



Directie Natuur en Milieu
Ministerie van Transport, Integriteit,
Natuur en Ouderenzaken



Aruba Standard Operating Procedures for detecting, assessing, and responding to coral disease outbreaks

AN INTEGRATED AND ADAPTIVE APPROACH TO PREVENTION,
DETECTION, MITIGATION AND COMMUNICATION OF CORAL
DISEASE OUTBREAKS IN ARUBA

ESTABLISHED BETWEEN: DIRECTIE NATUUR EN MILIEU, FUNDACION
PARKE NACIONAL ARUBA, DIRECTIE SCHEEPVAART EN BUREAU
RAMPENBESTRIJDING



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1. Definitions

SOP	Standard Operating Procedures detecting, assessing, and responding to coral disease outbreak
SCTLD	Stony coral tissue loss disease
BWRF	Ballast Water Reporting Form
MARPOL	The International Convention for the Prevention of Pollution from Ships
IMO	International Maritime Organization
DNM	Directie Natuur en Milieu (Directorate of Nature and Environment)
FPNA	Fundacion Parke Nacional Aruba
DOW	Dienst Openbare Werken (Public Works)
BRA	Bureau Rampen Bestrijding (Disaster Management Agency)
DSA	Directie Scheepvaart (Directorate of Shipping)
SDG	Sustainable Development Goal
ABC	Aruba, Bonaire, Curaçao
AGRRA	Atlantic and Gulf Rapid Reef Assessment
MPA	Marine Protected Area
GPS	Global Positioning System

2. Purpose

The prevalence of coral diseases has increased significantly over the last 30 years, causing widespread mortality among reef-building corals. A deteriorating marine environment associated with the cumulative effects of a multitude of anthropogenic stressors and threats are believed to be related to this increase (Doyle & O’Sullivan, 2019). It is critical to have the ability to assess and reduce risk, detect and contain outbreaks, and monitor and minimize impacts of coral disease outbreaks. In this document, we are standardizing a coral disease response with the assistance of MPA managers, coastal managers, divers, snorkelers, fishers and other residents by offering guidance on how best to identify and manage a coral disease outbreak in Aruban waters. To minimize spread of coral diseases, best practices for government, scuba divers, snorkelers, fishers and boaters are presented.

In this document, we also pay special attention to a virulent and fast-moving disease called Stony Coral Tissue Loss Disease (SCTLD). “It is suspected to be a bacterial pathogen spreading by contact or through waterways. SCTLD has high mortality rate and can cause death of a colony within weeks to months.” (UNEP, 2022). Although coral diseases are already present in Aruba, diseases seem to be contained within colonies or very small areas and affect a relatively low percentage of corals.

In two of the latest coral studies performed in Aruba, both researchers found that coral disease presence and distribution was low (Carmabi Foundation, 2020; Wouters, 2018). However, both studies only provided snapshots of the situation at their respective times. These studies did not provide a trend of coral disease progression in Aruba’s reefs that is spatially or temporally defined, where seasonal effects (tourism and climate) can be considered.

Considering the impacts of tourism, (land-based) point sources and non-point sources of nutrient loading and coastal pollution in Aruba, that are exacerbated by a changing global environment, identifying and tracking coral diseases should be a high priority. In conjunction with developing mitigation strategies and conservation plans, as “the consequences of increasing coral disease may be severe, leading to elevated extinction risk and loss of critical reef habitat” (Sokolow, 2009), fisheries and other sectors of economy (DCNA, 2022; Nature Foundation St. Maarten, 2019). Urgently addressing land-based sources of marine pollution, such as human waste and sewage point-sources

and non-point sources, should be more effectively mitigated in Aruba as a **preventative measure** (Carmabi Foundation, 2020; Doyle & O’sullivan, 2019).

Additionally, it is known that “human sewage is harmful to corals as it both delivers excess nutrients as well as pathogenic microbes that cause coral disease and mortality” (Vega Thurber et al., 2014). Alarming, the fecal enterobacterium, *Serratia marcescens*, was identified as an etiological agent for white pox coral disease (Sutherland et al., 2010) since 2002.

3. Scope

Coral reefs deserve human respect, attention and protection because they sustain marine biodiversity, offer coastal protection, and are the reason why Aruba has a thriving economy. The Nature Ordinance (AB 1995 no.2) and “Landsbesluit bescherming inheemse flora en fauna” (AB 2017 no.48) provides the national legal framework for protecting Aruba’s corals. At an international level, corals are protected under the SPAW Protocol (Cartagena Convention) and the trade in coral is prohibited under CITES,

This SOP focuses on the corals in Aruba’s coastal waters and on all types of coral diseases currently known to occur in Aruba’s marine environment, including the wider Caribbean. For stony corals this includes among others: black-band disease, red-band disease, yellow-band disease, dark spot disease, rapid wasting disease, white-band, white-plague, white-pox, Caribbean ciliate infection and stony coral tissue loss disease (SCTLD). For soft corals, for example sea fans, this includes among others Aspergillosis.

The coral disease response framework presented in this document consists of four components: (1) an early warning system, (2) an impact assessment/ monitoring plan, (3) scaled management actions, (4) a communication plan (Beeden et al., 2012; DCNA, 2022).

4. Responsibilities

Leads

Strategy and policy

The Directorate of Nature and Environment (DNM) is responsible for receiving, handling complaints, environmental notifications and preparing this document. For coral disease related notifications, DNM follows the guidelines of the Atlantic and Gulf Rapid Reef Assessment (AGRRA). AGRRA has an interactive tracking map that shows where SCTLD has been confirmed in the Caribbean. DNM is also responsible for informing the public on coral diseases so that people know where to report and what they should act on. DNM cannot do this without knowledge of what is happening in the field. Therefore, DNM together with FPNA will develop community awareness.

Monitoring and contingency plan

Fundacion Parke Nacional Aruba (FPNA) is responsible for protecting and conserving the marine protected areas (MPAs) for which they are appointed as management authority on Aruba. FPNA staff and volunteers will check and identify the reported coral diseases inside and outside the MPAs. The information is relayed back to DNM for planning and community awareness. FPNA will facilitate coral disease identification and monitoring training for a group of volunteer divers. Additionally, as part of a contingency plan and enhanced resilience, the FPNA will take the lead on the development of a coral reserve together with her partners.

In partnership the two leads complement each other in mitigating coral diseases in Aruba (SDG17).

Regional

Aruba, Curaçao and Bonaire (ABC islands) have a communication and advisory collaboration. Once disease presence is confirmed it is shared with the other partners. The progression of the disease and some characteristics aid us in identifying the type of disease. Atlantic Gulf and Rapid Reef Assessment (AGRRRA) maintains the data with regards to the spread of diseases in the region and has a larger network that can aid the ABC islands in identifying the disease and provide advice with regards to mitigation.

Prevention mitigation partners

The Directorate of Shipping (DSA) and the Harbor Master have been mandated since 2012 to regulate the release of ballast water from vessels. Ballast water is used to stabilize vessels during ocean crossings and has long been identified as one of the causes for the spread of invasive species and toxic water. Ballast water has also been identified as potentially driving the spread of devastating coral diseases (Doyle & O'sullivan, 2019; Rosenau et al., 2021). All vessels that wish to enter the Territorial Waters of Aruba, with the exemption of innocent passage, must have a local agent and must submit an Aruba Pre-Arrival Questionnaire to the Harbor Master 72 hours prior to entering the Territorial Waters. Additionally, the vessel must send in a copy of the Ballast Water Reporting Form (BWRF). This is an IMO form and is a copy of the Ballast Water record that is mandatory to fill aboard all vessels. Vessels are not allowed entry without permission of the Harbor Master. The Harbor Master will analyze this BWRF. In the case that the vessels are equipped with Ballast Water Treatment Plants, the Ballast Water that is taken in will be free of "life" and will be safe to de-ballast at her destination (see MARPOL).

In the case that the vessel is not equipped with a Ballast Water Treatment Plant, the vessel has to do a 100% exchange of its ballast water while underway from one port to the other. In the case that a vessel did not perform a Ballast Water exchange (as per MARPOL Procedures) and did not take in ballast water through a treatment plant, the vessel will not get permission to de-ballast within the Territorial Waters of Aruba.

NOTE: The manager of the Wastewater Treatment Facilities on Aruba (Zeewijk, Parkietenbos, Bubali) is responsible for prevention mitigation. In this case that is Utilities N.V. that is responsible for preventing the introduction of untreated wastewater into the natural system. Any form of untreated water entering the marine environment must be immediately halted to restore (marine) water quality, health and resilience of corals, for the success of any coral restoration and adequate marine conservation efforts. If the management of these facilities is privatized, the new owner will be held accountable for this measure. The governmental Department of Public Works (DOW) remains overall responsible for water management and the Directorate of Public Health (DVG) for monitoring water quality.

Disaster mitigation partner

The governmental Disaster Management Agency (BRA) is a consultation partner with regards to coral diseases. BRA is aware that a SCTL D outbreak is an environmental calamity (Estrada-Saldívar et al., 2020). When an environmental calamity occurs, it has an impact on societal use and economy. When a coral disease outbreak¹ is confirmed, BRA will be informed and consulted.

BRA is responsible for communications with the Prime Minister when disease outbreak is verified. BRA will inform the ministers about the social and economic impacts. In this case, the council of ministers can decide to close off the dive location and prohibit access until further notice. If council of ministers

¹ A disease outbreak is the occurrence of disease cases in excess of normal expectancy (WHO, 2021).

declares an environmental calamity, BRA takes over lead on all communications and actions. Site closure is a possibility if deemed necessary. For site closure careful consideration should be taken of the following:

- location and site use value for economic impact of closure and potential ensuing court cases
- identified disease vectors from this site, i.e., humans, vessels, etc.;
- time of detection (early/late);
- prevalence of disease and potential to spread to other sites. I.e., severity of spreading that has already occurred in colonies;
- the resources available to effectively enforce a closure;
- legal mitigation measures if sanctions apply;

Additional considerations:

- Site closure could give a false impression that the disease is containable, while it is never fully containable in water;
- Exemption applicable to disease monitoring staff and volunteers for information relay to BRA and council of ministers for further decision-making.

If it is decided to close off a site and prohibit access, BRA will be responsible for informing and coordinating with the relevant authorities, including enforcement authorities, which is well beyond the intention of this SOP.

Early warning signaling community

Aruba's corals are protected; therefore, all stakeholders, citizens and visitors have a general responsibility to conserve the coral reef ecosystem of Aruba. Therefore, early warning signaling where the community will play a crucial role in reporting suspect coral disease to the DNM and FPNA.

The community referred to here, includes anyone that frequents coral reef areas, such as watersport practitioners, fishers, boat captains, swimmers, snorkelers and divers. Early detection of sick corals is very important, so when people observe any signs of abnormal (infected) coral colonies they should report their sightings to marinepark@arubanationalpark.org and send the below mentioned information (as much as possible):

- one or more photos of the diseased coral;
- type of coral that has been affected;
- directions to the location, GPS and/or site name;
- date of sighting/documentation;
- depth of affected coral;
- personal contact information.

Additionally, citizens and tourists can encounter coral disease without knowing it. Most of the coral diseases are transmitted via direct contact or through the water column. It is therefore necessary to follow the decontamination procedure after every site visit before visiting another site.

NOTICE: Watersport practitioners (incl. divers) are responsible for following the boat, swim, snorkel, diving and fishing 'gear decontamination protocols (AGRRA) to limit the spread. These are as follows:

“Scuba divers and other visitors to coral sites are urged to follow recommended gear decontamination protocol after every site visit to limit spread. All non-sensitive gear should be soaked in a 1% bleach

solution for **at least 10 minutes** to totally decontaminate the equipment. The equipment should then be rinsed in freshwater and dried thoroughly before diving, snorkeling, or visiting any other marine site.”

Coral Monitoring Volunteer Requirements

You are a certified diver, snorkeler, fisher, captain, marine/coastal management specialist or organization or a resident with one of the above-mentioned certificates. Having basic knowledge of coral species is desirable.

5. Procedure SOP Coral Disease

Communication plan

Accurate and timely communication with the public is critical in creating awareness and encouraging responsible behavior for preventing and managing coral diseases.

General knowledge of the diseases will be shared with the community in the form of posters and flyers, social media posts that will be published to promote and drive awareness and ultimately make the community aware of any reporting of new coral diseases and the importance of such reporting. DNM and FPNA will gather the information to inform BRA and the respective ministers.

Through different, relevant channels and using effective media, the general public will be informed about coral diseases and what they can do to help. For a detailed flow chart see Appendix 1. Additionally, a reef resilience symposium or information evening (townhall) will be organized in preparation of outbreaks and disease identification. The FPNA will take the lead together with the DNM.

The leads have already distributed materials on coral disease to the dive community, yet zoonotic diseases have been on the rise in the past two decades (WHO et al., 2020) due to loss of biodiversity (curio trade), uncontrolled habitat destruction, soil erosion, land-based pollution (incl. waste water), and poor agricultural practices such as monoculture mass production that may cause major run-off with chemical pollutants (insecticide, herbicide, fungicide, etc.), and eutrophication. Therefore, if new and updated communication materials need to be produced this will be done by the leads. Findings will be reported to the community as the monitoring lead deems necessary. An information evening will be held by the leads to both alert the community and find recruits that may assist in coral disease monitoring. A workshop will be held by the leads for these volunteers that will be called upon when suspect colonies are reported.

Early warning system: identification and reporting

When any symptomatic or discolored corals are encountered, citizens are asked to snap an image and send it to marinepark@arubanationalpark.org. Upon receiving the image, FPNA will review the information, coordinate a field evaluation if necessary, and share it with DNM and regional networks for confirmation of disease.

Early detection is key, so this part is very important. The earlier Aruba is aware of the potential problem, the earlier an intervention can take place. At times, the intervention will just be monitoring because not all coral diseases have a high infection and mortality rate.

Due to the high infectious rate of SCTLD in stony corals (reef-builders), a coral vulnerability map was produced based of vulnerable coral species present on the western coast of Aruba (Carmabi Foundation, 2020). The map below (figure 1) shows the most vulnerable locations on the island taken from the presence of vulnerable species and their rate of presence. The names of the species are found below in the image description.



Figure 1. Stony coral vulnerability map of the Western coast of Aruba (Carmabi Foundation, 2022). Dots show percentages of community present that are highly vulnerable. These species are *Coral species SCTLD vulnerability map at 10m (Colpophyllia natans, CNAT or boulder brain coral), Dendrogyra cylindrus, DCYL or pillar coral), Dichocoenia stokesii, DSTO or elliptical star coral), Diploria labyrinthiformis, DLAB or grooved brain coral), Eusmilia fastigiata, EFAS or smooth flower coral), Meandrina meandrites, MMEA or maze coral), Pseudodiploria strigose, PSTR or symmetrical brain coral), Pseudodiploria clivosa, PCLI or knobby brain coral).*

Scaled management actions

Actions are scaled based on sighting, monitoring, disease confirmation, infection rate, geographic location (Appendix 2).

Sighting

Citizens and tourist report their sighting as an image to the lead authorities by submitting the image, site information, depth and if possible coral species [to marinepark@arubanationalpark.org](mailto:marinepark@arubanationalpark.org).

Monitoring

The monitoring group will follow a workshop (2023) in identifying and monitoring for SCTLD and more common coral diseases. When a sighting is reported, the monitoring group will follow the lead. Site visits will occur as deemed necessary by the monitoring lead, FPNA.

Roving dive/snorkeling surveys will be conducted (DCNA, 2022). Spatial extent, mortality rate and coral species impacted will be documented in these surveys. Additionally, images of infected corals will be taken making use of a pole measure for scale and repeated from the same angles over time (days-weeks) to assess the disease progressions rate.

Additional methods can be developed during and after the workshop. These include possible treatment protocols (if applicable and deemed necessary) and sample collections for disease testing or experimental interventions.

NOTICE: For SCTL, other management needs and approaches may be applicable if this is considered a calamity.

Disease confirmation

Not all community sightings will be a coral disease. Some may be discoloration from environmental conditions, coral bleaching or predation. Coral diseases tend to look like each other. Therefore, confirmation of disease takes time, a lot of experience, and in some cases, laboratory testing of samples. The criteria that will be used at the time of writing are:

1. the number of coral species infected
2. the progression of disease on the colonies
3. distribution pattern/rate
4. the appearance of the symptoms (coloration, affected area within colony, etc.)

FPNA and DNM will consult with the regional partners when identifying disease until local capacity is enhanced. Timely visits will occur to suspect colonies and reported sites. Upon confirmation of disease, monitoring of the rate of infection and distribution will continue so that the disease is identified. The information acquired will be relayed back to DNM and regional partners.

NOTICE: If SCTL is confirmed in Aruba and declared a calamity, then the BRA will take the lead with regards to incident communication, mitigating site closures and other considerations. In all other cases, disease progression will be monitored and shared within the regional network AGGRA.

Geographic location determines scaled management actions

If diseases are confirmed in the Wider Caribbean Region and in countries where Aruba is located downstream from that are further than 200km, the local response will be to inform the public that they should keep an eye out and report any suspect cases and a “WATCH” is initiated (Appendix 2. Code yellow). If a disease is confirmed in Bonaire (<180 km), it is expected that this will be reported to the regional partners and an “ALERT” is initiated (Appendix 2. Code orange), which entails that the community is on alert for suspect infection. If the infection moves from Bonaire to Curacao, then Aruba will intensify the alert action and maintain code orange (Appendix 2. Code orange).

BOX 1. Case Aruba coral disease 2022:

In December 2022, a suspect infection was reported in Boca Catalina (Dec. 5). This was four months after Bonaire had reported a fast-moving disease on two of their dive sites. Although there is no confirmation that the two incidents are connected, it provides an example of how the network and alert action in the community works.

In response to this report, the site was surveyed immediately by FPNA (Dec. 6), and FPNA coordinated repeated monitoring in collaboration with DNM (Dec. 10 and 21 & Feb. 19). Additional volunteers were contacted to share observations for adjacent sites (Arashi Reef and Antilla), both showing similar symptoms on corals. The findings were shared with all partners. Based on the affected coral species (not all SCTL D susceptible species) and the change in progression rate over time, it was presumed to not be SCTL D and more likely white-plague (which may have had a more severe impact this time due to recent high amounts of polluted water (sediment, sewage) entering the sea.

When disease is confirmed locally, actions will be scaled to “WARNING” (Appendix 2. Code Red) based on corals affected, severity of infection and stages of mortality. If disease is confirmed but NOT SCTL D, then monitoring is continued until authorities can better identify the disease type and relay this back to the public and BRA.

IMPORTANT: If the disease is confirmed to be SCTL D on Aruba, actions are scaled to code black (Appendix 2. Code black), and the Disaster Management Agency (BRA) will take over actions and communications for decision-making together with the Council of Ministers.

Rehabilitation

When disease outbreaks subside, Aruba’s actions move to code purple: rehabilitation. Rehabilitation will not form part of this SOP. The reason being that rehabilitation can mean many things, it can be natural or human-induced, engineered and steered. For rehabilitation options, it is recommended to develop a multifunctional rehabilitation framework of coral reefs of Aruba, rather than one for this specific SOP, that covers over 10 types of coral disease.

Treatment options

Treatment of corals can be considered for each disease. Ideally, treatment options will be summarized with their cost and effectiveness in a document for thorough decision-making. By doing so, Aruba can develop a national coral disease treatment guide and/or decision-making tool if deemed necessary (Eaton et al., 2022) .

Should treatment be considered, it is only recommended for large coral colonies near others of the same species. It is also recommended to prioritize large colonies which still retain a significant portion of healthy tissue with small numbers of lesions, which will be more easily treated. In addition, coral reef sites which have the highest likelihood of responding positively to treatment should be prioritized. This would include sites with healthy reefs and water conditions prior to the coral disease outbreak. Sites which have additional stressors, such as high levels of tourism or fishing pressures, may not respond as well to treatment. However, note that there is currently limited evidence that treatment with antibiotics on infected sites leads to health improvements in cases of SCTL D and other diseases.

Resilience

Considering that treatment options are labor intensive and experimental in each local condition, considerations for resilience are **urgently** needed. One form of resilience is to have proper and nationally set environmental standards that give space for corals to thrive in harmony with sustainable anthropogenic activities. Another is to have strict prescriptions and preventative actions, such as the fining of dumping semi-treated and untreated sewage water at sea, the epitome of respect for nature as an important member of human society in Aruba. Unless the above mentioned are institutionalized, resilience will not be achieved, only “green-washed”. Additionally, possibilities for enhancing resilience should be developed.

For this, a coral reserve facility can offer an option to ameliorating reef rehabilitation after a major loss event, building artificial reefs in locations where waters are of least affected quality, off-set programs, fisheries and so on.

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Appendix 1. Coral Disease Aruba Communication Strategy.

OBJECTIVE	To create awareness and educate the community of Aruba on the implications of coral diseases on the health of certain coral species found on the reefs of Aruba and expand the island's capacity to respond to a disease outbreak.		
PILLARS	PHASE I: AWARENESS	PHASE II: EDUCATION	PHASE III: REACTIVE RESPONSE
	Drive awareness in the local community and for visitors to the island on what coral disease is threatening the island's reefs and the unprecedented threat it poses to Aruba's coral reefs, marine biodiversity, tourism and economy on the long term.	Educate the local community on the importance of a healthy reef ecosystem and equip stakeholders, such as divers, snorkelers and fishers with the knowledge and expertise to signal the potential presence of coral diseases in Aruba as they are our eyes on the ground.	Alert local community and visitors to the presence of coral disease. Includes actions deemed necessary as responsible divers, snorkelers and fishers, and if SCTLD is detected, Council of Ministers are included for national decision-making: usage infected site, mandatory sanitation measures and others.
TACTICS	<ul style="list-style-type: none"> • <i>Information night</i> • <i>Distribution of print & digital infographics</i> • <i>Social media awareness</i> • <i>Press Release</i> 	<ul style="list-style-type: none"> • <i>Stakeholder engagement</i> • <i>ID & Monitoring workshop</i> • <i>General Public townhalls</i> • <i>Recruitment of volunteers</i> • <i>Precautionary rinsing advised</i> • <i>Press Release (of monitoring results)</i> • <i>Social Media awareness</i> 	<ul style="list-style-type: none"> • <i>Press Conference</i> • <i>Press Release</i> • <i>Interviews</i> • <i>Social media awareness</i> • <i>Official comms to stakeholders</i> • <i>Mandatory decontamination protocols</i>
PIC	Communications team of DNM & FPNA		BRA
CODE	Yellow, Orange, Red		Black

In the strategy depicted above phases of communications are separated in three sections:

1. Awareness Communication
2. Education Communication
3. Reactive Communications/Crisis Comms once disease is confirmed.

Appendix 2. Scaled management actions SOP Coral Disease 2023

NOTICE: FPNA will organize a training workshop for the monitoring group. The monitoring group, consisting of volunteers and specialists, will be trained in identifying coral diseases and how to monitor and document areas with possible infections. The monitoring group will be available for monitoring sites and can be asked to assist in identifying the coral disease when FPNA receives reports of symptomatic corals.

No	Code Yellow: #WATCH Identification of disease upstream >200 km away from Aruba or in Wider Caribbean Region
1	A disease outbreak is confirmed on a near-by island e.g.: Isla las Roques, Surinam, Trinidad & Tobago or other.
2	Phase 1. Awareness Communication in place (Appendix 1).
3	Citizens are informed by DNM/FPNA to keep an eye out and start reporting sightings of symptomatic corals.
4	<p>Inform the general public on responsible behavior in preparation for upscaling. This ‘basic’ information includes an introduction to SCTLD, gear decontamination protocols and instructions for early detection (sending picture(s) of infected colony, site location, contact information etc. to marinepark@arubanationalpark.org. DNM (Public relations) will take the lead in organizing the first step of the communication plan, which includes a press release, press conference and social media awareness posts, which FPNA will compliment.</p> <p>Not only Scuba divers but also snorkelers, and fishers (all that frequent coral reefs) should be encouraged to keep an eye out for diseased coral. If possible, divers and fishers should be encouraged to record the location of the diseased coral (landmarks) and take a picture. Send all information to FPNA for identification. With or without photo identification, the colony will be monitored by the response group. Monitoring results will be sent to the regional network for confirmation.</p>
5	ONLY IF SCTLD confirmed on other islands or in other countries: Activity plan that include problem formulation, and seeking the decision from the council of ministers.
6	Inform MinTINO that Aruba is under the yellow code. MinTINO will start lobbying with the other ministers. The ministers need to decide and allow public crisis communication when SCTLD is confirmed in Aruban waters. Instead of waiting for the incident to happen a decision can be made beforehand to ameliorate the procedures in case of crisis.
7	BRA will do the same for MinPres.

No	Code Orange: #ALERT Identification of disease within <200km upwind/upstream; suspect disease
1	Phase 2. Education Communication in place: tourists and locals (Appendix 1).
2	A disease outbreak is confirmed on near-by island or country e.g.: Bonaire, Curacao, Venezuela.
3	DNM and FPNA will consider distributing new information materials, together with ATA AHATA and a list of relevant companies/organizations such as dive shops and tour operators.

4	ONLY if SCTLD is confirmed on the near-by island or country: FPNA will organize town hall sessions for the volunteers. A general invite goes to divers, snorkelers, fishers (including lionfish hunters), other watersport practitioners, 'enthusiasts' and frequent water users. The goal is to get this group more informed about SCTLD and coral disease identification. This group becomes the monitoring group.
5	If the local area is confirmed with disease, inform the public to avoid the area and use decontamination protocols (communication partners, Appendix 1).
6	If a disease is confirmed at a site, all gear - including boats and the bilge - should be washed carefully, before moving between areas. (Communication partners, Appendix 1).

No	Code RED: #WARNING OR HIGHLY SUSPECT (Identification of disease in Aruban waters)
1	Phase 3. Reactive Response Communication in place: monitoring group and BRA.
2	Execute monitoring survey—FPNA and monitoring/responsive group
3	If applicable and deemed best practice for infected site, mark suspect area with buoys.
4	Awareness advisory to community to not: treat infected colonies, touch infected colonies, break pieces of infected colonies off.
5	If disease in Aruba is confirmed to be SCTLD, then there is an environmental calamity taking place and actions are scaled to code BLACK. The BRA will take over in code BLACK. Any other type of disease with less severity than SCTLD, will maintain code RED.

No	Code Black: #CONFIRMATION OF SCTLD
1	BRA and Counsel of Ministers define and overweigh actions: e.g. closure of SCTLD infected sites and declare calamity. The areas will be documented on a map and the extent of infection will be included (FPNA/DNM/AGRRA). Permissions ballast water need to be requested by the Harbor Master. Dive operators and fishers are informed to implement strong measures of sanitation (disinfecting gear mandatory).
2	Continued monitoring of infected sites, including the progression of the disease in the infected colonies and the potential spreading to adjacent areas.