minimum.

Recommendation: **Leave the surf spot, should a shark not move on.**

Reason: Falling off a board, paddling out, or sitting on the board (and moving legs) always creates attractive sound patterns for a shark. Should a shark not move on despite the absence of sounds, the activity should be terminated.

Confrontation, interception and rescue rules

In rare cases it is necessary to face a shark and deal with a potential confrontation. Such a need might occur if one can't withdraw (e.g., shore is too far away, shark has been attracted by a person and won't leave, shark returns several times and keeps reducing the distance between itself and the person every time, and other similar situations). The common rules in such circumstances are as follows:

- 1) Turn towards the shark, face it, and keep it in your eyesight. If you are in deeper water, change into a vertical position, let your legs loose (hang), and only use your arms to keep your general position to face the shark.
- 2) Guide a shark around you should it come so close that you can reach the shark by stretching your arm without (!) leaning forward. Do not touch the shark in its snout area but rather on its top or side (behind the eyes). Do it gently and extend your arm slowly (never quickly).

- 3) Push the shark off should it approach head on. If the pattern is repeated, try to touch the shark in its gill areas. Remember: a shark does not know what a person is but will likely recognize the signal (= only other aggressors “go for the gills”).
- 4) Move towards the shark should it be persistent and not show the desired effect of leaving you alone.

These four recommendations are also called “Face-Guide-Push-Move,” in chronology of the steps to be taken.

The following set of rules is based on incidents that have been analyzed, reconstructed, and then tested on sharks that act and behave similarly in comparable situations. These rescue rules are developed for situations in which the shark remains close to the victim after the bite occurred (such is mostly the case, despite the outdated “hit & run” classification that implies a shark would then “run away” after it bit a person). Biting something unfamiliar (in this case a person) to explore the object is a rather common behavior for a shark and it will not lead to a “guilty conscience of having done anything wrong; hence, withdraw is the best way to avoid punishment” as this erroneous classification implies.

The following rules are to be considering in addition (!) to regular procedures lifeguards and other rescue people are accustomed to performing. Nevertheless, special attention should and must be given to a shark when approaching a victim in reference to the shark’s position as well as during extrication.

Rule: Deal with the shark first before attending the victim.*

Reason: A shark’s curiosity about the victim might still be high, even if it did not bite the victim a second time. Any attempt to rescue the victim can trigger another response from the shark, and the rescuer’s initial task is to secure the situation.

* It is understood that a person might be drowning and immediate help is needed but most bites are less severe, and such is the exception to the rule. In these rather rare occasions, a rescuer must deal with a victim while remaining face-to-face with the shark.

Rule: If a shark is still swimming in close proximity to the victim during a rescue attempt, avoid anything that might trigger competition over the victim.

Reason: Even if the shark has decided that the victim is not suitable prey, there is a possibility that the sudden appearance of another person - together with the attempt to remove the victim - might trigger a “claim response.” A claim response could reflect an establishing of ownership based on initial appearance and exploration, so a rescue attempt should not commence until the situation with a shark is under control. In its worst form, a claim response ends up in a tug-of-war between the rescuer and the shark with the victim caught between the two.

Rule: Approach from behind a victim and then first evaluate the situation regarding the shark before attending to the victim.

Reason: A stressed victim can grab you and pull you down, aggravating the situation.

Rule: Move in front of the victim should a shark approach again.

Reason: The likelihood of a shark biting the victim a second time is statistically rather small (unless a claim response is triggered), but a rescuer must still be capable of fending off the approaching shark. The rescuer should position himself/herself in front of the victim (in relation to the shark's position), and follow the interception and confrontation rules. Although moving a victim from the site can trigger a competitive or claim behavior in a shark, a situation will not escalate as long as the rescuer acts focused and immediately ceases moving the victim when the shark is turning towards the rescuer/victim again (see following rules as well).

Rule: Never move a victim when a shark is approaching.

Reason: Always assume that a shark is still interested in the victim, and the removing of the victim as the shark approaches could trigger a claim response. Move the victim only when the shark is swimming away from the rescuer and victim or moves at least a few body lengths away.

Rule: Always push the shark off, never pull the victim away.

Reason: Pushing the shark off (aim for the gills if possible) will not only be a stronger signal to the shark but it is also much easier than moving a possibly large and immobile victim. Should a further conflict not be preventable, a rescuer must always focus on the shark first (and follow interception and confrontation rules).