St. Maarten: Impact Hurricane Irma on Nature

Brown Pelican, Photo by: © Miro Zumrik

> *"I am afraid we lost half of our Brown Pelican population"*

Some Brown Pelicans (Pelecanus occidentalis) have returned to the breeding site Divi Little Bay after St. Maarten was hit by Hurricanes Irma and Maria.
Photo by: © *NFSXM*

What started out a week prior as a low pressure system off the Cape Verde Islands ended up as the first ever category 5+ hurricane to hit the Caribbean's Leeward Islands mostly due to warming ocean temperatures. Hurricane Irma was so powerful that it devastated several islands in the north-eastern Caribbean. The Dutch Caribbean Island of St. Maarten was not spared and sustained catastrophic damage. On the morning of September 6th, Irma struck the island with so much power that more than 90% of the buildings are damaged, many houses lost their roof and infrastructure is significantly damaged, resulting in much of the population becoming homeless and without basic needs. Nature Foundation St. Maarten (NFSXM) has assisted with water and food distributions, cleaning up beaches and water bodies, and has focused on assessing the extent of damage the 185 MPH winds, large waves and strong surge caused to the island's nature. The first terrestrial and marine assessments took place from September 12th to 16th, and from September 22nd to the 25th. They were carried out quickly to get a first overview of the damage – further, more in-depth assessments are continuously going on.

On land, the island looked nothing like itself post-hurricane. The usually green island was now brown, with most vegetation defoliated and many large trees knocked down by strong winds (NFSXM, 2017a). The rains bought by the Caribbean's second hurricane 5 of the season, hurricane Maria, helped most trees and shrubs - including tamarind, acacia, flamboyant and kapok trees - sprout new leaves, and some areas have already returned to their typical shade of green (NFSXM, 2017b; König, 2017). However the height of vegetation have decreased significantly everywhere on the island. The many broken palm trees will however take much longer to recover due to their slow growth.

St. Maarten's avifauna did not fare well, with some species such as the barn swallows *(Hirundo rustica)* displaced from their usual habitat (BirdsCaribbean, 2017). Hummingbirds are of specific concern due to the lack of food. NFSXM has asked local residents to place bird feeders in schools and gardens, and BirdsCaribbean has sent 300 hummingbird feeders to be distributed to schools and homes across the island (BirdsCaribbean, 2017). The bird species that was greatly affected by the hurricane's heavy winds appears to be the brown pelican *(Pelecanus occidentalis),* the island's national bird (NFSXMb, 2017). Initial assessments found that thirty of the island's two hundred pelicans died during or following hurricane, although conservationist Binkie van Es recently stated *"I am afraid we lost half of our Brown Pelican population"* (König, 2017; BirdsCaribbean, 2017). Most of the pelicans' rookery sites have been destroyed. Shortly after the passing of the hurricanes NFSXM found that the complete breeding site at Divi Little Bay had been decimated and about two-dozen nests at the sites were lost. Recently NFSXM was delighted to report that the majority of the breeding pairs have returned (NFSXM, 2017c).

St. Maarten's wetlands and coastal areas suffered significant damage. Simpson Bay Lagoon, a dominant feature of the island and one of the largest lagoons in the Lesser Antilles, has been labelled an "environmental disaster zone" by NFSXM. The Foundation estimates that Irma caused over 300 vessels to sink in the lagoon and Oyster Pond on the eastern coast. As a result, more than 750,000 liters of fuel is being discharged into these waters, and Tadzio Bervoets, manager of NFSXM, estimates that cleaning up all the vessels in the waters will take about 10 years (König, 2017). Bervoets carried out a diving survey of Simpson Bay Lagoon post-hurricane and reported seeing a sunken boat every five meters, with the water being more diesel than salt (Bervoets, 2017). While this is a huge concern for the environment and public health, NFSXM has had little support for clean-up activities and urges the fast-tracking of permits so that critical large scale work can begin in Simpson Bay. *"Our request for assistance has largely been unanswered and we now are dependent on commercial salvage operators to clean up the wrecks"* explains Bervoets (NFSXM, 2017d). The Foundation has been able to monitor the removal of sunken vessels in Oyster Pond and is helping ensure that oil spill containment equipment is being properly used to minimize further stress on the ecosystem.

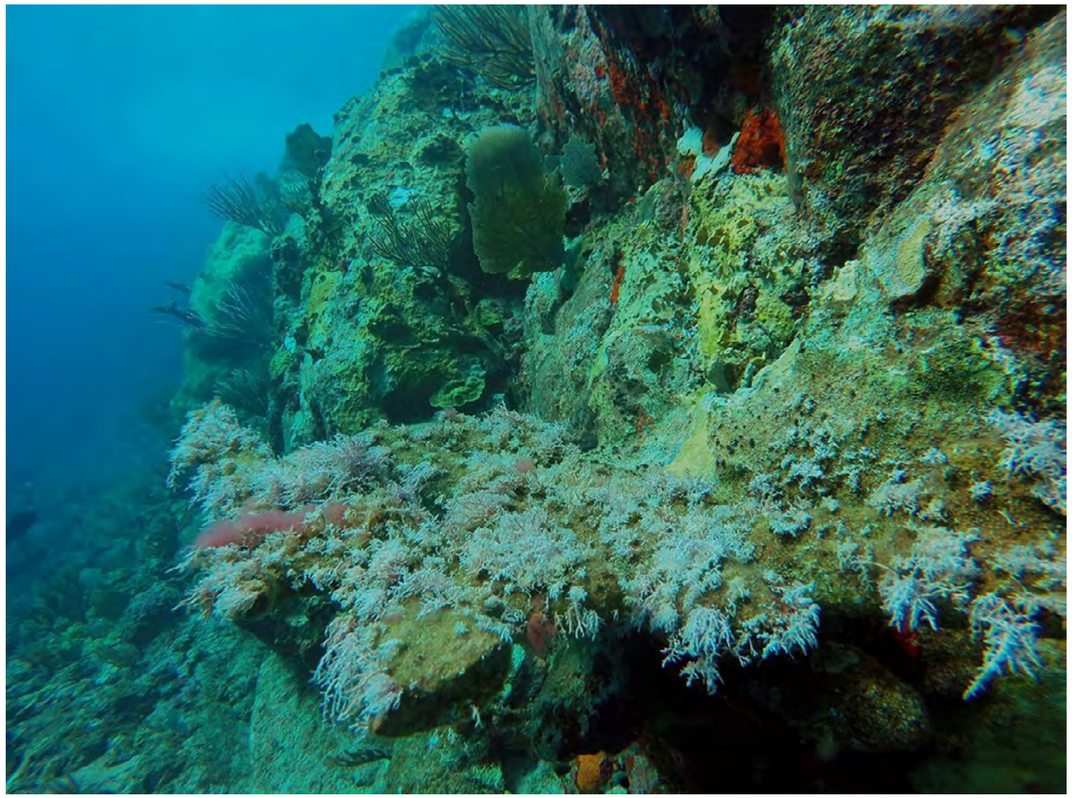
Water quality is of specific concern and is being monitored by NSFXM. Wetlands and coastal areas have been polluted not just by sunken vessels but also by the significant run-off from land that resulted from Irma's torrential rains. Several areas have been reported to have raw sewage entering them, and there has been an important fish die-off at both Great Salt Pond and Fresh Pond (NFSXM, 2017a). Nature Foundation has advised against the consumption of any seafood as it may be contaminated. Large amounts of debris are also being found in the island's wetlands and coastal areas. The removal of this debris is a source of concern in itself, as the Philipsburg landfill was already over capacity before the storm.

Mangroves and seagrasses in Simpson Bay Lagoon and in Oyster Pond, which have already suffered significant losses as a result of pollution, anchoring and eutrophication, were uprooted and torn down by hurricane Irma's strong surge. While St. Maarten's invasive seagrass species (*Halophila stipulacea*) was the most affected, probably due to its weaker roots and smaller growth, native species (*Thalassia testudinum, Syringodium filiforme*) did not fare well, with two hectares of native seagrass beds gone. Most mature mangrove trees have been destroyed, with estimates as high as 90% (NFSXM, 2017a). The biggest loss has been recorded at Mullet Pond, a RAMSAR site and therefore wetland of significant international importance. Many boats tried to secure themselves to mangrove roots, which led to the uprooting of many mangrove strands (NFSXM, 2017a). This is a significant issue for the island as many species, such as sea turtles and juvenile reef fish, depend on seagrass beds and/or mangroves for food and shelter.

While the impacts of hurricane Irma are much more evident on land, NFSXM has surveyed the island's reefs and found that the damage under water is just as catastrophic. The Foundation conducted an initial Marine Park and Dive Site assessment from sept 28th to Oct 6th, which will soon be followed by more in depth reef monitoring. The assessment revealed that the powerful hurricane caused much direct and indirect damage to St. Maarten's coral reefs. According to NFSXM's estimates, Irma caused 30% of the reef to die off - mostly corals and sponges in shallow reefs – and 50% of the reef to suffer some kind of damage such as broken branching coral fragments (NFSXM, 2017e). Siltation bought by Irma's strong surge has resulted in many corals covered in sediment and sludge. Many reef species are believed to be unharmed, including reef fish, octopus, morays, sharks and stingrays. Sea turtles did not fare so well. According to Bervoets, about half of the 80 to 100 sea turtles in St. Maarten probably survived (König, 2017). Much of the turtles' seagrass habitat has been damaged, and nesting beaches are now severely eroded and full of debris. In fact, the 2017 Sea Turtle Nesting Season Monitoring Programme has been cancelled.

A sunken Houseboat in the Mullet Pond Ramsar Site.
Photo by: © *NFSXM*

Oil Spills Simpson Bay Lagoon
Photo by: © *NFSXM*



Macroalgae overgrowing St. Maarten's reefs.
Photo by: © *Melanie Meijer zu Schlochtern*

NFSXM has been working hard on a number of marine conservation projects over the past couple of years, all of which have been devastated by hurricane Irma. The foundation's coral nursery project – funded by the European Union Best 2.0 Program and aimed at restoring elkhorn and staghorn reef zones – was totally wiped out. While NFSXM staff secured the 9 coral ladder structures located at the dive site 'The Bridge' and pulled them deeper to minimize damage, Irma tore down the ladders and took away all fragments growing on them. Of the 355 fragments, only two small ones have been recovered (NFSXM, 2017f). A GoFundMe page has been set up to raise the funds needed to rebuild the coral nursery (*www.gofundme.com/rebuild-st-maartens-coral-nursery*). Acoustic receivers placed to monitor shark populations have also been lost. Not a single one of the 8 receivers or their structures has been retrieved. The juvenile conch growth research experiment, which is determining whether native and invasive seagrass affected conch growth differently, also suffered significant setbacks. Not only were many seagrass beds and juvenile conch destroyed by Irma, but all of the research project's infrastructure and equipment is gone.

Hurricane Irma has been a strong reminder of the urgency to preserve the natural buffers that protect our islands from storm damage, such as coral reefs. The resiliency of the St. Maarten's nature remains to be determined – it is right now impossible to know how long recovery will take.

Bervoets remains optimistic: "the nature of our Island, just like her people, are resilient and will recover in due time" (NFSXM, 2017a).

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He also stresses the importance of keeping dive tourism going as St. Maarten's economy is heavily dependent on tourism. Coral reefs contribute more than USD 50 million annually in ecosystem goods and services. The Foundation is encouraging divers to visit the island as dive sites are still spectacular thanks to their marine life and surroundings.surroundings.

You can donate and help the nature foundations of Saba, St. Eustatius & St. Maarten to restore nature from the devastating impacts of Hurricanes Irma & Maria.

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