



Our People

Our Animals

Our Environment

WHAT'S BEEN GOING ON?

Avian Influenza (H5N1, H5N2, H5N8, H5N9)

The Caribbean remains on high alert as Avian Influenza (AI) continues to rear its head around the globe. In the 2015 U.S. events, Highly Pathogenic AI (HPAI) strains included H5N2 and H5N8 and resulted in the depopulation of 7.5 million turkeys and 42.1 million egg-layer and pullet chickens, with very few detections in wild birds, while France has now reported an H5N1 and H5N9 outbreak. As CARICOM member states take appropriate measures to help prevent or lower the probability of the disease entering the region, are you aware of the warning signs? If birds are showing any of these signs, **sound the alarm!** Call your local or private Veterinarian or Animal Health personnel, the Veterinary Services Division at your Department or Ministries of Agriculture, or your Veterinary Diagnostic Laboratories.



Sudden increase in deaths with no prior clinical signs



Loss of appetite



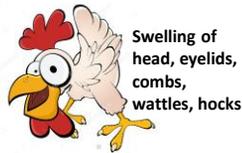
Reduction in egg production



Soft or thin-shelled eggs



Purple discoloration of wattles, combs and legs



Swelling of head, eyelids, combs, wattles, hocks



Difficulty breathing/gasping



Coughing, sneezing, nasal discharge



Diarrhoea



Stumbling/falling over

Learn more from these helpful resources:

<http://www.caribvet.net/>; <http://afliudary.blogspot.co.il/2015/12/french-moa-10-outbreaks-of-hpai.html>
http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=avian_influenza.html
https://www.aphis.usda.gov/wps/portal/aphis/ourfocus/animalhealth/sa_animal_disease_information/sa_avian_health/avian%20influenza%20vaccines/1ut/p/a0/04_Sj9CPykyssy0xPLMnMz0vMAFGjzOK9_D2MDJ0MjDzdgY1dTz9wtX8LXzMj09TPQLsh0VAZdihtlg/

Clipart and photos courtesy Google images

Swine Flu (H1N1) Deaths

In October 2015, Trinidad and Tobago recorded its fourth confirmed H1N1-related death. Read more here:

<http://www.guardian.co.tt/news/2015-10-22/after-swine-flu-death-south-cover-say-relatives>

St. Lucia Fish Kills

In October 2015, back-to-back fish kills in a pond at a water treatment plant in St. Lucia raised concerns for public and environmental health and safety. Read more below:

http://www.caribbean360.com/news/second-fish-kill-within-weeks-in-st-lucia-affects-water-supply?utm_source=Caribbean360%20Newsletters&utm_campaign=f8140243f2-10_29_2015&utm_medium=email&utm_term=0_350247989a-f8140243f2-39408133



Photo courtesy www.caribbean360.com

Sunscreen and Microplastics Threaten our Coral Reefs

Read about the newfound effects of **oxybenzone** (a major ingredient in sunscreen products) and **microplastics** (from cosmetics, clothing and other plastic items) on our coral reefs. Harmless? Perhaps worrisome...

http://www.caribbean360.com/news/coral-reefs-under-attack-from-chemical-in-sunscreen-new-study-finds?utm_source=Caribbean360%20Newsletters&utm_campaign=ef9d59e9a3-Vol_10_Issue_188_News10_20_2015&utm_medium=email&utm_term=0_350247989a-ef9d59e9a3-39408133

<http://unep.org/gpa/news/MicroplasticsCoralReef.asp#Vdw0xV0BeSE.linkedin>



<http://assets.inhabitat.com/wp-content/blogs.dir/1/files/2012/09/coral-reef-537x356.jpg>



SARGASSUM ASHORE

Lori Lee Lum

For the past four years, the seasonal onslaught of Sargassum or Gulfweed, has continued to challenge fishermen, property and resort owners, port operators and beach-goers, among others, in the Caribbean and the Gulf of Mexico. Thousands of tons of seaweed coming ashore for as long as six months has had economic implications for hotels and guest houses who have had to deal with cancellations from anxious guests. The prolonged presence of this much seaweed also has negative effects on the natural environment. It shades marine habitats preventing sunlight from reaching underwater communities such as coral reefs and sea grass beds and there are reports of both adult and juvenile sea turtles and even a Pilot whale becoming entangled and dying in the thick mass. In August 2015, the image of Speyside, Tobago seemingly engulfed in Sargassum emphasised the severity of the problem.

New source of Sargassum

While we see and feel the effects of the seaweed, theories abound as to the source of the plants and why it is continually affecting such a large area in the Caribbean. Researchers from the University of Southern Mississippi, Gulf Coast Research Laboratory, (GCRL) are using satellite tracked drifters and oceanographic modelling to back-track Sargassum from locations on the affected islands.

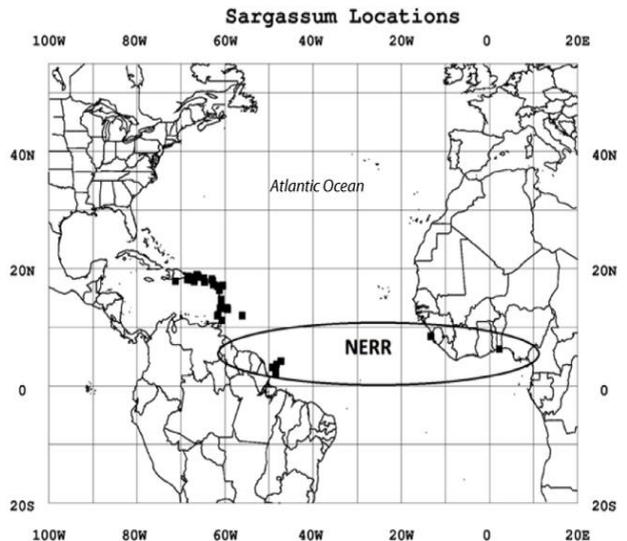
Passive transport via ocean currents was tracked from the eastern Caribbean southward toward Guyana, Suriname, French Guiana and northern Brazil. Massive accumulations of pelagic Sargassum even extended eastward across the Atlantic to the coastal region of Benin and Sierra Leone on the African continent in 2011, a highly unusual and previously undocumented occurrence for that region.

The scientists proposed that a new source of Sargassum associated with the 2011 event was located in the tropical Atlantic Ocean eastward of Brazil. This area, the North Equatorial Re-circulating Region or NERR (see attached map), is where the seaweed appeared to bloom and accumulate to be later transported into the eastern Caribbean when seasonal currents dissipate.

The surface waters of the NERR are nutrient-rich with input from equatorial upwelling, coastal upwelling off west Africa, the Amazon River, the Congo River and iron-rich Sahara dust from northwest Africa.

The species of Sargassum involved, *S. fluitans* and *S. natans*, simply fragment and keep on growing not needing to be attached to the seafloor.

Once the seaweed arrived in the Caribbean, local oceanographic and meteorological conditions facilitated its spread. What was shown is the connectivity across the tropical Atlantic Ocean via currents. While the traditional source of Sargassum is the Sargasso Sea in the Northern Atlantic, there was no obvious linkage shown between this event and the Sargasso Sea.



Black squares show locations of Sargassum landfall. Note two locations in west Africa. NERR – North Equatorial Re-circulating Region

Source: Donald Johnson et al. 2013. Proceedings of the 65th Gulf and Caribbean Fisheries Institute, Columbia

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SARGASSUM ASHORE, continued

Lori Lee Lum

Contributing Factors

There appears to be a combination of factors contributing to this seaweed invasion – warming sea surface temperature, increased nutrient input and oceanic circulation. Sargassum flourishes in warm water and the area in which this new source was found is in the warmest part of the tropical Atlantic near the Equator. Additionally, the world's warmest years on record were 2010, 2013 and 2014, optimum conditions for plant growth prior to the years Trinidad and Tobago was most affected.

Tourism-based economies throughout the Caribbean were hard hit and left reeling to deal with this natural disaster. The Tobago House of Assembly set aside TT\$3 million to assist with clean up efforts to help coastal communities recover. While this may give some temporary relief for 2015, recent trends shows that seasonal Sargassum incursions may well be the new status quo.

Opportunity from Adversity

Approaches to managing this emerging threat to Caribbean economies have to go a step further than removing it from the beaches, and to include utilising the resource. A symposium was held at the University of the West Indies, Cave Hill campus, Barbados in August 2015 aimed at finding workable solutions to address the situation. These include use as fertilizer, fungicide, biofuel, a source of alginates for industry, animal feed, and bioprospecting, to name a few. Because Caribbean islands do not traditionally consume or eat many marine plants we may not see the opportunities that this abundant resource presents.

It is unfortunate that the public's introduction to this seaweed has been through these unprecedented events. Sargassum is a brown marine alga that is an important part of coastal ecosystems where it helps anchor sand and contributes nutrients. At sea, it provides crucial habitat for a variety of marine life, such as sea turtles, fish, and invertebrates, some of which are endemic to Sargassum. Transients such as tuna, wahoo, billfish, eels and even sea birds utilise the floating mats as shelter and a food source. It has been described as an oasis in the desert of the open sea. Once it comes ashore in such overwhelming amounts however, it fast becomes a smelly nuisance.

Looking forward, with the world experiencing record-breaking warmth every month in 2015 it appears we are on track to eclipse 2014 as the warmest year, enhancing conditions for seaweed growth. Scientists at GCRL are seeking ways to forecast the arrival of Sargassum mats so that the tourism industry can be better prepared for its landfall. Bioprospecting and biofuel research may be able to turn the golden tide of Sargassum into a gold mine.

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A golden tide of Sargassum carpets: Speyside, Tobago, August 2015.

Photograph by Kelby Lee Lum



SPEYSIDE SARGASSUM CLEAN-UP CAMPAIGN

Howard Mario Robin

The Caribbean island of Tobago has been impacted by the intrusion of the Sargassum seaweed, particularly on its Atlantic beaches, in differential quantities and varied locations since 2011. On July 31, 2015, the villagers of Speyside awoke to find their coastline marred by Sargassum deposits. Speyside is a scenic coastal village on the northeast coast of the island that is known for fishing, diving and popular restaurants. The Sargassum deposits stretched as far as Anse Bateau Bay leaving Speyside with approximately 2041m of Sargassum along the foreshore and nearshore areas (Figure 1). This unprecedented quantity of Sargassum may have been directly related to the spring tide associated with the July 31 fullmoon.

On August 3, 2015, the Chief Secretary of the Tobago House of Assembly (THA) designated the Sargassum invasion in Speyside as a natural disaster. A total of 3 million dollars (TT) (US\$1: TT\$6.45) was committed to cover the cost of the predicted thirty (30) day clean-up campaign. The objective of this exercise was to expediently and effectively remove the Sargassum from the coastline. It was envisioned that by removing the material from the foreshore the natural actions of the ocean would gradually force the remaining Sargassum onshore so that it could be subsequently removed. The health of the villagers was of paramount importance. Sargassum, depending on the conditions, can emanate a pungent scent and gases during the process of decay. The effects of hydrogen sulfide on villagers was of particular concern since inhalation may produce irritation of the eyes and the respiratory system.

On August 2, 2015 it was observed that the water had already 'turned septic' and dead fish could be seen floating on the surface. If the Sargassum was not removed, but allowed to decay in the water and on the beach, there would be severe negative impacts on the coastal marine environment. Three factors were considered when deciding on how to proceed with the challenge posed by the Sargassum. These were the health of the villagers, the unprecedented quantity of Sargassum and the potential negative impacts on the coastal ecosystem and by extension the tourism sector. After careful deliberation, the decision was taken to allow heavy equipment to be used on the beach, complemented by manual labour with the use of basic implements such as rakes, forks and wheelbarrows.



Figure 1. Panoramic view of the Sargassum invasion in Lucyvale Speyside. Photograph by Howard Robin.

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SPEYSIDE SARGASSUM CLEAN-UP CAMPAIGN, continued

Howard Mario Robin

The clean-up efforts commenced on August 2, and continued until August 18. Excavators, backhoes, front-end loaders and several trucks worked together to remove the Sargassum. A total of 2409 truckloads of Sargassum (equivalent to approximately 11086 m³ of the seaweed) were removed from the beach. During this time residents indicated that they were experiencing respiratory problems, discoloration of metal objects and jewellery (particularly silver), damage to their televisions, as well as the deposition of a black film on the walls of houses. This black film on the walls was a source of financial discomfort for owners of guesthouses as they continually painted their walls and refurbished rooms to make their establishment aesthetically pleasing to their guests. Other entrepreneurs suffered as customers refused to eat at restaurants because of the stench emanating from the Sargassum.

By August 17, the majority of the Sargassum had been removed from both the nearshore and foreshore. Aesthetically, the beach returned to a state of normalcy (Figure 2). The waves were able to reach the shore and the stench in the air was minimal. In this regard, the desired relief to the villagers and the coastal ecosystem was achieved. It is envisioned, barring any similar incursion of Sargassum in Speyside, that the coastal marine environment will continue to recuperate from the temporal negative effects associated with this natural phenomenon as well as from the activities associated with the subsequent clean-up exercise.



Figure 2. Segment of Lucyvale beach before (Sunday) and on the penultimate day of the campaign (Monday). Photographs by Howard Robin.

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SPOTLIGHT ON... Ayodhya Ouditt



The One Health concept focuses on the inter-relatedness of human, animal and environmental health and the multidisciplinary approach that is therefore needed to effectively address and

solve local, regional and international issues that affect any of these facets. Human medical practitioners, veterinary medical practitioners, environmentalists, biologists, animal rehabilitators, legal practitioners, information technologists, economists, scientists, artists, fisherfolk, agriculturists, designers, architects, farmers, sociologists, educators and so many others, all play a key role in successfully tackling the many problems that have an impact on our globe. We therefore take the time to turn the spotlight on individuals who are seeking to use their unique talents to contribute to the One Health Mission.

This quarter, we highlight a talented young designer who has crafted the One Health logo and banner seen below, which will be featured in upcoming local and regional One Health Caribbean initiatives.

Ayodhya Ouditt is an industrial designer, illustrator, and writer, with a BFA in industrial design from the Rhode Island School of Design. He focused on design for social change, sustainable design, and system design. As a writer, he has worked as a contributing columnist on matters of science, ethics, and philosophy, for the Trinidad Newsday, and while in the United States, had illustrated for NPR's science blogs. He has hosted international STEAM workshops with teachers at the Korean Gifted Summer Institute (St. John's University, NYU), on the importance of fostering creativity in education, and currently works in the field of medical communication design. One Health Caribbean seemed like the perfect synthesis of ideas, in which he could apply his work and his passion for the environment.

We salute and thank Ayodhya for his contribution and dedication to the team effort that defines and epitomises the One Health movement.



One Health Caribbean Banner

Designer: Ayodhya Ouditt

HUMAN, ANIMAL, AND ENVIRONMENTAL HEALTH RESOURCES FROM AROUND THE REGION

USEFUL LINKS

Caribbean Agricultural Health and Food Safety Agency (CAHFSA)
<http://www.oecd.org/aidfortrade/47479430.pdf>

Pan American Health Organisation (PAHO) – Health Topics
http://www.paho.org/hq/index.php?option=com_topics&Itemid=40241&ang=en

Caribbean Epidemiology Centre (CAREC)/ Caribbean Public Health Agency (CARPHA)
<http://carpha.org/>

Caribbean Regional Fisheries Mechanism
<http://www.crfm.net/>

Caribbean 360 – News from around the Caribbean
<http://www.caribbean360.com/>

WE NEED YOUR INPUT!

Spread the word and join the One Health movement throughout the region.

Together, we can raise awareness of regional human, animal and environmental health threats and collaborate to bring positive change. Join the revolution!

Submit to onehealthcaribbean@gmail.com.

Use the subject "One Health Submission".

Provide your name, affiliation, and primary contact information.