

**Emergency Transboundary Outbreak Pest (ETOP) Situation Bulletin for
July 2020 with a forecast through mid-September**
résumé en français est inclus

SUMMARY

The **Desert Locust** (*Schistoseca gregaria* - **SGR**¹): The SGR situation continued being a serious concern in the central outbreak region (COR) during July. Swarms from Kenya moved to Ethiopia and Uganda and autochthonous locusts persisted in northern, northeastern and eastern parts of Ethiopia, and northern and eastern parts of Somalia. Control operations treated 44,880 ha in Ethiopia, 12,569 ha in **Somalia**, 12,080 ha in **Kenya** and 3040 ha in **Uganda** during this month. Scattered adults were treated on 235 ha in **Sudan**. Breeding continued in the southern coast and the interior of **Yemen** where, for time in recent time, 10 718 ha were reported treated in a single month (a remarkable improvement). Locusts were controlled on 443 ha in southern coast of **Oman** and on 440 ha in southwest **Saudi Arabia**. In the eastern outbreak region (EOR), breeding continued along the **India** and **Pakistan** borders where hatching and band formations continues and swarms from the northern states of India returned to Rajasthan; 102,640 ha were treated in India and 33,599 ha in Pakistan during this month. The SGR situation in **Iran** and **Afghanistan** remained calm and the two countries treated 1,450 ha and 304 ha respectively. A few isolated and scattered adults were detected in Algeria, Mauritania, Mali, Niger and Chad in the western outbreak region (WOR) during this month. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Forecast: In COR, locust numbers will increase in northern, northeastern and eastern **Ethiopia**, in the coastal and the interior of **Yemen**, and perhaps in northern **Somalia** where ecological conditions remain favorable. Swarms from Yemen will likely invade eastern and northeast Ethiopia and Somalia and perhaps reach Eritrea during the forecast period. Most swarms from northern Kenya will likely migrate to **Ethiopia** and **Sudan** via **South Sudan** and a few may remain locally and begin breeding later in the season. **Sudan** will likely witness increased locust populations as breeding is expected to intensify where ecological conditions have improved due to the summer rains. EOR, particularly, **India** and **Pakistan**, will experience a significant increase in locust numbers due to multiple breeding during the forecast period. In WOR, limited breeding is likely in Sahel frontline countries during the forecast period, but significant developments are not likely. Thanks to the generous responses from donors, international partners, philanthropists, NGOs, private sector and, of course, host governments <https://locust-hub-hqfao.hub.arcgis.com/> efforts, the fight against this age old enemy has been intensified. These collective efforts have made a difference in strengthening

¹ Definitions of all acronyms can be found at the end of the report.

coordination, preparedness and surveillance, monitoring, and control operations by host countries across regions. It is critical that all SGR affected countries remain vigilance and maintain surveillance, monitoring and control interventions. Development and humanitarian partners are encouraged to sustain their generosity to help reduce further invasions and help minimize SGR impacts on food security and livelihoods of tens of millions of vulnerable people and communities amidst the rapidly spreading and debilitating COVID-19 pandemic.

Red (Nomadic) Locust (*Nomadacris septemfasciata*) (NSE): NSE populations persisted in Lakes Chilwa and Chiuta plains that transcend Mozambique and Malawi; Ikuu-Katavi, Malagarasi, Rukwa plains in Tanzania; Kafue Flats, Zambia; Buzi-Gorongosa and Dimba plains in Mozambique.

African Migratory Locust: *Locusta migratoria migratorioides* (LMM): LMM populations were reported in Zambia and Zimbabwe.

Tree Locusts, *Anacridium spp.* (ASP): ASP report was not received during this month.

Central American Locust, *Schistocerca piceiferons* (CAL): CAL was reported threatening crops in Belize and Guatemala and may be present in countries in the region as well.

South American Locust, *Schistocerca cancellata* (SCA): SCA outbreaks were reported in Argentina, Bolivia, Brazil, Paraguay and Uruguay during July month.

Italian (CIT), Moroccan (DMA), and Asian Migratory Locusts (LMI): CIT and LMI presence and control operations continued in several countries in CAC region whereas DMA gradually declined in most place.

Fall Armyworm (*Spodoptera frugiperda*) (FAW): FAW was reported in Tanzania, Malawi, Zambia and Zimbabwe. It may have also persisted in other maize growing countries in Asia and elsewhere.

African Armyworm (AAW) (*Spodoptera exempta*): AAW outbreak was not reported during this month.

Quelea spp. (QSP): QSP outbreaks were reported in Ethiopia, Keya, Tanzania, Uganda and Zimbabwe during this month.

Active surveillance, monitoring and timely preventive and curative interventions as well as sharing ETOP information remain critical to abate the threats ETOPs pose to food security and livelihoods of vulnerable communities.

USAID/OFDA/PSPM regularly monitors ETOPs in close collaboration with its network of national PPDs/DPVs, regional and international pest monitoring and/or control entities, including FAO, CLCPRO, CRC, DLCO-EA, and IRLCO-CSA, and research centers, academia, private sector, NGOs and others and issues concise, analytical Bulletins to stakeholders. **End summary**

RÉSUMÉ

La situation du Criquet pèlerin (*Schistoseca gregaria* - SGR): La situation de la SGR continue d'être une grave préoccupation dans la région centrale de l'épidémie (COR) en juillet. Des essaims du Kenya se sont déplacés vers l'Éthiopie et l'Ouganda et des criquets autochtones ont persisté dans le nord, le nord-est et l'est de l'Éthiopie, ainsi que dans le nord et l'est de la Somalie. Les opérations de lutte ont traité 44 880 ha en Éthiopie, 12 569 ha en Somalie, 12 080 ha au Kenya et 3040 ha en Ouganda au cours de ce mois. Des ailés épars ont été traités sur 235 ha au Soudan. La reproduction s'est poursuivie sur la côte sud et dans l'intérieur du Yémen où, pendant un certain temps ces derniers temps, 10 718 ha ont été traités en un seul mois (une amélioration remarquable). Les criquets ont été contrôlés sur 443 ha sur la côte sud d'Oman et sur 440 ha dans le sud-ouest de l'Arabie saoudite. Dans la région orientale de l'épidémie (EOR), la reproduction s'est poursuivie le long des frontières de l'Inde et du Pakistan où les éclosions et les formations de bandes se poursuivent et les essaims des États du nord de l'Inde sont retournés au Rajasthan; 102 640 ha ont été traités en Inde et 33 599 ha au Pakistan au cours de ce mois. La situation en Iran était relativement calme et seuls 1 450 ha ont été traités. En Afghanistan, 304 ha ont été contrôlés dans la partie orientale du pays où une reproduction limitée a été observée. La région ouest de l'épidémie (WOR) est restée calme et seuls quelques ailés épars isolés ont été détectés en Algérie, en Mauritanie, au Mali, au Niger et au Tchad au cours de ce mois. <http://www.fao.org/ag/locusts/en/info/info/index.html>

Prévisions: Dans la COR, les effectifs acridiens vont augmenter dans le nord, le nord-est et l'est de l'Éthiopie, dans la zone côtière et à l'intérieur du Yémen, et peut-être dans le nord de la Somalie où les conditions écologiques restent favorables. Des essaims du Yémen envahiront probablement l'est et le nord-est de l'Éthiopie et la Somalie et atteindront peut-être l'Érythrée au cours de la période de prévision. La plupart des essaims du nord du Kenya migreront probablement vers l'Éthiopie et le Soudan via le Soudan du Sud et quelques-uns pourraient rester localement et commencer à se reproduire plus tard dans la saison. Le Soudan connaîtra probablement une augmentation des populations de criquets,

car la reproduction devrait s'intensifier là où les conditions écologiques se sont améliorées en raison des pluies estivales. L'EOR, en particulier l'Inde et le Pakistan, connaîtra une augmentation significative des effectifs acridiens en raison d'une reproduction multiple au cours de la période de prévision. Dans le WOR, une reproduction limitée est probable dans les pays de première ligne du Sahel pendant la période de prévision, mais des développements significatifs ne sont pas probables. Grâce aux réponses généreuses des donateurs, des partenaires internationaux, des philanthropes, des ONG, du secteur privé et, bien sûr, des efforts des gouvernements hôtes, la lutte contre ce vieil ennemi a été intensifiée. Ces efforts collectifs ont fait une différence en renforçant la coordination, la préparation et la surveillance, le suivi et les opérations de contrôle des pays hôtes dans toutes les régions. Il est essentiel que tous les pays touchés par la SGR restent vigilants et maintiennent leurs interventions de surveillance, de suivi et de contrôle. Les partenaires de développement et humanitaires sont encouragés à maintenir leur générosité pour aider à réduire de nouvelles invasions et à minimiser les impacts de la SGR sur la sécurité alimentaire et les moyens d'existence de dizaines de millions de personnes et de communautés vulnérables au milieu de la pandémie COVID-19 qui se propage rapidement et débilite <https://locust-hub-hqfao.hub.arcgis.com/>

Criquet nomade (*Nomadacris septemfasciata*) (NSE): les populations de NSE ont persisté dans les plaines des lacs Chilwa et Chiuta qui transcendent le Mozambique et le Malawi; Ikuu-Katavi, Malagarasi, plaines de Rukwa en Tanzanie; Kafue Flats, Zambie; Plaines de Buzi-Gorongosa et Dimba au Mozambique.

Criquet migrateur africain: *Locusta migratoria migratorioides* (LMM): Des populations de LMM ont été signalées en Zambie et au Zimbabwe.

Le criquet arborial, *Anacridium spp*: (ASP): Le rapport ASP n'a pas été reçu au cours de ce mois.

Criquet Amérique centrale, *Schistocerca piceifrons piceiferons* (CAL): La CAL a été signalée comme menaçant les cultures au Belize et au Guatemala et pourrait également être présente dans les pays de la région.

Criquet d'Amérique du Sud, *Schistocerca cancellata* (SCA): des foyers de SCA ont été signalés en Argentine, en Bolivie, au Brésil, au Paraguay et en Uruguay au cours de ce mois.

Criquets italiens (CIT), marocains (DMA), Asian Migratory Locust (LMI): les opérations de présence et de lutte de CIT et de LMI se sont poursuivies dans plusieurs pays de la région CAC alors que la DMA a progressivement diminué dans la plupart des endroits.

Chenille Légionnaire d'automne (*Spodoptera frugiperda*) (FAW): La FAW a été signalée en Tanzanie, au Malawi, en Zambie et au Zimbabwe. Elle peut également avoir persisté dans d'autres pays producteurs de maïs en Asie et ailleurs.

Chenille Légionnaire africaine (AAW), *Spodoptera exempta*: aucune épidémie d'AAW n'a été signalée ce mois-ci.

Quelea spp. oiseaux (QSP): Des flambées de QSP ont été signalées en Éthiopie, à Keya, en Tanzanie, en Ouganda et au Zimbabwe au cours de ce mois.

La surveillance active, le suivi et les interventions préventives et curatives opportunes ainsi que le partage des information ETOP restent essentiels pour réduire les menaces que les ETOP font peser sur la sécurité alimentaire et les moyens de subsistance des communautés vulnérables.

USAID / OFDA / PSPM surveille régulièrement les ETOP en étroite collaboration avec son réseau de PPD / DPV nationaux, d'entités régionales et internationales de surveillance et / ou de lutte antiparasitaire, y compris la FAO, la CLCPRO, le CRC, le DLCO-EA et l'IRLCO-CSA, et des centres de recherche, universités, secteur privé, ONG et autres et publie des Bulletins analytiques concis à l'intention des parties prenantes. Fin de résumé

Note: All ETOP Bulletins, including previous issues can be accessed and downloaded on USAID Pest and Pesticide Monitoring website: [USAID Pest and Pesticide Monitoring](#)

Additional resources on ETOPs can be found on the last pages of this Bulletin.

Weather and Ecological Conditions

In **COR**, July 21-31, the ITF remained nearly stationary relative to its previous position (2nd dekad of July) and was close to the long-term climatological position during this time of the year. From 10W to 10E, the mean position of the ITF was approximated at 19.2N, which was slightly to the south of the mean position at 19.4N and was close to last year's position at 19.1N. Nevertheless, this anomalously south position brought

favorable moisture over many parts of the Sahel. From 20E to 35E, the mean position of the ITF was located at 17.5N, which was to the north of the mean position at 16.8N and also was north of last year's position at 16N.

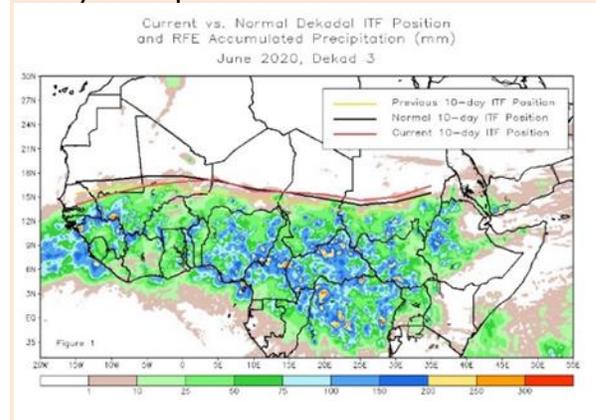


Figure 1: current position of the ITF relative to the long-term climatological position during the 3rd dekad of July compared to its position during the 2nd dekad of July (NOAA).

The anomalous north position resulted in widespread above-average rainfall over

much of summer breeding areas in Sudan, West Africa, Ethiopia, and neighboring areas. Figure 1 below shows the current position of the ITF relative to the long-term average position during the 3rd dekad of July and its previous position during the 2nd dekad of the month. Figures 2 and 3 are time series, illustrating the latitudinal values of the western and eastern portions of the ITF, respectively, and their seasonal evolutions since April 2020 (NOAA).

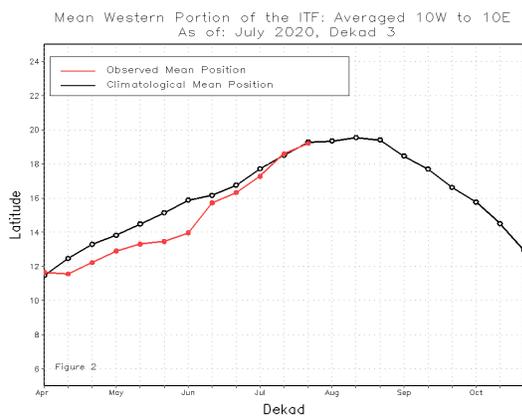


Figure 2 – Latitude value of ITF position in the western region (NOAA)

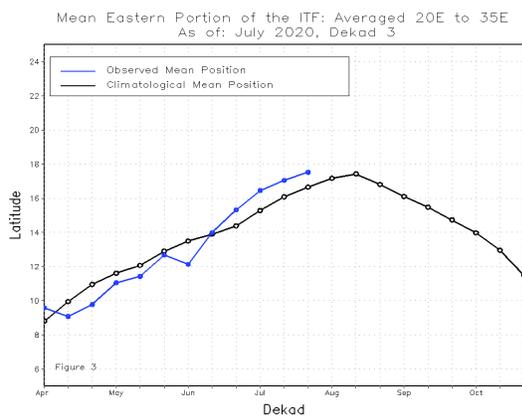


Figure 3. Latitude position of ITF in its eastern part (NOAA, 8/2020)

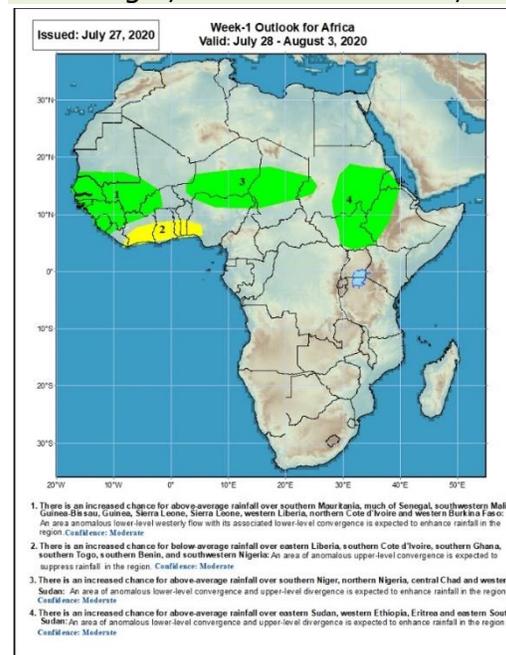
In EOR, monsoon rains commenced during the latter half of the 3rd dekad of June along the India-Pakistan border in summer breeding areas in EOR (two weeks earlier than normal). Light to moderate rains followed in most areas in July while heavier rains fell during the 1st

dekad in Rajasthan up to the Pakistan border. As a result, ecological conditions improved over vast areas on both sides of the border in Rajasthan and northern Gujarat in India and in Tharparkar, Nara and Cholistan deserts in Pakistan for locust breeding (FAO-DLIS).

The **NSE** outbreak region remained generally dry during July. Only isolated showers were reported in Gorongosa (13 mm), Nhamatanda (12 mm), Buzi (17 mm), and Mafambisse (19 mm) in the Buzi-Gorongos plains, and in Dimba plains, Dimba (70 mm) and Caia (5 mm) in Mozambique (IRLCO-CSA).

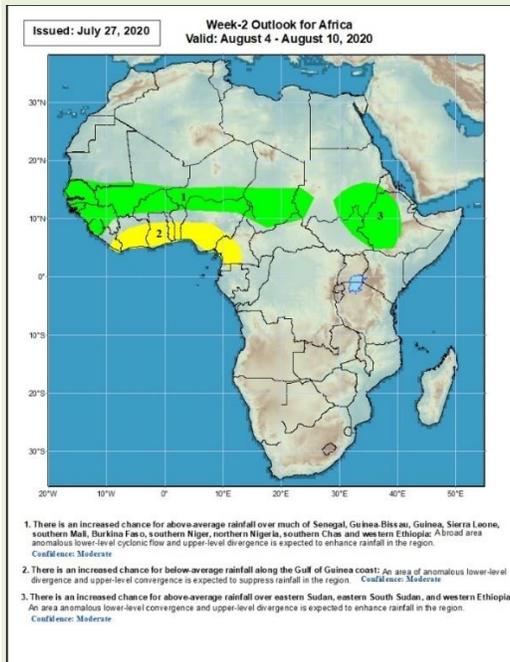
CAC Region: In CAC, an update was not available at the time this Bulletin was compiled, however, weather condition is expected to have remained favorable for locusts to survive and reproduce.

Precipitation outlook: From 28 July to 3 August (see map below), there is an increased chance for above-average rainfall over southern Mauritania, much of Senegal, southwestern Mali, Guinea-



Bissau, Guinea, Sierra Leone, Sierra

Leone, western Liberia, northern Cote d'Ivoire and western Burkina Faso. There is an increased chance for above-average rainfall over southern Niger, northern Nigeria, central Chad and western Sudan. There is an increased chance for above-average rainfall over eastern Sudan, western Ethiopia, Eritrea and eastern South Sudan.



From 4-10 August (see map above), there is an increased chance for above-average rainfall over much of Senegal, Guinea-Bissau, Guinea, Sierra Leone, southern Mali, Burkina Faso, southern Niger, northern Nigeria, southern Chad and western Sudan. There is an increased chance for below-average rainfall along the Gulf of Guinea coast. There is an increased chance for above-average rainfall over eastern Sudan, eastern South Sudan, and western Ethiopia (NOAA 8/2020).

SGR proliferation vis-a-vis climatic anomalies

Note: Changes in the weather pattern such as increased or decreased

temperatures and precipitation can contribute to an ecological shift in ETOP habitats and could increase or decrease the risk of pest outbreaks, resurgence and/or emergence of new pests. The extended SGR outbreaks and upsurges are partially attributed to the change in the weather pattern, i.e., extensive and above normal rainfall partly associated with the occurrence of multiple cyclones over a period of less than two years – May 2018 to December 2019 in the COR region.

http://www.cpc.ncep.noaa.gov/products/international/casia/casia_hazard.pdf

End note.

Detailed Accounts of ETOP Situation and a Forecast for the Next Six Weeks are provided below

SGR – COR: The SGR situation remained serious in East Africa where hoppers, groups and swarms were widespread in several places and control operations were launched in the affected countries.

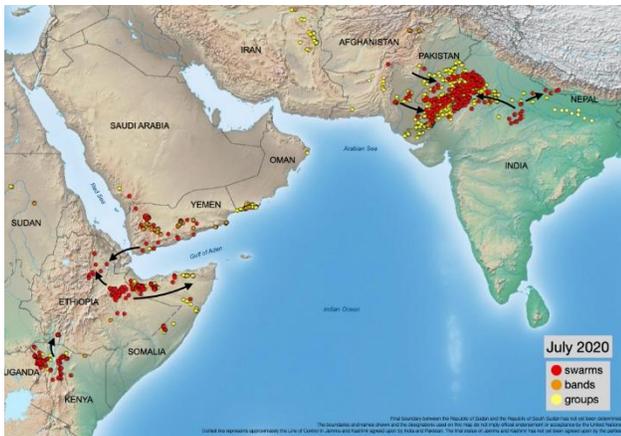
In **Ethiopia**, several immature and mature allochthonous and autochthonous swarms and groups, some of which were from northwestern Kenya and Somalia were reported in several places in the Afar, Amhara, Oromya, Somali, SNNP and Tigray Administrative Regions as well as Dire Dawa area. Aerial and ground control operations were carried out against hoppers and adults in more than 44,883 ha (DLCO-EA, FAO-DLIS, PPD/Ethiopia).

In **Somalia**, hopper bands and groups as well as immature and/or mature adult locusts were detected in several places in Somalia - eastern, northern, central, southcentral and southern parts of Somalia during July. Aerial and ground operations treated 12,569 ha with *Metarhizium* (biopesticide). In **Kenya**, several immature swarms were controlled

in Turkana, Marsabit and Samburu counties during July. Escapee swarms from northern and northwestern Kenya invaded southern Ethiopia, southeastern South Sudan and northeastern Uganda. A few Immature swarms moved from Turkana and northern Samburu. Aerial and ground control treated some 12,080 ha (FAO-DLIS).



Hoppers controlled in Somali Admin Region of Ethiopia, July 2020 (photo: PPD/Ethiopia)



SGR situation for July 2020 (FAO-DLIS)

In **Sudan**, intensive ground surveillance were carried out in summer breeding areas in Khartoum, Northern, River Nile, White and Blue Nile, Kassala, Red Sea, Sinnar and Kordofan States and detected scattered gregarious adults in some locations in White Nile State during July. Low density solitary adults were also observed in the River Nile, Northern,

Khartoum, White Nile, Kassala, Red Sea and Kordofan States. Ground operations controlled adults and hoppers on 235 ha during this month (PPD/Sudan).

In **Uganda**, immature swarms from Turkana, Kenya entered eastern and northeastern parts of the country. The swarms mostly concentrated around Naput, Rolengi, and Moroto villages. Aerial control was conducted by a DLCO-EA aircraft on some 4,040 ha and Sumithion (Fenitrothion) 96 was used. No locusts were reported in **South Sudan** during July.

In **Djibouti**, immature and mature adults were reported in Magoul on July 3rd and in Sagallou on July 16^t (DLIO/Djibouti). In **Eritrea**, locusts were not detected during ground surveys that were conducted in summer breeding areas in the western lowlands (FAI-DLIS, NLCU/Djibouti).

In **Yemen**, the locust situation remains a threat to food security and livelihoods of many as widespread hopper bands and immature and mature adult groups and highly mobile adults continued developing and appearing in Al Jawf, Marib, Shabwah, Hadhramaut, Al Mahra and Sana'a governorates and on the southern coastal near Aden. Control operations were conducted in the interior and in the south of Sana'a and treated 10,558 ha – a marked increase compared to the past several months (DLMCC/Yemen, (FAO-DLIS).

In **Saudi Arabia**, scattered mature solitary adults were reported in the southwest near Najran and in the Asir Mountains to the north and south of Khamis Mushait. A mature adult group was seen in the Asir Mountains north of Khamis Mushait on the 1st and a mature swarm was observed to the southeast on

the 6th. Ground control treated 440 ha on 1–6 July (FAO-DLIS).



SGR movement forecast during July, FAO-DLIS, 7/2020

In **Oman**, hopper groups and bands continued to form on the south coast and in the Dhofar Hills near Salalah. Scattered mature solitarious adults were reported west of the Dhofar Hills in the interior between Thumrait and the edge of the Empty Quarter. Scattered immature solitarious adults were reported near Nizwa and Buraimi in the north. Ground control treated 443 ha (FAO-DLIS, LCC/Oman).

Forecast: In COR, breeding will increase hopper and swarm formations in northern, northeastern and eastern **Ethiopia**, along coastal areas and the interior of **Yemen**, and perhaps northern **Somalia** where ecological conditions remain favorable due to heavy rains and occasional flooding in some places. Swarms will likely migrate from Yemen and reach northeast **Ethiopia** and **Somalia** and perhaps **Eritrea** during the forecast period. Most swarms from northern **Kenya** will likely migrate to **Sudan** via **South Sudan** and **Ethiopia**, and a few swarms may remain in **Kenya** and begin breeding during the coming season. It is likely that some will appear in **Djibouti** if the situation in neighboring countries continues to deteriorate (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, PPD/Djibouti, PPD/Sudan).

SGR - EOR: In EOR, breeding, hatching and band formations continued along the **India** and **Pakistan** borders. Swarms that migrated to the northern states of India during previous months returned to summer breeding areas in Rajasthan, while one swarm managed to reach **Nepal**. Control operations treated 102,640 ha in **India** and 33,599 ha in **Pakistan** during July. The situation in **Iran** remained calm and only 1,450 ha were treated, and limited breeding was reported in eastern part of **Afghanistan** where 304 ha were treated during this month (FAO-DLIS, PPD/Pakistan).

Forecast: In EOR, particularly, in **India** and **Pakistan**, will experience a significant increase in locust numbers during the forecast period; and the 2nd generation breeding will further intensify hatching and band formations during the forecast period leading to substantial population increase unless abatement mechanisms are pre-positioned and strategic actions are implemented in time (BHA/TPQ, FAO-DLIS).

SGR - WOR: The SGR situation remained calm in WOR during July and only a few scattered isolated adults were detected in Algeria, Mauritania, Mali, Niger and Chad during this month. No locusts were reported in Tunisia and no update was received from Libya during this month (ANLA/Chad, CNLAP/Mali, CNLAA/Morocco, CNLA/Mauritania, CNLA/Tunisia, FAO-DLIS, INPV/Algeria).

Forecast: In WOR, limited breeding is likely in frontline countries in northern Sahel, including **Chad**, **Niger**, **Mali**, and **Mauritania**, but significant development is not likely in the coming months.

Active surveillance, monitoring, preparedness and timely preventive and curative interventions are critical to avert

=m any significant locust developments and the potential threat they pose to food security and livelihoods of vulnerable communities (FAO-DLIS, OFDA/PSPM).

Red (Nomadic) Locust (NSE): Medium density swarms of NSE continue to be reported by farmers at the edges of Lake Chilwa/Lake Chiuta plains that are shared by Malawi and Mozambique. The pest also remained relatively serious in Buzi-Gorongosa and Dimba plains in Mozambique. In Tanzania NSE swarms and concentrations are expected to have persisted in the Ikuu-Katavi plains, South Rukwa plains and Malagarasi Basin. (BHA/TPQ).

Forecast: Vegetation burning that is in progress in most of the outbreak and invasion countries couple with the dry season and rising temperatures progressing, locusts will be forced to concentrate further and likely form larger swarms which, if not controlled, will invade neighboring areas and countries and cause damage to crops. There is an urgent need for aerial surveillance and timely control to abate further spread of locusts (IRLCO-CSA).

African Migratory Locust, LMM: Low to medium-density outbreaks of hopper bands and fledglings of LMM occurred in Kalabo, Lukulu, Sikongo, Sesheke and Mwandia districts of Zambia over an estimated 75 000 ha. Ground control was carried out jointly by IRLCO-CSA and MinAgri and 96% Fenitrothion was utilized. In Zimbabwe, mild LMM outbreaks were reported in the Low Veld region affecting Mukwasine and Hippo Valley Sugarcane Estates. Control was carried out by the affected farms (IRLCO-CSA).

Forecast: Receding of flood water along the Zambezi River and its tributaries will create suitable conditions for egg laying for LMM during the forecast period. Continued breeding will allow swarm formations. If left unattended, some of the swarms will likely invade neighboring areas and threaten crops. Aerial surveillance in the Simalaha plains, Northern parts of the Zambezi plains and the Kafue Flats in August are necessary. Swarms must be abated before invading neighboring districts where maize, wheat and sugarcane crops are cultivated under irrigation Zimbabwe (IRLCO-CSA).

Central American Locust - *Schistocerca piceifrons piceifrons* (CAL): CAL was reported threatening crops in Belize and Guatemala. The pest may be threatening other countries in the region, including Columbia:
<https://www.breakingbelizenews.com/2020/07/14/breaking-central-american-locusts-arrive-in-belize-crops-and-pastures-may-be-devastated/>.

South American Locust, *Schistocerca cancellata* (SAL): SAL outbreaks were reported in several countries in South America where it was detected in Argentina, Bolivia, Brazil, Paraguay and Uruguay during July
<https://www.voanews.com/americas/argentina-battles-locust-plague-northern-province>.

Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC): Although an update for July was not received at the time this Bulletin was compiled, DMA is expected to have gradually completed breeding and egg laying in Central Asian (CA) countries while it continued egg laying and hopper development in Caucasian countries (Azerbaijan, Georgia, Russian Federation) aided by hot and dry weather conditions during July. DMA

control operations are expected to have concluded towards during this month. the CIT is expected to have continued, intensive band formations, fledglings and group formations in Azerbaijan and Georgia where control operations were carried out against fledging and adults in the southern CA countries during June. LMI hopper development in Azerbaijan, Kazakhstan, Russian Federation and Uzbekistan that was accelerated by hot weather is expected to have continued and followed by fledgling during July. Intensive control operation that began in May are expected to have continued through July.

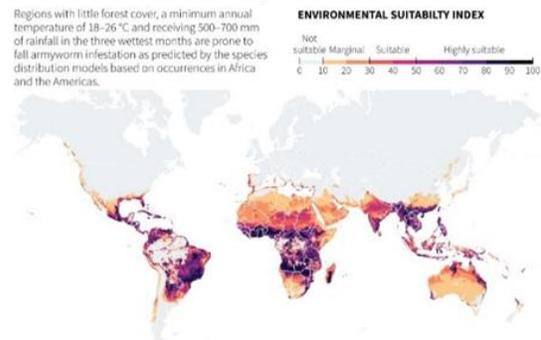
Forecast: DMA is expected to have concluded development activities and disappeared in most countries. CIT will continue further developing in several places mostly in C sub-region. LMI is expected to continue appearing and developing with more bands fledging and maturing and further spreading out.

Fall armyworm (FAW): Infestations continued in Malawi, Zambia and Zimbabwe. Although updates were not available at the time this Bulletin was compiled, it is likely that FAW persisted across the Yangtze River and further spread to the central China and perhaps Henan Province. It is to be recalled that this year the pest movement to Northern China occurred at least three months earlier than last year, suggesting the likelihood of FAW becoming a resident pest in China's largest (45%) maize producing region. Other maize growing regions across Asia, Pacific and elsewhere likely experienced FAW presence during July (BHA/TPQ, DLCO-EA, IRLCO-CSA, USDA/FAS/GAIN).

Forecast: FAW will likely continue affecting rain-fed and irrigated maize and other cereal crops across sub-Saharan Africa, Asia, the Pacific Regions and elsewhere during the forecast period.

Areas suitable to Fall Armyworm

Regions with little forest cover, a minimum annual temperature of 18-26 °C and receiving 500-700 mm of rainfall in the three wettest months are prone to fall armyworm infestation as predicted by the species distribution models based on occurrences in Africa and the Americas.



Source: CAB, 2019. Invasive Species Compendium. Wallingford, UK: CAB International.
P.K. Dutta, 19/06/2019

REUTERS

Active monitoring, surveillance, reporting and preventive and curative actions remain critical to abate significant crop damage (BHA/TPQ).

Recent Event on FAW: The first meeting of the Technical Committee of the Global Action for Fall Armyworm Control (GAFC) was conducted on **May 18, 2020**. The GAFC is a pioneering initiative that aims to mobilize USD 500 million over the period 2020–2022 to take radical, direct and coordinated measures to fight FAW at a global level. The 3 key objectives of the GAFC are to:

- Establish a global coordination and regional collaboration on monitoring, early warning, and intelligent pest management of FAW;
- Reduce crop losses caused by FAW and
- Reduce the risk of further spread of FAW to new areas (Europe and South Pacific).

Key Activity update: Scaling up of the USAID/OFDA sponsored Community-Based FAW Monitoring, Surveillance and Management project (CBFAMFEW) that was implemented from September 2017 through August 2019 and exploring

additional innovative intervention projects will benefit large numbers of farming communities in affected countries across different regions and is worth considering.

Note: Several species of FAW natural enemies have been identified in Ethiopia, Kenya, Tanzania, Madagascar, India, etc. and are being further studied to determine their efficacy, environmental impacts and safety. **End note.**

African Armyworm (AAW): AAW outbreaks were not reported during this month (IRLCO-CSA).

Forecast: AAW activities will likely remain calm in the primary outbreak areas during the forecast period (IRLCO-CSA, BHA/TPQ).

Note: OFDA developed printable and web-based interactive maps for AAW: <http://usaid.maps.arcgis.com/apps/Viewer/index.html?appid=8ff7a2eefbee4783bfb36c3e784e29cb>
OFDA/PSPM is considering a similar map for the CBFAMFEW countries.

Strong surveillance, monitoring and quarantine enforcement remain critical to prevent invasive pest species.

Quelea sp. (QSP): QSP infestations were reported in Seghen Zone, Karat district in the SNNP Admin Region of **Ethiopia** in July and control operations were conducted against roosts spanning over 25 ha (62 acres) in Dokato village. In **Kenya**, QSP outbreaks were reported in Narok County and control operations were at a planning stage, but control was delayed due to the ongoing locust operations that diverted aerial resources. QSP outbreaks were also reported in Morogoro and Manyara Regions of **Tanzania** where control operations are

underway. Survey and preparations are underway against QSP infestations in Kingdom Rice scheme in Bunambutye Sub-county, Bulambuli District in the northeastern Uganda. Mashonaland Central and West and Matebeleland North Provinces in **Zimbabwe** also witnessed QSP infestations and damage to wheat, sorghum and rice crops during this month (DLCO-EA, IRLCO-CSA).

Forecast: QSP is expected to continue posing a threat to small grain cereal crops in several countries in southern and eastern Africa as well as elsewhere during the forecast period (BHA/TPQ, DLCO-EA, IRLCO-CSA).

Facts: QSP birds can travel ~100 km/day in search of food. An adult QSP can consume 3-5 grams of small grain and destroy the same amount each day. A medium density QSP colony can contain up to a million or more birds and is capable of consuming and destroying 6,000 to 10,000 kg of seeds/day, enough to feed 12,000-20,000 people/day (OFDA/AELGA).

Rodents: Outbreaks that occurred in Arumeru district in Arusha region and Siha and Mwanga districts in Kilimanjaro region in northern Tanzania in June likely continued appearing during July.



Rodent damage to maize cobs, Tanzania (MoA/PHS, 6/2020).

FACTS: On average, an adult rat can consume 3-5 gm of food (grain, etc.) per day; a population of 200 rats/ha (an extremely low density/unit area) can consume a quantity enough to feed an adult sheep/day, not to mention the amount of food the rats can damage, destroy, and contaminate making it unfit for human consumption, and the zoonotic disease this pest carry/transmit.

All ETOP front-line countries must maintain regular monitoring and surveillance and launch control interventions as needed. Regular crop scouting is critical to avoid damage /losses. Invasion countries must also remain on alert. Regional and national ETOP entities - DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, National DPVs and PPDs, ELOs, etc., are encouraged to continue sharing ETOP information with stakeholders as often as possible. Lead farmers, field scouts, community forecasters and others must remain vigilant and report ETOP detections to relevant authorities as quickly as possible.

OFDA's Contributions to ETOP Abatement Interventions

USAID/OFDA/PSPM is sponsoring an operational research through Arizona State University to develop a tool to manage the Senegalese grasshopper (OSE). OSE is a notorious pest of cereal and vegetable crops as well as pasture and causes serious damage to small-holder farmers in its wide geographic coverage extending from the Canneries, to Cape Verde to nearly all sub-Saharan Africa regions to India and beyond. This pest occurs more frequently than several other grasshopper/locust species and is a constant threat to small-holder farmers.

USAID/BHA/TPQ continuously explores parties interested in developing and expanding innovative technologies to help minimize the impacts of ETOPs on food security and livelihoods of the most vulnerable peoples and communities across regions.

The online Pesticide Stock Management System (PSMS) that was developed by FAO with financial assistance from donors, including USAID/OFDA, that continued benefiting participating countries across the globe was halted due to lack of resources to maintain the system. FAO has agreed to search for resources and revive the PSMS system. Thanks to the system, SGR frontline countries and others had been able to effectively manage their strategic pesticide stocks and minimize/avoid accumulation of unusable pesticides and empty pesticide containers.

Note: A sustainable Pesticide Stewardship (SPS) can contribute to strengthening pesticide delivery system (PDS) at the national and regional levels. A strong and viable PDS can effectively reduce pesticide related human health risks, minimize environmental pollution, reduce pest control cost, improve food security and contribute to the national economy. A viable SPS can be effectively established by linking key stakeholders across political boundaries and geographic regions. **End note.**

OFDA/PSPM promotes an IPM approach to minimize risks associated with pesticide poisoning, stockpiling, and environmental contamination. An informed procurement and judiciously executed triangulations of surplus stocks from countries with large inventories of usable products to countries where they are much needed is worth considering

Inventory of Strategic Pesticide Stocks for SGR Control

During June, inventory of SGR pesticide stocks significantly changed in all regions except in WOR, close to 222,446 ha (a significant decrease from June due to intensive control, decline in locust numbers from end of life, and increased mobility in some areas) to were treated (Afghanistan = 304 ha; Iran = 1,450 ha; India = 102,645 ha; Pakistan = 33,599 ha; Ethiopia = 44,883 ha; Kenya = 12,080 ha; Oman = 443 ha; Saudi Arabia = 440 ha; Somalia 12,569 ha; Sudan = 235 ha; Uganda = 3,040 ha; and Yemen = 10,718 ha).

Table 1. Estimated inventory of strategic SGR Pesticide Stocks in frontline and invasion countries.

Country	Quantity, l/kg*
Algeria	1,186,034~
Chad	34,100
Egypt	10,253 ULV, 45,796
Eritrea	527~
Ethiopia	110,543~
Libya	24,930~
Kenya	~
Madagascar	206,000~ + 100,000 ^D
Mali	3,540
Mauritania	39,803
Morocco	3,412,374 ^D
Niger	75,701~
Oman	9,953~
Saudi Arabia	23,379~
Senegal	156,000~
Somalia	
Sudan	103,482
South Sudan	
Tunisia	62,200 obsolete
Uganda	
Yemen	35,000 ^D ; 180 kg GM~

*Includes different pesticides and formulations - ULV, EC and dust;

~ data may not be current;

^D = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015

^D = In 2013 Morocco donated 200,000 l to Madagascar

^D = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea

^{DM} = Morocco donated 30,000 l of pesticides to Mauritania

GM = *Green Muscle*TM (fungal-based biological pesticide, e.g., NOVACRID)

LIST OF ACRONYMS

AAW	African armyworm (<i>Spodoptera expempta</i>)
AELGA	Assistance for Emergency Locust Grasshopper Abatement
AFCS	Armyworm Forecasting and Control Services, Tanzania
AfDB	African Development Bank
AGRA	Agricultural Green Revolution in Africa
AME	<i>Anacridium melanorhodon</i> (Tree Locust)
APLC	Australian Plague Locust Commission
APLC	Australian Plague Locust Commission
	Bands groups of hoppers marching pretty much in the same direction
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
CABI	Center for Agriculture and Biosciences International
CAC	Central Asia and the Caucasus

CBAMFEW	Community-based armyworm monitoring, forecasting and early warning	ha	hectare (= 10,000 sq. meters, about 2.471 acres)
CERF	Central Emergency Response Fund	ICAPC	IGAD's Climate Prediction and Application Center
CIT	<i>Calliptamus italicus</i> (Italian Locust)	IGAD	Intergovernmental Authority on Development (Horn of Africa)
CLCPRO	Commission de Lutte Contre le Criquet Pélerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)	IRIN	Integrated Regional Information Networks
CNLA(A)	Centre National de Lutte Antiacridienne (National Locust Control Center)	IRLCO-CSA	International Red Locust Control Organization for Central and Southern Africa
COR	Central SGR Outbreak Region	ITCZ	Inter-Tropical Convergence Zone
CPD	Crop Protection Division	ITF	Inter-Tropical Convergence Front = ITCZ)
CRC	Commission for Controlling Desert Locust in the Central Region	FAO-DLIS	Food and Agriculture Organizations' Desert Locust Information Service
CTE	<i>Chortoicetes terminifera</i> (Australian plague locust)	Hoppers	young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)
DDLC	Department of Desert Locust Control	JTWC	Joint Typhoon Warning Center
DLCO-EA	Desert Locust Control Organization for Eastern Africa	Kg	Kilogram (~2.2 pound)
DLMCC	Desert Locust Monitoring and Control Center, Yemen	L	Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)
DMA	<i>Dociostaurus maroccanus</i> (Moroccan Locust)	LCC	Locust Control Center, Oman
DPPQS	Department of Plant Protection and Quarantine Services, India	LMC	<i>Locusta migratoriacapito</i> (Malagasy locust)
DPV	Département Protection des Végétaux (Department of Plant Protection)	LMM	<i>Locusta migratoria migratorioides</i> (African Migratory Locust)
ELO	EMPRES Liaison Officers -	LPA	<i>Locustana pardalina</i>
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases	MoAFSC	Ministry of Agriculture, Food Security and Cooperatives
EOR	Eastern SGR Outbreak Region	MoAI	Ministry of Agriculture and Irrigation
ETOP	Emergency Transboundary Outbreak Pest	MoARD	Ministry of Agriculture and Rural Development
Fledgling	immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed	NALC	National Agency for Locust Control
GM	GreenMuscle® (a fungal-based biopesticide)	NCDLC	National Center for the Desert Locust Control, Libya
		NOAA (US)	National Oceanic and Aeronautic Administration
		NPS	National Park Services
		NSD	Republic of North Sudan
		NSE	<i>Nomadacris septemfasciata</i> (Red Locust)
		OFDA	Office of U.S. Foreign Disaster Assistance

PBB	Pine Bark Beetle (<i>Dendroctonus</i> sp. – true weevils)	ZEL	<i>Zonocerus elegans</i> , the elegant grasshopper
PHD	Plant Health Directorate	ZVA	<i>Zonocerus variegatus</i> , the variegated grasshopper, is emerging as a relatively new dry season pest, largely due to the destruction of its natural habitat through deforestation, land clearing, etc. for agricultural and other development efforts and due to climate anomalies
PHS	Plant Health Services, MoA Tanzania		
PPD	Plant Protection Department		
PPM	Pest and Pesticide Management		
PPSD	Plant Protection Services Division/Department		
PRRSN	Pesticide Risk Reduction through Stewardship Network		
QSP	<i>Quelea</i> species (Red Billed <i>Quelea</i> bird)		
SARCOF	Southern Africa Region Climate Outlook Forum		
SCA	<i>Schistocerca cancellata</i> (South American Locust)		
SFR	<i>Spodoptera frugiperda</i> (SFR) (Fall armyworm (FAW))		
SGR	<i>Schistoseca gregaria</i> (the Desert Locust)		
SPI	<i>Schistocerca piceifrons piceiferons</i> (Central American Locust)		
SSD	Republic of South Sudan		
SPB	Southern Pine Beetle (<i>Dendroctonus frontalis</i>) – true weevils		
SWAC	South West Asia DL Commission		
PBB	Pine Bark Beetle		
PSPM	Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)		
Triangulation	The process whereby pesticides are donated by a country, with large inventories, but often no immediate need, to a country with immediate need with the help of a third party in the negotiation and shipments, etc. Usually FAO plays the third-party role in the case of locust and other emergency pests.		
UF	University of Florida		
USAID	the United States Agency for International Development		
UN	the United Nations		
WOR	Western SGR Outbreak Region		

Additional resources on SGR and other ETOPs

SGR

USAID Pest Monitoring:

<https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring>

Archived ETOP Bulletins:

<https://www.usaid.gov/what-we-do/working-crises-and-conflict/responding-times-crisis/how-we-do-it/humanitarian-sectors/agriculture-and-food-security/pest-and-pesticide-monitoring/archive>

UN/FAO Desert Locust Watch

<http://www.fao.org/ag/locusts/en/info/info/index.html>

FAO Locust Hub

<https://locust-hub-hqfao.hub.arcgis.com/>

FAO Locust Emergency Appeal for Greater Horn of Africa and Yemen

http://www.fao.org/fileadmin/user_upload/emergencies/docs/Greater%20Horn%20of%20Africa%20and%20Yemen%20%20Desert%20locust%20crisis%20appeal%20%20May%202020.pdf

<http://www.fao.org/emergencies/crisis/desertlocust/en/>

FAO visuals on SGR

<http://tv.fao.org/>

FAO Desert Locust Crisis

<http://www.fao.org/emergencies/crisis/desertlocust/en/>

CIT, DMA and LMI – FAO-PPP

<http://www.fao.org/locusts-cca/en/>

DLCO-EA

<http://www.dlco-ea.org/final/index.php/about-us>

FAO/Central Region Locust Control Commission

<http://desertlocust-crc.org/Pages/index.aspx?CMSId=8&lang=EN>

FAO/Western Region Locust Control Commission

<http://www.fao.org/clcpro/fr/>

FAO Locust Watch - Central Asia and Caucasus

<http://www.fao.org/locusts-cca/en/>

FAO SGR Response Overview Dashboard

<http://www.fao.org/locusts/response-overview-dashboard/en/>

FAO Locust Hub

<https://locust-hub-hqfao.hub.arcgis.com/>
<http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html>

FAW

USAID FtF FAW

<https://www.agrilinks.org/post/fall-armyworm-africa-guide-integrated-pest-management>

FAW management animation SAWBO

<https://sawbo-animations.org/video.php?video=//www.youtube.com/embed/5rxlpXEK5q8>

<http://www.cabi.org/isc/datasheet/29810>

<http://www.fao.org/emergencies/resources/maps/detail/en/c/1110178/>

FAO NURU FAW Application

<http://www.fao.org/news/story/en/item/1141889/code/>

USAID FAW PERSUAP

<https://ecd.usaid.gov/repository/pdf/50065.pdf>

FAO FAW Monitoring and Early warning System

<http://www.fao.org/3/CA1089EN/ca1089en.pdf>

<https://acbio.org.za/sites/default/files/documents/BT%20Maize%20Fall%20Army%20Worm%20report.pdf>

<https://www.invasive-species.org/wp-content/uploads/sites/2/2019/03/Fall-Armyworm-Evidence-Note-September-2017.pdf>

AAW

<http://www.armyworm.org/latest-armyworm-forecast-irlco-csa-oct-2018/>

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