



Code of Conduct and Safety Procedures for Diving with The Greenland Shark

2009-01

www.geerg.ca

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After several seasons of field experience and hundreds of encounters, GEERG (Greenland Shark and Elasmobranch Education and Research Group) has developed a voluntary code of diver conduct as well as safety procedures in order to increase diver awareness and to help reduce the risks during Greenland shark encounters. Our recommendations also aim to minimise the human impact on the shark's normal life cycle. However, the most important message is the following: **Diving with the Greenland shark poses inherent risks even under the best conditions. The only means of eliminating all risks for divers and the shark is to refrain from diving in areas where the Greenland shark is found.**

DISCLAIMER - READ BEFORE PROCEEDING

Abiding by these recommendations does not guarantee your safety. The Greenland shark is a very large and unpredictable mammal predator. Although some behavioural characteristics are shared by all individuals of a given species, sharks behave unpredictably. No matter how many times you have encountered the Greenland shark without incident, never take its apparently docile behaviour for granted. Stick to your original dive plan, apply the GEERG code, and remain alert at all times.

The GEERG Code of Conduct is by no means an invitation to dive with the Greenland shark. It is a series of recommendations that are intended to help protect both divers and sharks when encounters occur, whether the encounter is intentional or not.

SPORT DIVERS THAT VOLUNTARILY SEEK CONTACT WITH THE GREENLAND SHARK DO SO AT THEIR OWN RISK AND GEERG ASSUMES NO RESPONSIBILITY FOR THEIR ACTIONS.

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Version française

La version en langue française de ce document est disponible sur le site web du GEERG (www.geerg.ca).

Section 1

Introduction

An extraordinary situation has been taking place in the St. Lawrence Estuary since the spring of 2003: Sport divers have repeatedly observed the Greenland shark, *Somniosus microcephalus*, at shallow depths and at an easily accessible location. After four productive research seasons conducted by GEERG, this unique phenomenon remains largely unexplained. As our research projects continue, several scientific papers have been published¹ or are currently under review. GEERG research on the Greenland shark has received a considerable amount of exposure in the national press and has been the subject of several documentary productions². We believe the Greenland shark is part of the St. Lawrence's natural heritage and that it should be studied and conserved for the benefit of Canadians and the world community. For the time being, the most important question remains unanswered: Why is this normally deep-sea Arctic animal here? The behaviour of the world's second largest carnivorous shark in the presence of divers is also largely unknown because humans do not dive in sub polar waters in large numbers or at many locations.

A rumour has long persisted in the scientific and fishing communities. It states that the Greenland shark is completely harmless and that it poses no risks to humans. This contention is found even in the most modern publications on sharks. However, it is not based on factual observations of the animal in its environment, and humans had not been encountering this species of Arctic deepwater shark underwater with any frequency until 2003. Based on hundreds of encounters with the Greenland shark since 2003, **GEERG believes the Greenland shark may potentially pose a risk to sport divers.** This is based on several pieces of evidence:

- Fresh marine mammal remains have been found in the stomachs of Greenland sharks in the vicinity of diver observations.
- Sharks have repeatedly located and tracked divers in low to zero visibility.
- Sharks have been observed traveling in groups and converging on divers from several directions simultaneously.

¹ *Movement and environmental preferences of Greenland sharks (Somniosus microcephalus) electronically tagged in the St. Lawrence Estuary, Canada.* **Marine Biology.** (2005). Michael J.W. Stokesbury, Chris Harvey-Clark, Jeffrey Gallant, Barbara Block, Ransom A Myers. Document posted on GEERG website in the « Research » section (www.geerg.ca).

² *Searching for a Monster – The Greenland Shark* (Summerhill Entertainment, 2004), *Operation Skalugsuak* (Discovery Channel, 2001), *Sharks of the Great White North* (Discovery Channel, 2000).

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- Sharks show a great deal of curiosity and repeatedly visit, circle and “buzz” divers.
- Telemetry data shows that sharks move into shallow water at night and move up and down in the water column in a pattern recognised in other shark species that hunt marine mammals.

Now that a reliable sighting area has been established, human curiosity has encouraged a large number of sport divers to seek out the Greenland shark. However the long term consequences of diver interactions with the sharks are as yet unknown. GEERG strongly believes that divers should take responsibility for their actions when diving in this region, and should understand the risks of diving with a large, powerful shark species. The GEERG guidelines will help meet this goal by encouraging divers to educate themselves and to acquire relevant knowledge and diving experience, and to employ common sense before embarking on this quest. Diving with the Greenland shark is not for entry level divers.

It is not our intention to create a scare around the Greenland shark. However, we need to state our main concern as clearly as possible: **an encounter between a diver and the Greenland shark could lead to serious injury or death if the diver acts brazenly or simply is not careful.** Specimens observed in Baie-Comeau are very large (up to 4 metres in length, weighing 400 kg) and they are predators and scavengers of seals³ and certain cetaceans found in the area. They have no known natural predators and our observations show they do not fear humans. They are thus very curious in the presence of divers. They swim at relatively slow speeds and are easily approached. Although they appear docile, a diver's approach may be perceived as a threat and the shark will act accordingly. Most simply swim away while others appear to stand their ground. It is important to understand that each shark may not react in the same way on any given day or in any situation. Also some sharks take time to react while others respond immediately. The behaviour of these sharks also appears to be affected by gender, by time of day, by the presence of other sharks in the area, and by sea conditions such as water temperature and visibility. The bottom line is, the Greenland shark is unpredictable and must be treated with caution and respect.

After several seasons of observations and media coverage, word has spread throughout the dive community and GEERG expects a steadily increasing number of divers will seek contact with the Greenland shark. GEERG thus believes that educative measures must be put in place in order to protect both sport divers and the shark itself. They also believe that these voluntary

³ Shark (*Somniosus microcephalus*) necropsy in Ville de Saguenay (Quebec), June 2006, by GEERG, MUSÉE DU FJORD and FISHERIES & OCEANS CANADA

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safeguards should be applied immediately, to prevent potential injury and before negative interactions with humans drives the Greenland shark away. It is hoped that divers encountering this species will fill out the volunteer observer data sheets on this species and help to increase our knowledge and understanding of the Greenland shark.

International Attraction

If the Greenland shark continues to show itself in the St. Lawrence, Baie-Comeau may soon become a major dive destination. It is thus very important for every diver encountering the sharks to conduct himself as an “ambassador for the human race.” Dealing with the Greenland shark with maturity and respect will ensure that visitors will continue to observe this rarely seen creature. The impact of the presence of this species on local tourism in Baie-Comeau will be profound. Much as is the case with the six-gill shark (*Hexanchus griseus*) at Hornby Island in British-Columbia, Baie-Comeau may soon become a world-class site for diving and research.

Section 2

Diver Code of Conduct

Because it is normally found at abyssal depths in the Arctic, diving with a Greenland shark is exceptionally rare. Until 2003, only a few humans had the good fortune to see this shark underwater. As members of this privileged group, and having studied the behaviour of the Greenland shark while in the presence of divers, GEERG researchers offer the following advice in the event you encounter the Greenland shark. Adopting these recommendations should help make your encounter a positive and safe experience for you and for the shark.

Do not touch a shark under any circumstances.

Even the faintest contact could be interpreted by the shark as an attack, which may result in defensive and potentially dramatic action by the shark. Getting away with touching once doesn't mean the animal won't respond aggressively if you touch it again.

Don't hold on to or grab a shark.

Latching on to a shark is even more dangerous than touching one. By doing so, you hinder the shark's ability to escape thus forcing it to defend itself.

Never attempt to capture or hold back a shark using a rope or other device.

By preventing a shark from escaping, you are forcing it to defend itself. A captured shark may attack its captors or anyone else it comes across. The shark's life is also at risk. When struggling or entangled in a rope, it may attract and fall prey to other sharks.

Do not position yourself under a Greenland shark.

This is the shark's preferred hunting and feeding position.

In the presence of a 4.5-metre (or longer) shark, we recommend that you exit the water.

A shark of this size and age is a seasoned predator that is likely not afraid of anything, and should be considered potentially dangerous to divers.

Do not block the path of a shark.

Positioning yourself in front of a shark may be perceived as a challenge. Body language observed by GEERG on several occasions clearly demonstrates that the Greenland shark does not like to have divers directly in front of it. A shark cannot swim backwards and you will increase its stress level by forcing it to change course.

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Always keep your eyes on the shark.

When a shark is in close proximity, pay attention to its movements and behaviour. If you are heading to the surface, keep the shark in sight until you have exited the water. Check 360 degrees and above/below your position in the water column constantly.

Do not chase a shark.

Chasing a shark could be perceived as a threat or challenge. Choose a position on the bottom and stay there for the entire dive. Remain immobile on the bottom and adopt a team defensive position covering 360 degrees with the rest of your group (see Safety Procedures).

Never use bait to attract sharks.

Bait and blood in the water modify the behaviour of the animal and increase the risk factor exponentially. The use of bait at a popular dive site can also put everyone at risk within several hundred metres. The use of bait requires a scientific research permit subject to government approval and fines.

Never attempt to feed a Greenland shark.

You could easily become an extension of your offering.

Remember that all of our natural encounters with the Greenland shark were initiated by the shark itself. It is the shark that seeks out the divers.

The Greenland shark is aware of your presence long before you can see it yourself. When you see the shark, it is because it has decided to examine the human intruders. This behaviour demonstrates that the animal is curious and is not afraid of divers. When in the presence of this large shark that has no known predators and has no apparent fear of divers, it is thus very important to remain vigilant at all times.

When the presence of sharks is confirmed, do not linger at the surface.

At least two of the sharks observed in the St. Lawrence in 2003, and one in 2004, demonstrated an interest in humans at the surface. Since the Greenland shark is known to attack seals and beluga whales near the surface, this is something to keep in mind at the start and end of your dive.

Avoid diving in low visibility when the Greenland shark is known to be in the area.

Low visibility forces the shark to get very close in order to visually inspect its potential prey or any other object of curiosity, including a diver. Low visibility also limits your reaction time and increases the possibility of a shark mistaking you for a seal or other prey species. Shark attacks on humans, accidental or not, are more frequent in such conditions.

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Be very careful with underwater lights and camera strobes.

Although the Greenland shark is known to be attracted to light, our experience demonstrates that it can react violently when lights are flashed into its eyes. When filming or photographing a shark from a short distance, avoid flashing lights directly into its eyes or you may trigger a defensive reaction.

Do not dive at night when the Greenland shark is known to be in the area.

Like many other shark species, the Greenland shark is believed to feed under the cover of darkness. During this period, sharks are also more curious and competitive. Combined with the multiple effects of dive lights and very limited visibility (for the diver only), night diving increases the risk factors. Until we know more about the Greenland shark's nocturnal behaviour, stay out of the water at night.

Stay away from "dancing" sharks or sharks that close their eyes.

When a shark arches its body sideways in exaggerated and deliberate movements (observed by GEERG on several occasions), it is using body language to express its displeasure with your presence or proximity. The shark's next step will either be to charge the diver or swim away. A shark that "closes" its eyes (rolling its eyes backwards) may be getting ready to charge or take a bite. Never approach a shark demonstrating any of these actions.

Do not attempt to dive with the Greenland shark if you are an entry-level diver.

We highly recommend advanced training and several dives under similar conditions (without sharks) before attempting an encounter with a Greenland shark. If you still aren't fully at ease with your equipment or diving skills, you should not be diving with sharks. In the presence of a very large predator, an entry-level diver with little experience under any conditions and under the effects of shark-related stress can be even more dangerous than the shark.

Be patient and never take unnecessary risks.

Always keep a respectable distance between you and the shark and observe it passively. Give the Greenland shark the respect it deserves and it should leave you alone.

Never dive alone!

Sharks on the prowl prefer solitary victims. In the presence of several sharks coming in from every angle, being alone is the worst possible situation for so many reasons.

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Have an exit plan.

Make sure you have a planned exit point where you are not at the surface for a prolonged period. Have one member of the group assigned to watch below while other divers are occupied with exit procedures.

CLOSE ENCOUNTERS...

If for any reason - with or without provocation - a Greenland shark “comes at” you, try to avoid contact while protecting your extremities. Keep in mind the shark has restricted forward vision and may not have seen you, especially if there are several divers nearby. It may be trying to avoid other divers when it encounters you. The approach may also simply be a form of bluff/intimidation; scary for the diver but non-injurious. Never attempt to injure the shark with a knife or any other weapon. You will only annoy the animal, potentially making it more aggressive. Avoid the collision or bite and get out of the water. Our experience has been that sharks that closely approach divers usually immediately leave the area. In the event that you are injured by a Greenland shark, get out of the water immediately and seek medical attention.

Safety when diving is the responsibility of the individual diver, and by following the guidelines suggested here you will minimise, but not eliminate, the risk of injury from a Greenland shark.

Important: If you are closely approached or injured by a Greenland shark, please report it immediately to GEERG.

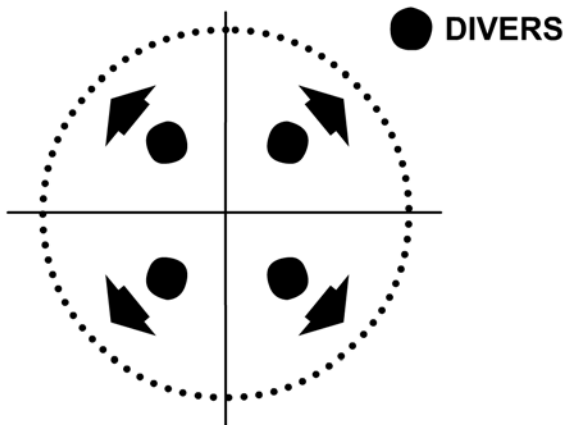
Section 3

Safety Procedures

Unless you have the experience of several encounters with the Greenland shark, applying proven GEERG safety procedures during your dives will greatly decrease the risk factor. However, abiding by these recommendations does not guarantee your safety.

Low-Impact Entry: Our experience tends to demonstrate that the Greenland shark is attracted by sound, and even the noise produced by people walking on a boat deck or a dock. If a shark is present, it will home into your dive bubbles and movements once you are on the bottom. **A low-impact (quiet) entry will reduce the possibility of encountering the shark near or at the surface or in mid-water on your way to the bottom.**

Defensive Perimeter: Once on the bottom, assume a team defensive position which covers every angle of approach and pay constant attention to your surroundings. Sharks may approach from all directions and while you are observing one shark, another may be only an arm's distance from your back. Covering all angles of approach in a team effort is most effective and reassuring. Assign each position before the dive and stick to the plan. **If you chase a shark, you will break formation and leave your buddies unprotected. You may also end up alone and surrounded by sharks.**



Shark Pursuit: Do not chase sharks. Pursuing a shark can result in one or more of the following situations that all greatly increase the level of risk of your dive.

A) Loss of Dive Partner: A diver chasing a shark is usually oblivious to his dive partner. If your partner cannot keep pace, you will lose sight of each other and end the dive alone, possibly surrounded by sharks.

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B) Diver Intimidation: A shark may feel threatened by your constant pursuit. By chasing a shark, you may provoke it to defend itself.

C) Increased Depth: A shark that feels threatened heads for deep water. While chasing a shark, you may fail to monitor your depth and go much deeper than planned. An entry level diver may quickly and unknowingly go beyond the depth limit of 18 metres (60 feet).

D) Diver Fatigue: Despite its lethargic appearance, the Greenland shark swims a lot faster than a diver. Chasing a Greenland shark soon leads to exhaustion and quickly depletes your air supply when you need it the most.

E) Surfacing in Open Water: All of these situations may force you - and the partner you left behind - to surface in open water far from the safety of the dock or your dive boat. In the presence of the Greenland shark, you are at your most vulnerable when swimming at the surface. A diver swimming at the surface may resemble a seal, a known prey item of the Greenland shark.

Return to Surface: As is always the case, the dive isn't over until you are safely out of the water. When it is time to end the dive, proceed as follows:

A) Exit Point: Remain close to the bottom until you have reached the exit point. Surface in teams of two in order to minimise time spent treading water at the surface.

B) Remain Attentive: Keep your eyes in the water and scout your surroundings until it is your turn to climb up the ladder.

C) Surface Scout: Have someone in the boat or on the dock scout the surface while any diver is still in the water. The Greenland shark has been observed following divers to the surface on several occasions. It has also been observed cruising at the surface while no divers were present.

Section 4

Shark Diving Insurance

Diving is an inherently risky activity. Diving with sharks simply adds to the level of risk, especially when the shark is as large as the Greenland shark. Before any dive with the Greenland shark or any other species, you should check with your insurer to see if you are covered for any such activity. If you are using the services of a dive charter, you should ask the owner/operator if he is also covered. Any self-preserving and business-minded charter operator will require you to sign a liability release before you get into the water. If anything happens during the dive, you alone will be responsible.

Basic life insurance policies may not cover scuba diving accidents, let alone an intentional encounter with large sharks. By knowingly participating in an organised shark dive that has the potential to put you in harm's way, you may not be covered in case of a shark-related accident. It is in your best interests - as well as your family's - to first check with your insurer before signing the liability release on the dive boat.

Section 5

Shark Charters

The charter boat business exists primarily for the purpose of generating revenue, and sharks are a pricy and exclusive commodity. However, taking people to dive with sharks is far more demanding than a typical reef or wreck charter. Make sure your charter operator (CO) knows what he is doing and look for the following:

Briefing: Does the CO conduct a proper briefing at the dock and before the dive? What does he know about the Greenland shark? If the CO tells you the shark isn't dangerous under any circumstances or can't answer your basic shark questions BEFORE you leave the dock, consider aborting the dive or using another CO.

Divemaster: Is the CO a diver and does he have any shark diving experience? Does the CO or an experienced divemaster accompany the group underwater? If you are left to fend for yourselves without an experienced guide or any prior experience of your own, consider aborting the dive or using another CO.

Emergencies: Does the CO have an emergency plan, a marine radio (cellular phones often do not function in narrow bays) and a proper first aid kit, including an oxygen administration unit? Does your CO know how to treat a serious injury such as the loss of a limb or a serious bite wound? How much time will it take to get a badly injured diver from the dive site to the dock? Although these are extreme situations, your CO must have an emergency plan that deals with any such life-threatening situation. If not, consider aborting the dive or using another CO.

Environmental Conditions: Does the CO allow diving under adverse environmental conditions? If underwater visibility is bad, does the CO give in to pressure exerted by certain customers and allow diving under dangerous conditions? If so, consider aborting the dive or using another CO.

Insurance: Is the CO insured for shark diving? Do you have to sign a liability release? If the CO assures you that the Greenland shark is completely harmless and that incidents are impossible, consider aborting the dive or using another CO.

Night Diving: Does the CO allow night diving with the Greenland shark? If so, consider aborting the dive or using another CO.

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Chase Boat: Does the CO use a chase boat to pick up divers that surface far from the main vessel? Having to do a long surface swim to get back to the boat (due to air reserve depletion or any other reason) while sharks are aware of your presence puts you at increased risk. If the CO does not use a chase boat, consider aborting the dive or using another CO.

IMPORTANT NOTICE: GEERG is a scientific organisation whose main objectives are to study the Greenland Shark and other northern shark species as well as to promote their conservation through research projects and the production of educational material for the dive community and general public. **ALTHOUGH GEERG OCCASIONALLY REQUIRES CHARTER SERVICES FOR RESEARCH PURPOSES, GEERG DOES NOT OPERATE OR ORGANISE ANY SPORT DIVING CHARTERS.**

Section 6

Scientific Permits

A scientific permit issued by the Canadian Department of Oceans and Fisheries (DFO) is required in order to legally conduct any of the following scientific and dangerous activities:

Capturing: Capturing or retaining a Greenland shark during a dive, even temporarily with a rope or any other means.

Chumming: Releasing marine or terrestrial animal blood (bovine, pig, seal, etc.) in the water for the purpose of attracting sharks. This is potentially very dangerous for every diver within hundreds of metres of the chumming site.

Feeding: Attempting to feed a Greenland shark with a dead terrestrial or marine animal (moose, pig, seal, etc.).

Tagging: Temporary or permanent placing of any device or fixture on the body of a live shark.

- ❖ Please note that it is illegal to kill a shark during fishing or scuba diving activities at all times. See Annex 2 (p. 22)

Section 7

Review Panel

The Code of Conduct and Safety Procedures for Diving with the Greenland Shark was developed by the GEERG Science Committee with the help of associates from the diving and science communities.

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⁴ CMAS – Confédération mondiale des activités subaquatiques

⁵ AMCQ – Association des moniteurs CMAS du Québec

⁶ FQAS – Fédération québécoise des activités subaquatiques

SHARK OBSERVATION REPORT



Name:	_____
Address:	_____ _____ _____
Phone:	(____) _____
E-mail:	_____

PLEASE USE ONE REPORT PER SHARK.
NO DATA IS MANDATORY. FILL IN WHAT YOU CAN.

Shark species:	_____
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Location of sighting:	_____
Date of sighting:	(Day) _____ (Month) _____ (Year) _____
Time of day:	_____ (a.m.) _____ (p.m.)

Type of sighting:	Fishing	___
	Diving	___
	Surface	___
	Beached	___
	Other:	_____

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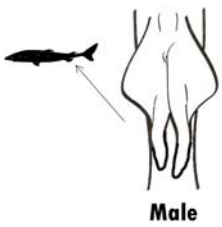
Fishing:	Type of fishing:	_____
	Depth:	_____ ft _____ m
	Bait:	_____

Diving:	Water temperature:	_____
	Depth:	_____ ft _____ m
	Visibility:	_____ ft _____ m

Condition of shark:	Healthy:	_____
	Injured:	_____
	Dead:	_____

Sex:	Male	_____
	Female	_____

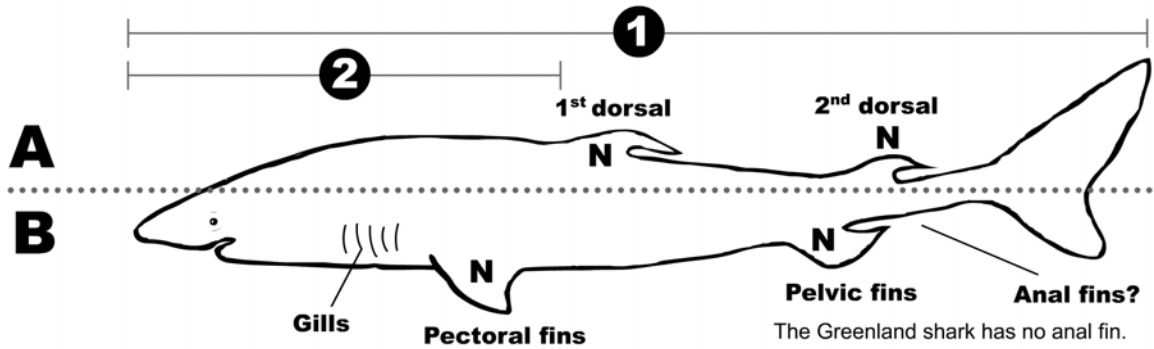
(The male has two reproductive organs - claspers - just before the tail.)



The diagram shows a side view of a shark's tail with two prominent, pointed claspers. An arrow points from the text 'Male' below to these claspers.

MEASUREMENTS (See illustration on next page):

1. From the tip of the snout to the end of the tail: _____
2. From the tip of the snout to the base of the first dorsal fin: _____
3. Number of fins on Side B of the shark (2 or 3):
_____ 2
_____ 3



SCARS OR INJURIES: The Greenland shark often has mating scars. These scars are normally found on its sides just before the caudal fin (tail). The caudal fin itself may also have marks or cuts. Scars resulting from entanglement with fishing gear may be present elsewhere on the body. These marks help us recognise individuals and give us important information on the shark's distribution.

Draw as precisely as possible the marks observed on the shark.

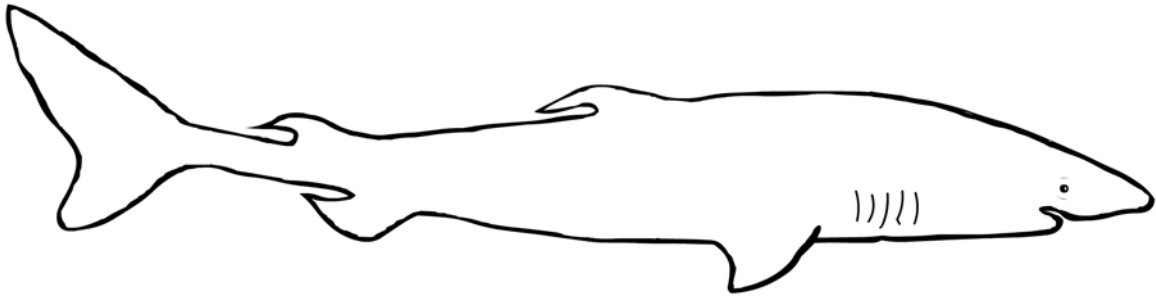
Left side:



Comments:

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Right side:



Comments:

Gills: The gills are the slits just before the pectoral fins. There are five (5) or six (6) on each side.

Number of gills: _____

Teeth: Upper jaw: Type _____

Lower jaw: Type _____

If possible, send us some teeth from the upper and lower jaws so we can positively identify the species.



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Other details or comments:

Photos

If you send photos of the shark, they will be returned within 30 days of the date of reception of your report.

Photo Rights: If you give us permission to post your photos on the GEERG website, please sign here.

I, _____, authorise GEERG to post my shark-related photos on the GEERG website: www.geerg.ca.

Signature

Date

Thank you very much for your help!

Please mail report to:

**GEERG
P.O. Box 483
Drummondville, QC
J2B 6W3**

E-mail: info@geerg.ca

ANNEX 2

NOTICE CONCERNING SHARK KILLED BY DIVER IN THE GULF OF MEXICO

13.03.2009

It was widely reported in the media this week that a freediver killed a tiger shark (*Galeocerdo cuvier*) which he claimed was threatening his group in the Gulf of Mexico. Video images made available to the media show only a brief sequence of the cameraman being buzzed once by the shark which is not uncommon with this and other pelagic species, especially in the vicinity of spearfishing activities when there are injured animals or blood in the water.

Judging by the movement of the sediment in at least one of the sequences, it appears that the shark - which is swimming at a respectable distance - is actually being chased by the group. This behaviour on the part of humans is known to provoke a threat response in some shark species which is often erroneously interpreted as aggressiveness. The animal is in fact defending itself against a perceived - or real - threat.

The killing of this particular shark may have been avoidable. If at all possible, the divers should have returned to the boat rather than chase and engage the animal. Instead, it appears to have been needlessly killed under the guise of self-defence by a professional spearfisher and trophy-hunter.

If a similar incident were to take place in Canada, the offending diver would be liable for killing a shark without a licence* and charges could be laid under the Canada *Fisheries Act*. If the circumstances and evidence indicated that the diver was in fact not under immediate threat, GEERG would support prosecution.

*Sport fishing for sharks in Canada is illegal with the exception of sanctioned shark derbies. However, catch-and-release is permitted since 1994. A licenced commercial fishery exists for the porbeagle shark (*Lamna nasus*) and the blue shark (*Prionace glauca*). By-catch of sharks is allowed under certain conditions for licenced commercial fishers.

Killing a shark while diving is thus not permitted. However, a diver may - and should - obviously defend himself if under attack.