Locust Swarms Devour Nations: Time for Emergency Solutions!

by Janet G. West

Feb. 9—The United Nations Food and Agriculture Organization (FAO) sounded the alarm, issuing an unprecedented statement on Feb. 3, warning that the swarms of locusts already infesting several African countries in the Horn of Africa now threaten additional countries such as Uganda and southern Sudan, and are already extending to others such as Yemen, southern Pakistan and western India.

FAO

Desert Locusts devouring crops in the Horn of Africa, January 30, 2020.

In its bulletin, "Appeal for rapid response and anticipatory action in the Greater Horn of Africa," the FAO outlines that the countries most immediately affected are Ethiopia, Kenya, and Somalia, with nearly 12 million people already experiencing "severe acute food insecurity" (households have minimally adequate food consumption, but are unable to afford some essential non-food expenditures without engaging in stress-coping strategies). If unchecked, the swarms threaten over 20 million additional people in the near term.

The FAO has called for a minimum of an *initial* funding of $70 million to support rapid control actions and take measures to prevent a deterioration in the food security situation and to protect livelihoods, and emphasized that long-term, sustained eradication efforts are required to avert catastrophe. This includes not only the means to destroy the swarms and end their propagation, but also massive support with food, since the locusts not only wipe out crops for people, but also for livestock.

The Scourge of the Desert Locust

Since Biblical times, the Desert Locust has been notorious—decimating crops and vegetation with huge swarms that can move almost 100 miles a day (150 km). In one day, a "small" swarm of one square kilometer can consume the equivalent amount of food for 35,000 people; a swarm in Kenya was recently measured covering an area of about 60 km by 40 km (about 927 square miles), and the swarm's caloric intake will be the equivalent of food for millions of people (i.e., hundreds of tons of food). Like a gigantic juggernaut, a swarm consumes every edible plant it encounters. (Note

that these figures ought to be in cubic measurements, rather than square, because the swarms can reach several tens of feet in depth.)

The adult insect is about 6 centimeters long (3 to 4 inches), and weighs about 2 grams; each adult eats its weight-equivalent in food every day. Much is known about its life-cycle and the conditions under which it begins to swarm. Eggs that have been in the ground for perhaps 20 years can begin to hatch under the right conditions. The young locusts are flightless and are called "hoppers"; groups of hoppers are called "bands"; bands merge into "groups" and groups expand to "swarms," and swarms soon become "plagues" that can number in the several *tens of billions* of insects.

CC/Christiaan Kooyman

A Desert Locust (Schistocerca gregaria) laying eggs during the Desert Locust outbreak in Mauritania in 1994.

Normally, the transition from young to adult takes about four weeks, but during optimal conditions, locusts develop much more rapidly—and then, they can fly. As the adults eat through and obliterate one area of food, they release pheromones that alert other adults to begin to fly and move on. Since they fly with the wind, they fly toward areas of low pressure—that is, rainy areas—and regions of lush vegetation.

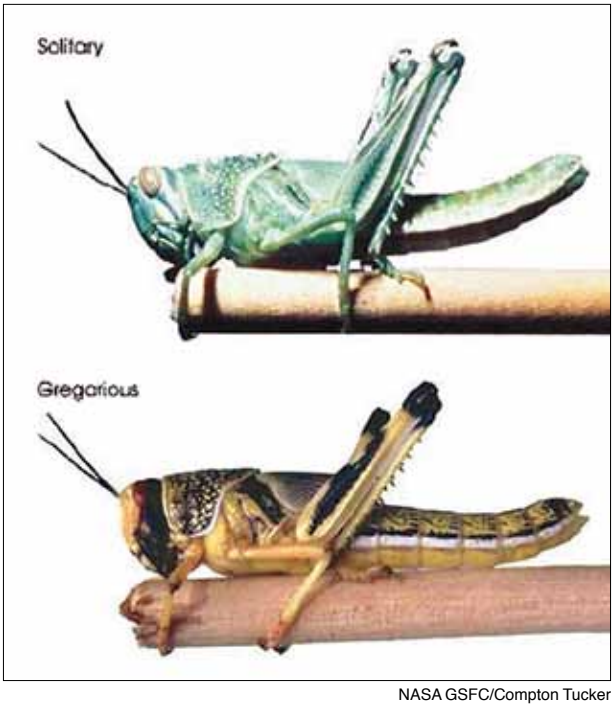
In 1921, a Russian entomologist, Boris Uvarov, made the discovery that a particular species of grasshopper could transform its appearance and behavior, depending on its population density, and turn into a locust. At low population density, the color of the insect is a greenish-brown, and the creatures avoid each other; this phase is called "solitarious"; when there is a dense population, they become bright yellow with black markings, increase in size and strength, and become attracted to each other—this is called the "gregarious" phase.

Researchers are still hypothesizing how and why this occurs; it has been observed to be reversible within a locust's lifetime, which is usually three to five months. The transformation of a mere grasshopper into a hefty locust is so dramatic, they were thought to be two different species until this discovery. This will be discussed further below.

The recent crises in the Horn of Africa region have created a "perfect storm" for the formation of these swarms—floods from March to June 2018; the outbreak of Rift Valley Fever, June-September 2018; prolonged drought from about 2016 to 2018, and favorable rainfall for locust breeding from September to December 2019. Locust activity began in July 2019, and swarming began in December 2019. Unusual weather conditions in January created a rapid deterioration of the situation. These conditions, along with expected rains in March 2020 (and the beginning of the new planting season), will allow the locusts to continue to breed until June 2020, with the potential for a truly terrifying 500-fold increase in the number of locusts. Experts emphasize that this magnitude of swarms has not been seen for at least 25 years in Ethiopia and Somalia, and over 70 years in Kenya.

What is also deeply disturbing is the threat of these swarms moving into the Rift Valley (the breadbasket of the region) and the countries

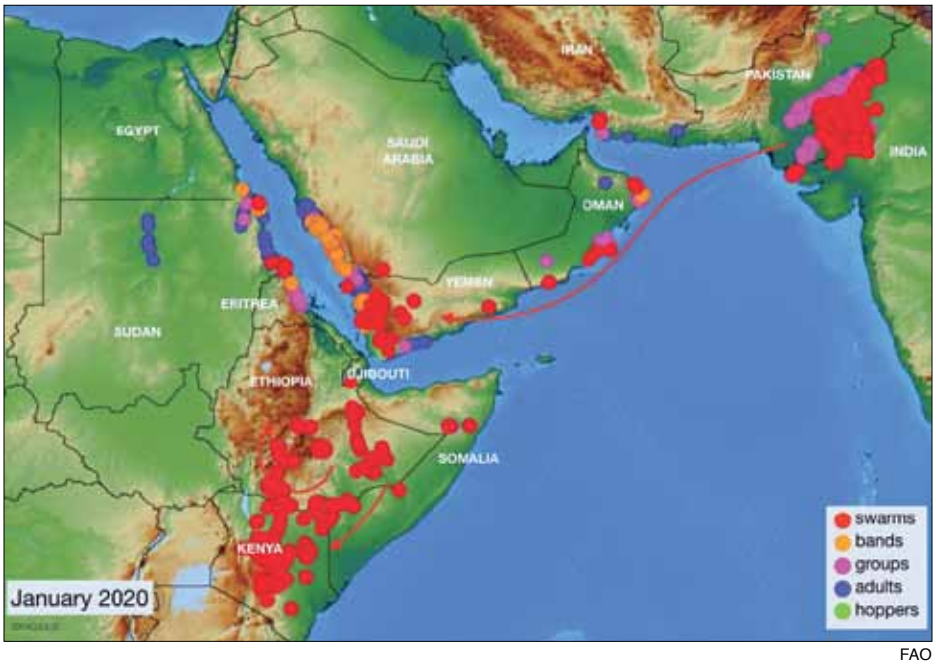
FIGURE 1



NASA GSFC/Compton Tucker

The solitaria (grasshopper) and gregaria (swarming) phases of the Desert Locust.

of Uganda and South Sudan—there is *no* existing response capacity in either country.



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The map shows the extent of the Desert Locust infestation in the nations in the Horn of Africa, Yemen and other nations in the southern part of the Arabian Peninsula, and Pakistan across the Arabian Sea, as of January 2020.

The Affected Countries—So Far

• **Ethiopia**—The FAO Bulletin reports: "Over 2,350 square kilometers of land has been affected so far in Ethiopia. Some cropping areas in Amhara and Tigray have already reported substantial crop losses, which is likely to have a direct impact on food security in the affected areas. As the locusts move, livelihoods and food security are at risk in the southern and southeastern areas of the country. While aerial control operations are taking place, additional support from FAO is required not only to control the Desert Locust outbreak, but also to support the livelihoods of the most vulnerable people in the affected areas."

• **Kenya**—"In Kenya, dozens of Desert Locust swarms have arrived from Ethiopia and Somalia on a nearly daily basis since the end of December 2019. To date, about 70,000 hectares of land has already been infested. As they move into the center of the country, the pest outbreak poses a risk to agricultural livelihoods. Agropastoral communities in the north are particularly vulnerable as they are only just recovering from a prolonged drought. Aerial control operations began early, though the capacity of the country to respond to the rapid multiplication and formation of dense swarms requires FAO support for both control operations and livelihoods interventions." (FAO)

• **Somalia**—As of Sunday, February 2, 2020, Somalia has declared a national emergency, underscoring its already fragile food supplies. Somalia's Ministry of Agriculture warned that, "food sources for people and their livestock are at risk." The FAO reported, "Desert Locust swarms bred in the north and have moved mainly to insecure areas in the central and southern parts of the country, invading livestock pasture and threatening the staple food crops in Somalia's breadbasket, where severe food insecurity is recurrent. Up to 180,000 hectares require control interventions, including remote, insecure areas where control capacity is limited. FAO support is therefore urgently needed to back government efforts to survey, control and monitor the pest, and deliver time-sensitive livelihood and food security assistance to the most vulnerable."

• **Yemen**—"Yemen is a key frontline country for Desert Locust because of its winter breeding areas along the Red Sea and Gulf of Aden coasts, the source of devastating plagues in the past," FAO locust expert Keith Cressman told Reuters. Due to the prolonged civil war in Yemen, vital equipment such as four-wheel drive vehicles have been lost or destroyed; food and fuel prices have doubled; some 80% of the population depends on some kind of humanitarian assistance; and 14 million people are on the brink of starvation. Compounding the crisis is the outbreak of cholera—fresh water supplies and basic sanitation are scarce.

• **Pakistan**—As of February 1, 2020, Prime Minister Imran Khan declared a national emergency in response to the swarms of Desert Locusts in the eastern part of the country. *Deutsche Welle* reports, "National Food Security Minister Makhdoom Khusro Bakhtiar said the locust swarms were currently on the Pakistan-

India border around Cholistan and were previously in Sindh and Balochistan, the Pakistani newspaper *Dawn* reported. 'The locust attack is unprecedented and alarming,' Bakhtiar told Pakistani lawmakers in a briefing on Friday. 'Action has been taken against the insect over 0.3 million acres (121,400 hectares) and aerial spray was done on 20,000 hectares,' he was quoted as saying by Pakistani newspaper *The Express Tribune*. 'District administrations, voluntary organizations, aviation division and armed forces are put into operation to combat the attack and save the crops,' he added."

Current Efforts Woefully Inadequate

Currently, spraying of pesticides is considered to be the only effective means of control, and is already going on, but to be effective, regions have to be sprayed at the right time and under the right conditions (wind and rain can affect the effectiveness), which requires adequate infrastructure and manpower. The most common insecticides used against locusts are fenitrothion, malathion, chlorpyrifos, and bendiocarb. It is well-known in these regions that the most effective spraying is with what is known as "Ultra-Low Volume" (ULV), in which an atomizer generates a mist with droplets in the ideal size range to cling to plants and locusts (about 3 micrometers in diameter). This type of spraying involves the pesticide pre-mixed with oil (rather than water) to decrease evaporation and to enhance its effectiveness.

"The wind is used to drift the spray over the target as overlapping swaths to buildup sufficient dose and toxicity to obtain a good result. ULV formulations required lower volumes of product and do not need to be mixed with water, which is often scarce in the desert," says the FAO. "Once the aircraft has done aerial spraying, the locusts inhale the chemical and die within a short while. What goes to the ground is very minimal and in less than a week, it dries up. The chemicals are safe for the environment and humans."

However, much of the spraying is apparently done on the ground by people using backpacks and other such equipment (hoses attached to trucks) to spray crops. In all of Kenya—about the size of Texas—there are only five planes deployed to spray. As reported in AP wires:

"It is challenging work, especially in remote areas where mobile phone signals are absent and ground crews cannot quickly communicate coordinates to flight teams. 'The ground crews are in 'the most woeful terrains,' Marcus Dunn, a pilot and the director at Farmland Aviation, said Saturday. 'If there is no network, then the fellow on a boda boda (motorcycle), he has to rush off now and go and get a network.' "

Cities, such as Ethiopia's capital, Addis Ababa, have been spraying on a regular basis, and the locusts that have arrived there are considered to be "leftovers" from the main swarms to the east and south. In central Kenya, the chief agricultural officer of Isiolo County commented to AP News, "So far we have decimated around five swarms in Samburu and Isiolo (counties) but we keep on receiving more swarms every week."

The FAO has been able to mobilize about $15.4 million of the $76 million requested, but this level of aid cannot address the magnitude of the disaster. The critical window of opportunity is now—between February and March, before the rains come. The FAO outlines the need for "large-scale aerial and ground pest control operations as well as surveillance, trajectory forecasting, and data collection efforts," reporting that, "during the hopper stages, ground operations are cost-effective and will be prioritized. Once locusts reach adult stage, air control operations will be utilized."

What Is To Be Done?

Although it is beyond the scope of this article to discuss mitigation efforts in depth, we can highlight some of the most promising areas. The proper approach is to mobilize resources as if for war, given the threat against millions of lives.

To begin with, we must address the decades of racist brainwashing of the advanced sector that these nations—or any nations—are "overpopulated." Even well-meaning people may have the Darwinian-jerk reflex of reacting with, "Well, … isn't it survival of the fittest? Aren't there too many people already? This is just nature's way of maintaining a balance," and other such crap. We're facing a crisis that potentially threatens the lives of some 32 million people—let's mobilize our resources, such as the U.S. Army Corps of Engineers that has the logistics expertise and knows how to transport materiel. We, who defeated fascism, who were horrified at the atrocities of the Nazis—can we turn away from this necessity to act? It is time to jettison the sewage that is the cultural pessimism of the Greenies.

The agenda for the war against the locust threat

FAO

A camel caravan making its way through a Desert Locust swarm near Shilabo, Somali Ogaden, Ethiopia.

must include the application of advanced technologies such as drones, whose effectiveness has already been proven on a smaller scale in Pakistan, Mauritania, and a few other African nations, along with a strengthening of the overall infrastructure of the region. Drone technology is already being applied as part of the FAO's global Desert Locust monitoring, early warning and preventive control in Africa and Asia program, in which locust survey teams equipped with drones seek out areas of green vegetation in the desert, search the areas for smaller locust infestations and treat them safely and effectively—before they develop into large swarms which do such enormous damage.

NASA (and other agencies') satellites can also be used—although not yet able to distinguish swarms, they can detect changes in moisture in the soil; the female locusts lay their eggs in moist soil, so we could predict when and where swarms are most likely to occur, to allow preventive measures to be taken.

Advanced Technologies to be Developed

In the 1980s, Lyndon H. LaRouche, Jr. spearheaded a campaign to eradicate locusts and other pests with the use of electro-magnetic pulse devices. In an article in *EIR* published in 1988, the science of using electromagnetic pulses which would be specifically "tuned" to affect only locusts, was discussed. These types of devices have proven feasible in research laboratories, but which went unfunded. Tests were performed on Lubber grasshoppers, chosen due to their similarity to their cousins, the Desert Locust. The wavelengths were approximately the size of the grasshoppers, which were treated to short bursts of electromagnetic radiation. It only took one-tenth of a second to kill the insects, and this sort of technology could be effective at a distance of up to three miles (*EIR*, Vol. 15, No. 16, April 15, 1988).

In 1989, a representative of *EIR* and the National Democratic Policy Committee (NDPC), William C. Jones, presented testimony before the U.S. Senate Sub-Committee on Appropriations (chaired by Sen. Inouye), regarding assistance to African nations (already devasted by the AIDS epidemic) to defeat the swarms of locusts at that time. In addition to recommending the use of Deeldran for spraying of the swarms with deployment of DC-7s, he also urged the immediate deployment of such electromagnetic devices to effectively eradicate locusts, and to save

countless of human lives. These recommendations were not adopted.

Earlier, in 1985, the Fusion Energy Foundation in its publication, *Fusion*, presented the case for use of electromagnetic fields or emission of specific pheromones to attract insect pests to an area to be killed in an article titled, "Insects and the Battle of the Beams." The author, Philip Callahan, based his fascinating research on his experience in World War II with radar, and how the pilots of the Luftwaffe were directed to their targets in London by a narrow radio beam; they didn't navigate—they followed the beam until they hit another beam which intersected the "pathfinding" beam, and then released their bombs. A similar principle could be used to direct specific insects to their doom (*Fusion*, Vol. 7, No. 5, September-October 1985).

In 2013, at the University of Central Florida, a then assistant professor of biology, Hojun Song (now with Texas A&M University, Department of Entomology), conducted experiments based on his hypothesis of a "phase theory," that the insect's behavior and characteristics change according to local population density. According to the article, "Controlling Destructive Locusts by Manipulating their Genetics," on Phys.org,

> All locusts are grasshoppers, but not all grasshoppers are locusts. Locusts are a special type of grasshopper capable of altering their shape, color and behavior in response to a change in density, an ability known as locust phase polyphenism.

The article continues,

> In the lab, Song has created two density scenarios—high and low—for several species of grasshoppers he has caught locally in Florida, as well as another species from Texas, and still another he plans to obtain from California. He also is conducting field studies in Mexico and South America on other species, because he cannot bring the insects into the United States.
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> "We have a generation of grasshoppers in the lab that reproduce," he says. "From the beginning, when the eggs hatch, we divide the hatchlings into two groups. Each of the members of one group is in complete isolation—they cannot see or touch or smell each other—while we are rearing the second group in high density, 500 to 1,000 in a cage. They bump into each other, see each other, and smell each other."
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> The researchers already have generated data for two Florida species and have found that they do, in fact, have the ability to change, although they are non-swarming when found in nature. "They are showing the traits in the lab," he says. "They are shy when isolated, but attracted to each other in crowded conditions. They change color, and one species marches together."

Other research during 2009 and 2013 revealed that although crowded conditions can initiate the change in the insect, serotonin would be the first neurotransmitter triggered, which plays a role in the transmorgrification of the grasshopper to locust. When solitary locusts were injected with serotonin, they became gregarious, even in conditions of being uncrowded, and in as little time as two hours. Further research must be carried out in this area, in which a locust-specific biological agent could be developed to shut down serotonin production, and curtail the ability to swarm.

Economic Justice

It is in these areas—the frontiers of science—that we may discover the means of mastery over our environment, such that locust plagues will become a thing of the past. What is required is a mobilization of resources, materiel, and manpower to rise to the challenge. Numerous nations must be involved in the effort for not only immediate humanitarian aid, but development of technology, agriculture and infrastructure throughout all of Africa, such that people can have modern sanitation, roads, electricity and the like, so that these problems are solved and the entire region can be stabilized politically. However, it is as much a moral question as a monetary one. The madness of the "Green Plague"—environmentalism—must stop if humanity is to survive.

Now, it is all the more urgent that world leaders heed the call of Helga Zepp-LaRouche for an immediate summit between President Trump, President Putin, President Xi Jinping, and if possible, Prime Minister Narendra Modi, to deliberate and collaborate in resolving this and the many crises in the world today, and for the United States to enact LaRouche's "Four Laws" for economic survival and science-driver development.