

**Emergency Transboundary  
Outbreak Pest (ETOP) Situation  
Update for April, 2016 with a  
Forecast till mid-June**  
**Un résumé en français est inclus**

## SUMMARY

The **Desert Locust (SGR<sup>1</sup>)** continued developing in April in northwest Africa and southern **Yemen**. Hatching was reported in **Morocco** and control operations treated 6,502 ha. Adults and hoppers continued appearing in **Mauritania** and controlled on 1,358 ha. **Algeria** treated 26 ha and **Mali** and **Niger** reported a few adults in the North while the rest of the Western Outbreak Region (WOR) remained calm during this month.

Swarms, adult groups and hoppers were reported in **Yemen** where hatching occurred in wadis and Hadramout plateau west of Thamoud. Yemen locust team is preparing to launch intensive surveillance and control in areas that are accessible. Limited breeding was reported in northern **Oman** and scattered adults were detected on the southern coast in **Eritrea**. No locusts were reported in the rest of the Central Outbreak Region (COR).

Small-scale breeding was reported in southeastern **Iran**, but no locusts were reported in the rest of the

Eastern Outbreak Region (EOR) during this month.

## Forecast

Escapee locusts from southern **Morocco** and northern **Mauritania** will likely migrate southward to the summer breeding areas reach northern Senegal. Some may move to Algeria and begin breeding. Isolated adults may appear in Ghat in **Libya** and breed on a small-scale. A few adults may persist in northern **Mali** and **Niger** and the rest of WOR will likely remain calm during the forecast period.

In **Yemen**, locusts that moved to the interior of the country and started breeding will further develop and form more groups, hoppers and perhaps swarms in several places and those that migrated earlier from southern **Yemen** will continue breeding in northern **Oman** and southern **Saudi Arabia**. A few adults will persist in **Eritrea** and appear in eastern **Ethiopia**, northern **Somalia** and along the Nile valley in **Sudan** and begin breeding during the forecast period. Active surveillance and timely preventive interventions are critical to abate any major threats.

Breeding will continue in southeast **Iran** and commence in southwest **Pakistan** during the coming months.

*It is worth noting that during the 2003-05 locust upsurges, locust-affected frontline countries in Sahel*

<sup>1</sup> Definitions of all acronyms can be found at the end of the report.

*West Africa and North Africa did not have well-equipped, well-organized autonomous locust control units. The regional organization that was mandated with coordination and strengthening regional collaborations was struggling to build its own capacity. Thanks to the efforts and commitments of national authorities and the supports from regional and international communities, development and humanitarian donors, including USAID, FAC, FAO, AFDB and many more, frontline countries, i.e., Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal and Tunisia, have since established fully operational autonomous locust management and control entities at the national level. These entities have been able to abate several locust threats, including a potentially devastating locust emergency in 2012 and again in 2015. The coordination and support that CLCPRO has been providing to the frontline countries remain invaluable.*

#### **Red (Nomadic) Locust (NSE):**

Ground surveys in **Tanzania** indicated the presence of locusts in Ikuu plains and flooding prevented successful breeding in North Rukwa and Wenmbere, whereas lower than normal and weaker flooding increased locust numbers in Kafua Flats in **Zambia** and Lake Chilwa/Lake Chiuta plains in **Malawi** and **Mozambique**. Scattered adults were reported in the Buzi-Gorongosa and Dimba plains where locusts will likely concentrate

later in the dry season and likely form swarms. Timely aerial surveillance and monitoring remain critical to determine the extent of the locust threat and accordingly plan effective control interventions and save crops and pasture.

#### **Madagascar Migratory Locust**

**(LMC):** No update was received at the time this report was compiled, but the final phase of the 3-year campaign was in progress and reported treated/protected more than 2.1 million ha and significantly reduced locust populations.

#### **Italian (CIT), Moroccan (DMA), Asian Migratory (LMI) Locusts,**

**Central Asia and the Caucasus (CAC):** DMA began hatching in March in southern Central Asia and continued in April where hopper groups and bands were formed. Hatching also progressed in northern Central Asia and parts of the Caucasus. CIT is expected to have begun hatching in a few places during this month.

Joint locust survey operations are planned for May in Georgia and Azerbaijan and USAID/DCHA/OFDA Senior Technical Advisor for Pests and Pesticides will be joining the team to observe, monitor and assess these operations.

**African Armyworm (AAW):** AAW caterpillars were reported attacking maize in Mwatate and Taveta Sub-Counties and pasture in Buguta in Voi Sub-County in **Kenya** during the 2<sup>nd</sup>

dekad of April. Control operations were launched by the affected farmers with technical and material assistance from MoA. Outbreaks were not detected in **Tanzania** during this month, but considerable numbers of moths were reported in pheromone traps in Mbeya region in the south-central part of the country during this period.

**Quelea quelea (QQU)**: QQU bird outbreaks were reported attacking sorghum and millets in **Tanzania** and in rice fields in **Kenya** during April.

*USAID/OFDA/PSPM monitors ETOPs closely through its network with national PPDs/DPVs, Migratory Pest Units and international and regional organizations, including FAO, CLCPRO, CRC, DLCO-EA, IRLCO-CSA. It provides timely updates and advices to HQ, field staff, partners and others as often as necessary. **End summary***

## RÉSUMÉ

**Le (SGR)**: a poursuivi le développement en Avril en Afrique du nord et le sud du Yémen. Ecllosion a été signalé au **Maroc**, où les opérations de lutte ont traité 6.502 ha. Les adultes et les larves ont continué apparaissant en **Mauritanie** et contrôlée sur 1.358 ha. **Algérie** traité 26 ha et le **Mali** et le **Niger** a signalé quelques adultes dans le Nord, tandis que le reste de l'écllosion Région de l'Ouest (WOR) est restée calme durant ce mois.

Essaims, groupes d'adultes et des larves ont été signalées au **Yémen**, où éclosions ont eu lieu dans les oueds et Hadramout plateau ouest de Thamoud. L'équipe du Yémen de se prépare à lancer la surveillance et le contrôle intensif dans les zones qui sont accessibles. Une reproduction limitée a été signalée dans le nord d'**Oman** et des ailés épars ont été détectés sur la côte sud de l'**Erythrée**. Aucun criquet n'a été signalé dans le reste des pays de la Région du foyer central (COR).

Une reproduction à petite échelle a été signalée dans le sud-Iran, mais aucun criquet n'a été signalé dans le reste de la région de l'Est Outbreak (EOR) au cours de ce mois.

## Prévoir

criquets Escapee du sud du **Maroc** et nord de la **Mauritanie** vont probablement migrer vers le sud vers les zones de reproduction estivale peut-être atteindre le nord du **Sénégal** et certains mouvement vers l'**Algérie** et de commencer la reproduction. Des ailés isolés peuvent apparaître dans Ghat au sud-ouest en **Libye** et se reproduire à petite échelle et quelques adultes peuvent persister dans le nord du **Mali** et du **Niger** et le reste du WOR restera probablement calme au cours de la période de prévision.

Au **Yémen**, les criquets qui se sont déplacés à l'intérieur du pays et ont

commencé l'élevage se développeront davantage et former plusieurs groupes, des trémies et peut-être des essaims dans plusieurs endroits, y compris des zones inaccessibles. Criquets qui ont migré plus tôt du sud du **Yémen** continueront l'élevage dans le nord d'**Oman** et le sud de **l'Arabie Saoudite**. Quelques adultes vont persister en **Erythrée** et apparaissent dans l'est de **l'Ethiopie**, norther **Somalie** et le long de la vallée du Nil au **Soudan** et commencer la reproduction au cours de la période de prévision.

La reproduction va probablement continuer dans le sud et **l'Iran** commencera au sud-ouest du **Pakistan** au cours des prochains mois. La surveillance active et les interventions préventives en temps opportun sont essentielles pour réduire les menaces majeures.

Il est à noter qu'au cours de 2003-05 recrudescences acridiennes, les pays de première ligne touchés par les criquets au Sahel en Afrique occidentale et en Afrique du Nord ne sont bien équipés, bien organisés des unités de lutte antiacridienne autonomes unités de lutte antiacridienne bien organisés. L'organisation régionale qui a été chargé de la coordination et le renforcement de la collaboration régionale a du mal à construire sa propre capacité. Merci aux efforts et aux engagements des autorités nationales, soutient des communautés régionales et internationales, le

développement et les donateurs humanitaires, y compris l'USAID, FAC, FAO, BAfD et beaucoup d'autres, les pays de première ligne, à savoir, l'Algérie, le Tchad, la Libye, le Mali, la Mauritanie, le Maroc, le Niger, le Sénégal et la Tunisie, ont depuis établi des entités de gestion et de lutte antiacridienne autonomes pleinement opérationnels au niveau national. Ces entités ont été en mesure de diminuer plusieurs menaces acridiennes, y compris une urgence acridienne potentiellement dévastateur en 2012 et à nouveau en 2015. La coordination et le soutien que CLCPRO a été fournissant aux pays de première ligne restent une valeur inestimable.

## AUTRES ETOPS

**Rouge (Nomadic) Locust (NSE):** Les relevés de terrain en Tanzanie ont indiqué la présence de criquets dans les plaines Ikuu et les inondations ont empêché la reproduction réussie dans le Nord Rukwa et Wenmbere, alors que plus bas que les effectifs acridiens normaux et les plus faibles inondations a augmenté en Kafua Flats en Zambie et dans les plaines du lac Chilwa / Lac Chiuta au Malawi et au Mozambique. Des ailés épars ont été signalés dans les plaines Buzi-Gorongosa et dimba où les criquets vont probablement se concentrer plus tard dans la saison sèche et probablement des essaims de forme. surveillance aérienne en temps opportun et de surveillance restent critiques pour déterminer l'étendue de

la menace acridienne et donc planifier des interventions efficaces de contrôle et de sauver les récoltes et les pâturages.

**Criquet migrateur Madagascar (LMC):** Aucune mise à jour a été reçue au moment où ce rapport a été établi, mais la phase finale de la campagne de 3 ans était en cours et a rapporté traité / protégé plus de 2,1 millions d'hectares et les populations de criquets considérablement réduits.

**Italien (CIT), du Maroc (DMA), d'Asie migrants (IMT) Criquets, l'Asie centrale et du Caucase (CAC):** DMA a commencé à couvrir en Mars en Asie centrale du Sud et continuer en Avril où les groupes et bandes larvaires se sont formées. Ecllosion a également progressé en Asie centrale du Nord et les régions du Caucase et CIT devrait avoir commencé à couvrir dans quelques endroits au cours de ce mois-ci.

**Chenille Légionnaire africaine (AAW):** AAW ont été signalés attaquer maïs Mwatate et Taveta sous-comtés et les pâturages en Buguta à Voi sous-comté au Kenya au cours de la deuxième décennie d'Avril. Les opérations de lutte ont été lancées par les agriculteurs touchés avec une assistance technique et matérielle du MdA. Les épidémies ne sont pas détectés en Tanzanie au cours de ce mois-ci, mais le nombre considérable de papillons nous signalés dans les pièges à phéromones dans la région de Mbeya

dans la partie centre-sud du pays pendant cette période.

**Quéléa (qqu):** foyers d'oiseaux de qqu ont été signalés attaquer le sorgho et le millet en Tanzanie et dans le riz au Kenya en Avril.

USAID / OFDA / PSPM surveille ETOPS de près grâce à son réseau avec PPDs / DPV, unités ravageurs migrants et les organisations internationales et régionales, y compris la FAO, la CLCPRO, CRC, DLCO-EA, IRLCO-CSA. Il fournit des mises à jour en temps opportun et de conseils à l'AC, le personnel de terrain, les partenaires et les autres aussi souvent que nécessaire. Résumé de fin

### OFDA's Contributions to ETOP Activities

*The online Pesticide Stock Management System (PSMS) that was developed with financial assistance from USAID/OFDA and other partners has been installed in some 65 countries around the globe and is helping participating countries maintain inventories. Thanks to this tool many counties have been able to avoid unnecessary procurements and stockpiling of pesticides and helping them avoid costly disposal operations and improve safety and well-being of their citizens and shared environment.*

*The USAID/OFDA funded community-based armyworm monitoring, forecasting and early warning (CBAMFEW) project that was concluded last September has been incorporated in the annual work plan of the national crop protection departments in all participating countries*

<http://bit.ly/1C782Mk>. The project enabled farmers to be able to detect and report AAW and prevent major crop/pasture damage. Participating countries continue expressing their gratitude for having the project implemented in their countries. USAID/OFDA/PSPM will maintain a line of communication with participating countries and monitor progresses.

OFDA/PSPM is working with other partners to explore means and ways to expand this innovative technology to other AAW affected countries and benefit farmers and rural communities.

OFDA/PSPM's interests in sustainable pesticide risk reduction in low income countries to strengthen their capacities and help improve safety of vulnerable populations and shared environment continued. OFDA-PSPM intends to extend this initiative to other parts of Africa, the Middle East, CAC etc., as needed.

OFDA continued its support for DRR programs to strengthen national and regional capacities for ETOP operations. The program which is implemented through FAO has assisted several frontline countries to mitigate, prevent, and respond to ETOP outbreaks. It has helped participating countries avoid potential emergencies from misuse and mishandling of pesticides, pesticide-incorporated materials and application platforms.

USAID/OFDA is sponsoring project activities through the UN/FAO to help strengthen/re-build national and regional capacity to prevent and control the threats the locusts pose to the 25 million plus vulnerable people that eke a living from agriculture and livestock in CAC.

The program is on track and it has enabled collaboration among neighboring countries where joint monitoring, surveillance, reporting and preventive interventions have been realized to minimize the threats of ETOPs to food security and livelihoods of vulnerable population.

**Note:** ETOP SITREPs can be accessed on USAID Pest and Pesticide Management website: [USAID/OFDA PPM Website](#)

## Weather and Ecological Conditions

### Western Outbreak region

During April, ecological conditions remained favorable for the survival and reproduction of SGR in Tichla and other areas in the Adrar Settouf in southern **Morocco**. In **Mauritania**, ecological conditions further deteriorated during April causing most of the annual vegetation dry up in Bir Moghreïn and Zouerat in Tiris Zemmour and only a few patches of green vegetation were reported mostly in wadis, sand dunes and ridges in Rich and Dahr Ahmed Maouloud towards the end of the month. In **Mali** meteorological and ecological conditions remained unfavorable in April and only patches of perennial plants and *Schouwia sp* persisted in Inchékar (19°35'46"N/ 00°11'51"E). The intertropical front was hovering over Kayes, Koulikoro and Sikasso in the southern regions. Visibility was moderately reduced in Mopti, Timbuktu, Gao, Kidal in the north due to sand dust particulates with max T° ranging between 40° and 45°C and the min T° hovering around 22° and 29 °C in Timbuktu, Gao and Kidal, home to the SGR breeding grounds in the North. Libya and Tunisia reported very light showers

(CNLA/Mauritania, CNLAA/Morocco, CNLCP/Mali, FAO-DLIS).

**Central Outbreak Region**

Very heavy rains, mixed with hailstorm were reported during the 1<sup>st</sup> dekad of April in eastern **Ethiopia** in Jijiga and Afar regions in areas bordering northern **Eritrea, Djibouti** and northern **Somalia**. These will create favorable conditions for the SGR to start appear in several locations.

In **Yemen**, moderate to heavy rains and floods were reported in most parts of the summer breeding areas between Marib (1527N/4519E) and Thamud (1717N/4955E) and Bayhan. As a result unusually favorable ecological conditions – green vegetation, moist soil – developed for SGR to breed in several places east and west of wadi Hadhramout and between Marib and Bayhan (see map below, DLMCC/Yemen). Good rains were also reported in winter breeding areas where occasional flooding occurred in several wadis on the coastal plains along the Red Sea, Gulf of Aden and Arabian Sea, but the rise in temperature made these areas unfavorable.



As many winter breeding areas remain inaccessible due to insecurity and remoteness, it was not possible to determine ecological conditions. In the coastal areas in Shabwah, most of the

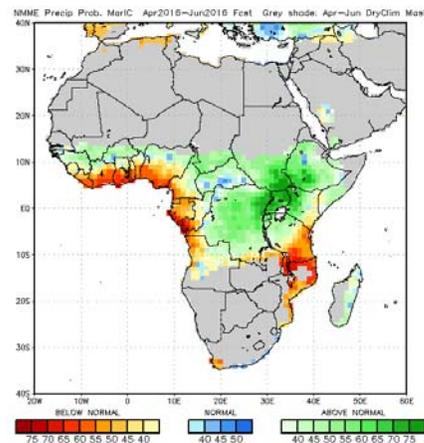
vegetation was drying up and only patches of green vegetation were present during April (see picture, DLMCC/Yemen, 5/2016).



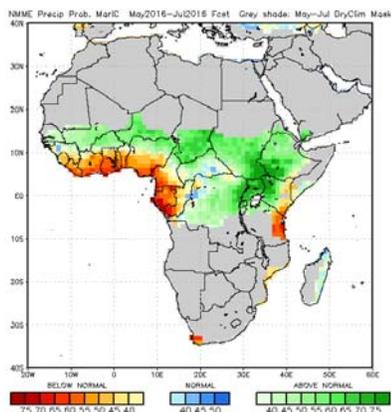
In **Oman**, ecological conditions remained favorable during previous months in Sharqiya, Dakhiliya, Battinah, Bureimi and Musandam Regions where light to heavy rains were reported (LCC/Oman).

The forecasts call for a slightly favor above-average rainfall over portions of the Sahel and Central African and Greater Horn of Africa. In contrast, there is a moderate tilt to favor below-average rainfall along the Gulf of Guinea coast, and coastal East Africa (map 1: April – June, 2016, map2: May – July, 2016; NOAA’s North American Multi-Model Ensemble (NMME), precipitation probability forecasts).

Map 1



Map 2



Mostly hot, dry weather dominated the scheduled desert areas (SDA) in **India** where only light showers were reported during this month (DPPQS/India).

Good to moderate rains were reported in April in the NSE region in Tanzania and Mozambique (IRLCO-CSA).

Table 1: Rainfall (millimeters) recorded in April near NSE outbreak areas (source: IRLCO-CSA).

Country, Station, outbreak area	Rainfall/mm
<b>Tanzania</b>	
Wembere Plain	86.7
Malagarasi Basin	649.6
<b>Mozambique</b>	
Nhamatanda plain	26
Mafambise plain	27
Dimba plain	107

In **CAC**, above-normal temperatures prevailed across Central Asia from March 27 to April 2 with the 7 degrees C difference across eastern Kazakhstan. Maximum temperatures reached low to mid 30s (degrees C) across southern Turkmenistan and the lowlands of western Afghanistan. Above-normal temperatures are likely to continue across

Kazakhstan with near to below-normal temperatures expected for the remainder of the region. Widespread moderate to locally heavy rainfall (more than 50 mm) occurred in Afghanistan, southern Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan from March 27 to April 2. Warmer temperatures and moist weather could mean early hatching and possible. Locally heavy rain and high-elevation snow melting is likely across Afghanistan, Kyrgyzstan, and Tajikistan (NOAA climate prediction center for Central Asia hazard outlook, 4/7-13, 2016)

[http://www.cpc.ncep.noaa.gov/products/international/casia/casia\\_hazard.pdf](http://www.cpc.ncep.noaa.gov/products/international/casia/casia_hazard.pdf)

**El Niño/La Niña and SGR outbreak**

*El Niño often affects the Central Outbreak Region (the Horn of Africa and the Arabian Peninsula) due to the above average rainfall during winter and wetter than normal long spring (April-June). Rain has already increased across parts of eastern Africa and the Horn (NOAA, OFDA/Hydromet). Above-average rainfall over the Horn of Africa, southern Red Sea region and Gulf of Aden could mean increased SGR development in these areas, including northwest coast of **Somalia**, much similar to an event that occurred during the El Niño of 1997-1998. Above normal precipitation could also lead to increased AAW outbreaks.*

*During the 1987-89 SGR plague, USG, primarily through OFDA, provided close to USD 60 million to support the international campaign that required more than USD 300 million to abate the plague. In the 2003-05 SGR upsurges that affected more than 25 countries across Sahel, North Africa, the Red Sea coasts and the Middle East, USAID*

deployed a 30-day DART and contributed more than USD 21 million to abate the upsurges and assist communities that were severely affected by the SGR upsurges. The upsurges required hundreds of millions of USD to control and assist affected farmers and rural communities (OFDA).

**Note:** Changes in the weather pattern and the rise in temperature can contribute to ecological shift in ETOP habitats and increase the risk of pest outbreaks, resurgence and emergence of new pests. In Uzbekistan, Moroccan locust (DMA) which is normally a low to medium altitude pest has shown a considerable vertical habitat expansion by up to 1,000 feet or 300 meters from its normal ambient altitude due to warmer higher elevations.

The **Pine Bark Beetle** appears has been escalating in the western hemisphere due to the rise in winter temperatures and decreased precipitation. Warmer weather means lesser egg/grab death from severe cold temperatures and less precipitation means weaker trees that succumb to the beetle attack.

The **Asian migratory locust**, an insect that bred just once a year, recently began exhibiting two generations per year. These anomalous manifestations and phenomena, which are largely attributed to the change in the weather pattern and associated ecological shift, are a serious concern to farmers, rangeland managers, crop protection experts, development and humanitarian partners and others. Regular monitoring, documenting and reporting anomalous manifestations in pest behavior and habitats remain critical to help avoid and minimize potential damages to crops,

pasture, livestock and reduce subsequent negative impacts on food security and livelihoods of vulnerable populations and communities. **End note.**

### Detailed Accounts of ETOP Situation and a Forecast for the Next Six Weeks

**SGR – Western Outbreak Region:** All stages of transient solitary hoppers, 4<sup>th</sup> and 5<sup>th</sup> dominating were reported in **Mauritania** from early April on and during the 2<sup>nd</sup> and 3<sup>rd</sup> dekads, immature and mature adults were detected migrating along northern **Mauritania** - southern **Morocco** borders. Early instar hoppers were treated with *GreenMuscle* on 19 ha and immature and mature adults were controlled on 115 ha during the 1<sup>st</sup> dekad and 565 ha during the 2<sup>nd</sup> dekad. On April 25<sup>th</sup> CNLA team in Tiris Zemmour treated six solitario-transient groups of adults, believed to have originated in the border area to the northwest implicating locust movements in Adrar. The unusual appearance of adults in Adrar in late April necessitated deployment of control team and a coordination team in Adrar. A CNLA team following the adult locust groups on April 26 at Yaghrev Tergit and south of Atar and by then the locust groups fragmented into smaller groups. The locusts were treated on 357 ha near Zouerat and during the last week of April 302 ha were controlled (659 for the dekad and 1,358 for the month – 7,276 ha in total since the current campaign began on November 2<sup>nd</sup>, 2015).

In **Morocco**, four survey and control teams and one monitoring team were deployed to the Adrar Settouf region during April. Groups of adults and hoppers were treated in more than 89



beekeepers, camel herders and nomads making it difficult to plan on using conventional chemical pesticides (in the past biopesticides were preferred by the inhabitants of these regions, mainly beekeepers and herders).

Scattered adults were detected in April on the Red Sea coasts in **Eritrea**. In **Oman** only isolated low density mature adults with 3<sup>rd</sup> and 4<sup>th</sup> instar hoppers observed in Wadi Batha (2222N/5856E) and Bidiya and isolated low density immature adults were reported in a few place in Shuweyi (230357N/563233E), Tan'am and Ibri, despite the good rains that fell in parts of the northern region of the country and the presence of favorable conditions during April,. No locusts were reported in Sudan, Ethiopia, Egypt, Djibouti, or northern Somalia (Somaliland) or Saudi Arabia during this period (DLMCC/Yemen, DLCO-EA, FAO-DLIS, LCC/Oman).

#### Forecast:

In the interior of **Yemen** in Marib, Shabwah and Ḥaḍramūt regions, breeding will continue in Hadramout. Hatching, band and group formations will increase over the coming months and likely lead to swarm formations. Intensive surveillance and timely preventive interventions are necessary to abate further developments and prevent the threats to beekeepers, camel herders and the nomads. Locusts that were dispersed into Saudi Arabia and Oman by the southwesterly and southerly trade during April will continue breeding and increase. Small-scale breeding will likely commence in the southern Red Sea coast in Eritrea in the coming months. Isolated adults may appear along the Nile Valley in Sudan, eastern Ethiopia and in adjacent areas in northern Somalia and the western plateau and begin breeding

during the forecast period. All countries in COR must remain vigilant and launch preventive interventions as early as needed and possible (DLCO-EA, DLMCC/Yemen, FAO-DLIS, LCC/Oman, OFDA/AELGA).

#### SGR - Eastern Outbreak Region:

Southeastern **Iran** witnessed small-scale breeding while Pakistan and India remained calm during this month (DPPQS/India, FAO-DLIS).

**Forecast:** Small-scale breeding will continue in southeast **Iran** and perhaps commence in southwest **Pakistan** during the forecast period (FAO-DLIS, OFDA/AELGA).

#### Red (Nomadic) Locust (NSE):

Although aerial surveys are undermined by lack of resources, ground surveys by the MoA/**Tanzania** indicated the presence of concentrations of locusts in the southern and eastern edges of Ikuu plains. Heavy rains and flooding prevented successful breeding in North Rukwa and Wenmbere plains. Swarms from Kafua flats in **Zambia** where lower than normal rain and lack of flooding allowed a successful breeding were reported causing damage to maize crops. A similar condition may have favored increased breeding in Lake Chilwa/Lake Chiuta plains in **Malawi** and **Mozambique**. Scattered adult locusts were reported in the Buzi-Gorongosa and Dimba plains in April (IRLCO-CSA, OFDA/AELGA).

**Forecast:** With the seasonal vegetation burning commencing in May/June, NSE will be forced to begin concentrating in patches of green vegetation in the primary outbreak areas and form small groups during the forecast period.

Swarms may begin appearing in Ikuu plains and Malagarasi Basin in Tanzania, Kafue Flats in Zambia, Lake Chilwa plains in Malawi and Mozambique as well as Buzi-Gorongosa and Dimba plains in Mozambique in the coming months. Timely aerial surveillance and monitoring remain critical to determine the extent of the locust threat and accordingly plan effective control interventions during the forecast period (IRLCO-CSA, OFDA/AELGA).

#### **Madagascar Migratory Locust (LMC):**

The final phase of the 3-year campaign that began on 26 August, 2015 is in progress and is expected to conclude by June 2016.

**Forecast:** Locusts will take a slow pace and remain localized in patches of green vegetation and develop in the southwest during the forecast period.

As of February, 2016, it has reported controlling more than 223,533 ha bringing total areas controlled/ protected to 2.1 million ha (USAID contributed close to \$4.55 M to the project/program fund of \$37 M. the campaign reported received \$36 M as of March 15. [www.fao.org/emergencies/crisis/madagascar-locust/en/](http://www.fao.org/emergencies/crisis/madagascar-locust/en/).

714,032 l Chlorpyrifos (OP) mixed with cypermethrin and deltamethrin, 259,912 l of an insect growth regulator - Teflubenzuron and 749 kg of a biopesticides - *GreenMuscle* are reported utilized to control the locusts and protect crops and pasture (FAO-ECLO).

**Italian (CIT), Moroccan (DMA) and Migratory (LMI) Locusts in Central Asia and the Caucasus (CAC):** Locust activities have commenced in most of the CAC region where ecological conditions

continued to improve during spring. Unusually warmer winter and early spring caused DMA to hatch in March in southern Central Asia - Kyrgyzstan, Tajikistan and Uzbekistan and a similar situation may have occurred in neighboring areas in Afghanistan and Turkmenistan. In April, hoppers developed in these countries and hatching commenced in Kazakhstan and Russia. In Azerbaijan and Georgia where February and March remained mostly cooler and wetter locust activities and delayed. DMA began hatching in those areas during April. Control operations that treated more than 19,000 ha in March continued into April in Central Asia.



**Forecast:** DMA hoppers groups and bands will continue forming in most of southern Central Asia and hatching will progress in Russia and the Caucasus. CIT will develop in several countries in the CAC during the forecast period (FAO-ECLO, OFDA/AELGA).

**Italian, Migratory and Moroccan locusts** are a constant threat to the CAC region. These pests can profusely multiply and attack tens of millions of hectares of crop and pasture and adversely affect food security and livelihoods of more than 20 million vulnerable inhabitants that eke a living primarily from farming and herding. With

*the ability to travel more than 100 km (60 miles) each day, these locusts can decimate dozens of hectares of cereal crops, pasture, cotton, fruit trees, leguminous plants, sunflower, tobacco, vineyard, vegetable and others over vast areas. Most of the countries affected by the three locust species lack well established capacity to effectively prevent and control these pests.*

**Timor and South Pacific:** No update was received from East Timor during April, but it is likely that acridid pests continued to be present.

**African Armyworm (AAW):** AAW caterpillars were reported attacking maize in Mwatate and Taveta Sub-Counties and pasture in Buguta in Voi Sub-County in sub-coastal **Kenya** during the 2<sup>nd</sup> dekad of April. The outbreaks were controlled by the affected farmers with technical and material assistance from MoA. Significant moth catches were reported in Mbeya region in south-central **Tanzania**. Other countries in the region remained free from of AAW outbreaks during this month (DLCO-EA, IRLCO-CSA).

**Forecast:** AAW outbreak will likely continue in **Kenya**, commence in northern **Tanzania** and perhaps start appearing in southern **Ethiopia** during the forecast period. AAW coordinators and CBAMFEW and non-CBAMFEW forecasters are advised to remain vigilant and report trap catches to concerned authorities on time for interventions (DLCO-EA, IRLCO-CSA, OFDA/AELGA).

**Quelea (QQU):** QQU outbreaks were reported damaging sorghum and millet crops in Dodoma, Mbeya, Singida and Shinyanga regions in **Tanzania** and MoA and DLCO-EA launched aerial control in

several places. QQU outbreaks were also reported causing damage to irrigated rice in Kisumu County in **Kenya** where areal operations were launched by MoA in collaboration with DLCO-EA. QQU outbreak was reported in Kibimba Rice schemes in eastern Uganda during April. The birds were reported damaged 10% of the infested rice field.

**Forecast:** QQU birds will likely continue being a problem to small grain cereal growers in **Tanzania, Kenya**, irrigated wheat in **Zimbabwe** and rice crops in **Uganda** and necessitate aerial operations (DLCO-EA, IRLCO-CSA).

***Facts:** QQU birds can travel ~100 km/day in search of food. An adult QQU bird can consume 3-5 grams of grain and destroy the same amount each day. A medium density QQU 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:** No update was received on rodent outbreaks in April. However, these pests are a constant threat to crops in the field as well as storage and must be regularly monitored and abated.

#### **Pine Bark Beetle Outbreaks:**

***Honduras, Central and North America** are experiencing severe outbreaks of the pine bark beetle (PBB) or the southern pine beetle, **Dendroctonus frontalis**, which is destroying pine and other trees. GoH declared a national disaster and deployed armed forces to tackle the problem. The pest is reported affecting **Beliz, Brazil, El Salvador, Guatamala, Nicaragua** and impacting agroforestry*

and umber industry. The beetles are also affecting pine and other trees in the **USA, Canada and Mexico** where millions of trees are dying from beetle damage (see purple brown patches in the photo below

<http://phys.org/news/2015-12-honduran-army-war-invading-bugs.html>)

The PBB eggs and larvae (grubs) that cannot survive severe cold winter and hibernate under dead leaves and barks to survive or often die out can now adjust to the relatively mild winter temperatures caused by increasingly warmer winter weather in the Rocky Mountains over the past decade. Furthermore, the prolonged below normal precipitation continuously weakens the trees. These two factors combined have created favorable conditions for the beetles to persist and cause large outbreaks over vast areas (NPS).

**All ETOP front-line line countries** must maintain regular monitoring. Invasion countries should remain alert. DLCO-EA, IRLCO-CSA, DLCCs, DLMCC, CNLAs, national DPVs and PPDs, ELOs are encouraged to continue sharing ETOP information with stakeholders as often as possible and on a timely bases. Lead farmers and community forecasters must remain vigilant and report ETOP detections to relevant authorities immediately.

**Inventories of Pesticide Stocks for ETOP Prevention and Control**

**Morocco and Mauritania** treated 6,502 ha and 1,358 ha, respectively, in April reducing their pesticide inventories by that amount. **Madagascar** is expected to have reduced its inventory in March and April.

**Note:** SGR invasions countries in West and North West Africa reported large inventories of obsolete stocks, some dating as far back as 2003-05 locust campaigns and even earlier than that. Countries in Central Asia and the Caucasus also carry large stocks of obsolete pesticides that date as far back as the old Soviet era. Safe disposal of these stocks requires considerable resources, but can significantly minimize health risks and environmental pollution associated with the stocks. **End note.**

**Note:** A Sustainable Pesticide Stewardship (SPS) can strengthen the pesticide delivery system (PDS) at the national and regional levels. A strong PDS can effectively reduce pesticide related human health risks, minimize environmental pollution, increase food security and contribute to the national economy. An SPS can be effectively established by linking key stakeholders across political borders. **End Note.**

**OFDA/PSPM/AELGA** encourages exploring alternatives such as IPM to reduce risks associated with pesticide stockpiling. A judiciously executed triangulation of surplus stocks from countries with large inventories to countries in need is a win-win situation worth considering.

Table 3. ETOP Pesticide Inventory in Frontline Countries during March, 2016

Country	Quantity (l/kg)*
Algeria	1,190,000~
Chad	44,500
Egypt	68,070~ (18,300 ULV, 49,770 I)
Eritrea	18,250~ + 20,000 <sup>D</sup>
Ethiopia	10,000~
Libya	25,000~

Madagascar	206,000~ + 100,000 <sup>D</sup>
Mali	27,000
Mauritania	28,6420 <sup>DM</sup>
Morocco	3,491,362 <sup>D</sup>
Niger	75,800~
Oman	10,000~
S. Arabia	100,000~
Senegal	156,000~
Sudan	171,780~
Tunisia	68,514 obsolete
Yemen	42,000 <sup>D</sup> + 180 kg GM~
<p>*Includes different kinds of pesticide and formulations - ULV, EC and dust;</p> <p>~ data may not be current;</p> <p><sup>D</sup> = Morocco donated 100,000 l of pesticides to Madagascar and 10,000 l to Mauritania in 2015</p> <p><sup>D</sup> = In 2013 Morocco donated 200,000 l to Madagascar</p> <p><sup>D</sup> = Saudi donated 10,000 to Yemen and pledged 20,000 l to Eritrea</p> <p><sup>DM</sup> = Morocco donated 30,000 l of pesticides to Mauritania</p> <p>GM = <i>GreenMuscle</i><sup>TM</sup> (fungal-based biological pesticide)</p>	

## LIST OF ACRONYMS

AAW *African armyworm (Spodoptera expempta)*

AELGA *Assistance for Emergency Locust Grasshopper Abatement*

AFCS *Armyworm Forecasting and Control Services, Tanzania*

AfDB *African Development Bank*

AME *Anacridium melanorhodon (Tree Locust)*

APLC *Australian Plague Locust Commission*

APLC *Australian Plague Locust Commission*  
*Bands groups of hoppers marching pretty much in the same direction*

CAC *Central Asia and the Caucasus*

CBAMFEW *Community-based armyworm monitoring, forecasting and early warning*

CERF *Central Emergency Response Fund*

CIT *Calliptamus italicus (Italian Locust)*

CLCPRO *Commission de Lutte Contre le Criquet Pèlerin dans la Région Occidentale (Commission for the Desert Locust Control in the Western Region)*

CNLA(A) *Centre National de Lutte Antiacridienne (National Locust Control Center)*

COR *Central SGR Outbreak Region*

CPD *Crop Protection Division*

CRC *Commission for Controlling Desert Locust in the Central Region*

CTE *Chortoicetes terminifera (Australian plague locust)*

DDLC *Department of Desert Locust Control*

DLCO-EA *Desert Locust Control Organization for Eastern Africa*

DLMCC *Desert Locust Monitoring and Control Center, Yemen*

DMA *Dociostaurus maroccanus (Moroccan Locust)*

DPPOS *Department of Plant Protection and Quarantine Services, India*

DPV *Département Protection des Végétaux (Department of Plant Protection)*

ELO *EMPRES Liaison Officers –*

EMPRES *Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases*

EOR *Eastern SGR Outbreak Region*

ETOP *Emergency Transboundary Outbreak Pest*

<i>Fledgling</i>	<i>immature adult locust /grasshopper that has pretty much the same phenology as mature adults, but lacks fully developed reproductive organs to breed</i>	NOAA (US)	<i>National Oceanic and Aeronautic Administration</i>
GM	<i>GreenMuscle® (a fungal-based biopesticide)</i>	NPS	<i>National Park Services</i>
ha	<i>hectare (= 10,000 sq. meters, about 2.471 acres)</i>	NSD	<i>Republic of North Sudan</i>
ICAPC	<i>IGAD's Climate Prediction and Application Center</i>	NSE	<i>Nomadacris septemfasciata (Red Locust)</i>
IGAD	<i>Intergovernmental Authority on Development (Horn of Africa)</i>	OFDA	<i>Office of U.S. Foreign Disaster Assistance</i>
IRIN	<i>Integrated Regional Information Networks</i>	PBB	<i>Pine Bark Beetle (Dendroctonus sp. – true weevils)</i>
IRLCO-CSA	<i>International Red Locust Control Organization for Central and Southern Africa</i>	PHD	<i>Plant Health Directorate</i>
ITCZ	<i>Inter-Tropical Convergence Zone</i>	PHS	<i>Plant Health Services, MoA Tanzania</i>
ITF	<i>Inter-Tropical Convergence Front = ITCZ)</i>	PPD	<i>Plant Protection Department</i>
FAO-DLIS	<i>Food and Agriculture Organizations' Desert Locust Information Service</i>	PPM	<i>Pest and Pesticide Management</i>
Hoppers	<i>young, wingless locusts/grasshoppers (Latin synonym = nymphs or larvae)</i>	PPSD	<i>Plant Protection Services Division/Department</i>
JTWC	<i>Joint Typhoon Warning Center</i>	PRRSN	<i>Pesticide Risk Reduction through Stewardship Network</i>
Kg	<i>Kilogram (~2.2 pound)</i>	QQU	<i>Quelea Qulelea (Red Billed Quelea bird)</i>
L	<i>Liter (1.057 Quarts or 0.264 gallon or 33.814 US fluid ounces)</i>	SARCOF	<i>Southern Africa Region Climate Outlook Forum</i>
LCC	<i>Locust Control Center, Oman</i>	SPB	<i>Southern Pine Beetle (Dendroctonus frontalis) – true weevils</i>
LMC	<i>Locusta migratoriacapito (Malagasy locust)</i>	SGR	<i>Schistoseca gregaria (the Desert Locust)</i>
LMM	<i>Locusta migratoria migratorioides (African Migratory Locust)</i>	SSD	<i>Republic of South Sudan</i>
LPA	<i>Locustana pardalina</i>	SWAC	<i>South West Asia DL Commission</i>
MoAFSC	<i>Ministry of Agriculture, Food Security and Cooperatives</i>	PBB	<i>Pine Bark Beetle</i>
MoAI	<i>Ministry of Agriculture and Irrigation</i>	PSPM	<i>Preparedness, Strategic Planning and Mitigation (formerly known as Technical Assistance Group - TAG)</i>
MoARD	<i>Ministry of Agriculture and Rural Development</i>	Triangulation	<i>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.</i>
NALC	<i>National Agency for Locust Control</i>	USAID	<i>the United States Agency for International Development</i>
NCDLC	<i>National Center for the Desert Locust Control, Libya</i>		

*UN the United Nations*  
*WOR Western SGR Outbreak Region*  
*ZEL Zonocerus elegans, the elegant grasshopper*  
*ZVA Zonocerus variegatus, the variegated grasshopper (This insect is emerging as a fairly 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 perhaps due to climate anomalies, etc.).*

**Who you should contact:**

If you have any questions, comments or suggestions or know someone who would like to freely subscribe to this report, please, feel free to contact us:

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