


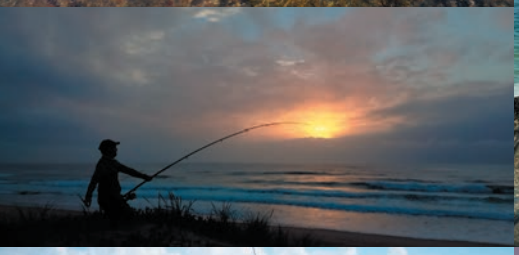

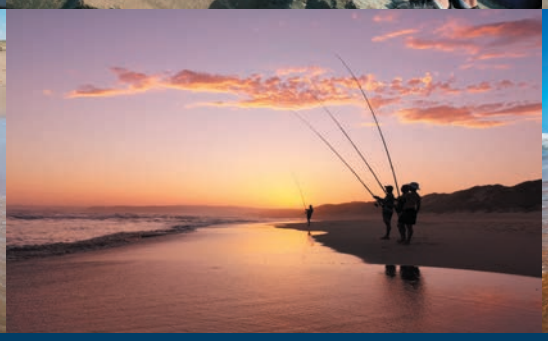


# BEST PRACTICE GUIDELINES FOR SHARK AND RAY ANGLING

**Sharks have been around for a long time, first evolving more than 400 million years ago! One would imagine them to be hardy, durable animals since they have outlived dinosaurs and survived several mass extinctions. This is not true, however, since sharks and rays are highly susceptible to stress, especially stresses related to handling and angling. One reason for this is that, unlike land animals, the organs of sharks and rays are not supported by internal structures but rather float around in a single soft cavity. This increases the risk of damage to their internal organs when the sharks and rays are dragged over hard surfaces or removed from the water. In addition, unlike terrestrial animals, and even other marine animals, sharks' skeletons are made purely of cartilage and muscle, which means that, if pulled out of the water and handled poorly, the weight of the shark's body could partially collapse onto its organs and in extreme cases, crush them.**

## SOME BACKGROUND INFO...

Sharks and rays are often targeted by recreational anglers, yet proper handling techniques are not always known or applied. Contrary to popular belief, sharks and rays are a delicate group of animals and the use of proper handling techniques can help anglers minimize the risk of injuring and stressing the animal and thus giving them the best possible chance of survival after release.

Shark Conservation Fund

shark ATTACK sharkattackcampaign.co.za

forestry, fisheries & the environment
Department: Forestry, Fisheries and the Environment
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## WHY SHOULD I LOOK AFTER SHARKS & RAYS WHEN ANGLING?

**Some species of sharks and rays are among the most endangered species on the planet – arguably even more endangered than rhino and pangolin.**

**Most anglers are keen to minimize their impact on the marine environment, and sharks and rays should be handled in a way that ensures their best chance of survival. This can be done by quickly and wisely handling sharks and rays to minimise trauma and injury while using equipment and tackle that reduces stress and increases the chances of survival when released.**

## **ACIDOSIS** - LACTIC ACID BUILD-UP

Sharks and rays suffer from acidosis, which results from the body's inability to produce enough energy to supply the needs of the muscles. This is the same muscle soreness that you would feel the next day after running a marathon or over-exerting yourself during a hardcore gym session. Interestingly, in sharks, this condition is exacerbated by extreme exertion endured during fighting when hooked and can often lead to the death of the animal.

## FISHING LOCATION & PERMITS

The fishing location is as important as the fishing permit. Several laws govern areas where fishing is allowed and mode of access to those areas. Ensure that all relevant rules are adhered to and that you are in possession of all relevant permits. There are currently 41 Marine Protected Areas (MPAs) in South Africa, covering 5.4% of national coastal waters. Some of these areas are 'controlled' areas where limited fishing is allowed, while some areas are regarded as 'no-take' zones where no fishing is permitted. It is the angler's duty to know where these MPAs are located and only fish in permitted areas.

## POST-CAPTURE STRESS

Sharks and rays can often survive the process of being caught, but stresses are placed on them even after their release. The animal's feeding, growth and reproduction may be negatively altered due to the energy required to recover from injuries or stress resulting from capture and release. The wise handling and treatment of sharks, rays and other species is encouraged, while targeting species which are rare, vulnerable, or threatened (e.g. raggedtooth, dusky, and bronze whaler sharks) is discouraged generally and in MPA's in particular. Anglers should also know which fish species, such as white sharks, are endangered and that they may not target them and, if one is accidentally hooked, the line should be cut.

| HOOKS | |
|---|---|
|  | 'J' Barbless Hooks |
|  | Barbless Circle Hooks |
|  | Circle Hooks |
|  | 'J' Hooks |
|  | Treble Hooks |

# REDUCING HOOK INJURIES - CHOOSE THE CORRECT HOOK

**The type and size of hook chosen are of great importance when reducing hook related injuries, trauma and deaths in sharks and rays. Barbless circle hooks are strongly recommended. The following is a list of hooks when trying to keep animal stress and damage to a minimum:**

- **'J' barbless hooks** (Recommended but barbless circle hooks better)
- **Barbless circle hooks** (Recommended)
- **Circle hooks** (Recommended but barbless circle hooks better)
- **'J' hooks** for deep hooking (Not recommended)
- **Treble hooks** (Not recommended)

***NOTE: All stainless steel hooks and tackle are not recommended.***

**Other important points to note are:**

1. Hooks can be made barbless by using pliers to flatten the barb or by using a metal file to file off the barb.
2. Removing a barbed hook from the lip of a fish with minimum harm is by pushing the point of the hook through the lip of the fish and flattening the barb when it protrudes. The hook can then be removed easily.
3. If a fish is hooked in a sensitive or delicate area like the gills, throat, eye or even if the hook is swallowed, the line should be cut as close to the hook as possible and the fish released with the hook left in place. The hook, if it is mild steel not stainless, will eventually rust out or, if barbless, will be spat out or safely passed through the digestive system.
4. The use of a "dehooking" device is recommended, especially when fishing from a vessel.
5. All hooks and line should be removed but, if a hook must remain, then always cut the trace as short as possible.
6. Keeping the line taut at all times will reduce the risk of entanglement (and increase the chances of landing the fish).
7. The use of circle hooks is encouraged since it is difficult for a circle hook to be swallowed, barbless circle hooks further minimize the risk of harm.
8. Minimize the fight time to keep the fish's acidosis levels as low as possible.
9. Measure the length of a shark or disc diameter of a ray, rather than trying to weigh it because this can seriously injure them and the measurement is usually inaccurate.
10. Try to remove hooks and line and measure the fish while still in the water to reduce the stress on the fish.
11. If essential, use stretchers or, as carefully but firmly as possible, pull a shark by the dorsal or tail fin onto land. Do not use a gaff or pull the fish by the gill slits, eyes or any other opening.
12. If you pull a shark by the tail, ensure that there is water supporting the body.
13. Wherever possible, never "land" a shark higher up the beach than is absolutely necessary and only move a shark out of or back to the water when the shark's weight is partially supported by a surge of water.
14. Small sharks (catsharks, shysharks, houndsharks, smaller gully sharks and guitarfish) should be handled with two hands, one around the tail and the other under the pelvic girdle (cradling the shark). Sharks weighing more than 30kg should not be lifted out of the water.
15. The use of gaffs is strongly discouraged as it can lead to serious damage to the shark or ray.

## GUIDELINES TO REDUCE ANGLING / HANDLING STRESS

1. Ensure that hooks and line are removed (if not possible, then ensure that the trace is cut as short as possible).
2. Try to keep the line taut at all times, to reduce the risk of entanglement.
3. The use of circle hooks is encouraged since it is difficult for a circle hook to be swallowed. Barbless circle hooks would further minimize the damage and trauma to the fish.
4. Minimize the fight time to ensure the fish's acidosis levels are not raised.
5. Try to remove hooks and line and measure the fish while still in the water to reduce the stress on the fish. Weight can be determined via a length-weight conversion.
6. If needs be, use stretchers to carefully but firmly pull the fish by the tail or dorsal fin to land rather than gaffing or pulling the fish by the gill slits, eyes or any other opening. This greatly reduces both stress and damage to the fish.
7. If the fish is removed from the water restrain its movement by applying firm pressure on the pectoral fins and minimise the time out the water.
8. If photography is necessary, allow the fish to lie flat, do not lift the tail over your shoulder, pull its mouth open or turn the fish upside down as these could cause permanent damage. Release the fish as quickly as possible.
9. Rays should never be flipped onto their backs.
10. Rays should never be gaffed or dragged by the spiracles or tail. They can be dragged by placing fingers just above the top lip in their mouth.
11. Be cautious of spines, barbs and stingers of rays. These should be avoided or safely be held against the tail with a gloved hand or wet cloth.
12. Never remove the spine from a ray, this is their defence mechanism in the wild.
13. Pregnant stingrays (as seen by a characteristic bulge) must never be beached because they can abort their near-term embryos, which most likely will not survive.

## INCREASING THE CHANCES OF SURVIVAL

**All sharks and rays hooked should be treated with great care to ensure a successful release. There are various actions that can lead to a fatal injury of the hooked shark or ray during hooking, landing and release. Other stressors that are less obvious may also have an effect on the biological functioning of the fish. These stressors being:**

1. **Lactic acid build-up:** When a fish fights for an extended period, lactic acid accumulates in the fish's muscles. This leads to a longer recovery time for the animal and thus an increase in the mortality rate (if released). The quality of the flesh of the animal also decreases.
2. **Exposure to air:** When sharks and rays are removed from the water for extended periods of time they suffer from hypoxia (oxygen deprivation). This hypoxia will significantly reduce the survival rate of the released fish.
3. **Barotrauma:** Barotrauma will affect fish hooked at depths greater than 20 meters. In bony fish, it is identifiable by the inverted swim bladder or bulging eyes but sharks and rays do not have swim bladders, so the signs of barotrauma are not easily recognisable. Sharks and rays can still suffer barotrauma when gasses in their tissues expand, causing internal damage.
4. **Injuries during landing:** Gaffing of fish should always be avoided since the bleeding from the gaff site would significantly reduce the chances of the fish's survival. Handling sharks and rays by their gills or spiracles or dragging them by their tails can also cause significant injuries.
5. **Landing Areas:** Always choose suitable landing areas, by avoiding rocks with barnacles and mussel beds, and areas with shore dumps. If landing in rocky areas, choose suitable gullies.

## ENSURING THE SUSTAINABILITY OF RECREATIONAL FISHING AS A SPORT OR LESUIRE ACTIVITY

**In order for recreational angling to be as sustainable as possible anglers should ensure that:**

1. If a long or stressful fight has occurred, take the time to scout the beach to ensure the animal has not beached itself again.
2. Their catch is not sold (it is illegal to sell recreational catches).
3. When bait is collected environmental disturbance should be minimised.
4. Fishing spots are clean before anglers leave and all waste (fishing line, hooks, bait packaging, food and drink packaging etc) must be properly disposed of. This will prevent further ocean pollution and reduce the risk of attracting problematic wildlife or diseases (littering is an offence according to municipal bylaws, and MPA legislation).
5. Baited hooks are disposed of properly to reduce the risk of 'ghost fishing' and injury to other beach users.
6. Unwanted fishing line is cut into short pieces and properly disposed of into rubbish bins to minimise the risk of wildlife entanglement. Tackle loss underwater causes damage to coral reefs and other ecosystems, and thus all reasonable precautions should be taken to reduce this.
7. Plastic straps from bait boxes must be cut before being disposed of to prevent animal/bird entanglement.
8. Drones are not used for fishing as they illegal according to the Marine Living Resources Act and the South African Civil Aviation Act (any drone use in an MPA is illegal).
9. Any illegal activity should be reported to the correct authorities (see Hotline number below) as soon as possible with as much detail as possible including any photographs.

## HOW CAN I CONTRIBUTE TO SCIENCE ON SHARKS & RAYS?

Any angler can contribute by correctly reporting the recapture of a tagged shark or ray or by supporting other citizen science projects that seek to better understand the biology of the fish and the impact of recreational fishers.

- **South African Elasmobranch Monitoring (ELMO) - www.elmoafrica.org:**
  ELMO is a citizen science project using public participation to gather data on South African shark, ray, and skate populations. Whether you are a snorkeler, diver, swimmer, skipper, angler or a beach goer you can assist by reporting your sighting or find to ELMO. With your support the ELMO database can help scientists, politicians, and stakeholders to make informed decisions about the conservation of our shark and ray populations.
- **ORI Co-operative Fish Tagging Project - www.oritag.org.za**
  The Oceanographic Research Institute (ORI), a division of the South African Association for Marine Biological Research, manages South Africa's only co-operative Fish Tagging Project (ORI-CFTP), a long-term project with the aim of ensuring the wise and sustainable use of southern Africa's marine linefish resources (including sharks and rays). It involves the voluntary cooperation of conservation-conscious anglers through tag and release of fish they catch and reporting catch that are already tagged.
- **iNaturalist - https://www.inaturalist.org**
  iNaturalist is one of the world's most popular nature apps where citizen scientists can contribute to global biodiversity records and science. This is a crowdsourced species identification system and an organism occurrence recording tool. You can use it to record your own observations, get help with identifications, collaborate with others to collect this kind of information for a common purpose, or access the observational data collected by iNaturalist users.
- **24-hour Hotline for environmental crimes: 0800 205 005**

*We would like to acknowledge and thank WWF South Africa, South African Shark Conservancy and a host of anonymous anglers for their contribution to this content. Photo Credits: Robert Kyle, Paul Cowley and Azhar Hasham.*

## Raggedtooth shark

CRITICALLY ENDANGERED
CR

## Bronze whaler / Copper shark

VULNERABLE
VU

## Whitespotted wedgefish / Giant guitarfish

CRITICALLY ENDANGERED
CR

## Common smoothhound / Houndshark

ENDANGERED
EN

## Honeycomb whipray / Leopard stingray

VULNERABLE
VU

## Thorntail stingray / Brown stingray

VULNERABLE
VU

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