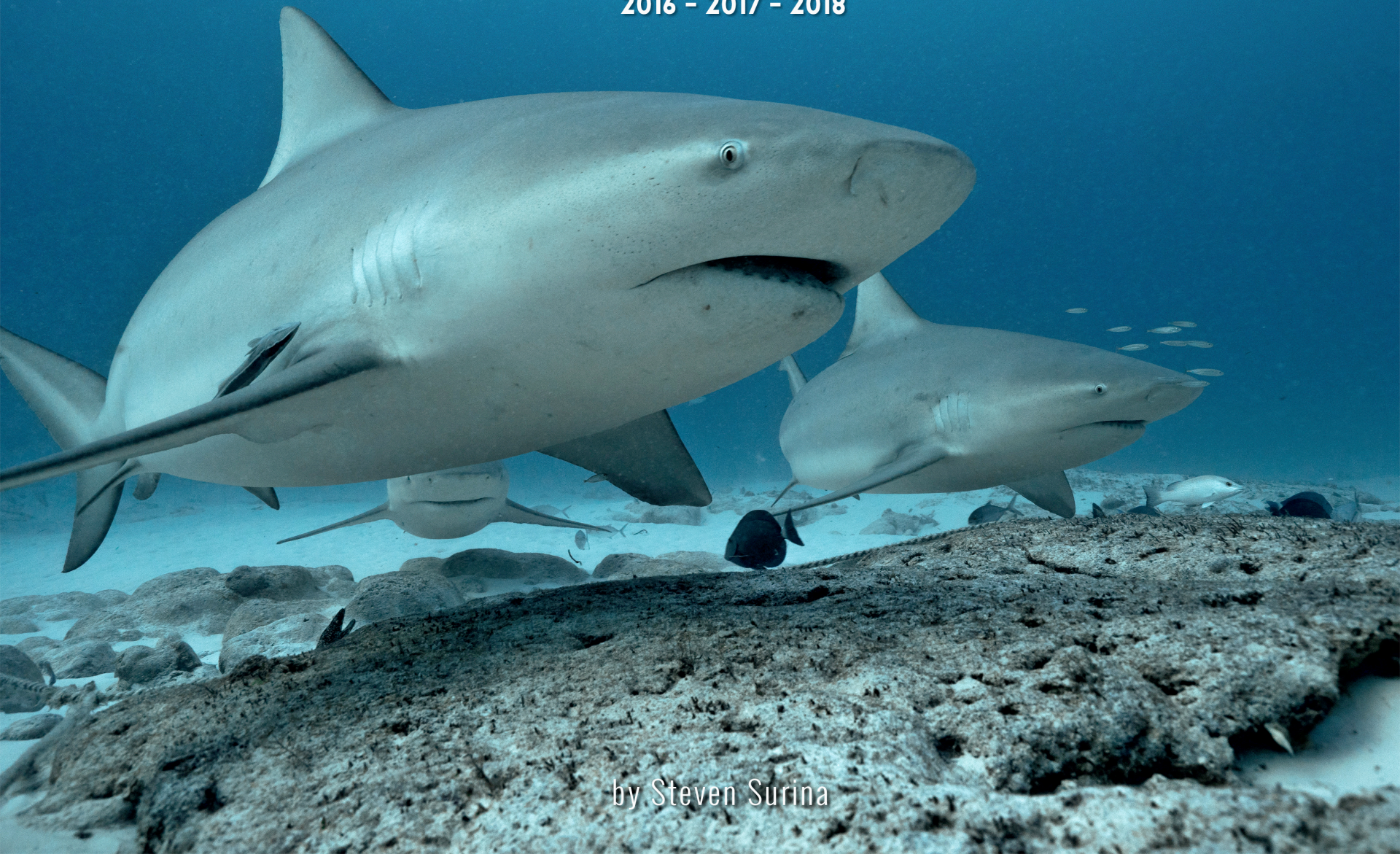


ID GUIDE FOR BULL SHARKS

PLAYA DEL CARMEN - MEXICO

2016 - 2017 - 2018



by Steven Surina

First edition
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For several years a small community of bull sharks (*Carcharhinus leucas*) are thriving in the shallow waters of Playa Del Carmen more specifically in the Quintanaroo region of Mexico. Sharks can be observed from November to March when the temperature drops below 26°C.

Their presence in Playa Del Carmen match with the arrival of the amberjacks (*Seriola dumerilii*); even if the sharks remain in the area once the amberjacks have gone.

On this point many questions remain: Where are the sharks coming from and where are they traveling to? Are they moving alone or in pack? Why are they residing around this specific area?

About thirty individuals have been observed for the last 5 years with sizes ranging from 1.8m to 2.8m. The sharks observed are only females, sexually mature for the most part and in a state of advanced pregnancy. The gestation period of a bull sharks is between 10 to 12 month. As being viviparous they are draining metabolizing energy required thanks to it's liver. Females can only give birth once every two to three years. However, they are returning almost systematically on a yearly basis even without being pregnant! Through daily observations over this short period, divers clearly distinguish the progressive disappearance of certain individuals several days before seeing them return significantly thinner! A Sign that they would give birth in the area.

To enlighten these theories, an acoustic telemetry system has been installed to study the spatio-temporal movements of these sharks. Today 23 receptors (VR2W) have been deployed on the coast between Cancun and Banco Chinchorro and 29 transmitters have been placed on various sharks. The main objective of this project would be to locate the breeding areas and pupping ground so that they could be protected in a near future. Their DNA sequence analysis has confirmed the relation established between bull sharks of Playa Del Carmen and others among the gulf Mexico. Samples of isotopes as well as thorough analysis of their diet has permitted to determine the nature of their diet.

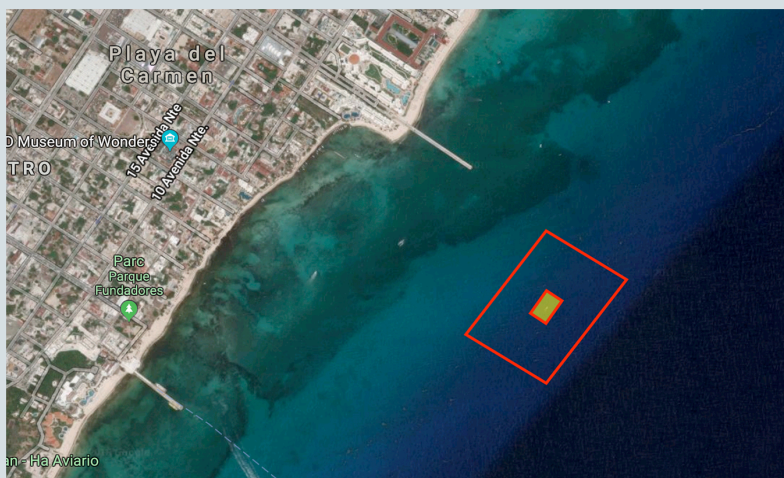
Let's not forget that in Mexico sharks do not benefit from any sort of protection and they are subject to constant pressure from various growing fishing industries.

Playa Del Carmen is considered as one of the best places in the world to observe bull sharks in their habitat within a very short distance of the coast, depth visibility, ease of organization and the number of specimens that can be observed during the same dive.

This identification guide allows all divers to collaborate on the individual tracking of each shark.



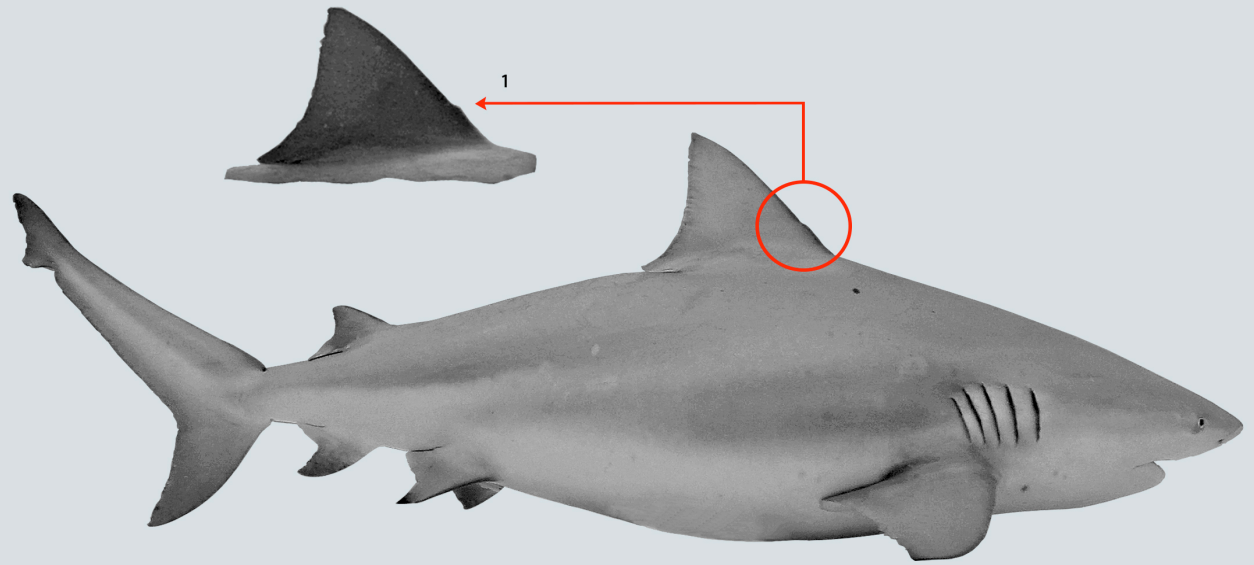
Deployment of acoustic receivers along the Quintanaroo coast.



At 800m from the beach in red is the approximate area of natural observation which stretches about 1km².

The yellow area (100m²) is the feeding place where ground ropes are laid out.

BULL SHARK # 01



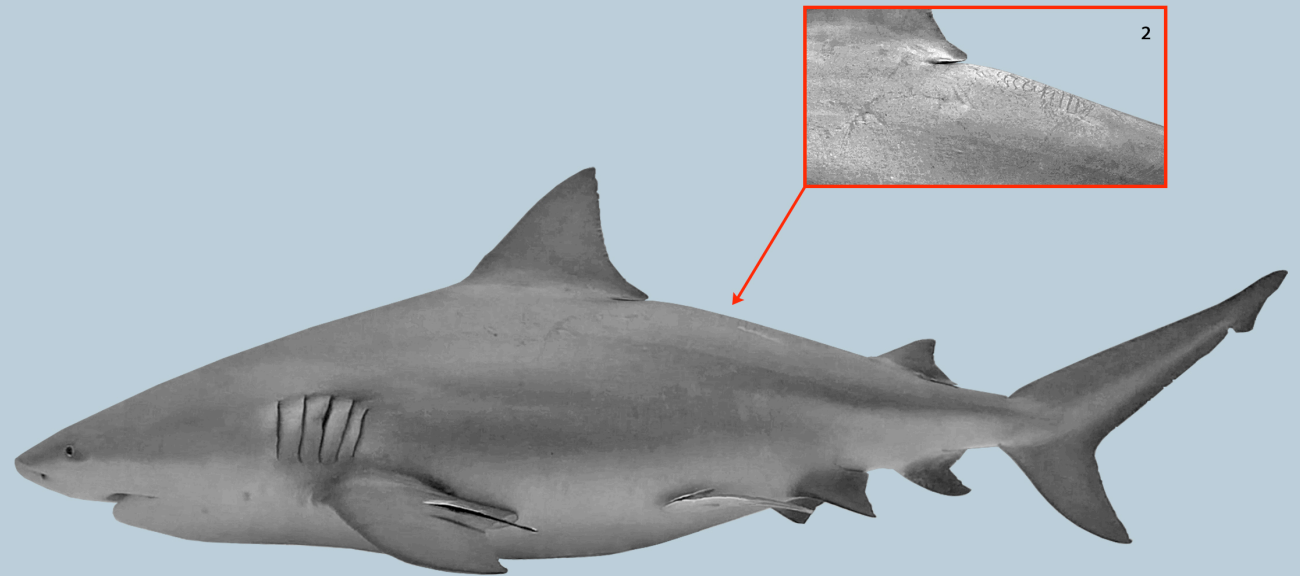
Size : 260 cm TL

ID : Small lug on the outer edge of the first dorsal fin (1). Scars in fishnet shape on the back between the first and second dorsal fin (2).

Behavior : Dominant female who does not hesitate to cut the trajectory of other sharks to take their place. She swims often up in the water column.

Personality : ♀ female. Persistent, insolent sometimes even too confident. Very small inner cicle.

Sightings : 2018 (pregnant)



BULL SHARK # 02



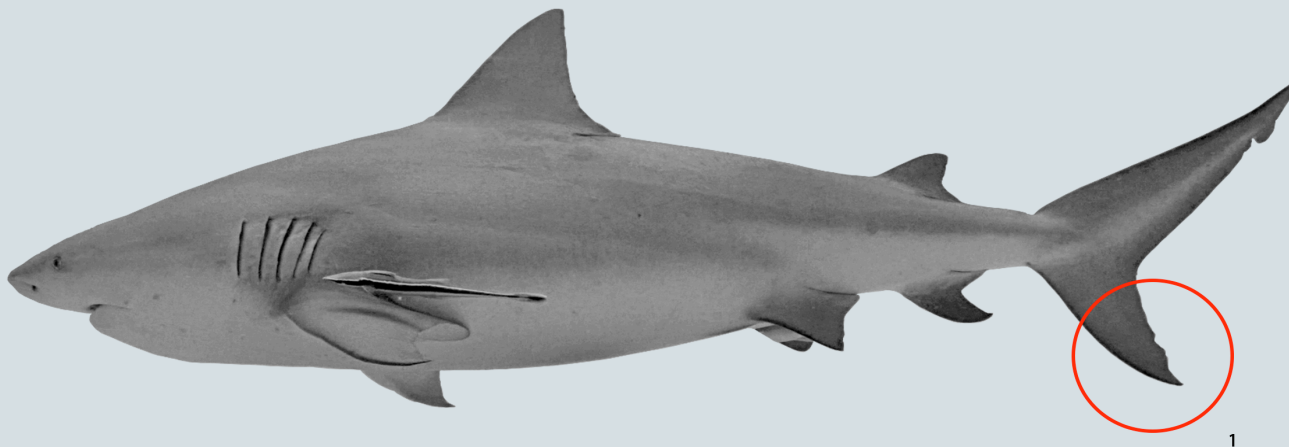
Size : 250cm TL

ID : Several lugs probably due to a wound on the outer end of the lower lobe of the caudal fin (1).

Behavior : Extremely confident toward divers. She does not hesitate to approach very close from 3 angles: front, side and behind. Affirms its territory to divers and sharks in the area.

Personality : **♀** Female. Inquisitive and territorial. She sometimes allows herself to pass so close to the divers that she touches them with her pectoral fins or her tail.

Sightings : 2018* (she looks thinner at the end of the season).



BULL SHARK # 03

“ROOSTER” “IXCHEL”

Size : 240cm TL

ID : The first dorsal fin is cut at the end (1). There is slight deformity on the outer edge of the lower lobe of the caudal fin (2). Her skin is darker.

Behavior : Generally cautious, she does not hesitate to assert her dominance according to the contexts. She swims gently and away from the action. It is a female that adapts very quickly.

Personality : Cautious observer but reckless. She seems more experienced than most other sharks in the pack.

Sightings :

2016 (non-pregnant)

2017 (pregnant)

2018 (non-pregnant)



BULL SHARK # 04

“MANITA”

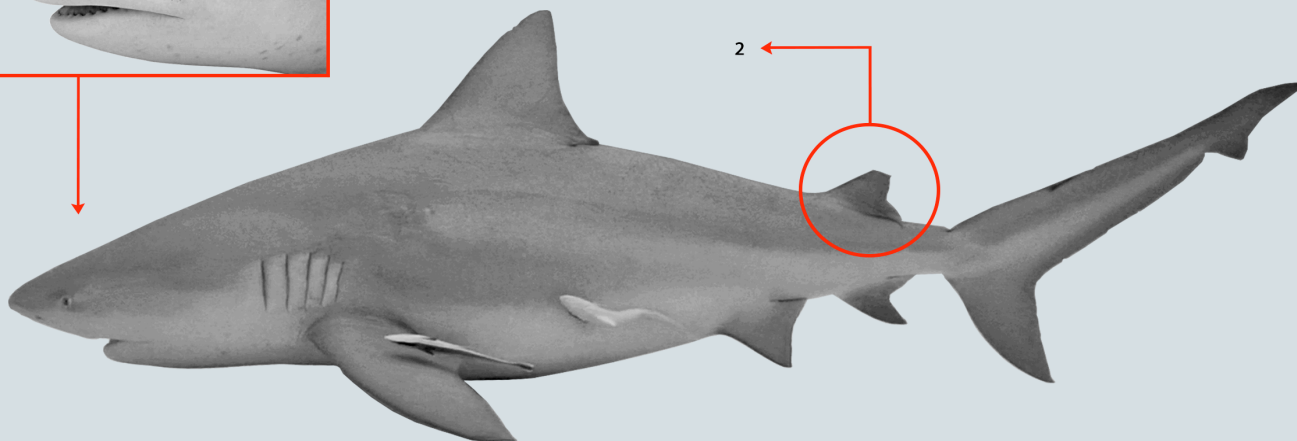
Size : 250 cm TL

ID : Very specific Morphotype: Deformity in the jaw and head (1). The area between the tip of the snout and the mouth is more upright than most bull sharks. The top of her second dorsal fin is cut off (2), her left pectoral fin is chopped a little short and she has a small scrape near the top of her first dorsal fin.

Behavior : Extremely careful, she approaches and swims gently. She keeps her distance most of the time so as not to confront herself.

Personality : **♀** female. Very gentle and soft. Determined, imposing, territorial and inquisitive under stimulus.

Sightings :
2016 (pregnant)
2018 (pregnant)



BULL SHARK # 05

“WAVE”

Size : 240 cm TL

ID : First dorsal fin curled over on the left (1). She has a darker skin too.

Behavior : She often keeps her distance and does not stay long with the divers . A stimulus can nevertheless determine her to approach fast and up close.

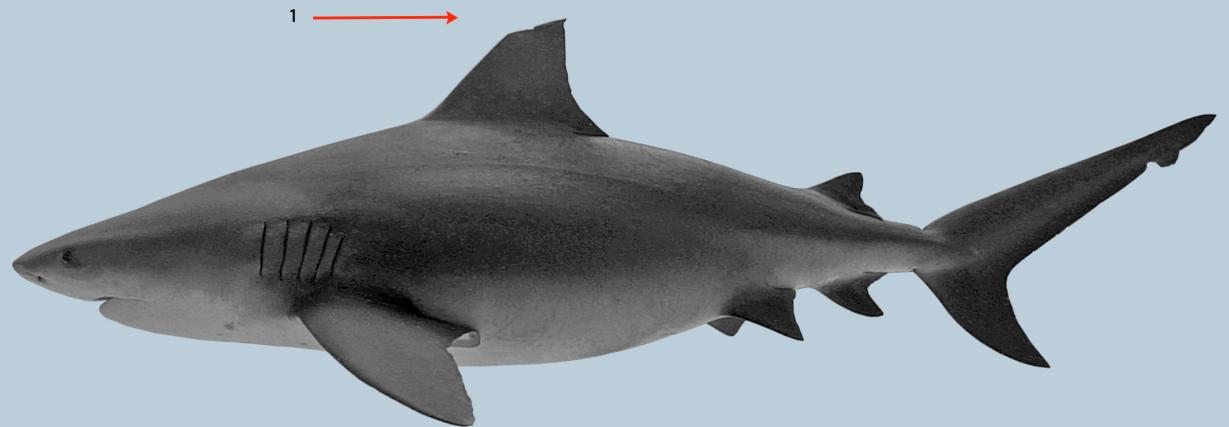
Personality : **α** female. Often rather calm but totally unpredictable, she can subtly accelerate and establish herself as one of the group's dominant females.

Sightings :

2016 (pregnant)

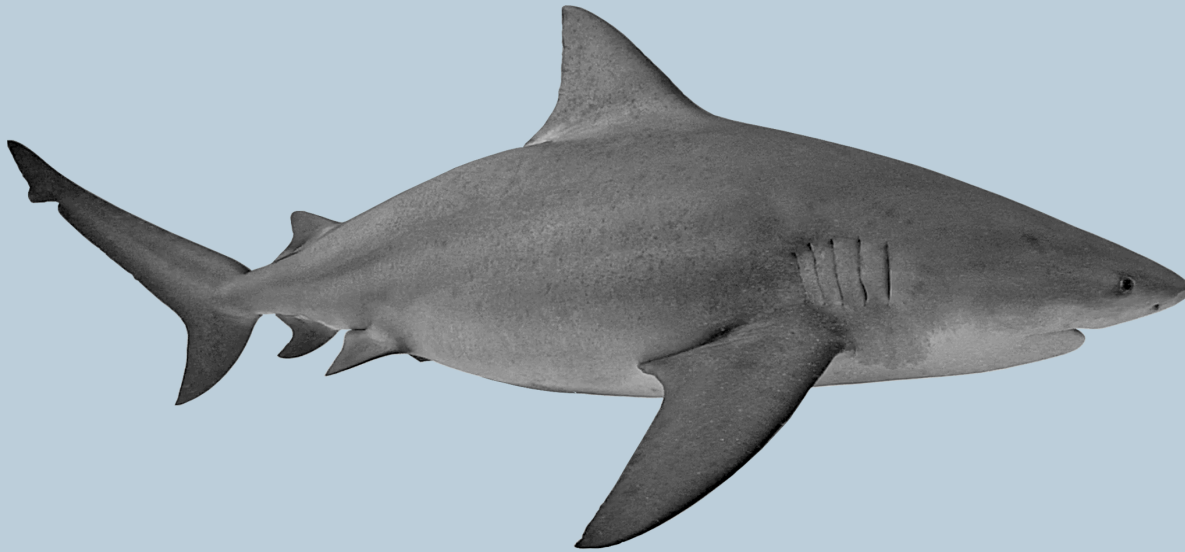
2017 (non-pregnant)

2018 (pregnant)



BULL SHARK # 06

“ANA”



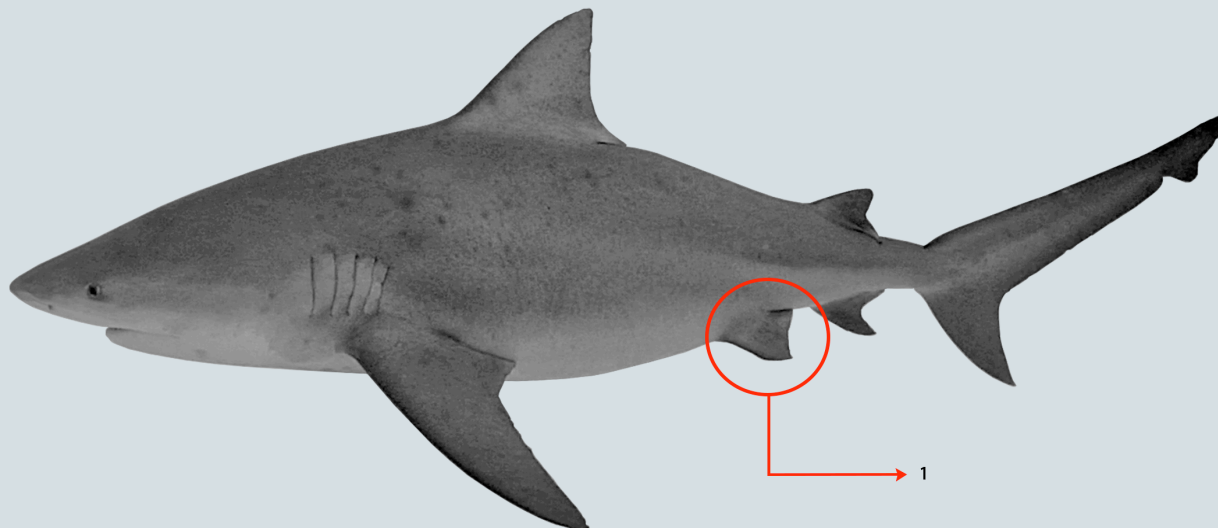
Size : 250 cm TL

ID : Ana is easily identifiable with her left pelvic fin cut short and folded (1). Dark in nature, her skin becomes lighter or darker depending on the stress and the time of day.

Behavior : Perform patrols on its territory by varying approaches and distances. She is more inquisitive when she is pregnant.

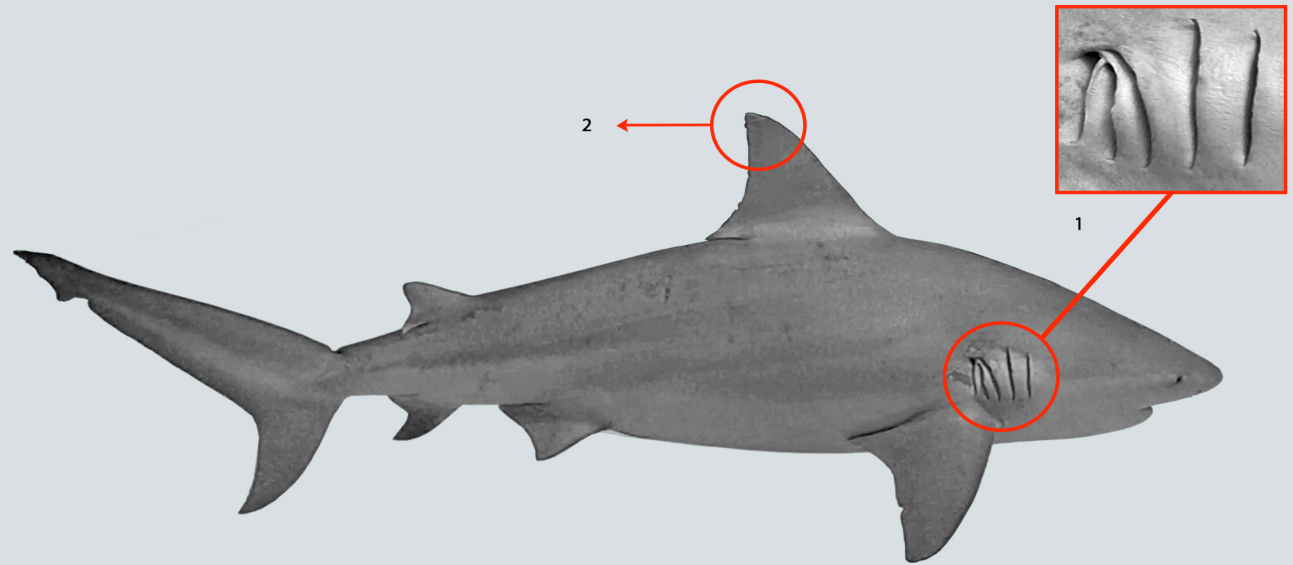
Personality : **α** female. This is the quiet strength of the group. Imposing, she knows her rank in the hierarchy and can at any times asserting dominance.

Sightings :
2016 (non-pregnant)
2017 (pregnant)
2018 (non-pregnant)



BULL SHARK # 07

“FRIZZIA”



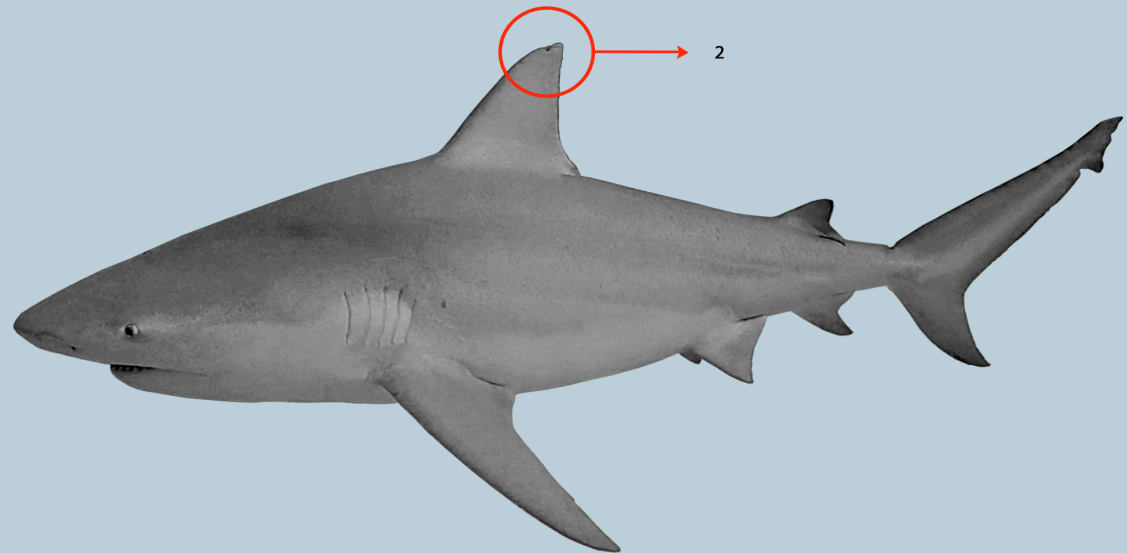
Size : 250 cm TL

ID : The fourth and fifth gills of the right side are joined (1). She has a small scrape at the tip of the first dorsal fin (2). Usually a clear skin.

Behavior : Frizzia is a dominant female with a lot of character. She does not like the attempts to dominate other sharks. Which tends to make her nervous. She swims fast, is determined and comes close.

Personality : ♀ female. Cheeky, inquisitive and fearless when there is competition. Very calm and docile when no stimuli.

Sightings :
2016 (pregnant)
2017 (non-pregnant)



BULL SHARK # 08



Size : 210 cm TL

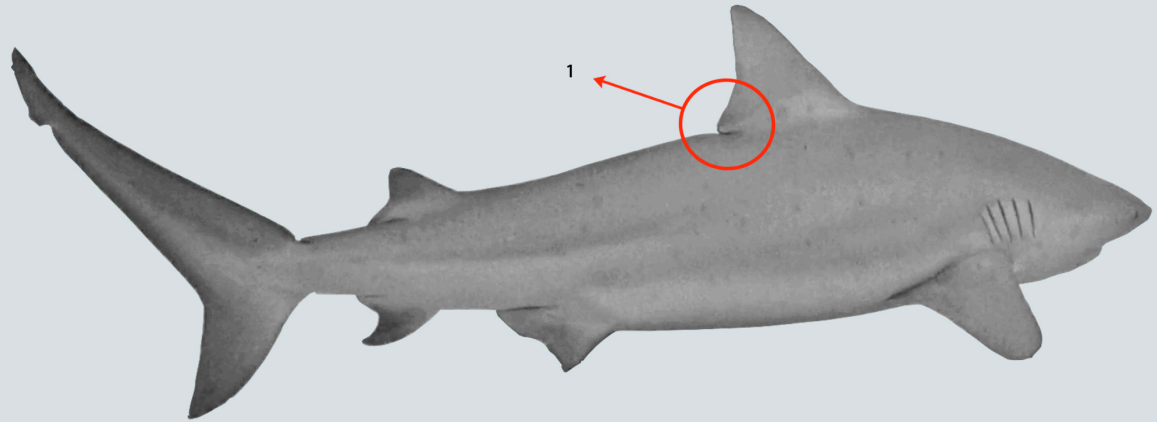
ID : Very slight cut on the lower lobe of the caudal fin.
Light-colored skin.

Behavior: Refers to the behaviors of dominant females. Subordinate and stays at a distance. Approach with several other small sharks if the bigger ones are gone.

Personality: Quiet and stealthy.

Sightings : 2018

BULL SHARK # 09



non - pregnant (2017)

Size : 200 cm TL

ID : The free rear tip of her first dorsal fin is cut off (1). She is sometimes stained with spots/patches that attest to her state of stress.

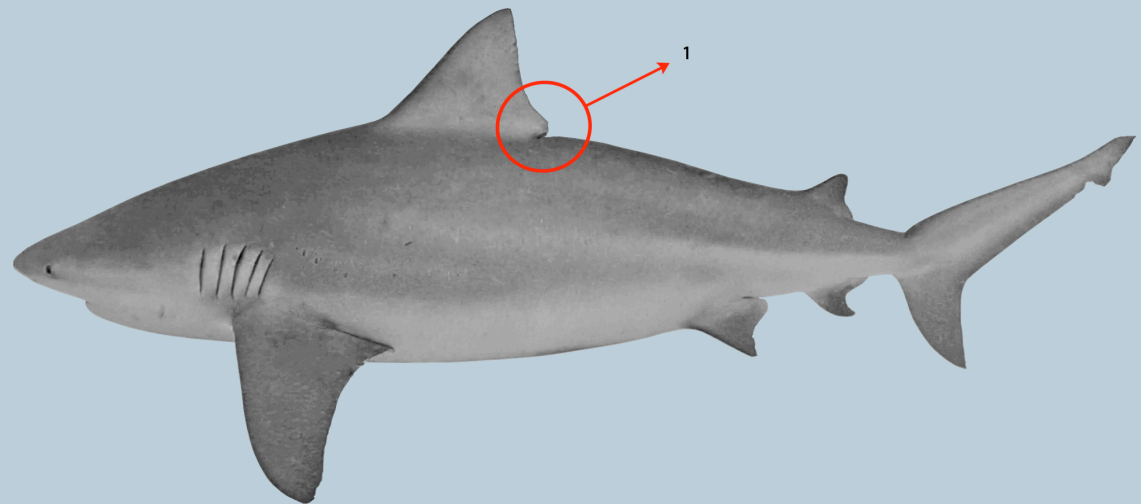
Behavior : She will approach if other sharks are going in the same direction. She does not lead, she follows. Always stay in second or third position.

Personality : Very fearful shark. She keeps her distances. Nervous stress related.

Sightings :

2016 (pregnant)

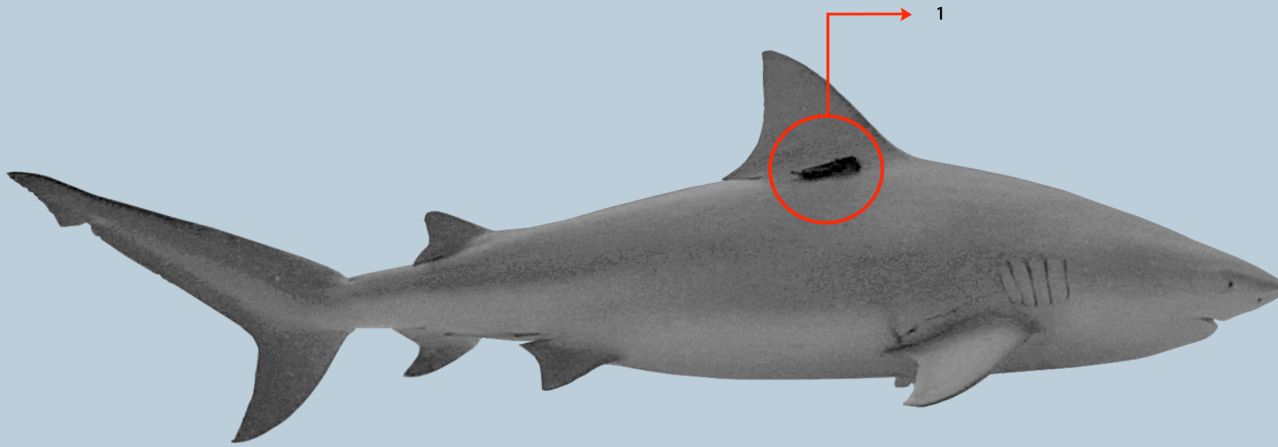
2017 (non - pregnant)



pregnant (2016)

BULL SHARK # 10

“STELLA”



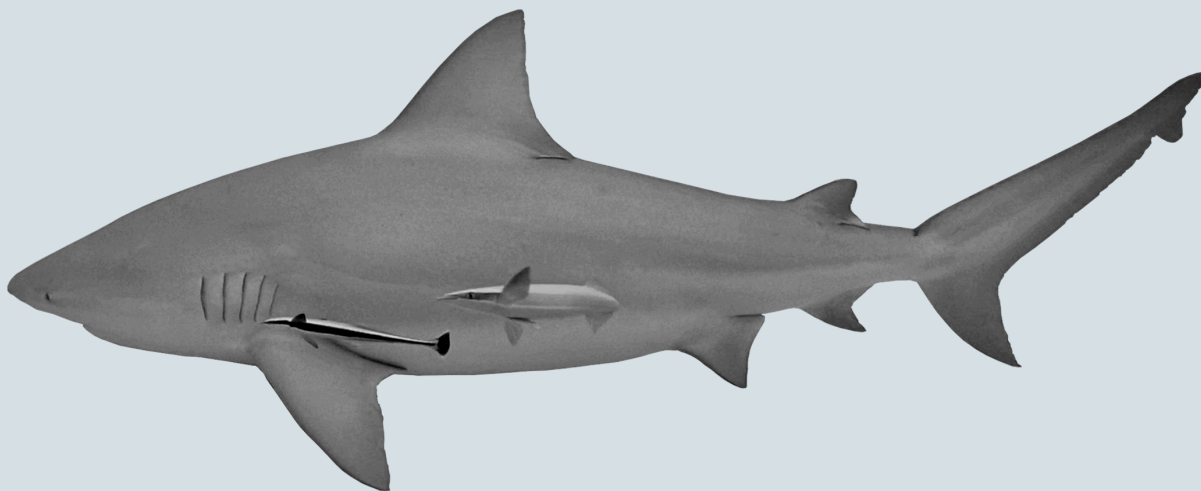
Size : 220 cm TL

ID : Very pale skin, almost white with an acoustic emitter at the right base of its dorsal fin.

Behavior : Most of the time she stays away from the action but she patrols the area very often.

Personality : A cautious but curious shark which nevertheless goes into action when the dominant females are gone.

Sightings :
2016 (pregnant)
2017 (non-pregnant)
2018 (non-pregnant)



BULL SHARK # 11



Size : 200 cm TL

ID : Vertical cut on the right pectoral fin (1). Hook with a fishing line in the left corner of the jaw (absent on the last observations).

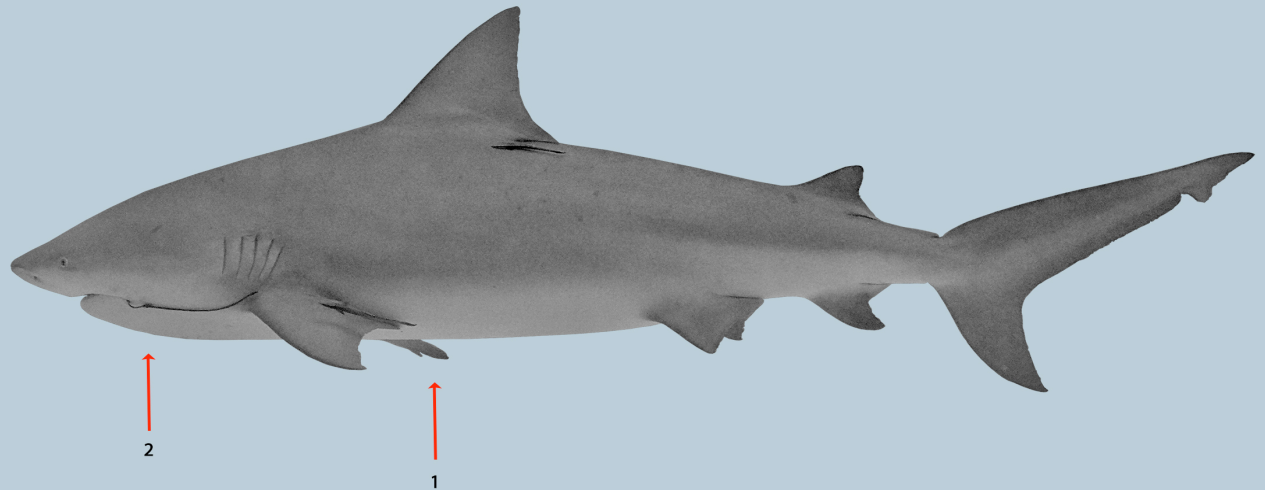
Behavior : Remote and dominated shark. She stays away from the action areas. She fled as soon as she saw a diver.

Personality : Shy and fearful, this female has a very strong instinct of preservation. She is aware of her size and the attitude of other dominant females.

Sightings :

2013 (non-pregnant)

2018 (non-pregnant)



BULL SHARK # 12



Size : 210 cm TL

ID : A part of the lower lobe of her caudal fin is missing. The extremity has healed and is rounded.

Behavior : Like all other smaller females, she leaves space to the dominant ones. She is cruising on the external areas of where the action is taking place. She can approach if several sharks arrive together at the same time.

Personality : Shy and docile

Sightings :

2016 (pregnant)

2018 (non-pregnant)

BULL SHARK # 13

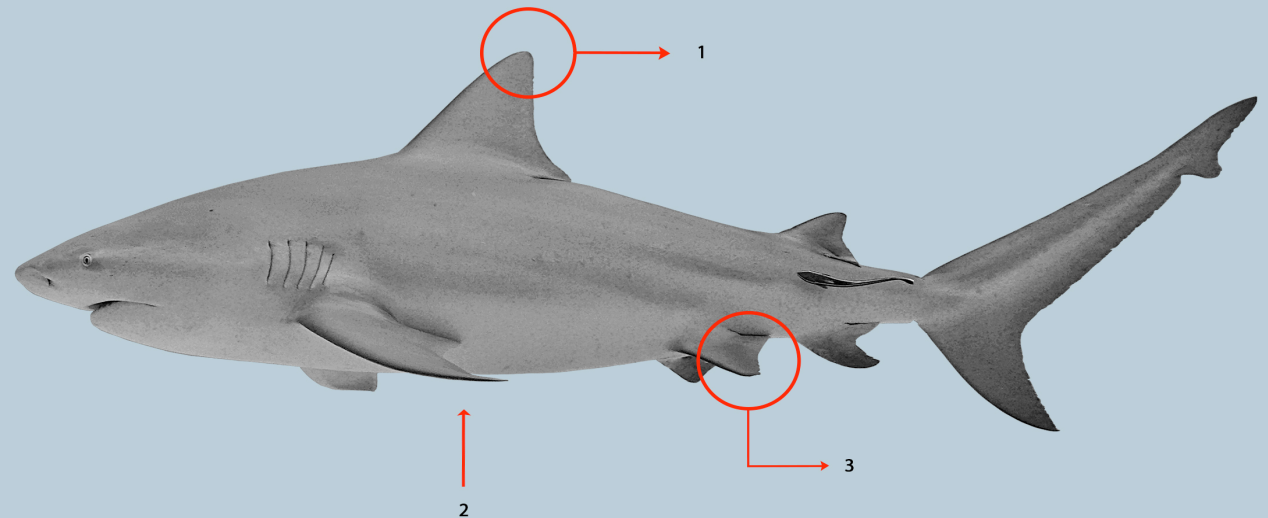
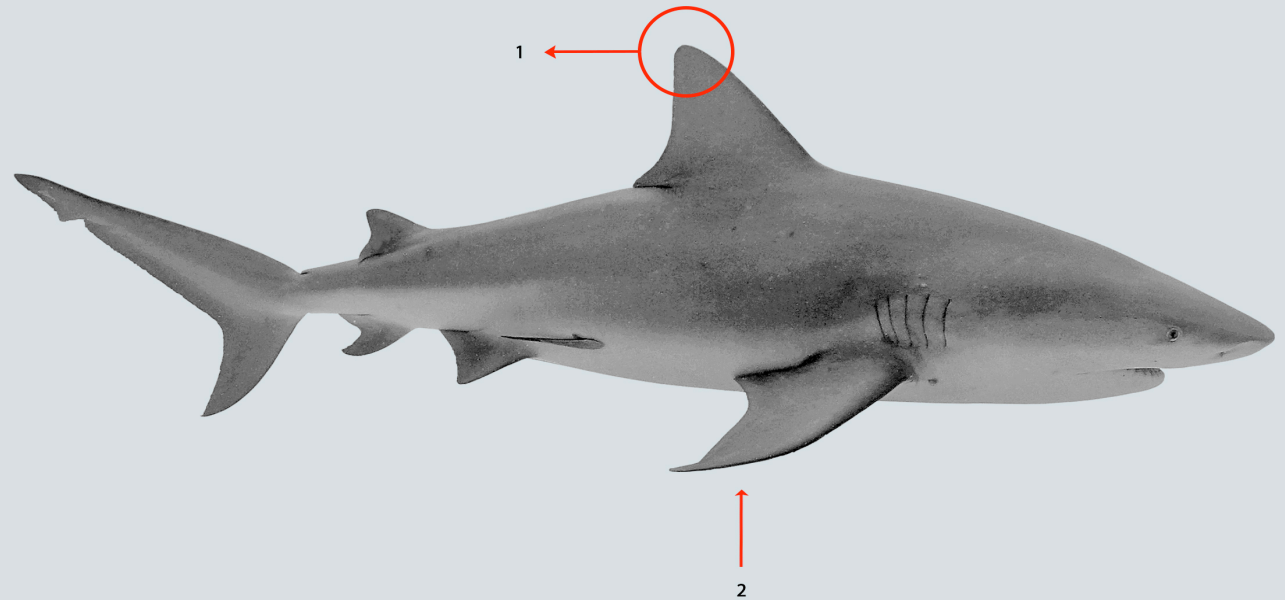
Size : 220 cm TL

ID : The tip of her first pectoral fin is rounded (1). The tips of the two pectoral fins are slightly curved outward and upward (2). The left pelvic fin is cut at the tip (3).

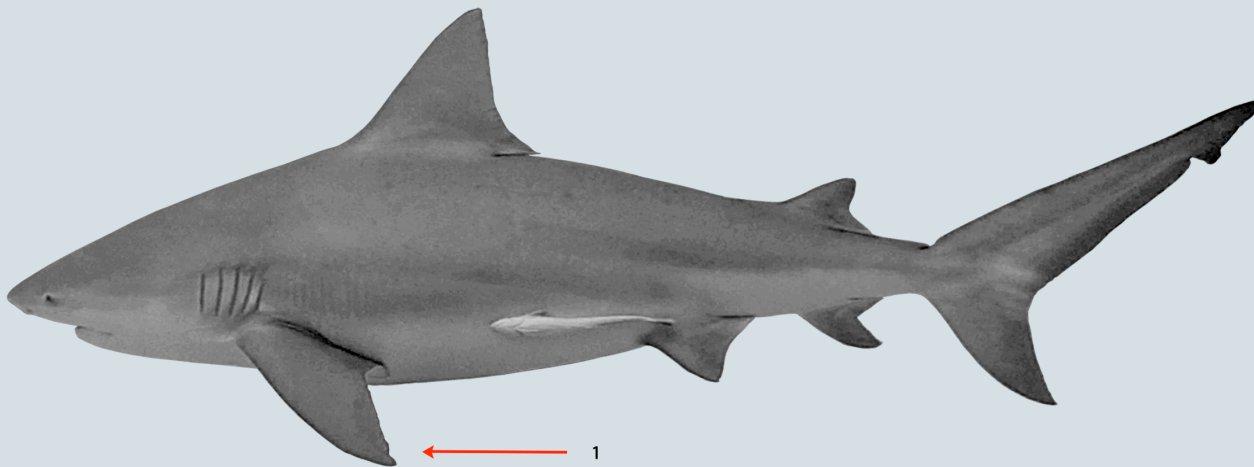
Behavior : Young female totally unpredictable! She swims fast, at all depth, often venturing higher in the water column. Shows a certain desire to dominate the dominant female despite her size. She sometimes comes to stroke the divers with her fins.

Personality : Curious, audacious, nervous, "playful".

Sightings :
2017 (non-pregnant)
2018 (non-pregnant)



BULL SHARK # 14



Size : 240 cm TL

ID : No predominant marks.
Slight cut on the inside edge
of the left pectoral fin (1).

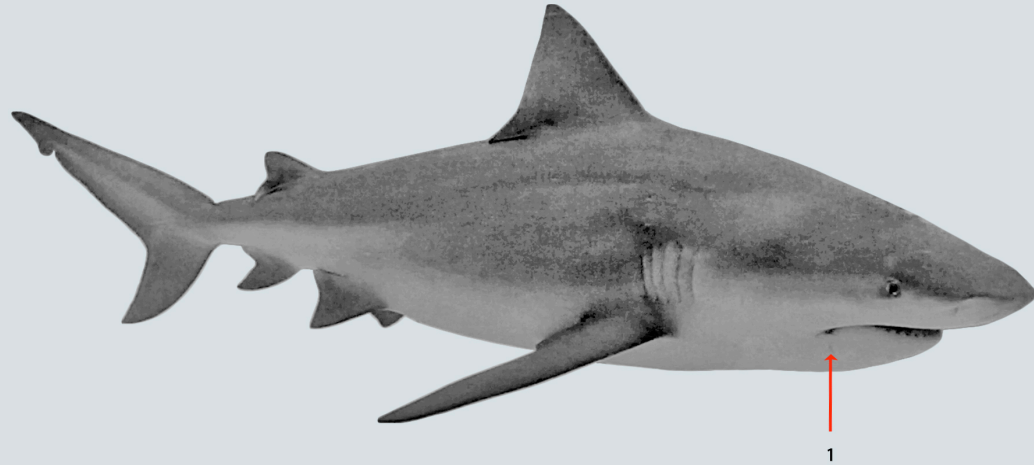
Behavior : She is not a
dominant female but she
competes with the larger
females in order to gain a
place in the hierarchy.

Personality: Bold and reckless
female who ignores the
presence of divers.

Sightings : 2017

BULL SHARK # 15

“MARTINE”



Size : 250 cm TL

ID : Scar from a hook in the right corner of the jaw. The lower jaw ("chin") is very developed compared to other sharks of the community.

Behavior : Indifferent shark if no stimuli interested her. She becomes extremely pushy under food stimulation. Regularly asserts her dominance by swimming above the divers.

Personality : Docile but very curious. She does not hesitate to get very close but slowly.

Sightings :

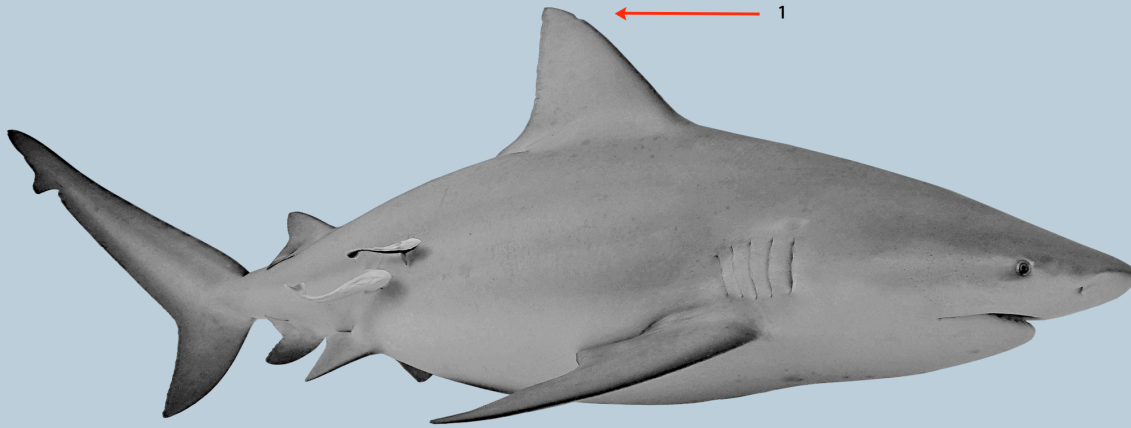
2016 (non-pregnant)

2017 (pregnant)

2018 (non-pregnant)



BULL SHARK # 16



Size : 200 cm TL

ID : She has a small scrape near the top of her first dorsal fin.

Behavior : She confronts the dominant females without difficulty and approaches the divers. During the dives, she goes back several times in the water column.

Personnality: Curious and calm.

Sightings :
2018 (pregnant)

BULL SHARK # 17



Size : 200 cm TL

ID : This young female carries 2 hooks on each side of her mouth (1) (2). She has dark skin with a mark on her left cheek.

Behavior : It is a very cautious shark which almost never approaches. The average observation distance is over 10m.

Personality : Shy shark extremely fearful. Nervous swimming due to stress.

Sightings :

2016 (non-pregnant) (no hooks)
2017 (non-pregnant) (no hooks)
2018 (non-pregnant) (no hooks)



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