

From an operational standpoint, 2014 began with the continuation of the Caprequins program, initiated in February 2013. Experimentation with drum lines constituted an end goal for me, after three years of fighting in favor of testing this method. Our unique local usage of “smart” drum lines – that’s to say drum lines equipped with signals giving an immediate alert at each hit – was a big first, internationally. Furthermore, beginning in June 2014, my friend Christophe, the head of this project in collaboration with the Fishing Committee, was invited to the worldwide seminar Shark International<sup>1</sup>, in the company of the fishing engineer and co-author of the 1997 study. This colloquium, organized by Jeremy Cliff, head of the Zwazulu Natal Shark Board and partner in Caprequins, brought 250 international researchers to Durban.

The concept behind our smart drum lines offered a hopeful advance, but there was one major obstacle: their usage in recreational waters in the middle of a marine preserve. The immediate alerts given by the drum lines prevented the mortality of untargeted by-catch and unsought-after species sharks, which has justly been considered a necessary “ecological” prerequisite<sup>2</sup>. Obviously, the usage of a live alert required hiring a technician ready to respond to hits 24/7, regardless of conditions, and in less than 2 hours, in order to free by-catch from the lines. The dispersion of the drum lines demanded a very large investment of manpower and finances, complicating the acceptance of the program, and leaving no margin for error.

Furthermore, all usage of the drum line in reef system areas had to be approved by the marine reserve’s scientific and administrative authorities, who remained vehemently against any type of fishing within the reserve perimeter...that includes the same space as the island’s recreational waters: without any evolution in this inhibited way of thinking, there’s no reason to fool ourselves progress will be made.

A large C4R was planned for February 5, 2014, and for once, after three years of being excluded, our association OPR was included on the official<sup>3</sup> invitation list for once. The focus of this institutional reunion was a thorough rundown on the state of many programs and experiments concerned, and the prefect began his opening speech denoting how “proud of the work accomplished over the last three years,” he was. Regardless, the danger was still very real and the ban was upheld until mid-Sept. 2014, the time when the systems of security put into

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<sup>1</sup> Financed in part by « Save Our Shores,” the NGO based in Switzerland belonging to the wealthy Saudi Abdulmohsin Al-Sheik mentioned before, and very present in South Africa. A look into the creation of this ONG sheds light on the interest in “saving our seas.” Save Our Seas was founded in 2003 and exists under two entities, one in the US, based in Hawaii with very little capital, the other in Switzerland, where an unknown fortune is invested. This NGO, a holding of Chelonia, was able to spend 60 million USD in 2012 (+10.5 million USD in taxes) on the purchase of Arros Island in the Seychelles, turning it into a marine reserve. *“Chelonia Company Ltd was registered May 9, 2012, and is headed by two Swiss lawyers based in Geneva named Laurent Moser and Luc Argand, belonging to the holding Save Our Seas Ltd, registered as an offshore enterprise based in the Virgin Islands and changed to manage the foundation funds of Save Our Seas.”*

This NGO is thus managed by two powerful Swiss lawyers at Pfyffer&Partners, one of whom is the secretary of the foundation. The president and major shareholder is the Saudi sheik Abdulmohsin Al-Sheik. The treasurer is Ivan Pictet, ex-president of the private Swiss Bank Pictet, the same bank where, the same funds, placed since WWII, served to finance the purchase of Arros by Mme. Bettencourt in 1998.

<sup>2</sup> Elsewhere in the world, bycatch is considered a normal consequence in the fight for security, a collateral damage acceptable to the state, due in part to the limited number of animals lost, the priority in protecting human lives and safety, and the economic interests of a thriving tourism industry.

<sup>3</sup> This meeting convened all institutions, scientists, public representatives and ecological movements. All of our opposition representatives, including the unexpected “Bishop of Reunion Island,” were included to the first meeting held Feb. 6, 2012. Only the OPR was absent from the list. Without a doubt, my honest opinion in favor of real action at the beginning of this crisis was the cause for this exclusion.

action may begin to bear results.

What I observed at this meeting of the elite was the dangerous double-talk on behalf of the State. On the one hand, surfing and swimming were prohibited in the face of exceptional danger, but activities such as scuba diving, windsurfing and sailing were outside the ban, under pressure from tour operators who depended upon these activities within their economics of tourism. After having denied the risks, and having denied the impact of the attacks, the authorities continued to attempt to bail a sinking ship, even though we were all going down together.

In my campaign to make the risk of sharks known, on March 3, 2014, I was able to meet and discuss at length with the new director of Reunion Island tourism. I attempted to convince her to speak of the risk realistically, to no avail. It was impossible for the institution to cross their very strict lines of promotion at any price, even if their public communication campaigns were doomed to fail in the face of our new reputation as “Shark Island.” The Tourism Office’s annual budget is 14 million euros, half of that destined towards communication.

During this meeting, in the face of my numerous arguments answered by the mute silence of her predecessors, she concluded that her bureau had made many attempts to deliver a more realistic public message, but that the State was vehemently opposed any discussion of the shark risk. She then showed me the most recent report from the regional accounting office dating to Feb. 2014, including a long audit with a conclusion that crushingly disapproved the regional politics of tourism.<sup>4</sup>

Our island has endemic<sup>5</sup> difficulties attracting tourists in an extremely competitive market, even though we are completely dependent upon tourism for the survival of our economic future<sup>6</sup>. Tourism’s current development is linked more and more closely to activities, notably sporting activities. Leisure travel is the product of modern Western civilization’s progress: one of the principal consequences of the second half of the 20<sup>th</sup> century has been the creation of the concept of vacation time. Mass tourism is a direct result of this, and the world’s tourism activity is concentrated into coastal areas where 80% of the earth’s population live already. Most tourists are attracted to the 4 S’s: Sun, Sea, Sex and Sand<sup>7</sup>, vacations associated with passive leisure time and pleasant activities. Logically, water sports practiced at the beach, notably surfing, assume an important place in modern society, and serve as a pertinent attraction to our island.

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<sup>4</sup> Recall that the prohibition seemed more a legal prophylaxis against imprudence than a veritable acknowledgement of a danger incompatible with human activities in local waters.

<sup>5</sup> In spite of the beauty of Reunion, the elevated price of airline tickets and local cost of living that brings with it a lesser quality of lodging and hospitality, we’re behind in the race for attracting clients, compared with neighboring islands.

<sup>6</sup> The world tourism market is due to expand to become the largest industry of the 21<sup>st</sup> century. Annual travel counts 1 billion travelers per year, at a volume of 550 million USD and includes 200 million jobs in the sector, or 8% of all activity on the planet. “*Tourism has become one of the principal sectors of international commerce. Today, international tourism accounts for the 4<sup>th</sup> largest economy after the oil, chemical and automobile industries.*” Source: “*Dirty Facts of Tourism*” Edition 2008, World Tourism Organization.

<sup>7</sup> Concept developed by P. Cuvelier, E. Torres, J. Gadrey in “*Patrimoine modele de tourism et de la developpement local.* » Paris, l » Harmattan, 1994

The director of the Reunion Island Tourism Office showed me a section of this report that testified to the “hesitation between the “blue” (seaside tourism) and the “green” (tourism concentrating on mountain and fresh water activities),” when in fact, these hesitations were the direct result of public policy’s failure to insure a secure situation for tourists seaside. This passage suggested it was time to make a choice to leave ocean activities to the wayside, due to the shark crisis and concentrate on inland activities. How can our « expert economists » be capable of this sort of ineptitude?

Every tourism professional knows very well that it’s impossible to attract tourists coming from colder climates to a tropical island without the guarantee of welcoming sunny beaches and a warm sea. Based upon this, the fact that our beaches have been the scene of repeated and dramatically violent attacks goes without need for explanation as the worst publicity imaginable, paired with the image of an ocean of blood. Shark attacks associated with the anticipation of a beach vacation<sup>8</sup> threw a certain pall over our island, and destroyed the very basis of what makes Reunion an attractive vacation destination. No publicity campaign can override the damage done by facts circulating in the media.

In the same paragraph of this report, it is noted, “The strategies adopted do not promote the veritable attractions to the destination, which include political stability, and modern health and hygiene standards that are often key elements sought by families and senior citizens.<sup>9</sup>” But health and sanitation standards fall by the wayside to the “health risk” proffered by the shark problem on Reunion Island, which may be the highest in the world. In this same report from the Court of Audits went even further, “Since 2011, Reunion Island as a tourist destination is confronted with the growing issue of more and more regular shark attacks.”<sup>10</sup>

Paradoxically, the State asked that tourism institutions base their communication in priority upon Reunion’s health and safety standards, and at the same time, recognized that there was a real health and safety issue due to the shark attacks. It is one more example of the French administration’s contradictory logic, ignoring this problem for the three years prior that it knocked at the door. In the meantime, to deprive an island that depends upon tourism for economic survival of all nautical recreational activities simply served to drive the island to ruin with unemployment, economic instability and poverty, at the same time augmenting dependence upon state social services and programs.

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<sup>8</sup> The two attacks in May and July 2013 involved vacationers from overseas, the most popular activity being surfing due to its recent and growing popularity as a sport.

<sup>9</sup> Reunion Island is a small slice of Europe right in the middle of the Indian Ocean, and offers, in comparison to other islands in the region, complete political stability and the same level of healthcare and hygiene as mainland Europe.

<sup>10</sup> The impact of the attacks on tourist activity is noted in this same report in a chapter questionably titled “The Downsides of Sanitary and Social Crises.” Citation 263, pg. 403.

The surfers and swimmers went back into the water, one after another. After having discussed this with a few of them, it appeared to me that they seemed to think – or preferred to think – they were protected by the nonchalance of the State’s message. I asked several times that ocean-oriented sporting businesses and the state spread a much stronger message about the danger lurking in the depths and that had not changed. No one responded to my demand, but passed the buck onwards, because the weight of the economic disaster tied to this loss of tourism was so disastrous that no one would engage themselves publically on the real danger the sharks posed. So, after having been quite optimistic at the beginning of 2014, there remained a very, very long way to go.

In March 2014, three French national media entities, followed one after another, a series of reports on the shark crisis hitting Reunion: France3 with *Thalassa*, France2 with *Envoye Special* and M6 with *Enquete Exclusive*. This growing interest was widely appreciated, as we were really busy on our side: a state-employed psychiatrist was present to prepare us to better handle relationships with the families of victims and survivors; there was a symbolic donation of surfboards to neighboring Madagascar, since the boards were useless on Reunion now; and a rally was organized to demand the lessening of the state-imposed restrictions of the Marine Reserve. The demand had to do with taking advantage of a GPS localization buoy error found in the 2007 decree that created the Reserve. The lawyer from the Mayor’s Office in Saint Leu had already begun a suit demanding the repeal of the same decree in 2007.<sup>11</sup>

Beyond the possible « illegality » of regulations that possibly endangered human lives, this new issue gave us hope that the decree would be revised, taking aim at the realization the shark risk in this area represented. We decided to respond to this case by assembling a march at the Northern limit of St Leu, where the faulty buoy was located on March 19, 2014. This allowed national media to attend one of our numerous manifestations and helped us grab the State’s attention.

Our State representatives explained repeatedly and over the years that it was “extremely complicated to modify a ministerial decree.” However, that didn’t hinder, barely 3 months later, in the official journal, published May 28, 2014 a modification of the decree no. 2014-542, which corrected the error in the limits of the Marine Reserve. It was once again a typical example of the State operating at two speeds, the State proving to us that they were not concerned with its citizens: very quick to protect rules and regulations, and at a snail’s pace when it came to managing, or even acknowledging the shark risk.

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<sup>11</sup> The questioning of the constitutionality brought forward by the Mayor of St Leu was rejected by the State council at the end of Dec. 2014. The final decision in the case will arrive in 2015. “It remains up to the State council to examine the question of the Marine Reserve in depth. Has the State endangered the lives of its citizens in deciding to protect this nature space?” excerpt from an article entitled “The Marine Reserve remains before State council” Article from the *Quotidien de la Ile de la Reunion*, Dec. 23, 2014

The Marine Reserve was further criticized: even the vice-president of the Region finished by “losing his reserve” to question the total control that scientists had over the situation, and who refused to recognize that compromise may be necessary to solve the problem at hand.<sup>12</sup> The municipal elections at the end of March 2014 would allow a changeover in the majority of council members to our side of the argument. This new aspect in the battle would allow us to lance the administrative abscess that held us back. At the same time, the director of the Marine Reserve left her position.<sup>13</sup> After two very uncomfortable years at the head of a hotly contested bureau, all the while having had her hands tied and opinion silenced, she publically confessed to the intolerable pressure put upon her to remain silent during this crisis.<sup>14</sup>

The voice of dissent was followed up by a tumultuous administrative council meeting held May 22, 2014 and was followed by the instauration of elected officials from the new municipal majority. The new members of council proposed a motion demanding a change from State governance towards local representatives, a necessary step in envisioning an evolution in acknowledgement of the shark crisis.

This rebellion brought the beginning of an audit by the Minister of Ecology, which engendered a mission of expertise to the Reserve at the end of Aug. 2014.<sup>15</sup> This delegation met with me and other associations defending the interests of our citizens. The meeting was pleasant, and for me, it was an unexpected opportunity to draw the attention of the delegates to the fact that the State was in large part responsible for maintaining the Reserve, even when faced with the fact that the bull shark risk could not be denied. Unfortunately, aware of the intolerable situation, all they could do was remind us that there only mandate was the management of the Reserve and the buoys.

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<sup>12</sup> From the Quotidien de l'île de la Reunion March 10, 2014, article entitled « The Management of the Reserve is Blocked.” Interview with Fabienne Couapel-Sauret, vice-president of the Marine Reserve Reunion Region. She fumed about “the rigidity of the State” and complained of the “iron-fist within the scientific council.”

<sup>13</sup> From the Quotidien May 23 2014, article entitled “The Depart of Soraya Issop-Mamode.” The journalist who closely followed the crisis from the beginning confirmed after her demission that Soraya “in the line of fire from the Marive Reserve’s scientific council.” He added, “The director who has been accommodating and open to discussions with the public, she was a liberal figure caught in the midst of a conservative council.”

<sup>14</sup> From the Quotidien de l'île de la Reunion May 24 2014, article entitled « I was completely silenced. » Interview of the director of the Marine Reserve after her demission, “I was entirely silenced. But I fought for more transparency and laxity, because our silence only made us appear guilty, but it was impossible to discuss many topics.” The state had chosen to forbid any communication on the Marine Reserve outside of the management, “At the Reserve, there was an official line and a non-official line of communication, and the scientific council had to know their place. This is why we couldn’t react quickly enough.” Then, on the topic of the evolution in regulations, she concluded, “At this time, it’s still the French State that holds the reigns of the reserve.”

<sup>15</sup> By the end of 2015, we still had no news of the audit finished in Aug. 2014, just as we’d never received any information from the long study lead by a mediator hired in 2013. “Regulating the Conflicts of Usage in the Natural Marine Reserve of Reunion Island,” report by Phillipe Barret Sept. 2013. The study had concluded that “most of the actors involved in the Marine Reserve are ready to attempt discussion and accept the changes, give room for empirical facts next to empirical science...is even more essential than our techo-scientific knowledge, which is limited and as to certain questions, the incertitude is large.” <https://mediationenvironnementale.files.wordpress.com/2013/12/synthecc80se-entretiens.pdf>

A large international symposium<sup>16</sup> on shark attacks was planned to take place in Recife, Brazil April 2-5 2014. We'd been in contact with associations from the region, even harder hit by shark attacks than Reunion. The organizers had planned to address the "case of Reunion Island," and to lead the discussion, they had invited Bernard Seret, the specialist from the Institute for Research and Development in Paris. We were very worried about this representative for our cause, because he was engaged in a fight since 2011 in favor of closing our oceans, well-aware of the incompatibility between a marine reserve protecting predators and human's presence in our seas.<sup>17</sup>

Upon the advice of my partners, as well as our Brazilian friends, and also the institutions who supported us, I decided to attend. The idea really excited me: it was an opportunity that shouldn't be missed to make our voices heard together, and internationally at that.<sup>18</sup>

Upon arrival in Recife, I was welcomed by Nyeff Souza, retired fire department chief, who had held the position of medical examiner for over 20 years. This local legend in prevention jumped straight to the subject upon meeting at the airport, and handed me a very large file filled with simply astounding material. It contained photos of more than 50 bodies, some devoured by 75% or eaten to the bone.

He explained that his battle consisted – each time – to make authorities admit these were shark attacks, and not simply drowning, as the government preferred to believe due to "insufficient proof." The collection of documents traced 20 years of the ban on nautical activities that began in 1995, and 20 years of scientific studies starting in 1994 and that had led to nothing at all, in terms of reduction of the risk of attack. The attacks, namely upon swimmers, have steadily occurred, without ever letting up, since 1992, and as it had occurred again recently. Discussions with the victims, the defenders of ocean activities and local surfers helped me understand the evolution Recife's crisis has known since the beginning of the 1990's.

Apparently, a large part of this city of 3 million inhabitants' drained waste water directly into the creeks that lead to the port and the sea. Scientists had decided that the principal cause of the shark attacks was the construction of Port Suape. Local specialists had determined that after construction of the port had destroyed the natural mangrove habitat of the sharks, and the sharks having lost their home, began to follow boats North, where they colonized the zone around Recife.<sup>19</sup> It's evident that high levels of pollution and an abundant fish stock explain the shark population at this beach, thus the exceptional danger in this area.

I was surprised to see the hegemony among the ecological associations, who had succeeded

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<sup>16</sup> Other than the Pope of sharks, George Burgess and Brazilian scientists, Jeremy Cliff from South Africa and Vic Peddemors from New South Wales, Australia would be present

<sup>17</sup> See note #47.

<sup>18</sup> There were several facets in play: making our presence and struggle known, this allowed us to create ties, learn from their knowledge and experience, and meet with George Burgess, who was evidently ill-informed of our problem. I had to correct him several times on certain elements, and above all his 2011 report, where he esteemed that if we had mortal attacks, it was because our rescue teams were inefficient compared to the United States. I explained that our oceans had been deserted by humans for 3 years, so he couldn't advance that the attacks were due to a higher number of humans in the water. I also corrected him in his article Aug. 2013, where he accused our island of wishing to eradicate sharks, informing him that over the last 8 months, only 4 sharks had been killed.

<sup>19</sup> The specific uniqueness of these attacks is that within 30km of coastline, there have been more than 50 fatal attacks in 20 years, whereas 100km North or 100km South of Recife, swimming and nautical activities are perfectly safe.

in preventing fishing or culling for all of these years, when it seemed evident, just like on Reunion, that fishing would reduce at least part of the risk. Protecting sharks has become a veritable business<sup>20</sup>, with financing from local petroleum producer Petrobras, and many of the same NGOs found in France and worldwide.

We wondered if this seminar was really an attempt to resolve this local crisis, or if it had been organized with a sole goal to ease the collective conscience of local institutions and associations. In fact, the principal guest speakers rolled out the same spiel heard a thousand times before, glossed in non-truths, and based upon shark “massacres” and “more and more humans in the water.” And here was Recife, just like Reunion Island, faced with a deserted ocean, the consequence of a ban on swimming and surfing, coupled with an absence of fishing for shark. I couldn’t help myself but to draw attention to the fact these very amalgams exacerbate public opinion against our cause.

Of course, this concept was beyond the scope of the shark defenders, even though they systematically agreed that bull sharks are migratory, from Brazil to Australia, in passing via Reunion. In effect, if these fish are migrating, the amalgam between preventative fishing and the “massacre of 100 million sharks” becomes highly unfeasible.

This voyage to Brazil was emotion-filled for me. With the Brazilians, we joined forces during these 4 days, in making ourselves heard each time it was called for. The third day, all the defenders of Brazilian water sports came wearing the t-shirt OPR I had offered them. The family of the latest Recife victim, the young swimmer Bruna Gobbi, whose attack dates to July 2013, were there in our company.<sup>21</sup> Very determined to receive an answer for their loss, they came to hear the “explanations” on the subject offered by scientists and authorities, who had planned to address this particular drama.<sup>22</sup>

On the final day Enio, the most-engaged militant of the group, came to the meeting with a sign reading “assassin” during the final concluding speeches of the foreign specialists. Visibly shaken, they seemed disconcerted in their role as special guests come to caution the Brazilians of their “green”<sup>23</sup> political stance on the issue. The unease was palpable, the local scientists departed furious, and for a long time. This was the 5<sup>th</sup> International Workshop organized in the last 20 years, with the presence of famous specialists like Burgess and Cliff, who had already been

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<sup>20</sup> Port Suape had been recognized « scientifically” responsible in a court of law, and was fined and estimated 200 million dollars in the name of “ecological damages.” This sum will be split between different actors and associations within the environmental sphere: according to the locals, this boon only served to reinforce the support for environmental protection in the region.

<sup>21</sup>After numerous years of having played down the risk, in justifying most of the deaths by “drowning,” this attack on the young victim was filmed live. This time, the victim was not from the favelas, and drew a large amount of attention and grief on the subject of risk management in Recife. <http://www.dailymail.co.uk/news/article-2375911/Shark-attack-drowning-Brazilian-Bruna-Gobbi-18-later-dies-result-loss-blood.html>

<sup>22</sup> The unconvincing justifications offered by the lifeguards, who were very slow to tourniquet her injuries, doubled the heavy atmosphere, and the questions posed by the family rang of an investigation. After a long intervention from an expert in ocean currents, the heads of ocean security conclude in presenting a reinforced security protocol for the few beaches under guard. This made it seem like the attack was the swimmers fault for getting caught in the current, more than the faults in the management of the shark crisis over the past 20 years.

<sup>23</sup> Op cite 131.

called to the rescue in the beginning of the 1990's.<sup>24</sup> It was justified to ask ourselves if Recife was seriously attempting to find a solution for their local issue, or were just going through the movements in order to assuage their guilt by asking for outside help, even if it's entirely in vain.

In both Recife and on Reunion, in a burning desire to pardon the shark, we end in finding guilty parties everywhere and in the most improbable places. The week prior to my departure to the seminar was marred by an event that stirred the pot in the local "sharkosphere." A young reporter from channel D8, Emilie Albertini, in the course the program, "Does it work?" from March 14, 2014, attempted to "explain" our shark crisis in noting with much aplomb that, on Reunion, "we throw animal carcasses like sheep and cows into the sea, so the sharks come for dinner...and if you're a surfer, you look like a little seal with your little feeties sticking off your board, the shark eats you." This new polemic around "the slaughterhouse theory"<sup>25</sup> once again stained the reputation of our island, and constituted an unacceptable insult for many residents of Reunion Island.

Following a discussion the local State representatives, I had, over the precedent months, initiated a modest campaign to promote the consummation of shark meat. In South Africa, sharks caught within preventative fishing measures are burned; in Australia, they are dragged out to sea. But what if we ate them, shark having traditionally played a part in our local diet. It was one of the points I'd made since the beginning: lose the taboo around shark fishing, around the death of sharks. Let's return to this traditional Reunion practice of consuming shark. In fact, it had reached a point where killing a shark "for the pleasure," even though shark fishing is not illegal, had somehow become a form of ecological suicide.

After having used up all of our options at a national level, we decided to invest all of our energy in to local action. This is how I came to support a party up for local municipal elections supporting nautical recreation (for the town of Saint-Paul). One of the members was the charismatic Patrick Flores, coach of the national amateur surf team and father of French national champion, Jeremy Flores, and who held in his heart hope of change. The list surprised everyone, and our unexpected win solidly proved the weight surfing and nautical sports drive the politics in this coastal town.<sup>26</sup>

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<sup>24</sup> The University of Recife is none other than a Brazilian extension of the Institute for Research and Development in Paris, in charge of the scientific program CHARC. Knowing that the Recife crisis has lasted for over 20 years, despite several studies and uncountable meetings, the discovery of this tie bode nothing well for our future in Reunion Island, on the contrary.

<sup>25</sup> Perhaps she found this subject in Nautilus magazine Nov. 2013, which discussed the slaughterhouse theory, without implicating it in an article titled "The Truth on the Shark Attacks on Reunion Island," with the opinion of a regarded French Scientist. Or maybe she got it from another edifying publication, from a Caribbean author <http://outremerlemag.fr/index.php/societe/780-le-requin-a-tue-certains-mais-dites-la-verite-aux-reunionnais>.

<sup>26</sup> Patrick Flores became deputy in Saint-Gilles-les-Bains, in charge of the coastal zone. Rob Machado's, one of the US surfing's stars, ex-wife was promoted to deputy of tourism, and the president of Radical Surf Club, one of the largest clubs on the island's West coast became deputy of sports.

It was a big first for St-Paul and its 100,000 residents: to have the president of the surf club at the head of the sports program in a large town was something quite uncommon.

At the same time, another local surf coach was elected to municipal council, responsible for nautical activities. He became town councilor and the representative for deputy mayor Thierry Robert for everything concerning the coast and the ocean. It was a very important evolution, as in his popularity was held the hope of a better reception of our fight in local opinion.

These elected officials were also close friends and collaborators from the very beginning of the crisis. It was a small revolution, and now we were in possession of a new form of dynamism and influence. When surfers entered local politics in Biarritz in the 1960's, they accompanied the development of the activity. Of course, some saw it as a victory for "The Surfers Party," but in attempting to save our nautical activities, so fundamental to our island's development and survival, wasn't it more of a victory for the future of Reunion Island as a whole?

Now, the shark crisis became the most important topic on the agenda. These changes did not come without responsibilities notably that of responding to a challenge with this degree of difficulty, and critics were waiting in the wings to pounce. Never in the history of Reunion Island had supporters of nautical activities taken over entire municipalities, and never representatives of a sport as peripheral as surfing. This unique occurrence illustrated the determination driving ocean enthusiasts over the previous three years.

Even the State was taken by surprise by these rapid changes. Opening a large meeting concerning the CO4R institutions on April 30, 2014 – the first held after this radical shift -- the prefecture deputy of Saint-Paul borrowed words I'd published in a review the day prior, "This is a new era." We had never imagined we could take the reins and work as fast as possible towards creating a plan for nautical security. The arguments we defended with much difficulty in the past, would be raised again, and this time, with the legitimacy of public election, with posts that would last 6 years.

The first results stemming from the election came rapidly and in many different forms. The new officials met quickly with entities proposing solutions and all other institutions involved to formulate new plans of action. With this shift in power, the scientists from the Reserve became minority, which was as unexpected as it was uncomfortable for them. Becoming more isolated from public opinion, they had no other choice than opening up to dialogue and negotiations with a population denied access to their sea.

We were still awaiting a decision from the National Agency of Sanitary Safety concerning the issue of shark consumption and the risk of Ciguatera virus, a food-borne illness stemming from the contamination of reef fish and causing severe neurobiological damage. Without surprise, in Sept. 2014 came back declaring that shark meat could not be guaranteed free of Ciguatera. This

decision fell directly in line with findings from the scientific program CHARC<sup>27</sup>. The scientist responsible for CHARC was also a member of the experts committee for the study. The report concluded: “It is impossible to exclude the risk of tiger and bull sharks fished on Reunion from being contaminated with ciguatoxins (or similar toxins), particularly in light of the analyses taken from samples of bull shark, recently implicated in a series of intoxications (with fatalities) in Madagascar, taking into consideration the sharks migrate between these two islands.” All hope of resolving this crisis with commercializing shark meat on the local market was dashed.

Though we weren’t surprised by the ban on sales, the limited fishing of coastal sharks, and local consumption of the meat, imperatively needed to continue to be supported. The State itself recognized that local fishery activity was insufficient in stopping the crisis, to the point where thinly veiled public announcements stated that sharks, “can be fished in total legality.”<sup>28</sup>

Meanwhile, we now had confirmation that the scientific program begun in July 2012 in urgency was nothing but an “alibi” for killing sharks. Sanitation authorities would never allow the sale of shark meat based upon precaution. Sadly, the lobby in favor of their protection was stronger, because let it be known, it was a lobby for protection of the species and not a true sanitary concern.

We had proof of this in Nov. 2014, when the president of MEDEF Reunion very simply confided a fact that he had discovered in his engagement to fight for our coasts: our island, situated 700km from Madagascar was prevented from selling shark meat because of its proximity to “contaminated sites,” whilst Mayotte Island, a French department since 2011 and 350km from Madagascar was not subjected to any such ban. So, were residents of Mayotte second-rate citizens that didn’t deserve State protection, or was this the proof of profoundly illogical scientists soliciting advice to State representatives on the subject of sanitization issues?

I had a chance to ask the joint deputy about the logic of this decision in Nov. 2014. Quite embarrassed, she responded in a haughty tone, “Why don’t you ask the deputy of Mayotte?” As it was, this unequal treatment was unfair, and we didn’t doubt that it would be straightened out...in a reinforcement of restrictions on sales.

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<sup>27</sup> The neutrality of this study can be questioned, as there is a definite conflict of interest, since the results of this study were prepared by the same scientific program that supported protection and the Reserve. See list of members, pg 17. « Contamination in sharks, tigers and bulls, by ciguatoxins: occurrence, method, analysis, human cases reported and elements of ethology.” Aug. 2014

<sup>28</sup> We were well aware, but we hoped the govt. would at least test the sale of shark meat with medium sized specimens, as this had been the case prior for several species of fish coming from the outer banks. In the review published Oct. 2015, The Institute Halieutique and Marine Sciences in Tulear provided the most recent sanitary recommendations for Madagascar, simply recommending to avoid consuming bull shark heads (the consumption of tiger shark carries no recommendations). [http://www.news.ihsm.mg/wp-content/uploads/2015/10/Ranomasina-7\\_T3-2015\\_light.pdf](http://www.news.ihsm.mg/wp-content/uploads/2015/10/Ranomasina-7_T3-2015_light.pdf)

As if the situation wasn't shocking enough, all that anyone retained from the ANSES conclusions was just another negligent communique from the prefecture stating that "the consummation of these sharks remains illegal. The authors of this press note had confused a ban on "commercialization" with a ban on "consumption."<sup>29</sup> It was just one more step backwards in our year-long attempt to rehabilitate the consumption of shark meat.<sup>30</sup>

It was primordial to take action in order to reestablish the truth, preventing false information from sinking into the public mentality. Luckily, there was a large CO4R meeting Oct. 9 2014, and I had several kilos of tiger shark a fisherman had given me. We organized a tasting right in front of the prefecture headquarters, in an attempt to communicate the truth and draw attention during this gathering of local institutions about the consumption of this fish. As is habit, we tasted it ourselves before offering it to our guests in order to reassure ourselves that no matter how infinitesimal the risk, we had no chance of affecting anyone's health. Public figures, journalists and local folk ate shark skewers in front of the cameras.

Cherry on the cake, during the meeting that followed our tasting, the president of the delta flight club asked the deputy prefect, "I ate the tiger shark just before, it's delicious. Why are there so many problems with sharks, when all we needed to do was eat them?" With his typical irony, and rather embarrassed, the deputy responded with a barb aimed at me, "I hope Mr. Nativel has a good freezer," well aware that the only risk run was that the fish had been poorly stored with a risk of carchotoxin, not ciguatoxin. Still, the point remains that if shark becomes accepted as a food source, the delicious nature of the fish will sell itself. The manoeuvre helped media spread the word that consumption of our local sharks is not banned on Reunion Island.

Beginning in Sept. 2011, diver and film director based on Reunion, Remy Tezier, began the production of a cutting-edge documentary for the French channel Arte, centered around the shark crisis. In June 2014, as an underground investigation, "Investigation: Shark Attacks on Reunion," the production was aired. The private showing on the big screen floored me: this was our story, these were our lives. After the waves of emotion had passed, I stepped back whilst noting the unanimous satisfaction the public found in the philosophy behind the documentary.

However, other than Fabien's extremely moving interview, the rest of the attacks were treated with a distant iciness.<sup>31</sup> Each attack filmed or described became a pretext to question the

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<sup>29</sup> Press communique from the prefecture of Reunion Sept. 17, 2014: "Warning concerning the risks tied to the consummation of shark and contamination of marine biotoxins."

<sup>30</sup> In 2013, a state representative responsible for the shark risk, sought solutions for the sharks caught, and had asked me in person to promote the consummation of shark in the light on an eventual removal of the ban.

<sup>31</sup> The film included images of the attack of Stephane Berhamel, which occurred right next to the port. The director happened to have his camera on his shoulder and operating, as he returned from filming at sea. A very clear bubble of blood surfaces and surrounds his surfboard, still floating on the water. Sarah's attack feels brushed aside, as the beach is presented as "extremely dangerous:" "In spite of warnings, in a place even fisherman tell me they won't put their feet in the water, a young 15-year old girl was taken while her sister watched." The narrator "omits" to mention that the interviews of the fisherman took place after the attack, but he presents them as discourses prior to her death. No

research provided by the scientists implicated, who appeared to back into a corner with each new and more frequent attack, attempting in vain to explain, and each time relieved to present evidence that the two bull sharks they had actually tagged, Estelle and Fanny, were nowhere near the scene of the crime, when in fact, they were responsible for this project, having gone as far as to release these same predators at these same beaches.

At the end of the film, synthesized images provided a visual of the two shark's migrations around the island. Viewers were stunned with suspense and a new feeling of impetus: these sharks, always described as mysterious creatures were divulging their secrets. Now, everyone could access information on their movements, information that had been jealously guarded and presented as "undeniable." This succeeded in definitively legitimizing their scientific research, and all the ulterior motives within it.

Now we were faced with an ethical question: was this production an apologist film for a grand experiment with nature where humans served as guinea pigs? Where was respect for human lives in all of this? Not one ounce of responsibility was assumed by these researchers who had tagged and released 80 sharks right in front of public beaches in the name of science. Absolutely no one involved raised these questions, probably due to their general opinion that empirical science required "modest" sacrifices. Shark attacks as they were presented in the film seemed like a large-scale game of pinball.

Like martyrs thrown into an area filled with lions, to fight bare handedly, the victims followed, one after another throughout the film, in a resolutely unequal battle. The viewer could sit comfortably back in his chair and watch the abominable spectacle, with the thrill of real human blood. Confronted with this disregard for the victims, and a certain devotion to the researchers work, wasn't this just powerful propaganda for the scientists' ideology? This project rang all too familiar with a similar documentary on the crisis in Recife, produced by a large American documentary production channel.<sup>32</sup>

I remembered that several camera teams who had come to our island had made their frustrations known to me: they were neither allowed to ride in the researchers' boats, or film the captures and tagging, and much less access any information gathered. We had heard that an exclusivity agreement had been signed with this producer and the Institute of Research and Development, which had been strongly criticized by the Animaux channel, in a documentary shot in Nov. 2012.<sup>33</sup> Viewers saw film crew denied access aboard the vessels responsible for tagging by the

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mention, either, of the fact that she was simply dipping in shallow water, like other people occasionally still do, in the bay at St-Paul. Saint Paul has hosted 14 triathlons in the past, and never has a quick dip in the shallows posed a risk. As if being cut into two pieces during a quick cooling off a few meters from the beach was always a radical risk

<sup>32</sup> « Shark invasion » by National Geographic in 2007 illustrated the history of the shark crisis in Recife. Directed in collaboration with local scientists, and presented as "a neutral investigation," with a scenario based upon the deaths and associated with human error, I noted once I arrived in Recife April 2014, that this documentary covered up a good part of the real horror, as well as the failure of prevention politics to act, allowing the calamity to continue for decades.

<sup>33</sup> « *Des requins et des hommes* », reportage de la chaîne Animaux diffusé en mars 2013.

embarrassed scientists in charge. The journalist involved concluded, “The terms of their accord are that IRD has promised exclusivity to another production company, and in return, has access to all of their images. This contract prevents us from doing our job, but instead of quashing our curiosity, it only serves to stimulate it. What’s behind this refusal? What’s going on out there in the sea? Where do the truth lie in a film produced from this accord?” These questions, shared by all the journalists chasing after the truth, cast a shadow of doubt as to the objectivity of the “Shark Attacks on Reunion: the investigation.”

The film’s national premiere in Aug. 2014 had been prepared by the cultural channel Arte, and unsurprisingly, we weren’t very pleased with his fact.<sup>34</sup> The document’s presentation included the ubiquitous comparative graph provided with the habitual manipulation that rendered our shark attacks anecdotal, devoid of perspective on the real danger on Reunion. It was just the classic presentation of the shark, exterminated by humans (totally unrelated to the subject of the attacks on Reunion) finished the piece, with of course, links provided to NGO sites that protected sharks, the same that we have fought bitterly with for the last 3 years.<sup>35</sup>

The «causes » of the attacks remain the critical issue, as they will determine the solutions to enact. It seemed opportunistic to spend so much effort on the explanation<sup>36</sup> of principal hypotheses promised by the documentary, since they conformed perfectly to the scientist’s assertions: that the sharks’ presence was seasonal, that the number of humans in the ocean augmented the risk, and that the pollution tied to urbanization had caused the environmental unbalance.

The main conclusion pronounced by the film was: “Now, the facts are undeniable, on Reunion Island, part of the bull sharks are seasonal migrators, they disappear in the summer and return for the winter. This seasonality was tied to reproductive behavior, according to CHARC’s<sup>37</sup> pre-established theories, along with images of males bulging testicles: “This video is the proof that bull sharks mate in Reunion’s waters in the winter. Noting the state of this male, it’s understandable that during periods of reproduction, these sharks may become aggressive. I think my investigation is terminated, I’ll return once again to see the boss at CHARC...Certain periods of the year, females are present here...which corresponds to reproduction periods when males are in a competition to reproduce with females, we agree (yes) there will be more aggressive behavior during these periods, more aggressive than normal (yes) in an environment that has been severely degraded (yes), creating competition to feed, so the sharks are coming in closer to the coastline.”

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<sup>34</sup>) You can watch it here: <http://www.arte.tv/guide/fr/051911-000/attaques-de-requins-a-la-reunion-l-enquete>.

<sup>35</sup>) You can watch it here: <http://www.arte.tv/guide/fr/051911-000/attaques-de-requins-a-la-reunion-l-enquete>.

<sup>36</sup>) The film conformed to scientific opinion after having quickly passed in review the other possible causes: commercial fish farming, the “permanent pantry” the Marine Reserve provided to sharks, or the effect the Fish Concentration Devices and bouys. Among our theories, sole the end of fishing was mentioned, but neither the “exceptional biotope” favorable to the development of the bull shark population, nor the lack of restraint on the part of the Reserve was mentioned.

<sup>37</sup>) Op. Cit. 154.

Lastly, the narrator synthesized his statement that systematically received approval from the head of the program: “Seasonally migrating bull sharks come to Reunion in the winter to mate and in the quest for food, with augmented aggressiveness. This explains why the majority of the attacks take place between May and October.” As attractive as this explanation is, the faults are glaring and the theory offered was in complete contradiction to the available facts. First of all, a simple analysis of the capture and tagging dates incontestably discredit the theory of “seasonality” since 81.6% of the sharks were tagged during the Austral summer season.<sup>38</sup> But let’s get to the bottom of this scientific reasoning that seeks at any price to tie the concentration of attacks in winter and the shark’s behavior. In the film, this hypothesis was supported by Fanny and Estelle. The information presented showed the two bull sharks detected in Aug. 2012 and returning to the island in April 2013.

According to these scientists, the behavior was linked to the reproduction phase that happened off our coasts each year in Austral winter. It’s an established fact that bull shark gestation lasts for 12 months, with two or three years between each conception. This means to say that these two females present on Reunion to mate in Sept. 2012, at the end of the Austral winter would return again at the end of April 2013 to mate again? That’s an interval of 8 months between the two identifications, which would mean they were still carrying young in April, but as is the case throughout the animal world, males are not interested in gestating females. Not that this fact would stop the film from directly associating the presence of the females to a competition among males in the sector, which may implicate and attack.

In contradiction to these scientific suppositions, it’s historically recognized that births as well as “mating date to the end of springtime through the summer, with a possibility of extension throughout the entire year.”<sup>39</sup> Captures of juveniles along the coast are known to be concentrated between Dec. and March on Reunion, or right in the middle of Austral summer. This is similar to other regions with bull shark population at similar latitudes. The period for births and mating were established in the middle of summer.<sup>40</sup> Also, in a comparative analysis with other countries in the Southern hemisphere concerned with attacks by the same species of shark<sup>41</sup> showed a regularity spread across the entire year, even the opposite concentrated in Austral summer vacation, when more tourists frequent the beaches, augmenting the chance of an attack.<sup>42</sup>

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<sup>38</sup>)Op. citation 154. The two principal sharks of the study, Fanny and Estelle, were captured in the middle of the Austral summer, on Feb. 10 2012.

<sup>39</sup>) Op. cit. 122. According to studies available at the time from South Africa, Australia and Reunion.

<sup>40</sup>) « Habitat Ecology of the Bull Shark, *Carcharhinus leucas* on Urban Coasts in Eastern Queensland, Australia.” Thesis presented by Jonathan Mark Werry April 2010 based upon 1060 bull sharks fished in the State of Queensland, a latitude close to ours, among whom 59 females in gestation. The results on page 33 describe mature embryos during the summer, and at the beginning of gestation in winter.

<sup>41</sup>) The regularity of attacks in the South African Natal region, where bulls are also present, shows a peak during Austral summer, the opposite of Reunion’s attacks. Also, studies from several regions (Florida and Australia primarily) show the sharks absent during winter, lessening the probability of attack during that season.

<sup>42</sup>) Faced with the controls and restraints concerning commercial fishing imposed upon the European Community, Reunion remains one of the zones least-impacted by over-fishing according to available information. See map #23 for zones touched by over-fishing in the world : <http://www.vox.com/2014/8/26/6063749/38-maps-that-explain-the-global-economy>. If over-fishing was the cause of our attacks, there would be thousands of deaths across the globe. Also, even specialists recognize the limits of this argument. From Bernard Seret, Jan. 7 2014 (Op cit.

Finally, the argument that sharks were coming closer to shore because food sources have rarified in the open ocean (tied to over-fishing), isn't a credible hypothesis in the case of our coastal sharks.<sup>43</sup>

So what would explain the growing frequency of attacks in winter on Reunion? Starting with the first deaths at the end of the 1980's, our first theory explaining the attacks commonly explained the attacks were due to fewer fish arriving during the cold season, which pushed the sharks closer to shore to feed.

But I thought of other parameters that clarify this phenomena. The winter days in Reunion are shorter, meaning fewer hours of sunlight, the sun lower in the sky that's often cloudy and leeward winds prevail. Bull sharks maybe drawn to these conditions, facilitating diurnal hunting, which rarely happens on very sunny days.<sup>44</sup> Moreover, ocean swells typical to the Austral summer are small and rare, so surfers remain closer to shore. During cyclone season, swells are large and regular, strong rains render the water muddy, and prudence is called for, if not total abstention from water sports. Also, in winter, big swells drawn the surfers out away from the beach, where long paddles against the current expose them to great risk of attack in murky waters due to rain run-off and sediment stirred up by the strong ocean swell. Our opinion is that the attacks are better explained by common sense, rather than "aggressive behavior due to mating season."

Beginning in 2000, the tie between the attacks and human behaviors was formally dismissed by an analysis<sup>45</sup> produced by a local shark specialist, based upon 20 years of attacks: "The shark attacks frequency remains stable on a year-round basis...all the attacks on divers are recorded during the summer months (Nov. to Jan.), during which time this activity is very popular due to clear water and abundant fish stock. Surfers and windsurfers seem to be attacked more often from March to July, when conditions are best (in terms of swell and winds) for these activities. Attacks on swimmers are constant throughout the year, so if seasonality was implicated, it would have to do with the number of subjects exposed to risk (that varies according to each activity), but not the behavior of the sharks present." It was incredible to read these conclusions, the polar opposite of CHARCs declarations. And neither I nor anyone else, at any given moment, drew attention to this analysis that provided a critical approach to the conclusions asserted by CHARC.

We've already shown that the most popular argument was "serious environmental degradation" that drew the beasts to our shores didn't hold water, in fact.<sup>46</sup> Recent documents prove that our island is the least polluted region of France and French colonies overseas!<sup>47</sup> There is very little

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148): "The over-fishing theory, that sharks draw closer, but we're not talking about the same sharks...in the open ocean, there's mako, blue, silk sharks, there's longimanus, they're all sharks that don't come close to shore."

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<sup>44)</sup> This means that general rules of caution consist avoiding the water at sunrise, at sunset or when there is thick cloud cover.

<sup>45)</sup> Op. cit. 30, p. 389.

<sup>46)</sup> See note 94.

<sup>47)</sup> Reunion Island was the sole region of France with 100% of the beaches obtaining 100% good quality recreational waters in 2011's "Report on the State of the French Environment," pg 71 by the Ministry of the Ecology for Durable Development and Energy, 2014. Source:

industrial activity on Reunion Island, isolated in the middle of the Indian Ocean, in some of the purest seas on the planet.<sup>48</sup> Our sanitation regulations are among the strictest due to our ties to the European Community, which is the opposite case of other places on the planet with bull shark issues. Many of these locations are developing nations with limited infrastructure or water treatment facilities, and waste water flows to the sea untreated.<sup>49</sup> How is it possible to conceive that 20% of the fatal attacks worldwide between 2011 and 2015 were concentrated on our little rock in the middle of the ocean due to environmental degradation? Moreover, in 2009, millions of Euro were invested in the latest water treatment installations (the water is purified under glass constructions) approved to EC standards and applied to all water treatment plants on the island. Finally, waters rejected near the “sensitive zones” comprised of the coral reef systems to the West receive and supplementary treatment removing phosphorous and nitrogen, which are the principal pollutants of coral reefs.

If in fact pollution was a determining factor in the attacks, why weren't more regions affected by this plague? The deaths should count into the thousands if this was correct. But it wasn't the case, and the argument was insulting to our island and its residents. To hear it eschewed as pure science coincided perfectly the “politically correct” ideology that placed all responsibility upon humans, whilst removing guilt from the predator.

Local ecologists buried themselves in flagrant contradictions: alarmist reports bounced around about a serious ecological degradation since the beginning in the 1980's. This argument was the convincing basis for the necessity of the Marin Reserve in 2007, as a solution to regenerate the coastal zones. How, in 2012, could they suddenly argue that “environmental degradation” was the cause of the attacks, when this same damage had been established for decades on the West side of the island?<sup>50</sup>

On another note, this film equally suggested that the rise in coastal population had led to an augmentation of humans in the sea, and that explained the rise in attacks. This theory, developed by George Burgess, is verifiable on a worldwide scale, but it can't be applied to our island. In fact,

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[http://www.statistiques.developpement-durable.gouv.fr/fileadmin/documents/Produits\\_editoriaux/Publications/References/2014/references-ree-2014.pdf](http://www.statistiques.developpement-durable.gouv.fr/fileadmin/documents/Produits_editoriaux/Publications/References/2014/references-ree-2014.pdf)

<sup>48</sup>) Reunion Island is located in one of the least polluted zones on Earth according to these analyses : <http://www.consoglobe.com/oceans-cartes-font-peur-vraiment-2330-cg>

<sup>49</sup>) For example, India with more than a billion inhabitants, according to studies, dumps 80% of its untreated waste water directly into the sea, without having the same problem with bull sharks along the coast. On the same note, our neighbor Mauritius Island, has no shark problem even though water treatment facilities are limited and waste water flows into the sea around the island <http://timesofindia.indiatimes.com/home/environment/pollution/Around-80-of-sewage-in-Indian-cities-flows-into-water-systems/articleshow/18804660.cms>

<sup>50</sup>) In 1977, Claude Bouchon, PhD in Oceanography notes the first signs of biological damage to the reefs at Salines-les-Bains... “A proliferation of these species shows a chronic augmentation of the organic waste they feed upon within the swimming areas of the reef.” Since the 1980's, further studies illustrated the loss of living coral on the reef plates... Scientists attribute this new situation by changes affecting water quality of coastal waters, such as polluted domestic run-off that comes with a growing population on the coastline, agricultural pollution (using chaotic quantities of fertilizer, pest and weed control in an attempt to raise harvest production), but also the unregulated exploitation of the reefs in general... It's been over 25 years that Reunion's coral reef system need protection, and today it happened on Reunion Island.” 2007 <http://vieocean.free.fr/articles/chronologie.html>

the regular occurrence of attacks beginning in 2011 had of course precipitated a massive drop in ocean-goers, from thousands per year to just several hundred,<sup>51</sup> according to a study conducted on the subject.<sup>52</sup>

Now, in 2011, when the number of people getting into the water was still quite high, there were two fatal attacks in the space of three months, June 15 and Sept 19, 2011. In 2013, even that the majority of ocean-goers had abandoned the practice, there were 2 deaths in the space of two months, May 9 and July 15, 2013. Then in 2015, after two years' ban on nautical activities, and only a few hardcore ocean-goers risked arrest, there were again two fatal attacks in two months, Feb. 14 and April 12, 2015. These facts go to prove that the leading argument – that the number of people in the water incited more numerous attacks – cannot be logically applied.<sup>53</sup>

Thereby, these comparative analyses give forth to an alternating and contradictory truth that leads to existence of a specifically local aspect, rendering it impossible to establish regular patterns for our coastal species of sharks. The three conclusions scientists arrived at were of little comfort, as they weren't pertinent enough to be useful. This raised the question of responsibility again, since from the beginning, the State had deferred the politics of risk reduction to these same scientist's conclusions.

To top it off, I discovered this same documentary had received a 50,000€ grant from the Reunion Island regional government, and had equally benefitted from financial support from the Minister of Outre-Mer (overseas territories)...thus, the State. These facts challenge the concept of neutral position on the State's behalf.<sup>54</sup> The damage was done, and had been done long before this documentary. There were so many viewers thrilled to have such a “seductive and romantic” version of our crisis.

The surfers portrayed in the production also stuck close to familiar clichés, as a tribe of noisy consumers, ready to respond with violence in order to protect their selfish little pastime. At not one moment was the nautical community given a voice, reconfirming the idea that we were in

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<sup>51</sup>) See note 76.

<sup>52</sup>) As part of a scientific study, a census was taken by ULM to monitor beach activity. The conclusion was reached, “The team swimming/tanning, as well as surfing have seen numbers drop since 2010.” Extract “Study of the frequentation of nautical activities within the CHARC program” figured in annexed to “Synthesis of studies of biotic and abiotic factors during the CHARC program,” pg. 112 the numbers were worse for beaches on the open sea.

<sup>53</sup>) This cliché remains, notably in the scientists beliefs, which added nothing but further confusion. For example, Catherine Vadon, PhD in Oceanography, conference leader at the Natural History Museum Paris, explained the attacks on Reunion (at the end of 2015!) with, “the development of tourism, sport and nautical leisure...a growing population on Reunion Island.” Words spoken on the program Archipel, on FranceO Oct. 25, 2015, as presentation of the documentary “Shark Girl.”

<sup>54</sup>) Surtout si on y ajoutait les images exclusives octroyées à ce réalisateur par l'institut scientifique, provenant d'une caméra de haute technologie installée à grands frais pendant un mois sous la ferme aquacole. Peut-être que le film coproduit par l'IRD et sa société de production, constituant le bilan et l'outil de promotion de l'étude CHARC pouvait permettre d'expliquer ces accointances ainsi que le parti pris ? Voir le film de restitution scientifique : « *Connaissances de l'écologie et de l'habitat de deux espèces de Requins côtiers.* » film réalisé par Rémy Tézier, 21 mn, 2015.

hysterics, demanding zero risk and the “extermination” of sharks. And again, online forums were witness to waves of hate aimed at our community, now more than ever nature’s enemy and a symbol of humanity’s excesses. The public widely received and applauded the film,<sup>55</sup> as did the media, and the documentary received several prizes.

A few days later, I was invited to participate in a large local debate filmed live, offered as a follow-up to the first screening of the documentary on our local channel. Invited to the debate were: the father of one of the victims, an elected official from Saint-Paul, one of the hero-scientists in the film, the director of CROSS, and a real adversary: the founder of Squal’idees, a local association for shark preservation. Knowing that he was sitting on stage with me, I had one goal alone: force him to recognize his initial errors in judgment on fishing the sharks Feb. 19, 2011, and the legitimacy of Caprequin’s campaign towards risk reduction.<sup>56</sup>

The game was crucial in turning opinions, formulated at the time by this specialist, who had determined that fishing dangerous sharks was a condemnable crime. Even though some change had taken place, this social representation persisted, and continued to slow any political or institutional engagement, representatives hesitant to displease their electorate. During this long debate, I failed to make him admit his initial errors in his positions, but I did succeed to confront these experts with their contradictions, and make known the exceptional danger we faced, incomparable to other regions in the world. The only hiccup occurred when the journalist gave the final closing words of the debate to this specialist, who proceeded to spout of on a tirade in favor of the suppression of any decision taken in the direction of prevention, based upon conclusions from skewed scientific experiments.

I barely tolerated hearing this, as we were at the final hour of a case subjected to three years of research, and this was all specialist could continue to advance “in spite of much time for reflection”?<sup>57</sup> After three years of devastation waiting for a solution, and apart from the crucial questions, should we accept without blinking another three years or thirty before a decision is made? The debate ended in argument, but I regretted nothing: it was fundamental to contest the dogma of a “scientific resolution” in such a crisis as this.

This incident pushed me to delve even further into available documents, and there, I discovered a new element: an important sociological study from 2011 had perfectly identified the central role played by the association founded by this doctor: “Following each attack, the media call upon “experts:” two associates from Squale’idees have regularly been called upon in the goal of clarifying the circumstances of each occurrence. Without fail, they mention the factor of risk, contributing to maintain the status quo opinion on what composes excessive risk...This contribution serves two purposes: first, it allows the avoidance of “shark psychosis,” and two,

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<sup>55</sup>) The documentary received the highest audience for the channel in 2014 with 827,000 viewers. Source : <http://pro.arte.tv/2014/08/succes-daudience-pour-attaques-de-requins-a-la-reunion-lenquete-de-remy-tezier/>

<sup>56</sup>) Program where the association Squal’idees was charged with a study of shark jaws collected since 2014.

<sup>57</sup>) Quote from Liberation Sept. 22, 2011 entitled « Sharks are not teddy bears,” 3 days after Mathieu Shiller’s death.

since the safety of each participant seems to lie within his personal responsibility, there is no reason to enact political maneuvers in risk prevention.”

This study confirmed my base sentiment of these two individuals: as long as the idea of “excessive risk-taking” is associated with “denying the real risk,” the crisis would remain reduced to a simple “psychosis.” Faced with these attitudes, how could one accept the expenditure of 10-20 million Euro in securing the beaches, to the profit of a few hundred irresponsible, shaggy blonde surfers? It was urgent to force the State to publically admit we were faced with dangerous predators and major social, economic and human consequences, and no longer simple “carelessness” with limited consequences. I pushed local authorities to finally edict declarations that recognized the real danger, allowed for legitimization of an engaged public policy, in hope of making the policies long term.

I did realize that this was wishful thinking. The State would never frankly acknowledge the extreme and very real danger in the media, as that would mean they equally accepted responsibility for the calamitous past three years. The State acted with one sole goal in mind: do whatever was necessary to preserve the impeccability of acts tied to image...and thus its authority. From the very start, this had the opposite effect, as if every minister had duly applied himself to erase traces of his failings and incoherencies.<sup>58</sup>

This meant that an acknowledgement of the extreme danger remained understood by just a few individuals. For the public at large, between the official discourse, human responsibility offered as a construct explaining each attack and the “success” claimed by the scientific community, the authorities appeared to be the “victim of those mean, vicious nautical recreationists,” who will never be content.<sup>59</sup>

Let’s look at the incoherence of the State council member, a fine example of contradiction. In a 2000<sup>60</sup> publication, this man admitted that we were potentially faced with bites that were acts of feeding and not exploratory bites on Reunion: “in a number of attack cases, the shark wasn’t sufficed to an exploratory and turn back (10 of the 22 cases since 1980 on Reunion). It would seem the fish attacks the foreign entity that is the human with perfect intention because this animal also represents a potential food source.” However, as I’ve already mentioned, in an interview given after the first attack in Feb 2011, he stated: “When a shark bites once, out of confusion of prey, he knows he’s made a

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<sup>58</sup>) In Dec. 2014, the head of a sociological study (financed by the Minister of Ecology) confirmed the pressure and “edits” for received, in the aims of limiting in his final report any reference to the authorities’ initial mismanagement. Long after his mission was completed, after two publications in April 2015, he was threatened with law suits, and banned from communication by the authorities, who claimed a “confidentiality clause.” Post from the site ZINFO974 April 22, 2015 entitled: “Shark crisis. Could we please implicate all involved in the crisis and decision-making?” And a letter from a reader entitled “Avoiding making the situation worse,” published April 27, 2015 on Imazpress.

<sup>59</sup>) From the beginning, our opponents presented an image of authorities acting under permanent pressure from associations of nautical recreationalists. Because the State refused to declare its position, the opposition seemed more of a lobbying movement against the real risk at hand.

<sup>60</sup>) Op. cit. 30, p. 404.

mistake and doesn't attack a second time. The scenario where the shark attacks, stalks his prey and attacks again, like in *Jaws*, never happens. He backs off, as we're not part of his typical menu."<sup>61</sup>

What was the motivation behind such a U-turn in opinion? Forensic scientist on Reunion since the beginning of the 1990's, there was no way for him to ignore the multiplication and the seriousness of the injuries, in which members were torn off most of the time, a new characteristic in the attacks, starting in 2011. The 2015 sociological study shed some light on the multiple attempts seeking to root a belief in a "confusion of prey:" Saying that the shark made a mistake adds some coherency to the tragedy, the schema of causal blame allows the implication of rules to follow in order to avoid these "errors."<sup>62</sup>

This attitude conveyed the shark attacks as part of destiny, and the only way to save yourself was by avoiding the circumstances. When a medical examiner and State council member makes such contradicting statements, hasn't he compromised his position? It was strictly out of the question to mention the predator's intentions, along the lines of the old *Jaws* cliché, in the discourse advocates of shark protection espoused. But after three long years of trying to pretend the risk wasn't real, the truth finally comes out: an in-depth article, "*Jaws* is not just a movie,"<sup>63</sup> was published in 2014 on the subject of the attack crisis. So, now that our theories on events had been entirely side-lined were now becoming headlines, no one was willing the shameful truth perhaps we were actually facing an epidemic of "man-eating sharks." Even the fictional *Jaws* couldn't imagine a scene where a tourist on honeymoon, an adolescent girl -- on Valentine's Day -- a girl chomped in two pieces, a child and even a dog pulled down from the shallows!

Mid-2014 saw Nicolas Hulot, the mandated ecological ambassador to the president of the French Republic, in charge of the battle against global warming, visit Reunion Island. Present for a climate conference organized for the end of June 2014, as Reunion is a member of this "climate group" and R20. Reunion hoped to make itself an Indian Ocean epicenter for the fight against global warming.<sup>64</sup> Nicolas Hulot was involved with the French government on the maritime agenda, directly implicated in the development of protected zones, one of which being the "shark sanctuary" in New Caledonia, a French territory, via the Oceania 21 consortium.<sup>65</sup>

What were the possible ties between global warming and shark attacks? They are twofold.

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<sup>61</sup>) Op. cit. 15.

<sup>62</sup>) Study "Sociological approach to the shark crisis." Planning, Housing and Environmental Dept. of Reunion (DEAL), Arnold Jaccoub, Oct. 2014. Link: [http://www.info-requin.re/IMG/pdf/Etude\\_socio\\_-RAPPORT\\_DEAL\\_-Approche\\_sociale\\_de\\_la\\_crise\\_requin\\_-.pdf](http://www.info-requin.re/IMG/pdf/Etude_socio_-RAPPORT_DEAL_-Approche_sociale_de_la_crise_requin_-.pdf)

<sup>63</sup>) Title of a long article published Jan. 2014 in *Geo Voyage* #17, special Reunion Island. Considered the cause of the negative image sharks have, *Jaws* has always served as the reference for advocates of shark preservation in their defense.

<sup>64</sup>) *Journal de l'île de la Réunion* June 25, 2014, article entitles « *Our Region to become Leader in the Combat Against Climate Change.* » (Voir note 145

<sup>65</sup>) From [www.la1ere.fr/2013/06/26/nicolas-hulot-avocat-d-oceania-21-44203.html](http://www.la1ere.fr/2013/06/26/nicolas-hulot-avocat-d-oceania-21-44203.html). This entity formed by a coalition of 21 islands in the Pacific Ocean engaged in the fight against global warming, with a main goal of transforming each of their islands into marine reserves.

The first is a common belief that sharks attacks are augmenting due to global warming.<sup>66</sup> The second is linked to shark conservation, asserting sharks play a significant role in the fight against global warming. Evidently, the shark has become a “strong-arm” against carbon emissions. A recent study in the scientific review *Nature* Sept. 2015 attributed the shark with a role in climate change...because they eat herbivores,<sup>67</sup> there by complicating any sort of regulation of the species.

Another recent study conducted by the Australian Institute of Marine Science (AIMS), and published in the renown review *Plus One* in 2013, explained that protecting shark populations, in a subtle game of chain reaction, protected coral reefs, as well,<sup>68</sup> and healthy coral reefs offer a natural dike against rising sea levels, and also capable of absorbing and processing atmospheric carbon. Sharks had suddenly become some sort of “wizard beast” spreading virtue wherever it goes, and no less!

The shark species was now the new emblem of oceanic equilibrium, and shark conservation was now the basis for the acceptance of measures in creating sanctuaries, that over the last ten years have multiplied world-wide.<sup>69</sup> This all followed a global movement prior described and criticized by an eminent French geographer: “...the exploitation of Small, Insular States by a mixed coalition of experts, activists, journalists, celebrities and politicians. The threat of rising sea levels and the disappearance of these same islands and its lot of “climate refugees” has become a veritable bonanza for these insular States in pretending to be victims of development in the goal of receiving compensation for damages.”<sup>70</sup> In exchange for financial compensation, the privatization of millions of square kilometers of the ocean allowed the creation of a reservoir of fisheries, mining<sup>71</sup>,

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<sup>66</sup>) There are all sorts of wild and contradictory theories explaining the shark attacks. Article from the Franco-Russian website Sputnik France, Aug 18, 2011, “Shark attacks on the rise: the fault of global warming?” citing Konstantin Zgourovski from WWF Russia, “It is very likely that the attacks by man-eating sharks in places where this did not occur in the past is tied to climate change, or more precisely, the migration of normal prey Northward. “What about all the attacks in Southern nations? Link / [fr.sputniknews.com/sci\\_tech/20110818/190544704.html#ixzz3pkYBsHkh](http://fr.sputniknews.com/sci_tech/20110818/190544704.html#ixzz3pkYBsHkh)

<sup>67</sup>) These theories were developed by Mike Eithaus, based on the Floridian zone known as “Shark Bay.” The Floridian was invited to our island in 2013, and was co-author of the *Nature* study Sept. 2015. <http://news.fiu.edu/2013/06/fear-of-sharks-helps-preserve-balance-in-the-worlds-oceans/63078> and

<http://www.news.uwa.edu.au/201108223834/business-and-industry/shark-bay-seagrass-potentially-8-billion-carbon-sink>

<sup>68</sup>) The AIMS produced a famous study (also financed by the PEW) with goal to prove that conservation was more economically viable than the revenues from diving tourism, claiming that “a live shark is worth more than a dead,” aiming to “incite more nations’ interest in these animals and their contribution to our oceans and the economic health of these nations.” Source: :

[http://www.lemonde.fr/planete/article/2013/09/24/pourquoi-la-surpeche-des-requins-menace-les-coraux\\_3483594\\_3244.html](http://www.lemonde.fr/planete/article/2013/09/24/pourquoi-la-surpeche-des-requins-menace-les-coraux_3483594_3244.html)

[http://www.lepoint.fr/science/mieux-vaut-un-requin-vif-que-mort-02-05-2011-1326035\\_25.php](http://www.lepoint.fr/science/mieux-vaut-un-requin-vif-que-mort-02-05-2011-1326035_25.php) Et idem au Fidji

<http://www.pewenvironment.org/news-room/reports/the-socio-economic-value-of-the-shark-diving-industry-in-fiji-85899381760>

<sup>69</sup>) In 2014, there are now 13 designated sanctuaries. Here is the list: <http://wiki.bluelobby.eu/analyses/shark-sanct> The sanctuary created in Palau in 2009 is the most well-known, but also the sanctuary least afraid of gaps in logic. In 2008, an independent report showed that the Northern part of the sanctuary was home to one of the world’s largest petroleum fields. Source:

<http://pidp.eastwestcenter.org/pireport/2012/December/12-28-20.htm> This report claims that the reserves in shallower waters contain no less than 1,044 billion barrels of petroleum lies under them, 35% of it available. In the deepest zones, there are 1,880 billion barrels, 35% of it available. Also, a store of more than 8 billion cubic meters natural gas has been mapped in the shallow limestone layer. In 2012, these prospects had still not been explored, and authorities renewed, against payment, prospection authorizations for the Palau Pacific Energy Inc (PPEI), based in Texas. The licenses have been accorded and the forage already planned for. (<http://pidp.eastwestcenter.org/pireport/2014/February/02-26-04.htm> et <http://pidp.eastwestcenter.org/pireport/2014/August/08-15-05.htm>)

<sup>70</sup>) Jean-Christophe Gay, French geographer, 2009: “Global warming and the role of Islands.” Link:

[http://www.mgm.fr/ARECLUS/page\\_auteurs/Gay77.pdf](http://www.mgm.fr/ARECLUS/page_auteurs/Gay77.pdf). It appears impossible that these miniscule islands, the first exposed to the risks tied to rising sea levels, can help in slowing this phenomena. The massive industrial pollution caused by over-consumption of fossil fuels is considered to be the largest contributor to global warming. A trait inherent to the large Northern nations, still ill-prepared to reduce their emissions, but demanding conservation efforts from “Southern nations,” according to them, in the goal of absorbing carbon emissions.

<sup>71</sup>) At each instance, we note an “ocean ecology movement at two speeds,” one excluding traditional fishing practices, and the other authorizing

sources of energy, all whilst monopolizing strategic ocean lines of transport.” This movement that began in the Pacific, via New Caledonia and Oceania 21 started to interest us, as did the international congress on protected marine zones that took place in Ajaccio, Corsica Oct. 26, 2013. The photos of the event especially caught our attention.<sup>72</sup> In my research, I discovered that Nicolas Hulot seemed to heavily implicate himself in the creation of the New Caledonian reserve, accompanied by autonomous political personalities.<sup>73</sup> One of their collaborators from New Caledonia sincerely worried us, as did these types of alliances.<sup>74</sup> She had succeeded in pushing the passing of new conservation laws, protecting fishery of even the most dangerous species of sharks, even though these islands had suffered three in 2013 alone, and the bull shark population was exploding.<sup>75</sup> In light of the profound difficulty Reunion suffered in controlling shark populations that weren’t protected, how would New Caledonia be able to control such an issue now that all species were now untouchable?

In a visit planned for June 23-25, 2014, Nicolas Hulot planned to discuss Reunion’s shark polemic unofficially, during an informal meeting, organized at the last minute and including all those involved in the shark crisis on the 25<sup>th</sup>. My association and I were the sole involved in the fight uninvited to the reunion.

Why wouldn’t I be able to question this government high official about his position on the subject of our bull sharks? I wrote a mail to local media questioning the political “opacity” that had developed in New Caledonia, and condemned the risks tied to shark sanctuaries, especially those in which Nicolas Hulot played the kingpin. Within this mail, I included information I had obtained from a friend: the month prior, Hulot went on vacation to Mauritius. He enrolled his kids in surf school with Cyril, one of the original surf instructors from Reunion, who, ironically, had to exile himself to the neighboring island because of our shark crisis in order to continue his profession. Why didn’t Hulot spend his vacation on Reunion, take his kids surfing and spend his money on our island -- we could really use the business, consequence of this crisis -- of

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the exploitation of the sea beds. After the marine sanctuary was created to protect New Caledonian coral reefs, this publication stated that prospections were well under way: Over the last few months, Total representatives, Texan petroleum giant and a French strategic resources research institute came through New Caledonia...there is no marine mining code in New Caledonia...so drilling is allowed within the Sea of Coral marine park. Conference, “The New Caledonian Marine Cluster,” Oct. 8, 2014. : <http://histoire-geo.ac-noumea.nc/spip.php?article468>

<sup>72</sup>New Caledonia was honored at this international congress. Link: : <http://www.la1ere.fr/2013/10/28/la-nouvelle-caledonie-cree-son-parc-naturel-de-la-mer-de-corail-80917.html>

<sup>73</sup>See link note 327.

<sup>74</sup>At this point, in New Caledonia, voices were raised against these conservationist decisions that had been made with no real collaboration. A defender of ecological fishing practices began the fight by sharing documents on the subject amongst the different lobbies present. This ended in several publications. See:

<http://caledosphere.com/2014/06/23/absence-de-nicolas-hulot-un-camouflet-pour-lecren/>

<http://www.actionbiosphere.com/?p=738#more-738>

Another denouncing the opacity of the Coral Sea sanctuary :

<http://caledosphere.com/2014/06/30/oceania-21-cree-du-vent/>

Nicolas Hulot responded by cancelling his trip to Reunion Island. In 2015, Oceania21 seemed to lose the wind in its sails: :

<http://nouvellecaledonie.la1ere.fr/2014/06/23/nicolas-hulot-annule-sa-participation-au-sommet-oceania-21-163347.html>

<sup>75</sup>Another fatal bull shark attack in April 2015. The sightings, photos and videos of bull sharks in the Nouville Port in Noumea have become more and more frequent : <http://www.sudouest.fr/2015/05/10/un-homme-tue-par-un-requin-bouledogue-en-nouvelle-caledonie-1916563-7.php>

which he was very well-aware and an advocate of our principal opponents? <sup>76</sup>

After having contacted a local TV news station, I decided to organize an event that would coincide with the inauguration of “The Whale’s Road” on June 25, 2014, just before noon. We were 50 or so with signs and banners ready to welcome Hulot when he would arrive with a group of representatives from local higher authorities.

To our total surprise, he came straight towards our group in a seething fury, contesting the dialogue I had included in the mail, and that I had forwarded to him, accusing me of being “defamatory” and that my mail was full of lies. I would have never expected to be singled out by one of the celebrities of ecology in France. In spite of this precarious moment, I was glad to have attained my goal, which was to point a finger at the failings of the French government’s “shark politics” during this event. Hulot accepted to meet with me the next day. I invited Marie, attack-victim Sarah’s younger sister, to join me in order to offer an aspect of humanity to our cause. This was the perfect occasion for her to put a letter in his hands, where she described her hopes: just to be able to enjoy the joys of the ocean with serenity. Faced with the dialogue coming from Francois Hollande’s “Mr. Ecology,” this ideal seemed further away each day.

At the same time, in spite of the ban in place for the last year, the surf spots were once again populated by the most dedicated surfers. On July 24, 2014, close friend and long-time collaborator in our battle was attacked at Saint-Leu. He was very lucky to escape with injuries to his arm and leg that were not too serious. This attack, the unique incident in 2014, again reheated the debate about surfer’s behavior and their lack of respect for the ban. Vincent’s attack happened within a particular context: the President of the Republic was planned to arrive July 26, 2014. His trip was cancelled last minute due to the crash of an Air Algeria flight over Mali. Nevertheless, from this point on, we were able to hold the government’s attention when ministers came through the island. It seemed as though, from the moment we had won elected positions, they realized we carried political weight and sought to oblige us.

The rescindence of the ban on nautical recreation and swimming must have had something to do with our new positions in local power. Successive prolongations on the ban, in the beginning provisory, put the authorities in a delicate position: the freedom and dignity of Reunion’s population was at stake.

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<sup>76</sup>) Since his nomination by President Francois Hollande in 2012, Nicolas Hulot had supported a vast campaign to accord political asylum for Paul Watson, the founder of Sea Shepherd, who was red-listed with Interpol. Hulot’s ties to the organization left little doubt as to his opinion on risk reduction via fishing strategies. The first thing he announced during his visit to our island in 2004 was the fact that he had obtained political asylum in France for Paul Watson after petitioning the president of the French Republic. We well understood the provocation in his choice to announce this information on our island: how could we hope for support from our main opponents? Granting Paul Watson asylum was a purely political manoeuver in the months preceding the Climat Conference (COP21) to be held in Dec. 2015 in Paris. What better political symbol for Francois Hollande than the role as protector of the world’s first “environmental refugee” on the planet?

We were received by a councilor to the President of the Republic during an official visit in Aug. 2014. The meeting lasted for hours, and for the first time, he guaranteed the “total engagement” of his chief of State on this topic. Recently, upon arrival, when questioned by journalists on the tarmac, on the state of affairs of our crisis, he replied, “We have a plan that you’re already familiar with: prevention, information and capture. It’s in the interest of Reunion Island. I know there is a lot of pressure to preserve the species, we all know that. This shark plan needs to be put forward, in in all of our interest.” In another television interview, he once again expressed compassion for the victims and their families. Finally, they had recognized how serious the situation was.

The three television programs produced in March 2014, *Thalassa*, *Enquete exclusive* and *Envoye Special*, were finally run in Aug. 2014. This constituted an avalanche of negative coverage at a national level. Suddenly, several local political personalities started braying about this polemic, naming it “media harassment,” going as far as to sign petitions here and there in sign of protest. The financial losses tied to tourism and the tarnished image of our island were now well-established. Fidel aficionados of Reunion were exasperated by the negative press. Veritable change was taking place, illustrated by several spontaneous incidents.<sup>77</sup> After each new attack, there seemed to be a new and accusatory dialogue: “Who will pay for this?”<sup>78</sup>

In an act of provocation directed at certain state representatives who complained a bit too much about the noise coming from media, I asked, “Will it go as far as to ask us to dig holes on the beach in order to immediately bury the next victims so that we escape more bad publicity?” No one wanted to calculate that and average 6.3 deaths per year among a population of 7 billion people, a growing interest in the issue, it was no wonder our island appeared on Page 1, since 15-20% of the attacks occurred here. It was clear that the sole solution to our problem was an efficient agenda to reduce the risk, not a campaign of non-disclosure.

We were also forced to deal with tourism boycott campaigns: the threat began systematically in 2012.<sup>79</sup> Our local associations and businesses suffered constant harassment from the entire planet via letters calling for boycott, and were stuck between a rock and a hard place: either

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<sup>77</sup>) After an attack took place during the subject’s filming, following a shark warning, Valerie Filain, journalist at Reunion1ere, posted on her Facebook page on Nov. 12, 2014: “During the production of this subject, my fellow journalist and I were accused by a certain person to “have blood on our hands” in covering the shark crisis on Reunion.”

<sup>78</sup>) After the July 22, 2014 attack on Vincent, a local surfer, as he lay seriously injured in his hospital bed, a journalist from the local private TV channel asked the head of tourism, “In your position as president, could you consider filing charges against people who don’t obey the ban, when we know the consequences these attacks hold upon tourism to Reunion?” (This type of discussion was absent when swimmers were involved in the attacks).

<sup>79</sup>) Boycott campaigns followed one after another throughout 2012, and will probably never end. Each one presented a petition with an evident conservationist tilt. This petition, from Aug. 2012, a letter to the Minister of Over-seas Territories posted online: “In conclusion, know that if at one time, Reunion was an attractive tourist destination, the island no longer figures on the list of my future voyages, as I believe with all my heart that the local economy should not be linked to the destruction of its fauna. I’ve invited friends and family to follow me in this choice. Source : <https://cetacesetfaunemarine.wordpress.com/2012/08/15/save-our-sharks-la-reunion/>

nothing was done and our reality of attacks, deaths and an ocean closed to public usage remained, or we attempted to secure our beaches “efficiently” by fishing the dangerous species, only to find ourselves under the spotlights and in the role of “an island of barbarians” who should be punished. Since the tourism/economic side of the argument prevailed, it fell upon our opponents to weigh the consequences even more devastating than an attempt to resolve the problem by regulating the number of predators.

This was no simple task for us, either. It was obligatory to illustrate the gravity of the situation in order to convey its seriousness, and force the State authorities to act. On the other hand, we became victims of virulent attacks from a number of the defenders of the island, who were in line with the shark defenders, accusing us of descending into shark-induced psychosis.

In the meantime, of the three TV programs released in Aug. 2014, the piece by *Envoye Special* was unique in including a very revealing interview with the prefect. In a discussion around the circumstances leading to Stephan Berhamel’s death, caught in a trap and confused, the prefect admitted he didn’t know much on the subject or the probable mistakes made by authorities under his direction: “Nobody’s perfect.” He was removed to another position July 30, 2014, a week before the release of the interview that held no secrets for anyone now. As the journalist mentioned, it would be difficult to not imagine causality, even if the prefect had handled several sensitive cases with, “decisions difficult to accept amongst his interlocutors and public opinion. The most shocking of these was the ban on swimming and surfing outside of surveyed zones.” Yes, the French State had found an impeccable prefect, capable of succeeding the impossible: legally prohibiting access to the ocean to an entire island.

In any case, this TV news report on the prefecture hinted at the scandal that lurked just below the surface. Also, beginning at the end of Dec. 2014, I was asked to serve as witness several times in the case for involuntary homicide filed by Alexandre Rassiga’s sister in the case of his death by attack, and was supported by Save Our Children. Finally, our court system began to investigate the calamitous management the government had provided, which indicated that perhaps fatalities could have been avoided. Several undeniable facts: the sublimated 1997 and 2007 reports, an internal communication in 2008, the absence of public signs warning of the shark risk before 2012, etc. gave body to the case.

I learned of the victim’s parents’ relief when they heard the case had been filed. To date, they had been subjected to a discourse revolving around their son’s “characteristic imprudence,” when in fact, the State and local institutions had made several inexcusable mistakes. For me, what was more important than the final judgement was the opportunity for all parties involved to reflect upon the consequences of their actions, the inflexibility of their opinions and the lack of solid decision-making that lead this situation to continue on for years.

I also hoped this inquisition would put into question the ideology behind the body of scientists that estimated the study of sharks more important than human safety. We also wanted

a condemnation for the scientists who had completely under-estimated the imminent danger the Aquila earthquake represented.<sup>80</sup> In the same vein, in Dec. 2014, elected officials had been charged and condemned with heavy sentences for negligence in preparations for Cyclone Xynthia.<sup>81</sup> I hoped that this case, and the sentences handed down, may serve as a warning, or even jurisprudence in future environmental conflicts. 2014 ended with an evaluation of the CHARC program. What would become of the sweeping and vulgar answers science had offered us over the years?

In my research, I discovered there existed an evaluation report for the program<sup>82</sup> that contained, to my extreme surprise, the following: “We can certainly expect major scientific results, and a method of application for key eco/ethnological concepts that will, according to the dimensions of the zones under study, represent a first in the scientific domain. But we discount our capacities for prediction of evolution. It is a certainty that if results in terms of management are not apparent, it is due to the chaotic aspect (in the sense of determinist chaos) that disallows all prediction, and we can abandon all hope of managing risk by analysis by study: it is thereby useless to attempt further scientific activity.” The author undoubtedly wrote these lines in a state of scientific euphoria, certain that their efforts would produce major discoveries in risk prevention. In order to avoid all risk, he must have added this paragraph as a rabbit hole allowing CHARC to shirk all responsibility by appearing neutral in this evaluation.

Or, in fact, perhaps he had already realized years prior that research into risk reduction based on modelling conditions in the zone may prove useless? Based on other studies from around the world, it seemed wishful thinking to reduce risk with simple knowledge of the species, tagging or high technology. Twenty years of research in Recife didn’t aide in reducing risk other than by implicating a ban.<sup>83</sup>

In any case, his statement was clear: if the CHARC program offered no information aiding in the management of the shark risk, it would be best to accept science’s failings on the subject. What the evaluator probably meant was that the program was one of the most ambitious on the planet, with 800,000€ invested over 2 years, with nearly 80 sharks tagged, reflective questions and a developed investigation plan, protocols, techniques and methods specialized to marine life study, and if such an in-depth study was in fact incapable of recognizing and establishing pattern data, it would be useless to invest 8 or 80 million Euro more in seeking a scientific resolution to the issue. Would we finally admit to ourselves that faced with a natural system that even “hard science” qualifies as chaotic, with a study subject as mysterious, the shark, within a milieu so

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<sup>80</sup>) Source : [http://www.lemonde.fr/planete/article/2012/10/22/seisme-de-l-aquila-derniere-audience-du-proces-des-scientifiques\\_1779033\\_3244.html](http://www.lemonde.fr/planete/article/2012/10/22/seisme-de-l-aquila-derniere-audience-du-proces-des-scientifiques_1779033_3244.html)

<sup>81</sup>) Source : [http://www.lemonde.fr/planete/article/2014/12/12/xynthia-l-ancien-maire-de-la-faute-sur-mer-condamne-a-quatre-ans-de-prison-ferme\\_4539436\\_3244.html](http://www.lemonde.fr/planete/article/2014/12/12/xynthia-l-ancien-maire-de-la-faute-sur-mer-condamne-a-quatre-ans-de-prison-ferme_4539436_3244.html)

<sup>82</sup>)« Project CHARC evaluation report » Mar./Apr. 2012, F. Gerlotto, ex-researcher at IRD, now scientific director at a Peruvian research institute concerned with fishery resources, IREA l'IREA (« Instituto de Recursos Acuáticos »).

<sup>83</sup>) Op. cit. 131.

difficult to comprehend, the ocean, and maybe the answer was out of reach?

One meeting followed another at the end of 2014, and even if the major methods of securing our sea seemed obvious, they needed to be tested before implementation, and were met with a wall of opposition from the shark's defenders. Discrediting the drum lines was their line of fire, even if this project was ecologically sound, and reduced by-catch to near-zero levels.<sup>84</sup> In Dec. 2014, our opponents circulated an umpteenth petition that received over 30,000 over-seas signatures opposing the European Community finances solicited for this risk reduction program.

The initial project implementing submerged look-outs, after having passed an experimental phase, was disregarded in Nov. 2014. The project's evaluation was written up by Bernard Seret, the French major shark specialist, who was hired on a private consultant in ichthyology marine at the occasion. This Parisian scientist had never masked his disregard for nautical recreationalists over his passion for sharks, reinforcing their indignation on the subject of his conclusions.

So, it was impossible to "scientifically prove" the program's efficacy, in spite of 4 months of trials and 100,000€ invested. It was also noted, "The study's conclusions are not solid enough to envision moving forward with operations."<sup>85</sup>

This « failure » forced the Surf League to revise and reinvent a new project at the beginning of 2015 that was even more confused. An "operational experiment" planned for a six month trial began in at the start of 2015, demanding an investment of several 100's of thousands of Euro, and centered solely around 15 young students chosen for the national amateur surf team. The program was continued in Aug. 2015.

The conclusions from the CHARC program were revealed during the C4R meeting Feb. 12, 2015. To our surprise, the assessment was presented in the form of a 20-minute film, produced by Remy Tezier, the same who'd directed the documentary discussed prior! The prefect presented the documentary to the assembly gathered for the occasion as a key element to comprehending our shark crisis and the share the information widely, but we didn't agree. The suppositions, as well as the conclusions offered by this scientific program were conflicting with all the facts available from the Reunion, as well as other locales. We intervened in order to protest the hegemonic opinion formulated by these scientists, for which we were the guinea pigs in their study.

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<sup>84</sup>) In Aug. 2014, they didn't hesitate to question the program's methods after a whale was caught by one of the buoys, even though the buoy wasn't part of the same program, any tactic was fair play in the media war out to discredit means of control by fishing. The State had chosen safety through fishing methods, but these conservation associations continued to incriminate these methods, even in the face of new attacks.

<sup>85</sup>) « Expertise study on the efficacy of shark look-outs on Reunion, » Bernard Seret, Sept 25, 2014. The twenty encounters required by the study's initial protocol seemed to be more of a scientific fantasy than a real knowledge of the beast: not one confrontation with a bull shark occurred, in spite of a large number of excursions, and the utilization of all means known to attract them. This conformed perfectly to the extremely shy character of the fish. We'd hoped for a time that human presence would scare the sharks away from humans below and on the surface of the water, but it wasn't to be.

The importance of the financial losses tied to tourism, as well as the image of our island, was now clearly established, much to the exasperation of residents, who were directly affected by the negative publicity. Certain spontaneous incidents revealed the importance of what was at stake. After each attack, the witch hunt began again, with a vocal accusation, “Who will pay?”<sup>86</sup>

I had provoked certain state representatives, who complained about the reach of the negative media coming out of Reunion, “Will it reach the point that we dig holes on the beach so we can bury the victims immediately before the media gets a hold of the news?” No one wanted to accept that with an average of 6.3 deaths per year amid a population of 7 million, it was impossible to escape the media attention, since 15-20% of the deaths on earth occurred in our waters. It was obvious that the sole solution to the crisis involved an effective risk reduction, and not a policy of sweeping attacks under the rug.

At the same time, we were dealing with recurrent campaigns calling for a tourism boycott: the threat had been constant since 2012. Local politicians were harangued by messages from the entire planet that left them in a stranglehold: either they did nothing and the attacks, deaths and closed waters, or we attempted to rectify the situation via fishing for consumption, only to find ourselves under fire, portrayed as “barbarians.” Because the argument for viable tourism prevailed, our critics needed to weigh the idea of a growing menace in the absence of regulation of these predators.

This was no simple task for us, either: it was necessary that we spread the news concerning our situation to create awareness that would force the government to act. This earned us the wrath of many of the island’s defenders, who accused us of creating a public psychoses, alongside the shark’s defenders.

In the meantime, among the three TV programs aired in Aug. 2014, Envoye Special stood alone in including a shocking interview of the Prefect. Backed into a corner and confused, on the topic of Stephane Berhamel’s attack and the presence of sharks, he admits to not knowing much about the subject and that his public services had most likely committed errors, concluding, “No one is perfect.” He was removed from public service July 30, 2014, a week prior to the report being aired, and which who’s take on the subject was known to all. It’s difficult to deny the coincidence, even if, as the journalist had remarked, he had managed his electoral position remarkably well, having made, “delicate decisions that were accepted by his constituency. The ban on nautical sports and surfing in unguarded waters remain the most shocking example.”<sup>87</sup> Yes, the French State had a very good Prefect who succeeded the impossible: forbidding access to the ocean to an entire island population.

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<sup>86</sup> Boycott campaigns followed one after another without respite since 2012, and probably will not cease. They were more or less subtly presented along with each movement or petition. One of the first, in Aug. 2012, was an online petition destined to the Minister of Territories: “Know that in the past, I was drawn to Reunion Island, but this is no longer a travel destination for me. I believe that destruction of native fauna should not coincide in the interest of tourism, and I have asked my friends and family to follow me in my choice.” Source: <https://cetacesetfaunemarine.wordpress.com/2012/08/15/save-our-sharks-la-reunion/>

<sup>87</sup> N° du Journal de l’île de la Réunion du 31 juillet 2014, article intitulé « Le préfet Marx sur le départ ».

In any case, this TV program contributed to the scent of scandal surrounding the crisis. As well, from the end of Dec. 2014, I was heard several times as witness in the case of involuntary homicide, pressed by Alexandre Rassgia's sister, and supported by Protect Our Children. Finally, the justice system took note of the calamitous management of the crisis, and lead us to believe that the system acknowledged the deaths could have been avoided. Undeniable facts, studies gathered from 1997 to 2007, the internal circular of 2008, the lack of public notification of risk prior to the end of 2012 all gave weight to the case.

A person close to the case let me know how relieved the parents of the victim were once the case moved forward. Contrary to the common conversation centered on the "characteristic imprudence" of the victim, now the inexcusable faults on behalf of the authorities were recognized. More than the final result of the case, it was important to me that the interlocutors implicated were forced to consider the consequences of their acts, the positions they had taken and their lack of decisiveness that had forced this crisis to continue.

Perhaps this court case would put into question the State's ideology that had sacrificed public safety in the face of scientific research on sharks? We held in mind the guilty sentences faced by scientists who under-estimated the imminent danger posed by the Aquila earthquake<sup>88</sup>, as well as the 2014 negligence case involving cyclone Xynthia, where politicians faced heavy sentences. I hoped this case would serve as a warning, or offer a precedent in environmental cases.

The end of 2014 saw the final analysis of the CHARC program<sup>89</sup>, whence I came upon a surprising conclusion, "We are expecting with certitude major scientific results, with the application of eco-ethological concepts that will, in context of the area of research, remain a scientific first within the domain. We also expect to collect predictive capacities. It is absolutely certain that if these results pertaining to study controls do not appear, it's due to the chaotic aspect (in the determinist sense of chaos) of the study's subject that disallows for all prediction, thus we can abandon all hope of risk management by analysis of the milieu. In which case, it is useless to pursue further scientific activities." No doubt that when the author wrote these confident words that only briefly touch upon failure, he never imagined the program would produce only results with very little value and nothing enlightening on the topic of risk management. He most likely included the final clause as an escape route that included a certain neutrality. Or perhaps he *had* realized, at this point, the impossibility of research concerning risk reduction based upon modelled conditions in a natural milieu?

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<sup>88</sup> Source : [http://www.lemonde.fr/planete/article/2014/12/12/xynthia-l-ancien-maire-de-la-faute-sur-mer-condamne-a-quatre-ans-de-prison-ferme\\_4539436\\_3244.html](http://www.lemonde.fr/planete/article/2014/12/12/xynthia-l-ancien-maire-de-la-faute-sur-mer-condamne-a-quatre-ans-de-prison-ferme_4539436_3244.html)

<sup>89</sup> Evaluation of project CHARC, March/April 2012, F. Gerlotto, retired researcher at IRD, current scientific director at a Peruvian research institute on Halieutic Resources, IREA (Instituto de Recursos Acuaticos)

Based upon studies lead in the four corners of the earth, it seemed illusory to hope to reduce risk based upon a simplistic understanding of shark populations gained through tagging and tracing. Twenty years of research at Recife, Brazil lead to no solutions other than banning the sea.<sup>90</sup>

In either case, his opinion is clear: if the CHARC program offered nothing in terms of managing the shark risk, then we needed to accept that science had failed at this juncture. Which most likely meant that this scientific evaluator recognized this research was among the most ambitious and costly on the planet, with 800,000€ assigned over two years to the project, with over 80 sharks tagged, prior consequent and irreproachable reflection, protocols, procedures and heuristic methodology that had been vigorously followed. With such a heavy level of engagement, it was inconceivable to not arrive at major results. If such a study failed to produce reliable patterns of behavior, it would be useless to invest either 8 or 80 million €uro more looking for solutions provided by science. Would we finally admit that we were faced with a natural system that “hard science” qualified as chaotic, with a mysterious subject matter, the shark, that moved though a natural environment that escapes human control, the Ocean?

The reunions were an endless series of events at the end of 2014, and if it was generally accepted that methods of securing our coasts were required, they each needed testing, and each one came head-to-head with the shark protectionists. Their main objective was to discredit drum-lines, even if this project was acceptable to ecologists by reducing to zero the risk of by-catch deaths<sup>91</sup>. As such, in Dec. 2014, our opponents launched another petition that collected more than 30,000 signatures internationally that opposed European funding dedicated to reducing risk of attacks.

The submerged look-out program was, after an experimental phase, terminated in Nov. 2014. Bernard Seret, renowned French shark specialist, served as a private ichnology consultant for the program’s evaluation. The Parisian scientist had never hidden his contempt for ocean-goers in the face of his passion for sharks, which only served to reinforce the nautical enthusiast’s indignation in light of his conclusions.

Because of this, it was impossible to «scientifically prove” the efficacy of the program despite 4 months of trials and more than 100,000€ invested. Seret indicated in his report that “the study’s

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<sup>90</sup> In addition to tagging programs held in Florida, Hawaii and Australia, numerous studies launched over several decades in the goal of reducing shark risk (see Op. cit. 80, chapter “Prevention with Equipment.” Pg. 203). Neither walls of air bubbles, chemical repulsives, electromagnetic waves and strobe flash have, to date, despite major investment and consequent research, offered any viable or economically approachable solutions to preserving human lives. Here is a recent article outlining these innovations:  
<http://www.news.uwa.edu.au/201506177707/international/shark-deterrent-research-reveals-interesting-results>

<sup>91</sup> Of course, in Aug. 2014, they didn’t hesitate to call attention to and put into question these methods after a whale was caught up in a bouy. Even if all evidence showed it was not one of the program’s bouys, all was fair in this media war discrediting fishing methods. After the State accorded that security could be maintained by fishing, the associations advocating shark protection made it their goal to condemn these methods, continuing even in the face of new attacks.

conclusions are not robust enough to envision passing to the operational stage of the program.”<sup>92</sup>

This «failure » forced the Surf League to reassess their project and create a new model, even more confused, at the beginning of 2015. This required further investment of several hundreds of thousands of Euro, and was geared in quasi-exclusivity towards the safety of 15 young interns from the French national surf team, and would continue through Aug. 2015.

The scientific program was restored during the C4R assembly held Feb. 12, 2015. To our real surprise, the outcome was presented in the form of a 20-minute film produced by Remy Tezier, director of the prior documentary. The Prefect lauded the document to the assembly united for the occasion as a comprehensive analysis of the situation, and that it should largely aired to the public. We were absolutely in disagreement. The postulates and conclusions from the scientific program were in complete opposition with facts from the field in both Reunion and other countries. We intervened to strongly contest the hegemony of the views presented by the scientific entity, for whom the public served as guinea pigs.

Never the less, during conversations between a biologist, as well as the director of the IRD, we agreed on one point: they hadn't been very effective, and it was in fact the State that had decided from the beginning to base decisions upon scientific studies that didn't indicate much of interest. We reproached the lack of honesty and courage to refuse the instrumentation that had been picked up by the media and our opponents, and that had also driven public opinion to prioritize national research over our local need for safety. We proposed that they reconsider the work taking place locally as complimentary and not an opposing force, as it was under the pretext that questioned the logic behind their conservative dogma. My goal through beginning collaboration again was to arrive at a point where the scientific information coming from Reunion could be used in other locales stricken with numerous shark attacks.

This large assembly held the 12th of Feb. 2015 left us with a glimmer of optimism and reconciliation: because of the ban on nautical activities, we had managed to pass more than a year with only one attack that wasn't fatal. What's more, for the first time, both the Prefect and the regional president were present, and announced that 10 million Euro would be attributed towards approved programs<sup>93</sup>. This was a breath of fresh air, as lack of investment was one of the most import obstacles we faced. All the way from our little rock lost in a massive ocean, faced

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<sup>92</sup> “Expertise on the research report on the efficacy of the shark look-out bouys on Reunion Island,” Bernard Seret, Sept. 25, 2014. The twenty encounters with bull sharks required within the initial protocol appeared more scientific fantasy than any real knowledge of these predators: not one encounter with a shark had occurred despite a large number of expeditions and the utilization of every trick in the book to attract them. All of this served to confirm for the scientists that bull sharks were extremely shy beasts. We would have hoped that these facts would have confirmed that bull sharks are hesitant in the presence of humans, above or below water, but the scientists were having none of it.

<sup>93</sup> No one seemed to comprehend that the cost of prevention demanded from the French system long and costly experiments within the sacrosanct “principal of precaution.” Article 5 in the 2004 Charter for the Environment prohibits all potential harm to the environment, applied by the principal of precaution, imposing prior evaluations of impact. If impact was difficult to evaluate, the situation remained blocked to all progress. It came down to a constitutional issue that accorded more importance to the environment and it's non-human occupants than human lives themselves. Here is the law in text: <http://www.conseil-constitutionnel.fr/conseil-constitutionnel/francais/la-constitution/la-constitution-du-4-octobre-1958/charte-de-l-environnement-de-2004.5078.html> The pressure coming from ecology groups in France had transformed a simple hook worth a few Euro into smart drumlins worth 10,000€ and a simple net worth several thousand Euro into an innovating barrier worth several millions of Euro. In every other island in our region, simple traditional fishing methods and the commercial consummation of shark meat sufficed to reduce risk of attack considerably.

with constraints, lives at stake and unequalled adversity, we succeed to move forward with a plan that was ambitious, complete<sup>94</sup>, ecologically viable, presented by large assembly of local associations and that above all, supported preventative fishing.

Even if it risked taking some time, and although we would most likely never return to the state of serenity we had known, the attention we were accorded during the Feb. 12 2015 assembly was evident, and we finally had a legitimate voice in the discussion, proof of the distance we had come since 2011. We were on our way.

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<sup>94</sup> We had developed no less than ten preventative measures consisting of numerous innovations (such as the submerged look-outs, smart drumlins and new generation netting), even though in the best case scenario, other nations facing attack risks use only four, at best five of these methods.