Locusts and the Cobweb of Humanitarian Crises[i]

Emergency response is never easy, now imagine the additional complexities of a migratory emergency in an already shattered world. Millions of desert locust swarm across the Horn of Africa, the Middle East, and Asia, eating away the vegetation, threatening the livelihood of a tenth of humankind.[1] Locust plagues themselves are difficult to combat, yet a series of unfortunate events over at least two years turned the current one into a perfect storm.

The locusts roam a region plagued by constant crisis and disaster. Countries struck by armed conflict, internal displacement, refugees, epidemic, and food insecurity. Countries in need of humanitarian aid long before the locusts – or COVID-19 – came to the area. It is the combination of multiple events that created what researchers have come to call a 'wicked problem'.[ii] It all ties together, creating a giant knot, where consequences of one problem are cause for another. Using the travels of locust from birth to death will illustrate that everything is interconnected, in a system that was already highly complex before the arrival of the dual plague of locust and COVID-19.

Box 1. A brief lesson in locust biology

Desert locust are not unusual and have been around for centuries in Africa, Asia, and the Middle East. They are typically solitary (actively avoiding others), although they occasionally form small groups. When vegetation scarcity forces them together, locust can change from solitary to gregarious. This change can be disastrous, because they move faster, start to form swarms, reproduce rapidly, and can cover greater distances together. Although locusts are always difficult to tackle, this time, due to a series of unfortunate events, we are facing a locust apocalypse. For more information on the biology of desert locust, please refer to the Desert Locust Guidelines by the Food and Agriculture Organization of the United Nations (2001) here, or the National Geographic infographic.

Climate change makes for locust outbreak in Yemen and Horn of Africa

The danger of locust lies in the swarms. All it takes for these to form is for them to 1) come together due to food scarcity, 2) be able to breed, and 3) keep breeding without interruption. Climate change has made sure of the first and second (see Box 1).

Coming together due to food scarcity: drought and hunger

Food scarcity due to droughts poses a problem to all living creatures. Cattle needs pastures to graze, crops need rain to grow, people need harvest and cattle to live off, and locust need

[i] This case is part of a series of humanitarian operations vignettes by the INSEAD Humanitarian Research Group called Behind the Scenes of Humanitarian Operations. It was written in July 2020 by Gina Fialka and Luk Van Wassenhove. For more information go to https://www.insead.edu/centres/humanitarian-research-group

[ii] See for instance Tatham, P., & Houghton, L. (2011). The wicked problem of humanitarian logistics and disaster relief aid. *Journal of Humanitarian Logistics and Supply Chain Management*.

crops and other vegetation to survive. The Greater Horn of Africa (Ethiopia, Kenya, Somalia, South Sudan, Sudan, and Uganda) has had multiple extreme droughts over the past 25 years, wiping out crops and livestock.[2] In fact, the chances of drought hitting this region have increased from one in seven years to one in 2.5 years.[3]

"I had 400 goats and five camels in 2016," said Ali, a 63-year-old father of 11 children who lives in Somalia's Galgaduud region. "The drought ate 100 of my goats and three camels. Then came 2017: out of the 300 goats remaining, the drought again claimed 150 goats and the remaining two camels. I started 2018 with a total of 150 goats which were decimated, leaving me with only 40. This year (2019) I have a small heard of 50—weak, but alive."[4]

For the people in the area, prolonged droughts mean ruined harvests and subsequent food insecurity. For desert locust, it means fewer places to eat, causing them to gather in the areas that *are* green. When forced together like this, the nature of locust sets in motion a process that turns them from solitary to group animals.

Cyclones and floods create the perfect breeding ground for more problems in Yemen

Once grouped together, all the locusts need to breed is moist soil. With the cyclones[iii] in 2018 and '19 in the Arabian Peninsula (see Figure 1) ideal breeding grounds were created, through the accompanying rains. Locust breeding is surveyed and predicted by the UN Food and Agricultural Organization's (FAO) Locust Watch and local organizations. So, breeding can in principle be predicted and areas surveyed.[iv] But this time around, the locust magic happened mainly in the Empty Quarter, a desert stretching across Saudi Arabia, Oman, and Yemen. This unbroken sea of sand is not only remote – therefore difficult to access –, it has also been flooded making roads inaccessible, and it stretches into Yemen, a war-torn country home to the largest humanitarian crisis on earth.[v] Consequently, surveying and control operations were found to be impossible.[5] And so, with perfect weather conditions locust breeding commenced uninterrupted. Because of the difficulty to access the region, an outbreak could not be prevented nor controlled. Locust spread their wings and moved on to other areas (see Figure1).

Lack of intervention causes the problem to spread

A locust outbreak usually does not directly imply the biblical plague unfolding now. For an outbreak to become an upsurge (the first step towards a plague), rainfall in adjacent areas is required. The regions surrounding the Empty Quarter experienced unusual widespread and heavy rains and the locust swarms took flight to forage, settle, and breed elsewhere.

[iii] For more insights into the issues related to cyclones, please see this article by the INSEAD Humanitarian Research Group.
[iv] See for instance the Weather and Desert Locust report, written by the Food and Agricultural Organization and the World Meteorological Organization.
[v] For more insights into the humanitarian crisis in Yemen, please see this article by the INSEAD Humanitarian Research Group.

Throughout 2019, they landed in Iran and Pakistan to the West, and Somalia and Ethiopia in the East. From here, they spread out to other East African countries, reaching Eritrea, Djibouti, and Kenya, as well as parts of Uganda, Sudan, and South Sudan (Figure 1). These countries have been facing multiple threats, from heavy rainfall to drought, from cyclones to armed conflicts, destroying the already weak infrastructure and hampering movement for disaster response – and locust control.

To make matters worse, swarms of locust can travel up to 150km a day, crossing country borders and spreading quickly. Hence, locust control requires cross-border coordination which has proven challenging across the globe and even more so in the currently affected areas. When a problem like locusts pops up in India and Pakistan, political tension and cross-border conflicts continue to undermine control measures.[6] When, for instance, South Sudan and Sudan are unwilling to cooperate due to their political struggles, the spread of locust from one country to the next is inevitable.

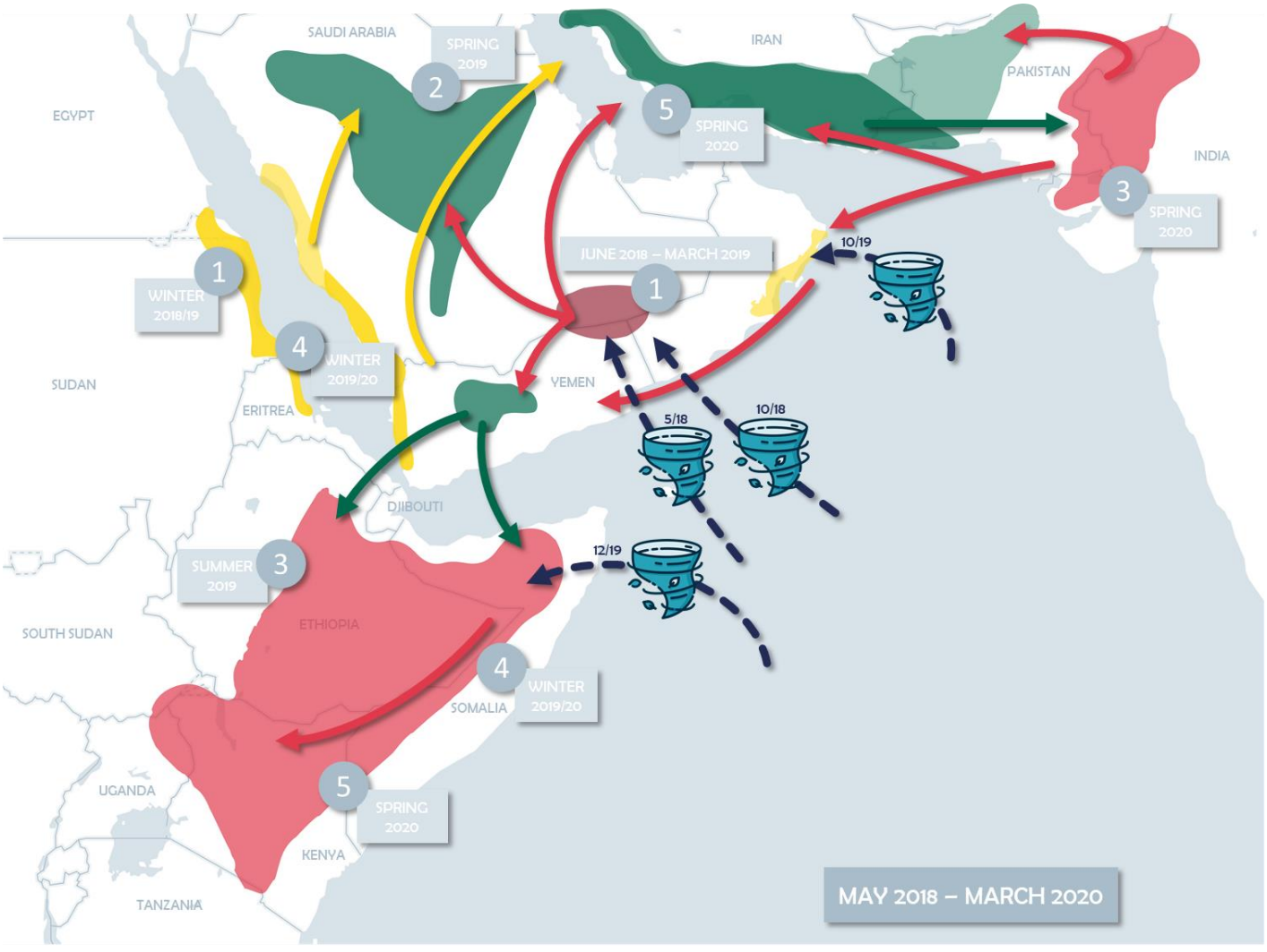

FIGURE 1. MAP OF LOCUST SPREAD FOR THE PAST 2 YEARS, ADAPTED FROM FAO

Adding another crisis: COVID-19 complicates matters even further

Yemen, India, Iran, Pakistan, the Horn of Africa and the other affected regions were already tormented by various humanitarian crises when the locust arrived, and as if this were not challenging enough, now a pandemic hit them as well.

COVID-19 further worsens the problem as restrictions on movement hamper the help that can be provided by humanitarian agencies, either because of travel restrictions on the ground, or inability to ship supplies across borders. COVID-19 also severely disrupted supply chains, causing a decline in pesticide production. Pesticide deliveries were cancelled or delayed because of diminished air traffic. The COVID-19 related border closures further hamper the response as they restrict access to helicopters that are crucial for locust surveillance and control.

"We need to have mobility that is equivalent to the desert locusts, that's what helicopters give us" – Cyril Ferrand, FAO's head of resilience for Eastern Africa[7]

Travel restrictions also meant locust teams weren't allowed to move freely, further restricting the efforts to survey locust breeding grounds as well as spraying them.[8] FAO's flying crews were stuck in quarantine in Ethiopia, and some NGOs weren't allowed to move around to provide assistance.[9] Because this plague is the worst in 25 years (70 years for some

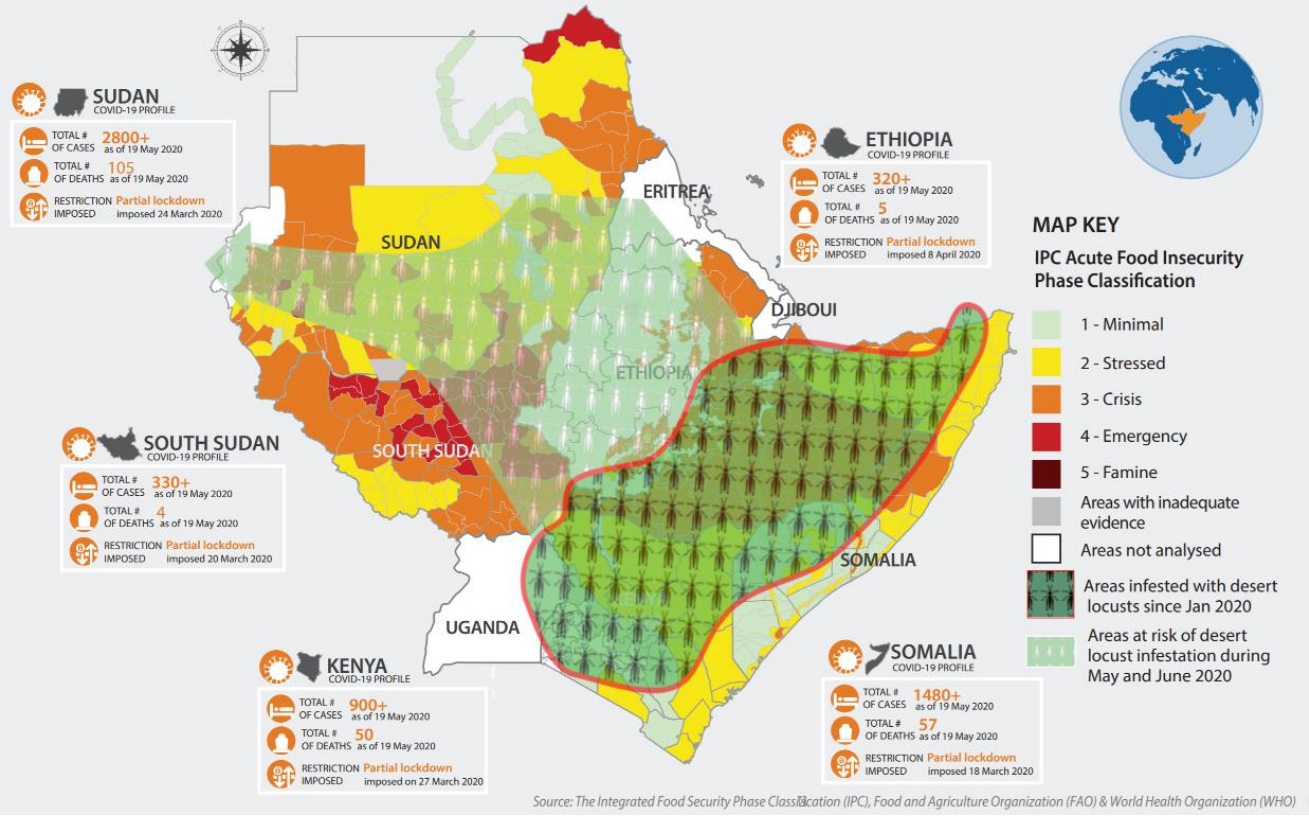

FIGURE 2. IPC ACUTE FOOD INSECURITY PHASE CLASSIFICATION, DESERT LOCUST, AND COVID-19 IMPACT (AS OF 19 MAY 2020, SOURCE: IPC AND FAO)

countries),[10] a shortage of knowledgeable people required training of new teams – during lockdown. As indicated on Figure 2, the locust plague will likely spread throughout South Sudan, Sudan, and further into Africa, while the number of COVID-19 cases increases, and the food security situation worsens every day. Millions will be drawn into severe hunger while help will be difficult to administer and budgets most likely not be available. Seems like everything comes together in a perfect storm.

Complex interconnected systems and knock-on effects

For most of the affected countries, COVID and locust are just another issue adding onto an already mile-high pile of problems, and skies do not seem to clear. In Somalia, new floods further threaten the population,[11] while in South-Sudan violence is flaring up again. If locusts are not eliminated, the worst may be yet to come next year, as food insecurity is becoming more critical by the day (Figure 2) and a new generation of locust takes flight during harvest season. A harvest that for several years in a row has been meagre because of climate change. Africa as a continent is responsible for only 2% of climate change but suffers disproportionally from the consequences.[12] Still, there are large funding gaps:[13] funding needed to keep humanitarian aid in Yemen, to keep vaccinations going in the Horn of Africa, to keep hospitals open despite the dangers of armed conflict, to contain COVID-19 and future virus outbreaks. The locust story illustrates how our global interconnectedness can easily lead to a cascade of events with knock-on effects, ending in a perfect storm. What we need is more research, adequate budgets, and, above all, willingness to act collectively. There is of course a component of solidarity and empathy, but it would be smart to also acknowledge the component of pure enlightened self-interest. The locusts originating from Yemen impact our lives in, say, a country like Belgium. We are all in this together.

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[1] https://reliefweb.int/sites/reliefweb.int/files/resources/1175_EN.pdf
[2] https://www.oxfam.org/en/5-natural-disasters-beg-climate-action
[3] https://unocha.exposure.co/how-drought-destroys-lives-and-what-we-can-do-about-it
[4] https://reliefweb.int/report/ethiopia/caught-between-extremes-violence-drought-flooding-and-now-locust-invasion
[5] http://www.fao.org/ag/locusts/en/archives/briefs/1810/2453/index.html
[6] https://www.nature.com/articles/d41586-020-01709-7
[7] https://www.reuters.com/article/us-health-coronavirus-africa-locusts/east-africa-locust-swarms-gather-as-coronavirus-curbs-delay-pesticides-idUSKBN21L1IH
[8] http://www.fao.org/news/story/en/item/1270183/icode/
[9] https://www.thenewhumanitarian.org/news/2020/06/11/coronavirus-humanitarian-aid-response
[10] http://www.fao.org/news/story/en/item/1264151/icode/
[11] https://news.un.org/en/story/2020/06/1066422
[12] https://www.brookings.edu/multi-chapter-report/foresight-africa-top-priorities-for-the-continent-in-2020/
[13] https://reliefweb.int/sites/reliefweb.int/files/resources/Flash%20Update%205%20-%20final%20for%20publication.pdf