Food and Agriculture Organization of the United Nations

No. 508 4 FEBRUARY 2021

Desert Locust Bulletin

General situation during January 2021
Forecast until mid-March 2021

WESTERN REGION: CALM

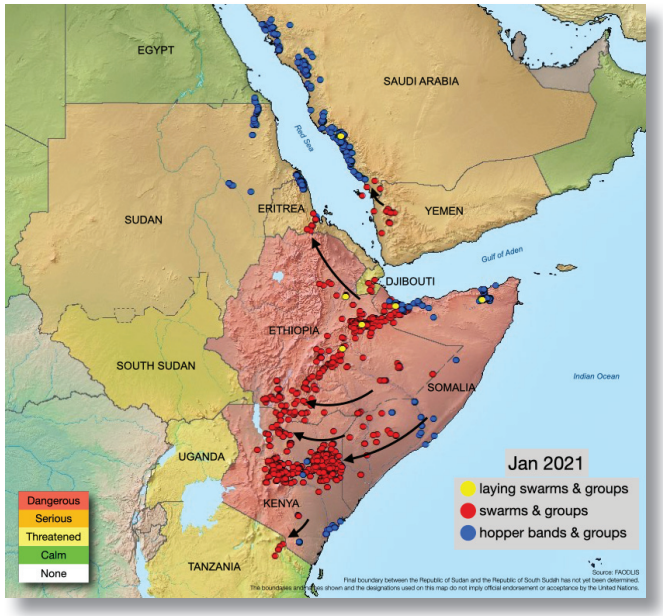
SITUATION. Control operations against adult groups in **Mauritania** (40 ha treated) and **Algeria** (2 ha); isolated adults in Mauritania, **Mali**, **Niger**, and **Morocco**.
FORECAST. Isolated locusts could persist in northwest **Mauritania**, northern **Mali** and **Niger**, and **Morocco**; small-scale spring breeding south of the Atlas Mountains.

CENTRAL REGION: THREAT

SITUATION. More swarms formed in eastern **Ethiopia** (166 158 ha treated) and central Somalia that migrated to northeast and southern Ethiopia, Eritrea, **Djibouti**, **Kenya** (39 036 ha), and **Tanzania** (450 ha); mature swarms, hatching and bands in northern **Somalia** (53 665 ha); swarms moved from Yemen to **Saudi Arabia** (47 070 ha) with hatching and bands on Red Sea coast; hopper bands and adult groups on coast of **Sudan** (7 122 ha), **Eritrea** (2 116 ha), and **Egypt** (755 ha); scattered adults on Red Sea and Gulf of Aden coasts in **Yemen**.
FORECAST. Swarm invasion to decline in southern **Ethiopia** and **Kenya** where they will mature and lay, giving rise to hopper bands; new swarms to form in northern **Somalia** and move to plateau; new groups and swarms may form on Red Sea coast of **Saudi Arabia** and move to interior; a few small swarms could form on Red Sea coast of **Sudan**, **Eritrea**, and perhaps **Yemen**; locust decline in **Egypt**.

EASTERN REGION: CALM

SITUATION. No locusts reported.
FORECAST. Small-scale breeding will commence with the onset of the spring rains in southeast **Iran** and southwest **Pakistan**.



Swarms continue to migrate in the Horn of Africa

Numerous immature swarms continued to migrate from previous breeding areas in eastern Ethiopia and central Somalia to southern Ethiopia and Kenya. A few swarms moved to northeast Ethiopia and continued to Eritrea, while a swarm was seen in northeast Tanzania. The invasion will decline in February, and intensive control operations are expected to reduce current populations. Nevertheless, if rains fall in northern Kenya and southern Ethiopia in the coming weeks, the swarms will quickly mature and lay eggs that will hatch and cause hopper bands to form; otherwise, this will be delayed until the arrival of the seasonal rains in March. More hatching and band formation occurred in northern Somalia where intensive control operations are underway to reduce the number of new swarms that will form in February. Control operations continued in winter breeding areas along the Red Sea where hopper bands formed along the Saudi Arabian coast and on both sides of the Eritrea/Sudan and Egypt/Sudan borders. A few swarms from inaccessible areas of northern Yemen moved to adjacent areas of southwest Saudi Arabia. Any new adult groups or swarms that form in Saudi Arabia could move to the spring breeding areas in the interior of the Arabian Peninsula. The situation remained calm in the other regions.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.
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Weather & Ecological Conditions in January 2021

Very little rain fell except for some areas along the southern coastal plains of the Red Sea in Saudi Arabia. Breeding conditions remained favourable in northern Somalia.

WESTERN REGION

No significant rain fell in the region during January for the thrid consecutive month. Consequently, vegetation was drying out in western Mauritania, the Air Mountains of northern Niger, southeast Algeria, and northern Western Sahara. Small pockets of vegetation remained green between Akjoujt and Atar in northwest Mauritania, in northern Mali between Aguelhoc and Ti-n-kar, on the Atlantic coast of Morocco between Tan-Tan and Guelmim, and near irrigated perimeters in the Adrar Valley of the central Sahara in Algeria.

CENTRAL REGION

Very little rain fell in Kenya and southern Ethiopia during January except for light showers in northwest Kenya on the 1st in Turkana county and scattered showers at times during the first week in Marsabit county, extending to adjacent areas of southwest Ethiopia. During the remainder of the month, light rain fell occasionally near Lake Turkana and in parts of the Rift Valley in southern Ethiopia. Ecological conditions were somewhat favourable for breeding in eastern Kenya (Wajir, Garissa) and parts of the north (Marsabit) while other areas were dry. In Ethiopia, vegetation was drying out in the east (Somali), conditions were dry in the northeast (Afar), and some areas were green in the south (SNNP, southern Oromia). In Somalia, vegetation was drying out in central areas but remained green on the northwest coast and in the northeast. In the winter breeding areas along the Red Sea, only light to moderate showers fell on the southern coastal plains in Saudi Arabia between Lith and Jizan during the first two decades. Vegetation remained green along the coastal plains on both sides of the Sudan/Eritrea border and on the Saudi Arabian coast from Jizan to Al Wajh. Conditions were drying out on the Red Sea and Gulf of Aden coastal plains in Yemen and along Wadi Diib in northeast Sudan and adjacent coastal and subcoastal areas of southeast Egypt. In the spring breeding areas, light rains fell during the first decade in the northern interior of Saudi Arabia near Gassim where low temperatures prevailed. Light showers fell at times on the eastern coast of Oman south of Hayma. Conditions were likely to be dry in the interior of Yemen.

EASTERN REGION

Light rain fell at times in parts of the interior in the spring breeding areas of Sistan-Baluchistan in southeast Iran and Baluchistan in southwest Pakistan where conditions were dry, cold, and unfavourable for breeding.

Area Treated

Control operations during January treated nearly 316 414 ha compared to 336 900 ha in December.

Algeria	2 ha
Egypt	755 ha
Eritrea	2 116 ha
Ethiopia	166 158 ha
Kenya	39 036 ha
Mauritania	40 ha
Saudi Arabia	47 070 ha
Somalia	53 665 ha
Sudan	7 122 ha
Tanzania	450 ha

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

• **SITUATION**

During January, isolated immature and mature solitarious adults were present in the west and northwest between Nouakchott (1809N/1558W), Aleg (1703N/1355W) and Atar (2032N/1308W). A mature adult group was treated (40 ha) in the Senegal River valley near Rosso (1629N/1553W) during the first week. Breeding ended in the northwest by mid-month when fifth instar solitarious hoppers were last seen between Akjoujt (1945N/1421W) and Atar.

• **FORECAST**

Isolated adults could persist in parts of the northwest. No significant developments are likely.

Mali

• **SITUATION**

During January, there were unconfirmed reports from the northeast of maturing solitarious adults persisting in areas of previous breeding between Aguelhoc (1927N/0052E) and Ti-n-kar (1926N/0022W).

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Adrar des Iforas. No significant developments are likely.

Niger

• **SITUATION**

During January, low numbers of immature and mature solitarius adults were scattered along the western side of the Air Mountains between Agadez (1658N/0759E) and Arlit (1843N/0721E) as well as in the Air Mountains north of Iferouane (1905N/0824E) and east and south of Timia (1809N/0846E).

• **FORECAST**

Isolated locusts will persist in parts of the Air Mountains. No significant developments are likely.

Chad

• **SITUATION**

No locusts were reported during January.

• **FORECAST**

No significant developments are likely.

Senegal

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During January, mature solitarious adults were present in the Adrar Valley (2753N/0017W) of the Central Sahara while immature solitarious adults and one immature group were present in the southeast near Djanet (2434N/0930E) where 2 ha were treated. No locusts were seen west of Tamanrasset (2250N/0528E) in the south.

• **FORECAST**

Small-scale breeding could occur near Tindouf and in the Central Sahara once temperatures warm up and if rains occur.

Morocco

• **SITUATION**

During January, isolated mature solitarious adults were present along the Atlantic coast between Tan-Tan (2826N/1106W) and Guelmim (2859N/1003W) and west of Laayoune (2709N/1311W) in the northern Western Sahara as well as further inland east of Boucraa (2621N/1250W).

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Western Sahara and the Draa Valley where small-scale breeding should occur once temperatures warm up and if rains fall.

Libya

• **SITUATION**

No reports were received during January.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during January.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During January, hopper groups and bands formed along Wadi Diib in the northeast subcoastal areas between Tomala (2002N/3551E) and the Egypt border where breeding occurred last month. An immature and mature swarm were seen in the first week of January while scattered immature and mature adults and groups were present most of the month. Breeding continued southeast of Atbara (1742N/3400E) along the Atbara River where a few mature adult groups were present, and some hopper groups and bands formed, including a group of immature adults by the end of the month. On the Red Sea coast, mainly mid-late instar hopper bands were present in the south between Aiterba (1753N/3819E) and the Eritrea border while isolated immature and mature solitarious adults were scattered along the coastal plains as far north as Eit (2009N/3706E). Control teams treated 7 122 ha of which 4 100 ha were by air.

• **FORECAST**

Locust infestations are likely to decline in the northeast as conditions become dry but may persist along parts of the southern coastal plains in areas that remain green. There is a moderate risk that adult groups and perhaps a few small swarms could appear near the Eritrea border and breed, especially if additional rainfall occurs.

Eritrea

• **SITUATION**

During January, breeding was in progress on the northern Red Sea coast where laying occurred in December. Consequently, mainly hopper groups and a few bands were present near Mehimet (1723N/3833E) and the Sudan border where some had reached the fourth instar by the last week. Isolated breeding occurred south of Massawa where adults were laying eggs and a group of first instar hoppers were seen. On the 25th, two immature swarms were seen in the highlands south of Asmara (1519N/3856E) near the Ethiopia border and a mature swarm was reported on the coast near Massawa (1537N/3928E). These most likely arrived from adjacent areas of northern Ethiopia. Ground teams treated 2 116 ha.

• **FORECAST**

Immature adult groups and perhaps a few very small swarms are likely to form near Mehimet and the Sudan border as hoppers fledge from early February onwards.

Ethiopia

• **SITUATION**

During January, numerous immature swarms were present in Oromia region east of the Rift Valley from Harar (0919N/4206E) in the north, along the Harar Highlands and eastern side of the Bale Mountains, to Mega (0403N/3815E) and the Kenya border in the south. In Somali region, swarms were mainly present near Jijiga (0922N/4250E) and to a lesser extent in the Shebelle River valley near Gode (0557N/4333E) and further south near Dolo (0410N/4203E) and the Kenya/Somalia border. In SNNP region, swarms were present in the southern Rift Valley between Arba Minch (0602N/3733E) and the Kenya border. During the third week, swarms started to spread out from these areas. A few swarms moved northwest from the Harar Highlands to Afar region south of Semera (1148N/4100E) where some continued west to eastern Amhara region near Dese (1108N/3938E) while others moved north to Eritrea. During the last week, immature swarms were also seen near Kebri Dehar (0644N/4416E) in eastern Somali region. Only a few swarms were mature and seen copulating near Harar in the second week, south of Semera in the third week, and in northern Bale Zone. Control operations treated 166 158 ha of which 153 517 ha were by air.

• **FORECAST**

Swarms are expected to concentrate mostly in central and southern Oromia and eastern SNNP adjacent to the Rift Valley. A few swarms may remain in the Harar Highlands. The swarms are likely to slowly mature and could start to lay eggs, mainly in the south, from about mid-February onwards that would hatch and cause an increasing number of hopper bands to form during March. Some immature swarms from northern Somalia may appear in Somali and Oromia regions.

Djibouti

• **SITUATION**

During January, immature swarms were reported in the south near Ali Sabieh (1109N/4242E) on the 6th and 8th, and on the coast near Tadjourah (1147N/4253E) on the 8th. During the last week, immature swarms were reported to the south and north of Lake Ghoubbet on the 22nd and 25th respectively. These swarms are likely to have originated from adjacent areas of Ethiopia and northwest Somalia. No locusts were seen during surveys in the south along the Ethiopia border from Diksa (1100N/4206E) to Guisti (1101N/4258E).

• **FORECAST**

There remains a risk of a few swarms appearing from adjacent areas of Ethiopia and northwest Somalia.

Somalia

• **SITUATION**

During January, mature swarms were present mainly in the northwest during the first three weeks. Breeding continued in areas that received good rains from Cyclone Gati in November on the northwest coast where swarms laid eggs in the first week and in the northeast where at least one swarm was still laying eggs after mid-month between Iskushuban (1017N/5014E) and Bosaso (1118N/4910E). Consequently, an increasing number of hopper groups and bands formed in these areas. By the end of the month, some bands had reached the fifth instar while hatching was still underway in some places. In central areas, immature groups from earlier breeding were maturing in Mudug and Galguduud regions while late instar hopper bands were present along the Shabelle River in Hiraan and Middle Shabelle regions early in the month. More immature swarms formed in central areas and continued to move south of the Shabelle River where they were seen in the southern regions of Bakool, Bay, Gedo, and Middle and Lower Juba flying south to Kenya. Control operations treated 53 665 ha of which 11 746 ha were by air in the north.

• **FORECAST**

Hopper bands will continue to develop and fledge in the northwest and northeast, giving rise to an increasing number of immature swarms from the first week of February onwards. Swarms on the northwest coast are likely to move to the plateau and adjacent areas of Ethiopia while swarms in the northeast will probably slowly shift westwards along the plateau where another generation of breeding could start in about mid-March. A few swarms may move southwards through central regions to the south and Kenya.

Kenya

• **SITUATION**

During January, immature swarms continued to arrive mainly in the northeast and east from where many spread further west to northern, central and southeastern counties. Swarms were reported in 15 counties; however, as many of the swarms were moving rapidly due to dry conditions, they were often reported more than once. Towards the end of the month, some of the swarms were starting to mature and, on the 31st, laying was reported in Tana River. On the coast, mid-late instar hopper bands were present between Lamu (0216S/4054E) and Malindi (0313S/4007E) from earlier breeding. In Taita-Taveta, hopper bands fledged, and a few immature swarms formed during the last week near the Tanzania border. Control operations treated 39 036 ha of which 31 955 were by air.

• **FORECAST**

Current swarms will continue to disperse within northern and central counties; however, the arrival of further swarms from the north should cease by mid-February. If rains fall, the swarms will quickly mature and lay eggs; otherwise, they will continue to slowly mature, awaiting the arrival of the long

rains in March for maturation and egg-laying. In either case, hatching will lead to the formation of hopper bands in March and April.

South Sudan

• **SITUATION**

No locusts were reported during January.

• **FORECAST**

There remains a low to moderate risk that a few small swarms from adjacent areas of Kenya and southwest Ethiopia could reach Eastern Equatoria.

Uganda

• **SITUATION**

No locusts were reported during January.

• **FORECAST**

There remains a low to moderate risk that a few small swarms from adjacent areas of Kenya could reach Karamoja in the east.

Tanzania

• **SITUATION**

During the second week of January, a few small immature swarms from adjacent areas of southern Kenya arrived in Simanjiro district of Manyara region in the northeast between Naberera (0412S/3655E) and the Kenya border. Aerial control operations treated 450 ha.

• **FORECAST**

There remains a low risk that a few small swarms from adjacent areas of Kenya could appear in border areas of the northeastern regions of Kilimanjaro, Manyara, and Tanga during February but this will progressively decline from March onwards as the seasonal winds reverse and come from the south.

Egypt

• **SITUATION**

During the first week of January, mid-instar hopper bands and a few groups of immature and mature adults were seen along Wadi Diib in subcoastal areas of the Red Sea in the southeast near the Sudan border. Some of the adults were copulating. Thereafter, scattered immature and mature adults were present, extending to the coast south of Shalatyn (2308N/3535E). During the last week, groups of mixed instar hoppers and immature adults were seen in Wadi Diib. Ground teams treated 755 ha. No locusts were seen elsewhere on the Red Sea coast north to Berenice (2359N/3524E), in the Red Sea Hills as far north as Qena (2609N/3243E), and near Lake Nasser in the Tushka (2247N/3126E), Abu Simbel (2219N/3138E), and Wadi Allaqi (2236N/3318E) areas.

• **FORECAST**

Locust numbers will decline along the Red Sea coast in the southeast as vegetation dries out.

Saudi Arabia

• **SITUATION**

During January, breeding continued along the Red Sea coast where a swarm and a group of adults were still seen laying at a few places in the first week. A substantial number of early instar hopper groups and a few bands were mainly present near Qunfidah (1909N/4107E) but extended south to Jizan (1656N/4233E) and north to nearly Mecca (2125N/3949E) as well as to the northern coast between Rabigh (2247N/3901E) and Al Wajh (2615N/3627E). Although fledging commenced shortly after mid-month, only scattered immature gregarious adults were reported between Lith (2008N/4016E) and Mecca. On 22–24 January, several immature swarms from adjacent areas of northern Yemen arrived on the southern coast near Jizan, Farsan Island (1640N/4210E), and adjacent areas in the Asir Mountains. Control operations treated 47 070 ha of which 3 400 ha were by air. There were no reports from the interior.

• **FORECAST**

Any hopper infestations that miss detection or control will fledge and form immature groups and small swarms on the Red Sea coast during February. Some of these groups and swarms could move to the spring breeding areas of the interior while others may remain in areas of recent rainfall on the coast south of Jeddah where they will mature and breed. There remains a moderate risk of additional swarms arriving from northern Yemen and moving northwards along the coast and in the Asir Mountains.

Yemen

• **SITUATION**

During January, mainly scattered immature and mature solitarious adults were present on the Red Sea coast between Suq Abs (1600N/4312E) and Zabid (1410N/4318E) and on the Gulf of Aden coast between Am Rija (1302N/4434E) and Bir Ali (1401N/4820E). Several immature and maturing swarms were seen during the second week in the highlands between Sana'a (1521N/4412E) and the Red Sea coast. During the last week, immature swarms were seen further south in the highlands to the east of Bajil (1458N/4314E) and on the coast near Bayt Al Faqih (1430N/4317E) and Al Zuhrah (1541N/4300E) while immature adult groups were present near Suq Abs. The swarms are likely to have arisen from inaccessible coastal and interior areas of the north.

• **FORECAST**

Unless further rains fall, breeding will be limited, and remaining adults are likely to concentrate as vegetation dries out and form small groups and perhaps a few very small swarms on the Red Sea coast. There remains a risk that a few swarms may be present in inaccessible areas on the coast and in the highlands. Scattered adults are expected to persist along parts of the Gulf of Aden coast, but breeding is less likely unless further rainfall occurs.

Oman

• **SITUATION**

During January, no locusts were seen in the northern interior from Buraimi to Sharqiyah, on the Batinah coast, and in the Musandam Peninsula.

• **FORECAST**

Small-scale breeding is likely to commence in the northern interior and on the Batinah coast with the onset of the spring rains.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Turkey, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During January, no locusts were seen or reported along the southern coast and in subcoastal areas between Iraq and Pakistan, the interior of Sistan-Baluchistan, and the northeastern province of South Khorasan.

• **FORECAST**

Low numbers of adults are likely to be present in a few areas along the southern coast where they will slowly mature and start to breed on a small scale with the onset of the spring rains. There is a low risk that a few swarms may arrive in the southwest from adjacent areas of the Arabian Peninsula.

Pakistan

• **SITUATION**

During January, no locusts were seen or reported in coastal and interior areas of Baluchistan.

• **FORECAST**

Low numbers of adults may appear in coastal areas of Baluchistan and start to breed on a small scale with the onset of the spring rains. No significant developments are likely.

India

• **SITUATION**

During January, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Afghanistan

• **SITUATION**

No locust reports were received during December.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. See www.fao.org/locusts for more details.

New eLocust3 tools

FAO has developed three new free tools for improving Desert Locust survey and control reporting: eLocust3g, eLocust3m, eLocust3w (http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html). Each tool allows the recording of basic survey and control data in the field while offline that is shared within the country in real time.

Locust Hub

FAO in partnership with ESRI has developed a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge (https://locust-hub-hqfao.hub.arcgis.com).

Calendar

CRC. 32nd session, Saudi Arabia (13–17 June, tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague
- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline
- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green
- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow
- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange
- *Threat*. Threat to crops; survey and control operations must be undertaken

Red
- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western
- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central
- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel,

Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

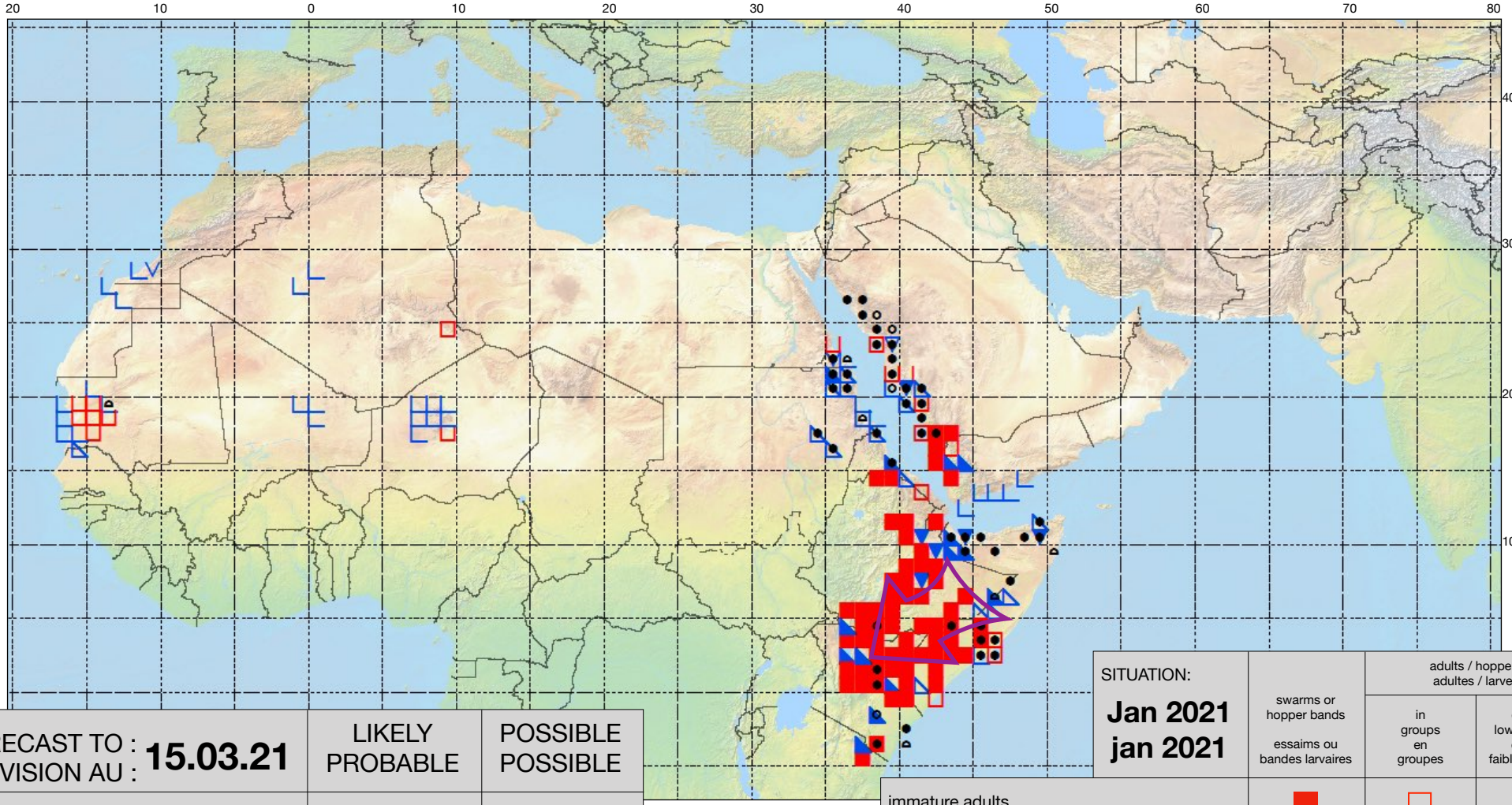
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

508



FORECAST TO : PREVISION AU : **15.03.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Jan 2021** **jan 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	⌓

Food and Agriculture Organization of the United Nations

No. 509 3 MARCH 2021

Desert Locust Bulletin

General situation during February 2021
Forecast until mid-April 2021

WESTERN REGION: CALM

SITUATION. Control operations against adults in **Algeria** (20 ha), isolated adults in **Niger**, and limited breeding in **Morocco**.

FORECAST. Small-scale spring breeding south of the Atlas Mountains in **Morocco**; isolated locusts in northern **Niger** and central **Algeria**.

CENTRAL REGION: THREAT

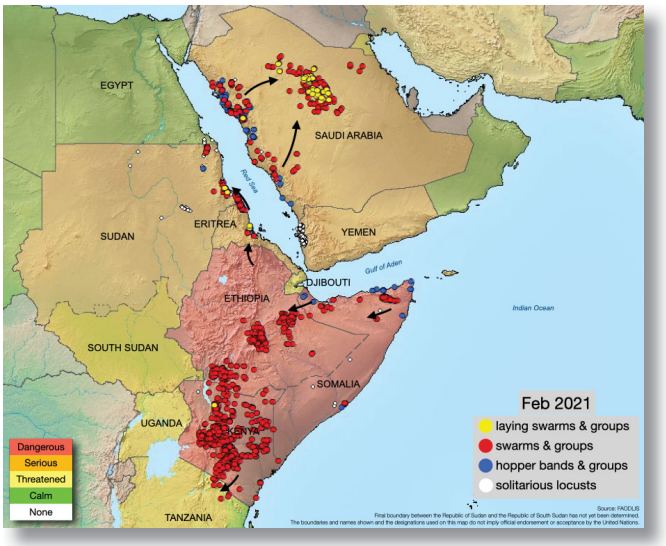
SITUATION. Swarm invasion of Kenya declines; immature swarms persist in **Ethiopia** (73 838 ha treated) and **Kenya** (11 349 ha); a few swarms cross to northeast **Tanzania** (638 ha); hopper bands fledge and swarms form in northern **Somalia** (21 143 ha). On the Red Sea coast, hopper and adult groups in **Eritrea** (1 500 ha), hopper bands and swarms in **Sudan** (16 781 ha), bands fledge in **Saudi Arabia** (104 775 ha) and swarms arrive in the interior to lay; scattered adults in **Egypt** (30 ha) and **Yemen**.

FORECAST. Swarms to mature and lay in areas of rain in southern **Ethiopia** and **Kenya**, giving rise to small to moderate scale hopper bands; swarms to persist on plateau in northern **Somalia** and may reach eastern Ethiopia; limited breeding on Red Sea coast of **Saudi Arabia** but widespread hatching and band formation in the interior; small groups form on central coast in **Eritrea**; hatching and band formation on central coast of **Sudan**, and small groups and swarms move inland; local breeding on Red Sea coast in **Yemen**.

EASTERN REGION: CALM

SITUATION. No locusts reported.

FORECAST. Small-scale breeding will commence with the onset of the spring rains in southern **Iran** and southwest **Pakistan**.



Immature swarms persist in East Africa

Control operations continued in Ethiopia and Kenya against swarms that remained immature throughout February. Good progress has been achieved, particularly in Kenya where the earlier swarm invasion from the north ceased and remaining swarms were smaller and less numerous than one year ago. Nevertheless, a few swarms crossed into northeast Tanzania and cross-border aerial control was carried out. Showers that fell during the last week of February may allow swarms to mature rapidly in northern Kenya and southern Ethiopia and lay eggs that could hatch in late March, causing small hopper bands to form. However, spring breeding is likely to be limited as control operations continue to reduce current infestations and well below-normal rains are forecasted. As expected, an increasing number of new swarms formed in northern Somalia, which are likely to disperse across the northern plateau. In the Red Sea winter breeding areas, adult groups and swarms formed mainly in Saudi Arabia and, to a lesser extent, in Eritrea and Sudan. Those in Saudi Arabia moved inland to the vast spring breeding areas where early rains combined with unusually warm temperatures allowed laying to start about one month earlier than normal, which is expected to cause widespread hatching and band formation. The situation was calm in the other regions.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

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Facebook/Twitter: faolocust

Weather & Ecological Conditions in February 2021

Good rains and unusually warm temperatures occurred in the spring breeding areas of the interior of Saudi Arabia. Some rain fell in northern Kenya and southern Ethiopia.

WESTERN REGION

No significant rain fell in the region during February for the fourth consecutive month. Consequently, vegetation was drying out in on the Tamesna Plains and in the Air Mountains of northern Niger while it remained dry elsewhere in the northern Sahel. In northwest Africa, small pockets of green vegetation were present in Morocco, mainly in the Adrar Settouf of the Western Sahara and in the Draa Valley where breeding conditions were improving.

CENTRAL REGION

In East Africa, light to moderate rains fell during a few days in the last decade of February from north of Mt. Kenya to the central Rift Valley in Ethiopia, including Samburu, western Marsabit, eastern Turkana counties in northern Kenya and reaching as far north as Adama in Ethiopia. Consequently, breeding conditions are likely to improve in these areas. Although no rains fell in northern Somalia, vegetation remained generally green on the northern plateau from the heavy rains of Cyclone Gati last November but was drying out on the northwest coast and escarpment. In the winter breeding areas along both sides of the Red Sea, light showers fell at times during the first decade on the southern coast of Saudi Arabia near Jizan and on the Tihama of Yemen, extending to the southern coast of Eritrea. Light rains also fell further north on the coast of Saudi Arabia between Yenbo and Duba. As a result, ecological conditions remained favourable in these areas as well as on the northern coastal plains in Eritrea and adjacent coastal areas of Sudan to Port Sudan. In the absence of rains, vegetation was drying out in northeast Sudan along Wadi Oko/Diib and adjacent areas in southeast Egypt. In the spring breeding areas of the interior of Saudi Arabia, light rains fell during the first decade between Gassim and Tabuk, and during the second decade in the east near Qaryat Al Ulya and Al Hofaf. These rains combined with warmer than usual temperatures allowed conditions to become favourable for breeding at least one month earlier than in most years. Dry conditions prevailed in the interior of Yemen. In Oman, light rains fell at times in central areas between Marmul and Duqm, but conditions remained dry.

EASTERN REGION

Light to moderate rain fell at times during the second decade on the southwest coast of Iran near Bushehr while lighter rainfall occurred further east towards Bander-e-Lenghen. Light to moderate rains also fell in the Jaz Murian Basin near Sowlan. Consequently, ecological conditions could start to improve for breeding, but more rainfall is likely to be required. Dry and relatively cool conditions prevailed in the spring breeding areas of Sistan-Baluchistan in southeast Iran and Baluchistan in southwest Pakistan where conditions were unfavourable for breeding.

Area Treated

Control operations during February treated 230 074 ha compared to 316 414 ha in January.

Algeria	20 ha
Egypt	30 ha
Eritrea	1 500 ha
Ethiopia	73 838 ha
Kenya	11 349 ha
Saudi Arabia	104 775 ha
Somalia	21 143 ha
Sudan	16 781 ha
Tanzania	638 ha

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Adrar des Iforas. No significant developments are likely.

Niger

• **SITUATION**

During February, mainly isolated immature solitarious adult mixed with a few mature adults were scattered on the Tamesna Plains between In Gall (1651N/0701E) and the Tazerzait Plateau (1832N/0449E), along the western side of the Air Mountains between Agadez (1658N/0759E) and Arlit (1843N/0721E), in the Air Mountains north of Iferouane (1905N/0824E) and east and south of Timia (1809N/0846E), and on the central plains north of Tasker (1507N/104140E).

• **FORECAST**

Isolated locusts will persist in parts of the Air Mountains and the Tamesna Plains. Limited breeding could occur on a small scale as temperatures warm up and if rains fall.

Chad

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

No significant developments are likely.

Senegal

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During February, scattered mature solitarious adults persisted in the Adrar Valley (2753N/0017W) of the Central Sahara. Ground teams treated mature solitarious adults that were copulating on 20 ha to the west of In Salah (2712N/0229E).

• **FORECAST**

Small-scale breeding could occur in the Adrar Valley and nearby areas once temperatures warm up and if rains occur.

Morocco

• **SITUATION**

During February, low numbers of mature solitarious adults were present and copulating in a few places of the Draa Valley between Zag (2800N/0920W) and Zagora (3019N/0550W). In the Western Sahara, isolated mature solitarious adults were seen in the Adrar Settouf between Tichla (2138N/1453W) and Bir Gandouz (2136N/1628W) near the Mauritania border.

• **FORECAST**

Small-scale breeding will cause a slight increase in locust numbers in the Draa Valley. Low numbers of adults are likely to persist in parts of the Western Sahara.

Libya

• **SITUATION**

No reports were received during February.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During February, late instar hopper bands were present in the northeast along Wadi Oko near Tomala (2002N/3551E) in the first week while groups of late instar hoppers and immature adults were seen further north in Wadi Diib near Sufiya (2119N/3613E) until mid-month. On the southern coast, fourth and fifth instar hopper bands, mixed with a few immature adult groups and swarms, were present during the first half of the month between Aiterba (1753N/3819E) and the Eritrea border. During the last decade, an increasing number of immature and mature groups and swarms were seen between Tokar (1827N/3741E) and Suakin (1906N/3719E), including copulating near Khor Ashat (1841N/3724E) and in Tokar Delta. One maturing swarm was seen on the western side of the Red Sea Hills near Haiya (1820N/3621E) on the 26th. In the interior, scattered mature solitarious adults were present in the Nile Valley near Shendi (1641N/3322E) and north of Dongola (1910N/3027E) while scattered immature and mature solitarious adults were seen along the Atbara River. Control teams treated 16 781 ha of which 12 960 ha were by air.

• **FORECAST**

Adult groups and swarms may continue to lay along the Red Sea coast between Suakin and Tokar where hatching and band formation will occur in March. There is a risk that some groups and small swarms will move inland to the Atbara River and Nile Valley. This could be supplemented by additional groups and small swarms arriving from the coast of Eritrea.

Eritrea

• **SITUATION**

During February, third to fifth instar hopper groups were present on the northern coast of the Red Sea near Mehimet (1723N/3833E) and fledglings were forming immature adult groups. At mid-month, breeding was in progress further south near Wekiro (1548N/3918E) and the Akbanazouf Plain (1555N/3910E) where adult groups were laying, and hatchlings were forming groups. A mature swarm was seen on the 8th on the coast near Foro (1515N/3937E) and an immature swarm was seen on the eastern escarpment near Ginda (1527N/3905) on the 16th. These most likely originated from adjacent areas of northern Ethiopia. No locusts were seen near Mehimet at the end of the month. Ground teams treated 1 500 ha.

• **FORECAST**

Hopper groups are expected to form near Wekiro that will start to fledge in April.

Ethiopia

• **SITUATION**

During February, numerous immature swarms persisted in Oromia and SNNP regions, concentrating mainly in the Harar Highlands (East Harerghe zone), the Bale Mountains (Arsi and Bale zones), and the southern Rift Valley (South Omo, Konso, and Borena zones). There was a slight southward shift in populations with more smarms in the south near the Kenya border from west of Lake Stephanie to Mega (0403N/3815E) in the east, and in the Rift Valley as far north as Arba Minch (0602N/3733E). Cross-border movements of swarms were reported in the south near Kenya early in the month while an increasing number of swarms from northwest Somalia were appearing near Jijiga (0922N/4250E) and Dire Dawa (0935N/4150E) at the end of the month. Control operations treated 73 838 ha of which 69 188 ha were by air.

• **FORECAST**

Swarms are expected to mature and lay eggs mainly in the south (South Omo, Konso, Borena) and the southern Rift Valley where rain has already fallen or where it falls during March. Additional swarms from northern Somalia may appear near Dire Dawa where breeding is likely if rains fall. Breeding may also occur in the Harar Highlands. Consequently, hopper bands will form by late March and throughout April.

Djibouti

• **SITUATION**

During February, no locusts were seen during surveys carried out in coastal and interior areas of Tadjourah and Obock regions.

• **FORECAST**

There remains a risk of a few swarms appearing at times from adjacent areas of Ethiopia and northwest Somalia.

Somalia

• **SITUATION**

During February, breeding continued on the northwest coast (Somaliland) and in the northeast (Puntland) where an increasing number of immature swarms formed as hopper bands fledged. By the end of the month, a few late instar hopper bands remained on the northwest coast near Djibouti but most of the infestations had declined as hoppers fledged and swarms moved up the escarpment to the northern plateau between Hargeisa (0931N/4402E) and Burco (0931N/4533E). In Puntland, late instar hopper bands were still present on the coast from Lasqoray (1109N/4811E) to east of Bosaso (1118N/4910E), and inland to the northwest of Iskushuban (1017N/5014E). Newly formed immature swarms were seen on the plateau between Iskushuban, Erigavo (1040N/4720E) and Garowe (0824N/4829E). In central and southern region, no locusts were reported except for a few infestations on the coast north of Mogadishu (0202N/4520E). The few remaining swarms probably moved to Kenya during the first half of February. Control operations treated 21 143 ha of which 7 387 ha were by air in the north.

• **FORECAST**

More immature swarms will form in Puntland and, to a lesser degree, in Somaliland. The swarms are likely to move to the northern plateau where some may disperse in a westerly direction. Any rainfall that occurs would allow the swarms to mature and lay eggs from late March onwards, giving rise to hatching and hopper band formation in April and May.

Kenya

• **SITUATION**

During the first week of February, numerous small but highly mobile immature swarms were scattered across 24 northern, central and southern counties from Marsabit and the Ethiopia border in the north to Kajiado and the Tanzania border in the south. A single swarm was often reported up to a half dozen times in one day. Fortunately, the peak of the swarm invasion from the north had passed early in the month and thereafter very few immature swarms arrived from adjacent areas of Somalia and Ethiopia. During the remainder of the month, small immature swarms continued to be reported, mainly in central counties and some near crops and inhabited areas, but their number steadily declined due to control operations that treated 11 349 ha of which 6 067 were by air. By the end of the month, only a few small swarms less than 100 ha in size remained in some central areas.

• **FORECAST**

Rainfall during the last week of February may have been sufficient for some swarms to mature and lay in Marsabit, Samburu and Turkana counties, which would give rise to hatching and band formation from late March onwards. However, additional rains are likely to be required during March, mainly in the north and, to a lesser extent, in some central areas where breeding is most likely to take place. If so, hatching and band formation can be expected in April. The scale of any breeding this year will be substantially less than in 2020.

Tanzania

• **SITUATION**

During February, a small immature swarm crossed the border from southern Kenya into Mwagna district southeast of Mt. Kilimanjaro on the 15th. In the following days, it moved southwest to Manyara region near Landanai (0404S/3708E) on the 19th. In Arusha region, at least one immature swarm crossed the border with reports near Longido (0244N/3642E) on the 20th, the southwestern side of Mt.

Kilimanjaro on the 24th near Rongai (0307N/3703E), north of Arusha (0322S/3642E). This was followed by reports of a maturing swarm west of Mt. Meru on the 27th and near Longido on the 28th. Cross-border aerial control operations treated 638 ha on 23–24 February.

• **FORECAST**

Small residual immature and maturing swarms are likely to persist in a few places in the northeast near the Kenya border (Kilimanjaro, Manyara, and Arusha regions). As seasonal southerly winds become established over these areas, most of the swarms should move north back into Kenya; however, there is a low risk that any remaining adults could lay eggs in moist, sandy areas.

South Sudan

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

There remains a low to moderate risk that a few small swarms from adjacent areas of Kenya and southwest Ethiopia could reach Eastern Equatoria.

Uganda

• **SITUATION**

No locusts were reported during February.

• **FORECAST**

There remains a low to moderate risk that a few small swarms from adjacent areas of Kenya could reach Karamoja in the east.

Egypt

• **SITUATION**

During February, low numbers of maturing solitarious adults were scattered along Wadi Diib in subcoastal areas of the Red Sea in the southeast near the Sudan border where breeding previously occurred, and ground teams treated 30 ha. Isolated immature adults were seen on the coast between Halaib (2213N/3638E) and Abu Ramad (2224N/3624E). No locusts were present elsewhere along the coast to Marsa Alam (2504N/3454E), in subcoastal areas west of Berenice (2359N/3524E), and near Lake Nasser in the Tushka (2247N/3126E) and Abu Simbel (2219N/3138E) areas.

• **FORECAST**

Locust numbers will decline further along the Red Sea coast in the southeast as vegetation dries out.

Saudi Arabia

• **SITUATION**

During February, hopper groups and bands decreased on the central and southern coastal plains of the Red Sea between Lith (2008N/4016E) and Jizan (1656N/4233E) as immature adult groups continued to form and move inland to the spring breeding areas between Riyadh (2439N/4642E) and Hail (2731N/4141E) where some groups may have already arrived in late January. On the north coast, hopper groups and bands increased between Thuwal (2215N/3906E) and Al Wajh (2615N/3627E), and a few mature groups were seen laying on the northern coast near Bader (2346N/3847E). An increasing number of immature adult groups and a few swarms formed and moved inland to the spring breeding areas where laying occurred during the second half of the month within a large area of about 500 km by 200 km from northwest of Riyadh and to northwest of Hail. A few groups continued east and reached Qaryat Al Ulya (2733N/4742E). Control operations treated 104 775 ha of which 13 300 ha were by air.

• **FORECAST**

Locust infestations are expected to decline on the Red Sea coastal plains as adult groups and small swarms form and move to the interior. Nevertheless, limited hatching may cause hopper groups and small bands to form near Yenbo. In the spring breeding areas, hatching will occur throughout March, causing hopper groups and bands to form within a large area from south of Al Jawf and Tabuk to nearly Riyadh.

Yemen

• **SITUATION**

During February, low numbers of immature and mature solitarious adults were scattered along the Red Sea coastal plains between Suq Abs (1600N/4312E) and Bayt Al Faqih (1430N/4317E).

• **FORECAST**

Small-scale breeding is likely to occur in a few limited areas on the Red Sea coastal plains where rains have fallen recently. Unless further rains fall, breeding will be limited, and remaining adults are likely to concentrate as vegetation dries out and form small groups. Scattered adults are perhaps a few small groups may start to appear in the interior between Marib and Wadi Hadhramaut.

Oman

• **SITUATION**

During February, no locusts were seen in the northern interior from Buraimi (2415N/5547E) to Ibra (2243N/5831E), and on the Batinah coast.

• **FORECAST**

Small-scale breeding is likely to commence in the northern interior and on the Batinah coast with the onset of the spring rains.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Turkey, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During February, no locusts were seen or reported along the southern coast and in subcoastal areas between Iraq and Pakistan, the interior of Sistan-Baluchistan, and the northeastern province of South Khorasan.

• **FORECAST**

Low numbers of adults are likely to be present in a few areas along the southern coast where they will slowly mature and start to breed on a small scale with the onset of the spring rains.

Pakistan

• **SITUATION**

During February, no locusts were seen or reported in coastal and interior areas of Baluchistan.

• **FORECAST**

Low numbers of adults may appear in coastal areas of Baluchistan and start to breed on a small scale with the onset of the spring rains. No significant developments are likely.

India

• **SITUATION**

During February, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Afghanistan

• **SITUATION**

No locust reports were received during February.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. See www.fao.org/locusts for more details.

New eLocust3 tools

FAO has developed three new free tools for improving Desert Locust survey and control reporting: eLocust3g, eLocust3m, eLocust3w (http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html). Each tool allows the recording of basic survey and control data in the field while offline that is shared within the country in real time.

Locust Hub

FAO in partnership with ESRI has developed a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge (https://locust-hub-hqfao.hub.arcgis.com).

Condolences

It is with deep regret that we announce the death of the pilot, Patrick Bouzon, from injuries sustained in a crash while undertaking Desert Locust aerial control operations to protect livelihoods in the Oromia region of Ethiopia on 11 February. We would like to extend our profound condolences to his family, friends and colleagues.

Calendar

- **CRC.** 32nd session, Saudi Arabia (13–17 June, tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague
- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline
- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green
- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow
- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange
- *Threat*. Threat to crops; survey and control operations must be undertaken

Red
- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western
- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central
- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel,

Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

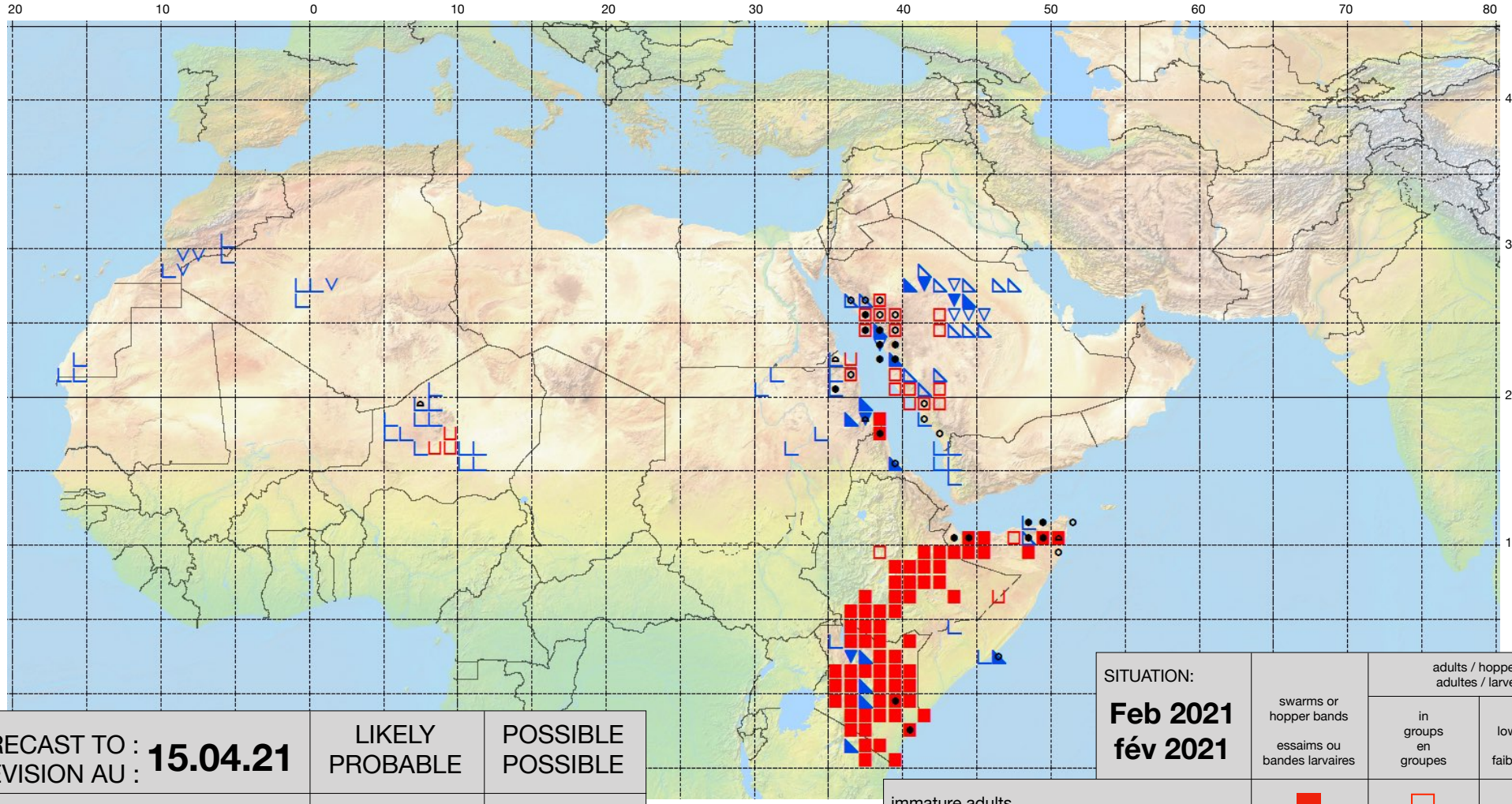
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

509



FORECAST TO : PREVISION AU : **15.04.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Feb 2021 fév 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	⊔

Food and Agriculture Organization of the United Nations

No. 510 3 APRIL 2021

Desert Locust Bulletin

General situation during March 2021
Forecast until mid-May 2021

WESTERN REGION: CALM

SITUATION. Low numbers of solitarious adults in **Morocco** and **Algeria**.

FORECAST. Small-scale spring breeding south of the Atlas Mountains in **Morocco** and central **Algeria**.

CENTRAL REGION: THREAT

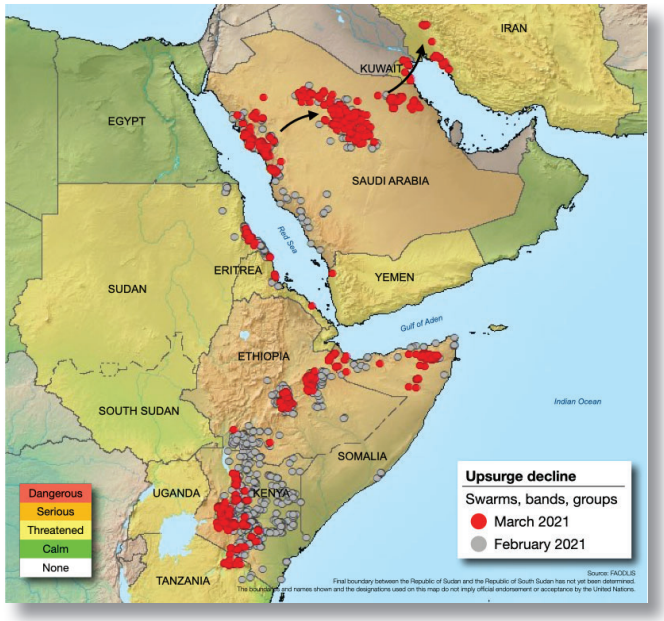
SITUATION. Swarms remain immature and decline due to control in **Ethiopia** (13 366 ha treated) and **Kenya** (1 184 ha); more swarms form in NE and NW **Somalia** (12 396 ha); mature swarm remnants, hatching and small bands form in northeast **Tanzania** (236 ha). On the Red Sea coast, hatching and hopper groups form in **Eritrea** (100 ha), and swarm laying, hatching and bands form in **Sudan** (7 437 ha). Adult groups laying, hatching and bands form in **Saudi Arabia** (50 120 ha) interior; few mature swarms invade **Kuwait**; scattered adults in **Egypt** and **Yemen**.

FORECAST. Immature swarms decline further in **Kenya**, **Ethiopia** and **Somalia** unless rains arrive to cause swarms to mature and lay, causing small bands to form in late April and May; more hatching and band formation in **Saudi Arabia** interior but may be limited by unusually hot, dry conditions, yet immature groups and small swarms could still form in May; bands, adult groups and perhaps small swarms form on central coast of **Sudan** and move inland; adults move from coast to interior in **Yemen**.

EASTERN REGION: CALM

SITUATION. Few mature swarms invade southwest **Iran** (1 521 ha treated) from Arabia.

FORECAST. Hatching and band formation in southwest Iran; small-scale breeding in southern **Iran** and southwest **Pakistan** if it rains.



Upsurge begins to decline

The current upsurge showed signs of significant decline during March as Desert Locust swarms continued to decrease in Kenya, Ethiopia and Somalia due to ongoing control operations and poor rainfall. Swarms remained immature, waiting for the spring rains that are required for maturation and egg laying. While this may still occur in April, below-normal rainfall expected this spring would limit breeding to parts of northern Kenya and southern Ethiopia at a much lower scale than last year. If this is followed by poor rainfall this summer in northeast Ethiopia, then the Desert Locust situation should return to normal. Limited breeding occurred in northeast Tanzania from remnants of earlier swarms. Although winter-bred infestations declined along both side of the Red Sea, late hatching and hopper band formation occurred in Sudan. More importantly, widespread hatching and hopper band formation took place in the interior of Saudi Arabia where control operations combined with earlier than normal dry and hot conditions should be able to reduce these infestations. In addition, strong winds carried a few small mature swarms to Kuwait and southwest Iran. This could lead to hatching and band formation in southwest Iran during April and May. The situation remained calm in other regions and no significant developments are expected.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

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Internet: www.fao.org/ag/locusts
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Weather & Ecological Conditions in March 2021

Some rain fell in northern Kenya and southern Ethiopia. Unusually high temperatures occurred in the spring breeding areas of the interior of Saudi Arabia.

WESTERN REGION

Very little rain fell in the region during March. In Algeria, light showers fell in the northwest near Bechar, in parts of the central Sahara in Algeria near In Salah, and in the Hoggar Mountains where runoff could occur on its edges that may lead to favourable breeding conditions in some places near Tamanrasset and Illizi. In Morocco, vegetation was green along the southern side of the Atlas Mountains in the Draa and Ziz-Ghris valleys but soil moisture remained dry.

CENTRAL REGION

In East Africa, light to moderate rains fell at times during the second half of March in the northern counties of Marsabit and Turkana in Kenya and in southern SNNP and Oromia regions of Ethiopia, including the Rift Valley, the Ahmar Mountains and Harar Highlands. Annual vegetation became green along the eastern escarpment of these areas, leading to the eastern lowlands. Vegetation was drying out along both sides of the Red Sea. Nevertheless, breeding conditions remained favourable on the central and southern coast of the Red Sea in Sudan as well as near irrigated areas in the Nile Valley. In Eritrea, ecological conditions were favourable for breeding on the central coast early in the month but were drying out on the northern coast. In Yemen, conditions were drying out along the coastal plains of the Red Sea and Gulf of Aden. Although no significant rain fell in the interior of Saudi Arabia, breeding conditions remained favourable between Riyadh and Hail from previous rains. Daytime temperatures were much higher than normal, accompanied at times by strong southerly winds and blowing dust, especially on 23–25 March.

EASTERN REGION

Light to moderate rain fell at times during the first half of March in some coastal and subcoastal areas of southwest Iran. During the second half of March, light to moderate showers fell in the interior of Baluchistan, Pakistan near Khuzdar and Nushki. Consequently, ecological conditions could become favourable for breeding in southwest Iran and in parts of the interior of Baluchistan. Elsewhere, dry conditions prevailed in the spring breeding areas.

Area Treated

Control operations declined in March, treating 86 360 ha, compared to 249 823 ha in February.

Eritrea	100 ha
Ethiopia	13 366 ha
Iran	1 521 ha
Kenya	1 184 ha
Kuwait	no details
Saudi Arabia	50 120 ha
Somalia	12 396 ha
Sudan	7 437 ha
Tanzania	236 ha

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Adrar des Iforas. No significant developments are likely.

Niger

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

Isolated locusts are likely to persist in parts of the Air Mountains and the Tamesna Plains.

Chad

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

No significant developments are likely.

Senegal

• **SITUATION**

No reports were received during March.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During March, scattered solitarious adults were maturing near irrigated areas in the Adrar Valley (2753N/0017W) of the Central Sahara. No locusts were seen in the northwest between Beni Abbes (3011N/0214W) and Bechar (3135N/0217W) and in the south to the west of Tamanrasset (2250N/0528E).

• **FORECAST**

Small-scale breeding is likely to occur in the Adrar Valley.

Morocco

• **SITUATION**

During March, isolated mature solitarious adults were present in the spring breeding areas along the southern side of the Atlas Mountains between Guelmim (2859N/1003W) and Zagora (3019N/0550W) in the Draa Valley, south of Erfoud (3128N/0410W) in the Ziz-Ghris Valley, and in a few places towards the northeast near Bouarfa (3232N/0159W). No surveys were carried out in the Western Sahara.

• **FORECAST**

Small-scale breeding will cause a slight increase in locust numbers in the Draa and Ziz-Ghris valleys.

Libya

• **SITUATION**

No surveys were conducted, and no locusts were reported during March.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During the first half of March, adult groups and swarms continued laying eggs on the Red Sea coast in Tokar Delta (1827N/3741E) as well as to the north and south that supplemented earlier laying during the last decade of February. Hatching and band formation occurred from the second week onwards and, by the end of the month, some hoppers had reached third instar. Control teams treated 7 437 ha of which 7 000 ha were by air. Elsewhere, scattered immature and mature solitarious and gregarious adults were seen on the coast between Suakin (1906N/3719E) and Karora (1745N/3820E) and in the northeast along Wadi Oko/Diib north of Tomala (2002N/3551E). In the interior, scattered mature solitarious adults were present along the Atbara River and in the Nile Valley between Shendi (1641N/3322E) and Ed Debba (1803N/3057E).

• **FORECAST**

A few more hopper groups and bands are likely to form in early April from late egg-laying near Tokar Delta. Fledging will commence about mid-April, giving rise to groups of immature adults and perhaps a few small swarms. As vegetation dries out, they are expected to move inland to the Atbara River and Nile Valley.

Eritrea

• **SITUATION**

During the first week of March, hatching occurred on the Red Sea coast south of Mehimet (1723N/3833E) and hoppers formed early instar groups. Further south on the central coast, mid-instar hopper groups were present near Wekiro (1548N/3918E) from earlier breeding while late instar hopper groups were seen at mid-month on the southern coast near Idd (1357N/4138E). Ground teams treated 100 ha.

• **FORECAST**

Fledging is expected to occur during the first half of April along the Red Sea coast where a few small groups of immature adults could form as vegetation dries out.

Ethiopia

• **SITUATION**

During March, swarms persisted in Oromia region where they remained immature due to a lack of rainfall. Most of the swarms were concentrated east of the Rift Valley in the Ahmar Mountains north of Bale Robe (0707N/4000E) and the Harar Highlands south of Dire Dawa (0935N/4150E). No locusts were seen further south after the second week when immature swarms were present in southern Oromia near Arero (0445N/3849E) and in SNNP west of Konso (0520N/3726E). By the end of the month, the number and sizes of swarms had declined. Control operations also declined as fewer targets were present, treating 13 366 ha in March of which 12 577 were by air.

• **FORECAST**

Additional rainfall is needed to allow current swarms to mature and lay eggs in eastern and southern Oromia and southern SNNP. This may occur during the first half of April; otherwise, only a few small immature swarms are likely to persist, and locust infestations should continue to decline.

Djibouti

• **SITUATION**

During March, no locusts were seen during surveys carried out in coastal and interior areas of the northern regions of

Tadjourah and Obock, on the coastal plains east of Djibouti (1134N4309E), and in the southern regions of Ali Sabieh and Dikhil.

• **FORECAST**

There remains a low risk of a few swarms appearing in the south at times from adjacent areas of Ethiopia and northwest Somalia.

Somalia

• **SITUATION**

During March, a few hopper bands persisted on the northwest coastal plains in the first week while a greater number of bands were seen in the northeast between Erigavo (1040N/4720E) and Iskushuban (1017N/5014E) until mid-month. As the bands fledged, immature swarms formed in both areas. Swarms that formed on the northwest coast moved inland up the escarpment to the plateau towards Boroma (0956N/4313E) where some continued into Ethiopia while the swarms in the northeast generally remain on the escarpment, drifitng slightly westwards. There is a risk of a few additional swarms in the inaccessible Cal Miskaad mountains northwest of Iskushuban. Apart from a few swarms that were maturing, the majority of the swarms remained immature during the remainder of the month. Control operations treated 12 396 ha of which 6 234 ha were by air in the north.

• **FORECAST**

Immature swarms are likely to persist on the northern plateau where they are likely to disperse between Garowe, Iskushuban, Las Anod, Erigavo, Burao and Boroma. Any rainfall that occurs would allow the swarms to mature and lay eggs that could give rise to hopper bands in April and May.

Kenya

• **SITUATION**

During March, swarms remained immature due to a lack of rainfall. Most of the swarms were present in Baringo and Nakuru counties between Mt. Kenya and the Rift Valley and, to a lesser extent, in parts of Samburu and Marsabit counties to the north and Kajiado county south of Nairobi as well as a few other counties. Although many swarms were reported more than once, their total number and size steadily declined. Swarms were reported from 12 counties in the first week compared to three counties by the end of the month. Control operations also declined as fewer targets were present, treating 1 184 ha in March of which 671 ha were by air.

• **FORECAST**

Additional rainfall is needed to allow any residual swarms to mature and lay eggs in northern areas (Marsabit, Turkana and Samburu). This may occur during the first half of April, giving rise to small hoppers by early May; otherwise, only a few small immature swarms are likely to persist, and locust infestations should continue to decline.

Tanzania

• **SITUATION**

During the first week of March, several remnants of swarms matured in the northeast between Mt. Kilimanjaro and the Rift Valley escarpment west of Arusha (0322S/3642E). On the 20th, small second instar hopper bands were seen at a few places west of Arusha, suggesting that laying occurred in late February with hatching during the second week of March. On 24 March, an immature swarm presumably from adjacent areas of southern Kenya was seen near the border northwest of Longido (0244N/3642E). Ground teams treated 236 ha.

• **FORECAST**

Undetected breeding may have occurred on a limited scale from west of Arusha to Mt. Kilimanjaro where small hopper bands may form. Fledging is likely to take place during the third week of April that could give rise to groups of immature adults and perhaps a few small swarms, which are likely to move northwards.

South Sudan

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

There remains a low risk that a few small swarms from adjacent areas of Kenya and southwest Ethiopia could reach Eastern Equatoria.

Uganda

• **SITUATION**

No locusts were reported during March.

• **FORECAST**

There remains a low risk that a few small swarms from adjacent areas of Kenya could reach Karamoja in the east.

Egypt

• **SITUATION**

During March, isolated maturing solitarious adults persisted at one place in the southeast near the Sudan border along Wadi Diib to the west of Abu Ramad (2224N/3624E). No locusts were present elsewhere along the coast and in subcoastal areas to El Sheikh El Shazly (2412N/3438E).

• **FORECAST**

Locust numbers will decline further along the Red Sea coast in the southeast and no significant developments are likely.

Saudi Arabia

• **SITUATION**

During March, hopper groups and bands declined on the northern Red Sea coast between Thuwal (2215N/3906E) and Al Wajh (2615N/3627E) due to control operations and as they fledged to form immature groups that moved to the spring breeding areas of the interior. There, groups of mature adults laid eggs between Hail (2731N/4141E) and Riyadh (2439N/4642E) as well as further east near

Qaryat Al Ulya (2733N/4742E). Hatching and band formation commenced after the first week near Gassim (2621N/4358E) and, to a lesser extent, Hail. Control operations treated 50 120 ha of which 2 500 ha were by air.

• **FORECAST**

Locust infestations will decline further on the Red Sea coastal. In the spring breeding areas, hatching and band formation will continue during April from south of Al Jawf and Tabuk to nearly Riyadh. New hatching and band formation are expected between Al Hofaf and Kuwait. Unusually dry and hot conditions may limit breeding in both areas. Nevertheless, immature groups and small swarms could start to form by the end of the forecast period.

Yemen

• **SITUATION**

During the week of March, low numbers of immature and mature solitarious adults were scattered along the Red Sea coastal plains between Suq Abs (1600N/4312E) and Bajil (1458N/4314E). An immature swarm was reported on the 5th most likely originating in areas that could not be accessed. During the second half of the month, immature and mature solitarious adults were scattered along the southern coast mainly between Am Rija (1302N/4434E) and Zinjibar (1306N/4523E) and, to a lesser extent, near Ahwar (1333N/4644E) and Mayfa'a (1416N/4735E).

• **FORECAST**

Adults that persist along the Red Sea and Gulf of Aden coasts may concentrate as vegetation dries out and form small groups. Scattered adults are perhaps a few small groups are likely to appear in the interior between Marib and Wadi Hadhramaut.

Oman

• **SITUATION**

During March, no locusts were seen in the interior and coastal areas of the north and in the Dhofar region of the south.

• **FORECAST**

Small-scale breeding may occur in the northern interior and on the Batinah coast if rains fall.

Kuwait

• **SITUATION**

On 24 March, mature groups and swarmlets first appeared in the south and rapidly moved northwards on strong southerly winds through Kuwait City and Al-Sulaibiya farms (2916N/4748E) to Abdali farms (3004N/4741E) in the north. Control operations were carried out on 24–27 March.

• **FORECAST**

A few adult groups could appear from the south during periods of strong southwesterly or southerly winds.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Lebanon, Palestine, Qatar, Syria, Turkey, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During March, isolated immature and mature solitarious adults were seen northeast of Bushehr (2854N/5050E) in a few subcoastal areas. On 25–26 March, several mature adult groups and a few small mature swarms from adjacent areas of Kuwait and Saudi Arabia arrived on the coast west of Bushehr during two days of very strong southwesterly and southerly winds. Some of the swarms were seen further inland to the north in Khuzestan Province near Dezful (3224N/4824E) and the foothills of the Zagros Mountains. One group was copulating on the coast. Ground teams treated 1 521 ha. No locusts were seen or reported elsewhere along the southern coast and in subcoastal areas from Hormozgan to Sistan-Baluchistan and in the northeastern province of South Khorasan.

• **FORECAST**

Hatching and band formation is likely to occur during the second half of April on the southwest coast near Bushehr and in a few coastal and inland areas of Khuzestan. Low numbers of adults are likely to be present in a few areas along the Hormozgan and Sistan-Baluchistan coast and in the Jaz Murian Basin where they will breed on a small scale in areas that receive rainfall.

Pakistan

• **SITUATION**

During March, no locusts were seen or reported in coastal and interior areas of Baluchistan.

• **FORECAST**

Low numbers of adults are likely to appear and breed on a small scale in areas of recent rain near Khuzdar and Nushki. This could extend to other areas along the coast and interior of Baluchistan if more rains fall. No significant developments are likely.

India

• **SITUATION**

During March, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Afghanistan

• **SITUATION**

No locust reports were received during March.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. [www.fao.org/locusts]

eLocust3 tools

FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data is critical for monitoring the situation and organizing control operations in each country and feeds into FAO's global early warning system. [http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited. [http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust. [https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge. [https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub. [https://data.apps.fao.org]

Calendar

- **CLCPRO.** 10th session, Algiers, Algeria (October, tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light

- 1–20 mm

Moderate

- 21–50 mm

Heavy

- more than 50 mm

Summer rains and breeding areas

- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas

- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas

- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding

- The process of reproduction from copulation to fledging

Recession

- Period without widespread and heavy infestations by swarms

Remission

- Period of deep recession marked by the complete absence of gregarious populations

Outbreak

- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge

- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

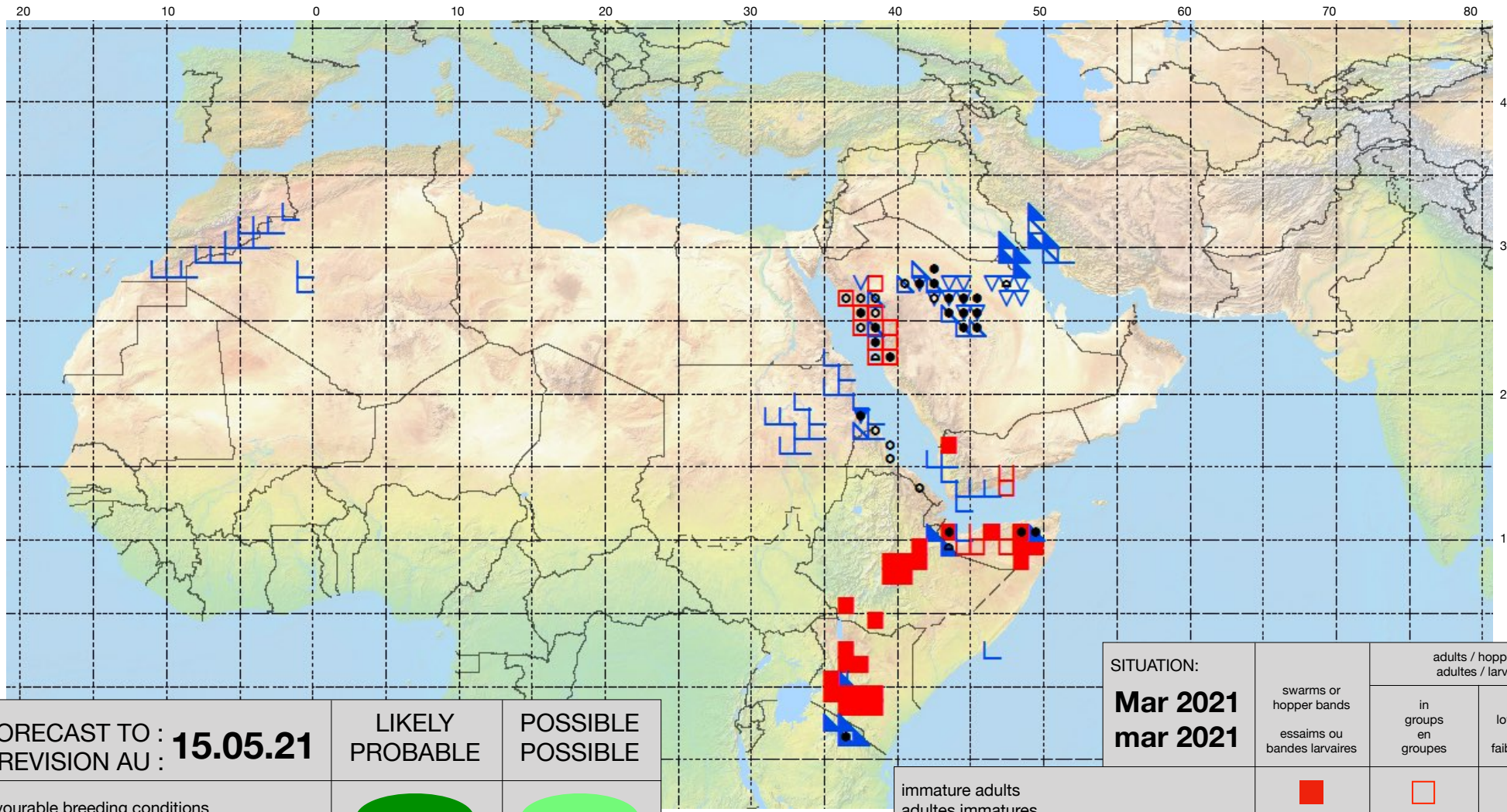
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

510



FORECAST TO : / PREVISION AU : **15.05.21**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Mar 2021 mar 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves: in groups en groupes	adults / hoppers adultes / larves: density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	◡
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	◡

Food and Agriculture Organization of the United Nations

No. 511 3 MAY 2021

Desert Locust Bulletin

General situation during April 2021
Forecast until mid-June 2021

WESTERN REGION: CALM

SITUATION. Local breeding in **Algeria** and scattered adults in northern **Mali**.

FORECAST. No significant developments.

CENTRAL REGION: THREAT

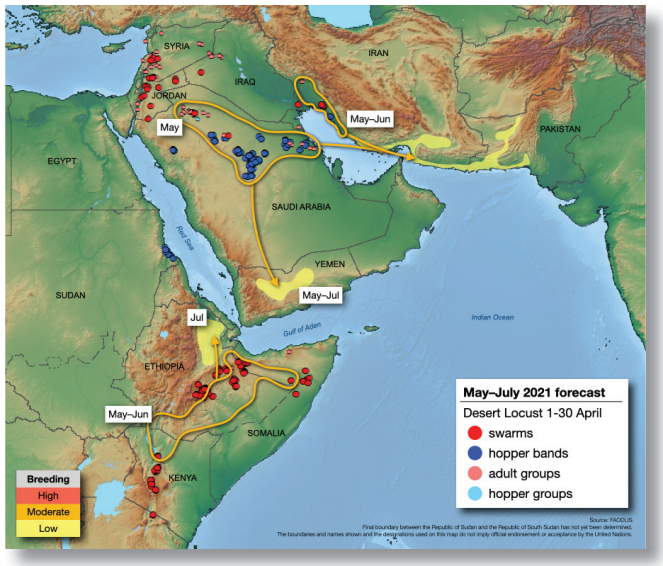
SITUATION. Swarms decline in **Kenya** (136 ha treated), become mature in **Ethiopia** (14 370 ha) and start laying while some move to NW Somalia, and those in NE **Somalia** (5 120 ha) remain immature; an immature swarm in northeast **Tanzania**. Groups and bands fledge on the Red Sea coast of **Sudan** (4 640 ha). Widespread hatching and bands in **Saudi Arabia** (8 250 ha) interior, fledging and immature adult groups form at end of the month. Strong southerly winds carry mature adult groups and small swarms from Saudi Arabia to **Iraq** (140 ha), **Jordan** (1 500 ha), **Syria** (2 867 ha), **Lebanon** (406 ha), **Israel**, and Sinai in **Egypt** (307 ha).

FORECAST. Hatching and band formation in **Ethiopia**, N **Somalia** and perhaps localized in N **Kenya**. Limited hatching and band formation possible in **Iraq**, **Jordan**, **Syria**, **Israel** and Sinai (**Egypt**). Immature adult groups and small swarms form in **Saudi Arabia** interior that could move to Yemen, countries along the Persian Gulf and, during southerly winds, to Jordan and Iraq; breeding in **Yemen** interior.

EASTERN REGION: CALM

SITUATION. Hatching and band formation in southwest **Iran** (4 718 ha treated).

FORECAST. Small adult groups to form in southwest **Iran** that may be supplemented by groups and small swarms arriving from Arabia, which will move east along the southern coast towards **Pakistan**.



Laying in Ethiopia and swarms in the Near East

The upsurge continued to decline in the Horn of Africa due to control operations that treated substantially less than the previous month as swarms dwindled. Nevertheless, good rains allowed remaining swarms to mature in Ethiopia where they started to lay eggs in late April that are expected to hatch in early May, giving rise to hopper bands. Similar breeding is likely in northern Somalia while localized breeding could occur in parts of northern Kenya by any remnant infestations. Therefore, intense vigilance should be maintained in the region. In the Near East, unusually strong southerly winds carried groups of mature adults and small swarms north from Saudi Arabia to Iraq, Jordan, Israel, Lebanon and Syria that nearly reached Turkey while others appeared in the Sinai Peninsula. Limited hatching and band formation may occur in a few places. In Saudi Arabia, widespread hatching and hopper band formation continued in the interior. Fledging started in late April and a few groups of immature adults began to form. This is expected to increase during May when small swarms may form that could move south to Yemen, east through the Persian Gulf and, during southerly winds, north to Jordan and Iraq. In Iran, hatching and a few bands formed in the southwest where immature adults are likely to form in May and move east towards Pakistan. The situation remained calm in other regions and no significant developments are expected.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

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Facebook/Twitter: faolocust

Weather & Ecological Conditions in April 2021

Good rains fell in the Horn of Africa, allowing conditions to be favourable for breeding. Good rains also fell in the interior of Yemen. Strong southerly winds at times over Arabia.

WESTERN REGION

No significant rain fell during April and mainly dry conditions prevailed throughout the region. Consequently, breeding conditions were not favourable except in some localized areas near irrigated perimeters in the Adrar Valley in the Central Sahara of Algeria. In Morocco, vegetation was green south of the Atlas Mountains in a few places of the Draa and Ziz-Ghris valleys.

CENTRAL REGION

In East Africa, southerly winds progressed northwards during the month, bringing light to moderate showers to Mandera and Wajir counties in northeast Kenya during the first two decades with lighter showers at times in Turkana county in the northwest. The rains extended over southern Ethiopia, reaching the Bale Mountains during the first decade and Dire Dawa and northwest Somalia during the second decade as well as parts of the Somali region in eastern Ethiopia and adjacent areas of central Somalia. By the end of the month, southerly winds were established over most of the Horn of Africa, having reached northern Somalia. Light to moderate rains fell during the third decade on the plateau and in northeast Somalia with heavier rainfall in the northwest as showers continued in eastern Ethiopia. Consequently, breeding conditions were favourable in southern and eastern Oromia, extending east to the lowlands near Kebri Dehar in the Somali region of Ethiopia. Conditions were improving on the plateau in northern Somalia. In Yemen, moderate to heavy rains fell throughout the interior on 25–29 April, causing flooding in some areas. The rains fell from Marib and Ataq to Wadi Hadhramaut, extending to the plateau between Minwakh and Thamud, and reaching the southern edge of the Empty Quarter. Lighter showers fell along parts of the southern coast. Consequently, breeding conditions are expected to improve in the interior. In Saudi Arabia, light rains fell at times during the second decade in the interior spring breeding areas west of Riyadh and south of Hail. There were also several consecutive days of strong southerly winds, extending from Saudi Arabia to northern Syria.

EASTERN REGION

Light to moderate rains fell in coastal and subcoastal areas of Khuzestan province in southwest Iran during the first decade of April that extended to Bushehr in the second decade. Consequently, ecological conditions remained favourable for breeding in the southwest but were unfavourable in southeast Iran and southwest Pakistan because of little rainfall and prevailing dry conditions. Light to moderate showers fell in southern Sindh province north of Karachi during the second decade.

Area Treated

Control operations declined substantially in April, treating 42 419 ha, compared to 95 795 ha in March.

Egypt	307 ha
Ethiopia	15 066 ha (March)
	14 370 ha
Iran	5 261 ha (March)
	4 718 ha
Iraq	140 ha
Jordan	1 500 ha (est.)
Kenya	136 ha
Kuwait	24 ha (March)
	2 ha (April)
Lebanon	406 ha
Saudi Arabia	8 250 ha
Somalia	16 367 ha (March)
	5 120 ha
Sudan	4 640 ha
Syria	2 867 ha

Desert Locust Situation and Forecast

WESTERN REGION

MAURITANIA

• **SITUATION**

No locusts were reported during April.

• **FORECAST**

No significant developments are likely.

MALI

• **SITUATION**

During April, scattered immature and mature solitarious adults were reported at four places in the Timetrine area of the north near Ti-n-kar (1926N/0022W) and west of the Tilemsi Valley.

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Adrar des Iforas and Timetrine. No significant developments are likely.

Niger

• **SITUATION**

No locusts were reported during April.

• **FORECAST**

Isolated locusts are likely to be present and will persist in parts of the Air Mountains.

Chad

• **SITUATION**

No locusts were reported during April.

• **FORECAST**

No significant developments are likely.

Senegal

• **SITUATION**

No reports were received during April.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During April, isolated immature solitarious adults were present in the southern Sahara west of Tamanrasset (2250N/0528E). Scattered mid and late instar solitarious hoppers and mature solitarious adults were present near irrigated areas in the Adrar Valley (2753N/0017W) of the central Sahara. No locusts were seen further north near Bechar (3135N/0217W).

• **FORECAST**

Scattered adults may persist in the Adrar Valley and west of Tamanrasset.

Morocco

• **SITUATION**

No surveys were conducted, and no locusts were reported during April.

• **FORECAST**

Isolated adults may be present in a few places south of the Atlas Mountains in the Draa and Ziz-Ghris valleys. No significant developments are likely.

Libya

• **SITUATION**

No surveys were conducted, and no locusts were reported during April.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during April.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During April, mainly mid to late instar hopper groups and bands were present on the Red Sea coast between Suakin (1906N/3719E) and Tokar (1827N/3741E), and fledging commenced during the last week. Scattered immature and mature solitarious adults were seen nearby. Control operations treated 4 640 ha of which 2 950 ha were by air.

• **FORECAST**

A limited number of small groups of adults may form on the Red Sea coast between Suakin and Tokar. As conditions dry out further, the adults are likely to move inland to the Nile and Atbara river valleys.

Eritrea

• **SITUATION**

During the first decade of April, no locusts were seen during surveys carried out on the northern Red Sea coastal plains.

• **FORECAST**

No significant developments are likely.

Ethiopia

• **SITUATION**

During April, swarms declined but still persisted east of the Rift Valley where they remained immature in the Ahmar Mountains north of Bale Robe (0707N/4000E) and the Harar Highlands south of Dire Dawa (0935N/4150E). After mid-month, an increasing number of swarms matured due to rainfall and some swarms moved north to Jijiga (0922N/4250E) as well as east to the lowlands of the Somali region near Degeh Bur (0813N/4333E). Control operations treated 14 370 ha of which 12 620 ha were by air.

• **FORECAST**

Swarm laying is expected to increase in eastern Oromia and north of the Shabelle River in Somali region during May. Breeding could also take place in southern Oromia and Somali regions. Hatching should commence from early May onwards, giving rise to hopper bands that would start to fledge after mid-June.

Djibouti

• **SITUATION**

No surveys were undertaken, and no locusts were reported during April.

• **FORECAST**

There remains a low risk of a few swarms appearing in the south at times from adjacent areas of Ethiopia and northwest Somalia.

Somalia

• **SITUATION**

During April, a few swarms persisted and remained immature in the northeast mainly near Garowe (0824N/4829E) but also north to Gardo (0930N/4905E), south to Galkayo (0646N/4725E), and west to Las Anod (0828N/4721E). Immature adult groups were seen near Erigavo (1040N/4720E) and scattered immature and mature adults were present on the plateau further west to Burco (0931N/4533E). In the northwest, immature and mature swarms from adjacent areas of Ethiopia appeared on the plateau between Hargeisa (0931N/4402E) and Boroma (0956N/4313E) on 26–27 April. Control operations treated 5 120 ha of which 1 510 ha were by air.

• **FORECAST**

Swarm breeding is likely to occur during May in parts of the northern plateau that received recent rain. This will give rise to hatching and band formation from mid-May onwards.

Kenya

• **SITUATION**

During April, only a few small immature swarms persisted and were partially maturing along the eastern side of the Rift Valley between Nakuru (0017S/3605E) and Lake Turkana in Nyandarua, Nakuru, Laikipia and Samburu counties. The last swarm was treated in Samburu county near Maralal (0106N/3642E) on the 23rd. Aerial operations treated 136 ha during April.

• **FORECAST**

A few small residual infestations may remain near the Rift Valley and in parts of the north. If so, limited breeding could occur in sandy areas of the northern counties that have received recent rainfall, causing low numbers of small hopper groups and bands to form.

Tanzania

• **SITUATION**

An immature swarm was reported near the Kenya border to the northwest of Longido (0244N/3642E) on 1 and 4 April. This is the same area where a similar swarm was seen the week before.

• **FORECAST**

No significant developments are likely.

Egypt

• **SITUATION**

On 23 April, a few small mature adult groups from the north first arrived in the Sinai along the Gulf of Aqaba coast at Taba (2929N/3453E). Some of the groups moved further south to Nuweiba (2902N/3440E) on the 25th and Dahab (2830N/3430E) on the 28th while others remained in the Taba area. Ground teams treated 307 ha. In the southeast near the Sudan border, isolated maturing solitarious adults persisted along Wadi Diib west of Abu Ramad (2224N/3624E). No locusts were present elsewhere along the coast to Marsa Alam (2504N/3454E) or inland near Lake Nasser.

• **FORECAST**

Locust numbers will decline along the Red Sea coast in the southeast and in the Sinai. No significant developments are likely.

Saudi Arabia

• **SITUATION**

During April, hopper groups and bands were present over an extensive area of the interior from north of Hail (2731N/4141E) to Al Dawadimi (2430N/4422E) and Dammam (2625N/5003E) as well as on the eastern side of the Asir Mountains between Tabuk (2823N/3635E) and Khaybar (2542N/3917E). Groups of mature adults were seen copulating and laying in the Al Jawf (2948N/3952E) area until mid-month. Mature adult groups were also present in the east between Dammam, Hafar Al Batin (2821N/4556E) and south of Kuwait. A few mature swarms were seen on the 4th near Al Jawf and northeast of Hail. While there were still early instar hoppers present during the last week, an increasing number of hoppers had reached fifth instar and were fledging to form a few immature adult groups near Hail and south of Tabuk. On the northern Red Sea coast, scattered immature and mature adults were present south of Yenbo (2405N/3802E). Control teams treated 8 250 ha of which 500 ha were by air.

• **FORECAST**

Fledging will increase during May in the interior, causing an increasing number of immature adult groups and perhaps small swarms to form. Low numbers of immature groups and swarms could move south towards Yemen and east through the Persian Gulf. A northward movement could occur during periods of southerly winds.

Yemen

• **SITUATION**

During April, scattered immature and mature solitarious adults persisted on the Red Sea coastal plains between Suq Abs (1600N/4312E) and Bayt Al Faqih (1430N/4317E). No locusts were seen on the southern coast near Aden (1250N/4503E).

• **FORECAST**

Scattered adults are perhaps a few small groups are likely to appear in the interior between Marib and Wadi Hadhramaut. Breeding is likely to occur in areas of recent rainfall. This may be supplemented by immature groups and small swarms arriving from Saudi Arabia after mid-May.

Oman

• **SITUATION**

During April, no locusts were seen in the northern interior near Nizwa (2255N/5731E) and Buraimi (2415N/5547E), on the northern coast near Rustaq (2323N/5725E), and on the Musandam Peninsula.

• **FORECAST**

No significant developments are likely.

Kuwait

• **SITUATION**

On 1 April, at least one small group of mature adults were present at Al Wafra farm (2838N/4808E) in the southeast near the Saudi Arabia border. Some of the adults were copulating. Control teams treated 2 ha.

• **FORECAST**

Limited breeding could take place on the edge of farms in the south. A few immature adult groups could appear from the south during periods of strong southwesterly or southerly winds.

Iraq

• **SITUATION**

On 8 April, a small mature swarm was seen at Al Rutbah (3302N/4017E) in the western governorate of Al Anbar. On 26–29 April, ground teams treated 140 ha of mature adult groups in farms along the Euphrates Valley near Rawa (3429N/4154E) and Qa'im (3420N/4111E) close to the Syria border.

• **FORECAST**

Local breeding may occur along crop edges in the northern Euphrates Valley near the Syria border. A few immature adult groups and perhaps small swarmlets from the south could appear in the southern governorates of Al Anbar, Karbala, Al Najaf and Al Muthanna during periods of strong southwesterly or southerly winds.

Jordan

• **SITUATION**

During several days of unusually strong southerly winds, a few small mature adult groups and swarmlets from Saudi Arabia arrived in the south near Al-Mudawwara (2920N/3602E) and in the east near Ruwaished (3230N/3812E) and the nearby Rawdat Al-Bandan Reserve on 14–15 April. More small groups of mature adults appeared on the 18–19th in the southern districts of Amman (3157N/3556E) and in the Jordanian Highlands near Kerak (3111N/3543E). On the 21st, similar infestations were mainly concentrated near Azraq (3150N/3649E) but were also reported on farms near Al Jafr (3019N/3610E) in Ma'an Governorate, and in the Araba Valley near Ghor Safi (3102N73528E). Ground and aerial teams treated an estimated 1 500 ha.

• **FORECAST**

Local breeding may occur along crop edges near Mudawwara and Azraq. A few immature adult groups and perhaps small swarmlets could appear from the south during periods of strong southerly or southeasterly winds from about the second week of May onwards.

Israel

• **SITUATION**

On 19–23 April, a few small, low-density groups of mature adults appeared south of the Dead Sea at three places in the Araba Valley near the Jordan border between Ein Tamar (3056N/3522E) and Yahel (3005N/3508E).

• **FORECAST**

Local breeding may occur along crop edges in a few places of the Araba Valley.

Syria

• **SITUATION**

As a result of several days of unusually strong southerly winds, small groups of mature adults arrived from the south in the Euphrates Valley of Abu Kamal district in the southeast on 17 April near the Iraq border and Ash-Shafah (3434N/4056E) where they later crossed the river to Al-Sayyal (3434N/4054E). Some of the adults settled near crops at densities of 10–20 adults/m^2 and were seen copulating while others subsequently moved northwest to Deir ez-Zur (3520N/4007E). In the west, a few small groups of mature adults and swarmlets arrived from the south on 18–19 April and were seen north of the Jordan border near As-Suwayda (3242N/3634E) at densities up to 40 adults/m^2. A small mature swarmlet appeared further north near Qarah (3409N/3645E) on the 22nd and movements occurred across the Lebanon border. Egg-laying was seen nearby in the Qalamoun Mountains north of Damascus (3331N/3618E) on the 23rd. Another northward movement occurred on the 24th during strong southerly winds, carrying adult groups as far north as Maskanah (3558N/3802E), Aleppo (3612N/3709E) and the Mediterranean coast near Latakia (3531N/3547E). A few mature adult groups were seen during the last week in the southwest near Quneitra (3307N/3549E). Ground teams treated 2 867 ha.

• **FORECAST**

Local breeding may occur along crop edges in a few places near As-Suwayda and in the Euphrates Valley where hatching could commence during the first week of May, giving rise to small hopper groups and bands. A few immature adult groups could appear from the south during periods of strong southerly winds.

Lebanon

• **SITUATION**

On 22 April, a few small groups of mature adults and swarmlets crossed the Anti-Lebanon Mountains from Syria into the Bekaa Valley near Aarsal (3410N/3625E) and Ras Baalbek (3416N/3625E). On the following day, at least one group returned to Syria as the winds shifted while other groups moved south in valley to Baalbek (3400N/3613E). On the 27th, a mature adult group was reported on the coast north of Beirut in Keserwan district. Ground and aerial control operations treated 406 ha.

• FORECAST

There is a low to moderate risk of local breeding in a few places of the Bekaa Valley where hatching could start about the second week of May, giving rise to small hopper groups and bands. Limited cross-border movements of small adult groups from adjacent areas of Syria could take place during periods of warm southerly winds.

Bahrain, Qatar and UAE

• FORECAST

A few immature adult groups or small swarms from eastern Saudi Arabia may transit in an easterly direction from mid-May onwards.

D.R. Congo, Palestine, South Sudan, Turkey and Uganda

• FORECAST

No significant developments are likely.

EASTERN REGION

Iran

• SITUATION

During the first week of April, a few mature adult groups and swarms were seen in Khuzestan Province on the coast north of Bushehr (2854N/5050E) and further inland near Dezful (3224N/4824E) at the foothills of the Zagros Mountains. A few adult groups persisted during the following week. Early instar hopper bands were seen at a few places near the coast from laying by earlier swarms that occurred from late March and the first week of April with hatching commencing at mid-month. On the 21st, a mature swarm was seen on the Iraq border near Abadan (3021N/4817E) that is likely to have arrived on strong southerly winds. Ground teams treated 4 718 ha. No locusts were seen or reported elsewhere along the southern coast and in subcoastal areas from Hormozgan to Sistan-Baluchistan and in the northeastern province of South Khorasan.

• FORECAST

Isolated adults are likely to be present in a few areas along the Hormozgan and Sistan-Baluchistan coast and in the Jaz Murian Basin. Small immature adult groups could form on the southwest coast near Bushehr and in a few coastal and inland areas of Khuzestan from the last week of May onwards. This may be supplemented by immature groups and small swarms arriving from eastern Saudi Arabia. In both cases, the adults are likely to move east along the southern coast towards Indo-Pakistan summer breeding areas.

Pakistan

• SITUATION

During April, no locusts were seen or reported in coastal and interior areas of Baluchistan.

• FORECAST

Isolated adults may be present in a few areas of Baluchistan. From late May onwards, there is low to moderate risk of few small immature groups arriving from the Persian Gulf in coastal areas of Baluchistan and continuing to the summer breeding areas.

India

• SITUATION

During April, no locusts were seen by surveys in Rajasthan and Gujarat.

• FORECAST

No significant developments are likely.

Afghanistan

• SITUATION

No locust reports were received during March.

• FORECAST

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa.
[www.fao.org/locusts]

eLocust3 tools

FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data is critical for monitoring the situation and organizing control operations in each country and feeds into FAO's global early warning system.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
[http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust.
[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge.
[https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub.
[https://data.apps.fao.org]

Calendar

- **CLCPRO.** 10th session, Algiers, Algeria (October, tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession

- Period without widespread and heavy infestations by swarms

Remission

- Period of deep recession marked by the complete absence of gregarious populations

Outbreak

- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge

- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

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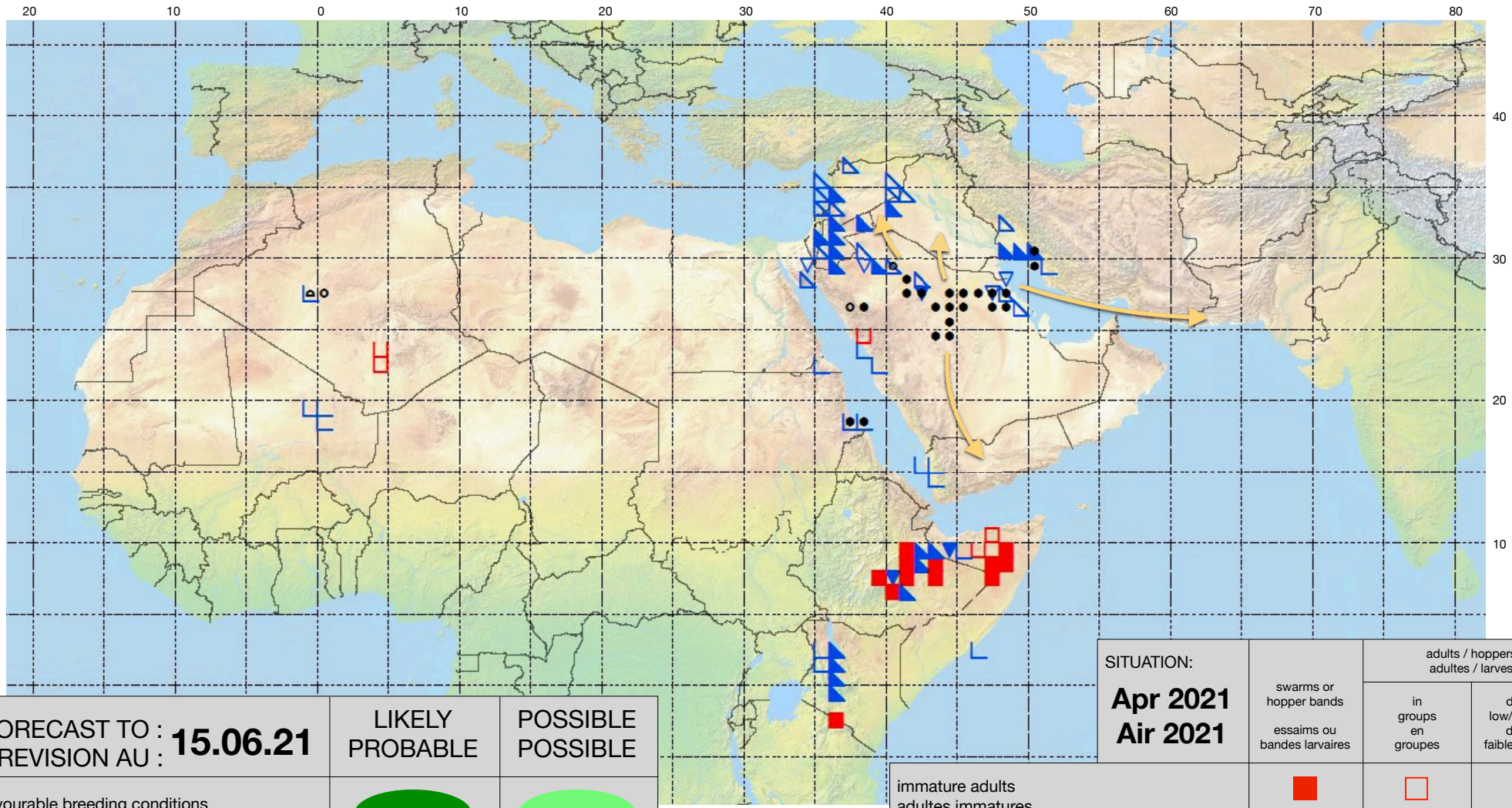

FORECAST TO : PREVISION AU : **15.06.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Apr 2021** **Air 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	⊔

Food and Agriculture Organization of the United Nations

No. 512 3 JUNE 2021

Desert Locust Bulletin

General situation during May 2021
Forecast until mid-July 2021

WESTERN REGION: CALM

SITUATION. Local breeding in **Algeria** (32 ha treated) and scattered adults in northeast **Morocco**.
FORECAST. Small-scale breeding in the Sahel of **Mauritania**, **Mali**, **Niger** and **Chad** once summer rains commence.

CENTRAL REGION: THREAT

SITUATION. Swarms continue laying and hatching with early instar bands steadily forming in **Ethiopia** (12 663 ha treated) and **Somalia** (18 304 ha); limited swarm laying in **Djibouti**. Adult groups decline on Red Sea coast of **Sudan** (2 868 ha). Limited hatching and hoppers form groups or bands in **Iraq** (502 ha), **Jordan** (300 ha), **Syria** (269 ha), **Lebanon** (31 ha), **Israel**; mature adult groups in Sinai, **Egypt** (20 ha). Hopper groups and bands fledge to form immature adult groups in **Saudi Arabia** (11 156 ha) interior; some move south towards Yemen; scattered adults in **Yemen** interior.
FORECAST. Hatching and band formation in eastern **Ethiopia** and northern **Somalia** with fledging and swarm formation from late June onwards. Local breeding possible in northern **Kenya**. A few small groups may form in **Iraq**, **Jordan**, **Syria** and **Lebanon**, and move south. Immature adult groups and perhaps a few small swarms may form in **Saudi Arabia** interior and move to Yemen for breeding in the interior. Small-scale breeding in summer breeding areas of **Sudan** and western **Eritrea** once seasonal rains start.

EASTERN REGION: CALM

SITUATION. Hatching and hopper group formation in southwest **Iran** (6 370 ha treated).
FORECAST. Small adult groups could form in southwest **Iran** and move to the Indo-Pakistan summer breeding areas where small-scale breeding will commence with the monsoon in July.

Hatching and band formation in Ethiopia and Somalia

Despite an earlier decline, the current upsurge prevails in the Horn of Africa where good rains allowed breeding to continue with hatching and more hopper bands forming in eastern Ethiopia and northern Somalia during May. In addition to aerial operations, ground survey and control teams will play an important role in finding and reducing hopper band infestations before they fledge and form a new generation of immature swarms from late June onwards, which are expected to move to the Afar region in northeast Ethiopia for summer breeding in August and September. Hopper bands declined in the northern interior of Saudi Arabia due to control and drying conditions. Nevertheless, immature adult groups and perhaps a few small swarms could form and move south to the interior of Yemen where conditions are favourable for breeding. Control operations were undertaken in parts of Iraq, Jordan, Syria and Lebanon against hoppers that hatched and formed small groups and bands as a result of earlier breeding by adult groups and small swarms that arrived in April. Although control operations continued in southwest Iran against hopper groups, a few small groups of immature adults could form and move east to the Indo/Pakistan border where small scale breeding is likely to commence with the onset of the monsoon. Once the summer rains begin, small-scale breeding is expected to occur in the Sahel of West Africa and Sudan from July onwards.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.
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Internet: www.fao.org/ag/locusts
Facebook/Twitter: faolocust

Weather & Ecological Conditions in May 2021

Extensive rains fell over the Horn of Africa and parts of Yemen that allowed favourable breeding conditions. Cyclone Tauktae brought heavy rains to western India.

WESTERN REGION

Little rain fell in the region during May except for light showers in the Tenere Desert in northeast Niger and near Ghat in southwest Libya during the first decade, the Adrar des Iforas in northern Mali during the second decade, and near the Mali/Algeria/Mauritania border during the third decade. Consequently, breeding conditions were not favourable except in some localized areas in northeast Morocco near Bouarfa and in the Central Sahara of Algeria near irrigated perimeters in the Adrar Valley. In the Sahel of West Africa, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards during May but remained south of the summer breeding areas.

CENTRAL REGION

In East Africa, the prevailing southerly winds progressed further north during the month and reached northern Somalia where they became established with the southwest monsoon winds over the Horn of Africa. Light to moderate rains fell over most of Ethiopia and Somalia during the first decade, reaching the southern coast of Eritrea as well as coastal and interior areas of southwest Yemen. Lighter rains fell in the interior of Yemen. During the remainder of May, very little rain fell in the region except for light showers near Garowe in northeast Somalia during the second decade. Ecological conditions were favourable for breeding over a large and widespread area encompassing the Somali region in eastern Ethiopia from the Shebelle River to the plateau and escarpment in northern Somalia. In Saudi Arabia, conditions were drying out in the interior as temperatures increased during the month. In Yemen, ecological conditions were favourable for breeding in the interior where good rains and floods occurred in parts of Al Jawf, Marib, Shabwah, Hadhramaut and Al Mahrah governorates in April. Conditions may also be favourable on the Red Sea and Gulf of Aden coasts from rains in early May.

EASTERN REGION

In the spring breeding areas, light rains fell in parts of southeast Iran and southwest Pakistan during the first decade of May. Mainly dry ecological conditions prevailed in most areas except for parts of the southwest coast near Bushehr. In the summer breeding areas, light pre-monsoon showers fell in some places along the Indo-Pakistan border during the first and third decades of May. During the second decade, heavier rain fell to the east of Jodhpur in eastern Rajasthan as a result of cyclone Tauktae, the first cyclone of this year and the strongest since 1998. It made landfall in Saurashtra region of Gujarat, India on 17 May with winds up to 205 km/h that weakened as it moved inland, bringing heavy rain to Ahmedabad (114 mm) on the 18th and Delhi (119 mm) on the 19th, the single highest daily May rainfall in history. The outer edge of the cyclone reached lower Sindh province in southeast Pakistan, causing high temperatures, dust storms and light rainfall.

Area Treated

Control operations treated 52 515 ha in May compared to 42 681 ha in April.

Algeria	32 ha
Egypt	20 ha
Ethiopia	12 663 ha
Iran	6 370 ha
Iraq	502 ha
Jordan	300 ha
Lebanon	31 ha
Saudi Arabia	11 156 ha
Somalia	18 304 ha
Sudan	2 868 ha
Syria	269 ha
	3 092 ha (April)

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

• **SITUATION**

No locusts were reported during May.

• **FORECAST**

Low numbers of adults are likely to appear in the southeast and breed on a small scale with the onset of the summer rains.

Mali

• **SITUATION**

No locusts were reported during May.

• **FORECAST**

Small-scale breeding is expected to occur with the onset of the summer rains in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna.

Niger

• **SITUATION**

No locusts were reported during May.

• **FORECAST**

Low numbers of adults are likely to appear in the central pasture areas and on the Tamesna Plains where small-scale breeding is expected to occur with the onset of the summer rains.

Chad

• **SITUATION**

No locusts were reported during May.

• **FORECAST**

Low numbers of adults are likely to appear in the summer breeding areas of the central and northern areas by the end of the forecast period and eventually breed on a small scale with the onset of the seasonal rains.

Senegal

• **SITUATION**

No reports were received during May.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During May, scattered hoppers of all instars, immature and mature solitarious adults were present in the central Sahara between In Salah (2712N/0229E), Reggane (2643N/0010E) and Adrar (2753N/0017W). Some of the *transiens* hoppers and mature adults were forming small groups. Ground teams treated 32 ha. Scattered immature and mature solitarious adults were seen further south near Tamanrasset (2250N/0528E). No locusts were seen northwest of Adrar near Bechar (3135N/0217W).

• **FORECAST**

Scattered adults may persist in the Adrar Valley and west of Tamanrasset where they could form a few small groups as vegetation dries out.

Morocco

• **SITUATION**

During the first decade of May, isolated mature solitarious adults were seen in the northeast between Bouarfa (3232N/0159W) and the Algeria border.

• **FORECAST**

No significant developments are likely.

Libya

• **SITUATION**

No surveys were conducted, and no locusts were reported during May.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during May.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During May, a late instar hopper band was seen on the Red Sea coast near Tokar (1827N/3741E) on the 1st. Immature and mature solitarious adults were present at several nearby places during the remainder of the first decade. As vegetation dried out, most of the adults formed immature groups from earlier fledging while only a few were maturing. Control operations finished on the Red Sea coast on 9 May, having treated 2 868 ha of which 2 050 ha were by air. In the Nile Valley, scattered mature solitarious adults were present near Abu Hamed (1932N/3320E) and Dongola (1910N/3027E).

• **FORECAST**

A few small groups of immature and mature adults from the Red Sea coast may appear near cropping areas in the Nile and Atbara river valleys where limited breeding could take place. Scattered adults are expected to start appearing in the summer breeding areas of North and West Kordofan, While Nile, and North Darfur at the end of the forecast period and eventually breed on a small scale with the onset of the seasonal rains.

Eritrea

• **SITUATION**

No reports were received during May.

• **FORECAST**

Low numbers of adults are likely to appear in the western lowlands and breed on a small scale with the onset of the summer rains.

Ethiopia

• **SITUATION**

During May, mature swarms were seen copulating and laying in several zones of Somali region until the 22nd, mainly between Jijiga (0922N/4250E) and Kebri Dehar (0644N/4416E) in Fafan and Jarar zones, and near Ayasha (1045N/4234E) in Siti zone. Mature swarms were also seen on 20–21 May west of Ayasha towards Afar region. As laying had started about 27 April, hatching commenced about 11 May and an increasing number of first and second instar hopper bands formed in Siti, Fafan, Jarar, Nogob, Erer and Afder zones as well as in eastern Bale zone in Oromia region. Control operations treated 12 663 ha of which 5 264 ha were by air. No locusts were seen in the southern Rift Valley.

• **FORECAST**

Hatching is likely to continue until the end of the first week of June. An increasing number of hopper bands will form in the Somali region, including eastern zones. Limited breeding may also be underway in southern Oromia and Somali regions. Fledging is expected to start about mid-June, peak in late June and finish by mid-July, giving rise to immature swarms.

Djibouti

• **SITUATION**

During May, at least one mature swarm was present and copulating near Petit and Grand Barra south of Arta on 16–18th. Mature adults were also seen at one place along the coast to the east of Djibouti (1134N/4308E) town.

• **FORECAST**

If habitat conditions are suitable, hatching may occur in early June near Petit and Grand Barra. This could cause a few small hopper bands to form that would fledge about mid-July, giving to a few small immature adult groups or swarms.

Somalia

• **SITUATION**

During May, mature swarms were seen copulating and laying in the northwest (Somaliland), mainly on the plateau as far east as Burco (0931N/4533E) as well as on the escarpment and at a few places along the coast near Lughaye (1041N/4356E) and Berbera (1028N/4502E). In the northeast (Puntland), a few mature swarms were seen during the second and third weeks near Iskushuban (1017N/5014E) and northwest of Gardo (0930N/4905E). As laying had started about 25 April, hatching commenced about 9 May and an increasing number of early instar hopper bands formed in Somaliland and at one place south of Gardo in Puntland. Control operations treated 18 304 ha of which 5 638 ha were by air. No locusts were seen in the central areas near Galkayo (0646N/4725E).

• **FORECAST**

Hatching may continue in early June and thereafter an increasing number of hopper bands are expected to form on the northern plateau between Boroma and Garowe. Fledging is likely to start about mid-June, peak in late June and finish by mid-July, giving rise to immature swarms.

Kenya

• **SITUATION**

During May, surveys continued in northern and central counties, and no locusts were reported.

• **FORECAST**

Local breeding may have occurred in a few places of the north by any remnant populations that could give rise to small groups of adults in late June.

Egypt

• **SITUATION**

During May, isolated immature solitarious adults were present on the Red Sea coast in the southeast near Halaib (2213N/3638E) and the Sudan border. Ground teams treated a group of mature adults covering 20 ha at the southern tip of the Sinai Peninsula near Sharm Esh Sheikh (2752N/3413E) on the 7th.

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During May, numerous hopper groups and bands were present in the interior between Riyadh (2439N/4642E) and Hail (2731N/4141E), further north near Al Jawf (2948N/3952E) and in the east near Jubail (2700N/4939E). Those in the north were mainly early instar while those in central and eastern areas were late instar. Fledging occurred throughout the month and groups of immature adults formed in central areas and along the eastern side of the Hijaz Mountains between Medinah (2430N/3935E) and Al Ula (2637N/3755E). During the last week, hopper infestations declined, and few remained in northern areas. On the 27th, an immature group arrived in the Asir Mountains of the southwest near Khamis Mushait (1819N/4245E), indicating a southerly movement from the spring breeding areas further north. Control teams treated 11 156 ha of which 5 650 ha were by air.

• **FORECAST**

Fledging will occur in the north near Al Jawf, causing small immature groups to form. This may be supplemented by a few small groups arriving from countries to north. As conditions become hot and dry, any remaining immature adult groups and perhaps a few small swarms that form are likely to move from the interior south to Yemen while a few groups in the east could move through the Persian Gulf.

Yemen

• **SITUATION**

During May, scattered immature and mature solitarious adults were seen in the eastern interior on the plateau southwest of Thamud (1717N/4955E) while scattered mature solitarious adults were present near Nisab (1430N/4629E). No locusts were seen in the interior near Bayhan (1452N/4545E), Ataq (1435N/4649E), Wadi Hadhramaut, and on the Thamud plateau near Hazar (1744N/4901E) and Remah (1727N/5034E).

• **FORECAST**

Small-scale breeding is likely to occur in areas of recent rainfall in the interior between Marib, Ataq and Thamud. This may be supplemented by immature groups and small swarms arriving from Saudi Arabia during June.

Oman

• **SITUATION**

During May, no locusts were seen in the northern interior between Adam (2223N/5731E) and Buraimi (2415N/5547E), in the northeast near Sur (2234N/5930E), on the northern coast, Musandam Peninsula, and in the interior of the southern province of Dhofar near Thumrait (1736N/5401E).

• **FORECAST**

No significant developments are likely.

Iraq

• **SITUATION**

During May, a group of mature adults were seen on the 1st in the northern Euphrates Valley near Anah (3422N/4200E). Hatching occurred in a few places along a 100 km stretch of the valley between Anah and the Syria border where mature adult groups were seen in April. The hoppers formed small first to third instar hopper groups. Ground control operations ended on 23 May after treating 502 ha during the month. No locusts were seen thereafter.

• **FORECAST**

No significant developments are likely.

Jordan

• **SITUATION**

During the first half of May, hatching occurred near several agricultural areas as a result of laying by mature groups and swarmlets from mid-April to early May. Thereafter, groups of first and second instar hoppers were seen at mid-month near Azraq (3150N/3649E), Al Jafr (3019N/3610E), and in the Araba Valley near Ghor Safi (3102N73528E). Control operations treated 300 ha.

• **FORECAST**

There is a low risk that a few immature adult groups or small swarms could form in areas where breeding occurred. If so, they would move south out of the country from late June onwards.

Israel

• **SITUATION**

During May, limited breeding occurred in the Araba Valley near the Jordan border and first instar hoppers were detected in 50 ha of crops near Yahel (3005N/3508E) on the 8th. As migrating birds subsequently ate the hoppers, control operations were not necessary. No further locusts were seen after mid-month.

• **FORECAST**

No significant developments are likely.

Syria

• **SITUATION**

During the first week of May, control operations continued near Damascus (3331N/3618E) and in the north near Aleppo (3612N/3709E), treating 269 ha.

• **FORECAST**

There is a low risk that a few immature adult groups or small swarms could form in areas where breeding occurred. If so, they would move south out of the country from late June onwards.

Lebanon

• **SITUATION**

During May, a group of mature adults was seen on the 1st in the northern Bekaa Valley south of Ras Baalbek (3416N/3625E). On the 16th, scattered hoppers from earlier breeding were reported at one place in the hills between Aarsal (3410N/3625E) and the Syria border. No locusts were seen elsewhere in the Bekaa Valley north of Zahle (3350N/3554E). Control operations treated 31 ha.

• **FORECAST**

No significant developments are likely.

Bahrain, Kuwait, Qatar and UAE

• **FORECAST**

A few immature adult groups or small swarms from eastern Saudi Arabia may transit in an easterly direction during June.

D.R. Congo, Palestine, South Sudan, Tanzania, Turkey and Uganda

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During May, hatching continued on the southwest coast west of Bushehr in Khuzestan Province where hoppers of all instars formed a few groups near Bandar Ganaveh (2934N/5031E) and Bandar Mahshahr (3034N/4911E). Ground control operations treated 6 370 ha. No locusts were seen or reported elsewhere along the southern coast and in subcoastal areas from Hormozgan to Sistan-Baluchistan and in the northeastern province of South Khorasan.

• **FORECAST**

A few small immature adult groups could form on the southwest coast near Bushehr during June. This may be supplemented by immature groups and small swarms arriving from eastern Saudi Arabia. In both cases, the adults are likely to move east along the southern coast towards Indo-Pakistan summer breeding areas.

Pakistan

• **SITUATION**

During May, no locusts were seen or reported in coastal and interior areas of Baluchistan.

• **FORECAST**

Low numbers of solitarious adults are likely to appear in Cholistan, Nara and Tharparkar during July where small-scale breeding is likely once the monsoon commences. No significant developments are likely.

India

• **SITUATION**

During May, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

Low numbers of solitarious adults are likely to appear in Rajasthan and Gujarat during July where small-scale breeding is expected once the monsoon commences. No significant developments are likely.

Afghanistan

• **SITUATION**

No locust reports were received during May.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa.
[www.fao.org/locusts]

eLocust3 tools

FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data is critical for monitoring the situation and organizing control operations in each country and feeds into FAO's global early warning system.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch. French and Arabic versions will be available shortly. The PDF is meant for printing pocket-sized (A5) hard copies.
[http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
[http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust.
[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge.
[https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub.
[https://data.apps.fao.org]

Calendar

- **CLCPRO.** 10th session, Algiers, Algeria (October, tbc)
- **CRC.** 32nd session, Jeddah, Saudi Arabia (November, tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague
- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline
- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green
- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow
- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange
- *Threat*. Threat to crops; survey and control operations must be undertaken

Red
- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western
- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only:

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

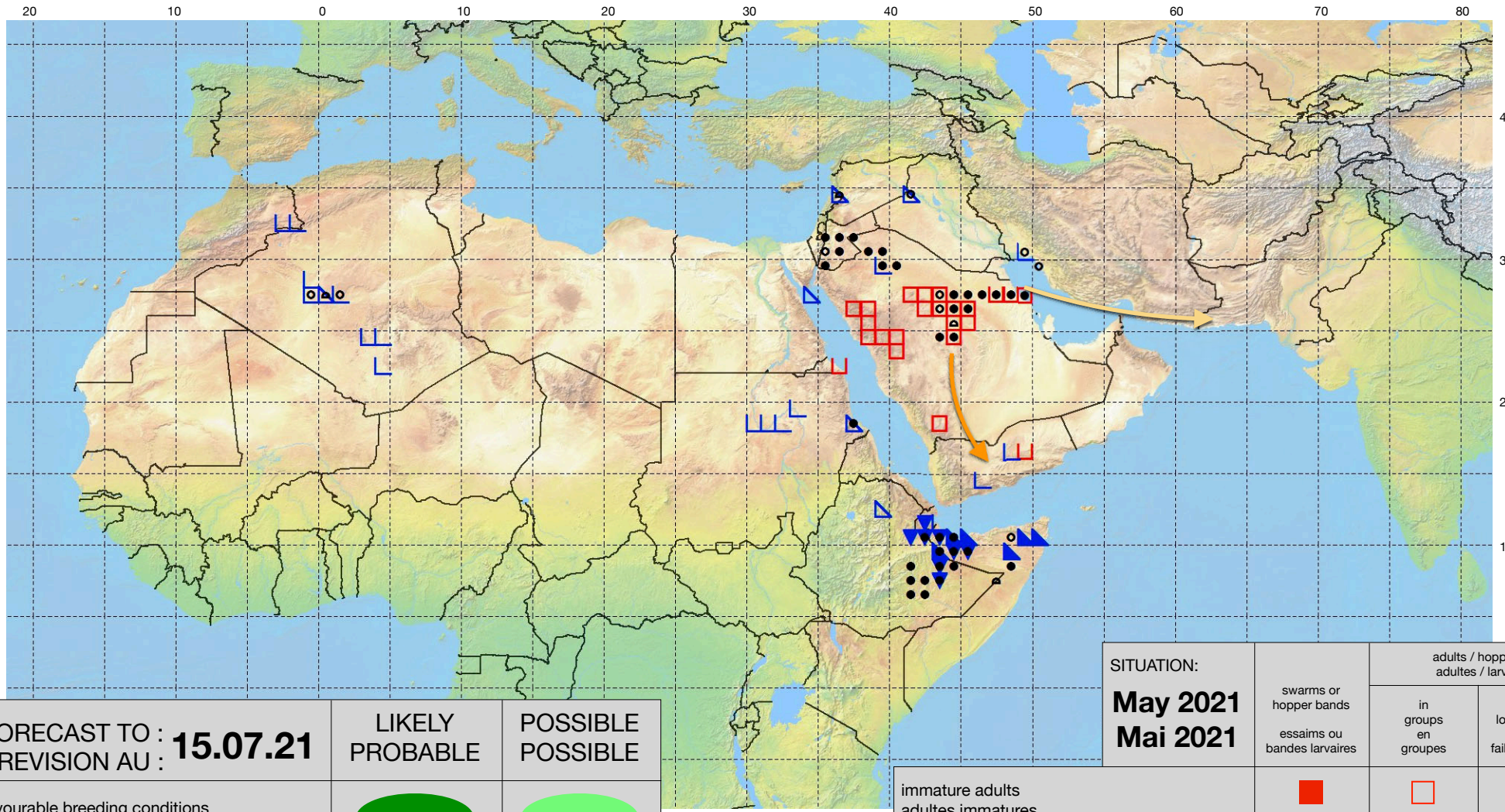
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

512



FORECAST TO : PREVISION AU : **15.07.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **May 2021 Mai 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures			
mature or partially mature adults adultes matures ou partiellement matures			
adults, maturity unknown adultes, maturité inconnue			
egg laying or eggs pontes ou œufs			
hoppers larves			
hoppers & adults (combined example) larves et adultes (symboles combinés)			

Food and Agriculture Organization of the United Nations

No. 513 2 JULY 2021

Desert Locust Bulletin

General situation during June 2021
Forecast until mid-August 2021

WESTERN REGION: CALM

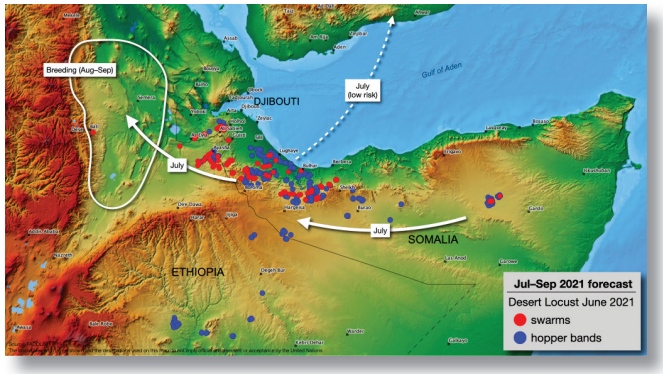
SITUATION. Local breeding in central **Algeria** (351 ha treated) and isolated adults in northeast **Morocco**.
FORECAST. Small-scale breeding in the Sahel of **Mauritania**, **Mali**, **Niger,** and **Chad** as summer rains arrive further north.

CENTRAL REGION: THREAT

SITUATION. More bands form and fledge, giving rise to increasing numbers of immature swarms mainly in northwest **Somalia** (80 330 ha treated) but also in eastern **Ethiopia** (6 436 ha) and southeast **Djibouti** (10 ha); one immature swarm reaches Afar. Breeding ends in northern **Saudi Arabia** (2 235 ha) but immature groups move south, and a few immature swarms arrive in the **Yemen** (5 ha) highlands while scattered adults increase in the interior. Local breeding near the Nile in **Sudan** (330 ha) and scattered adults appear in nearby summer breeding areas. Adults persist in southeast **Egypt**.
FORECAST. Limited swarm migration from eastern **Ethiopia**, northwest **Somalia,** and **Djibouti** to northeast Ethiopia and perhaps Sudan. Swarms will mature and lay with the onset of the rains in Afar region, causing hopper bands to form in August. A few swarms may migrate from northern Somalia to the interior of Yemen, and from the Yemen Highlands to northeast Ethiopia. Small-scale breeding in the interior of Yemen, **Sudan,** and western **Eritrea**.

EASTERN REGION: CALM

SITUATION. No locusts present.
FORECAST. Low numbers of adults will appear along both sides of the Indo-Pakistan border where small-scale breeding will commence with the monsoon in July.



New swarms form in the Horn of Africa

Numerous hopper bands continued to form and develop mainly in northwest Somalia but also in eastern Ethiopia and southern Djibouti during June. Intensive aerial control operations in Somalia used insect growth regulators against the hopper bands to limit the number and size of immature swarms that began forming at mid-month. At the end of the month, at least one swarm reached the Afar region in northeast Ethiopia as swarms declined in Somalia. During July, low numbers of small swarms are likely to appear in Afar where they will mature and lay eggs with the onset of the rains, causing a new generation of hopper bands to form in August. A few stray swarms may also arrive from Yemen and some swarms might continue to the highlands of northern Ethiopia and the summer breeding areas in Sudan. However, the scale of migration and breeding will be substantially less than one year ago. Smaller-scale breeding is also expected to occur this summer in the interior of Yemen. Breeding ended in northern Saudi Arabia, but some groups of adults moved to the southwest and a few swarms appeared in northern Yemen. The situation returned to calm in Lebanon, Syria, Jordan, and Iraq. Despite predictions of above-average rainfall this summer, only small-scale breeding is expected to occur, and no significant developments are likely in the northern Sahel of West Africa, Sudan, and western Eritrea, and along the Indo-Pakistan border.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.
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Weather & Ecological Conditions in June 2021

Early rains began to fall in parts of the summer breeding areas in the Sahel of West Africa and Sudan and along the Indo-Pakistan border.

WESTERN REGION

In the Sahel of West Africa, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards during June. It remained south of its normal position in Mauritania but improved during the second decade over Mali, Niger, and Chad where it was up to 125 km further north than usual, reaching the southern Adar des Iforas in Mali, southern Tamesna Plains in Niger, and Arada in eastern Chad. Consequently, light rains began to fall during the second decade in the pasture areas of central Niger and in parts of central Chad, and during the third decade in southeast Mauritania and the southern Tamesna Plains of Mali and Niger. Nevertheless, dry conditions prevailed in the summer breeding areas from Mauritania to Chad. Although, light rains fell at times in a few places south of the Atlas Mountains in Algeria and Morocco, ecological conditions remained dry and unfavourable for breeding except on the edges of irrigated perimeters in the central Sahara of Algeria.

CENTRAL REGION

In the Horn of Africa, very little rain fell except for light showers at times near Jijiga in eastern Ethiopia and in southern areas of Afar region. Consequently, vegetation began to dry out on the coastal plains of northwest Somalia at the end of the month but remained green along the escarpment and on the plateau as well as in adjacent areas of eastern Ethiopia. While southwesterly winds prevailed over the region, local winds often changed during the day in northwest Somalia, shifting from southwesterly in the morning to northeasterly in the afternoon. In Yemen, light rain fell in parts of the interior west and northwest of Wadi Hadhramaut, near Ataq and northwest of Al Ghaydah in the east on 24–25 June. Breeding conditions were favourable along the southern edges of the Ramlat Sabatyn, in Wadi Hadhramaut and in the wadis on the plateau to the north. Conditions were dry in Saudi Arabia and Oman. In Sudan, the Inter-Tropical Convergence Zone (ITCZ) continued is seasonal movement northwards over the summer breeding areas of the interior. During the second decade, it was 100–250 km further north than usual, reaching Khartoum, and bringing the first rains of the year to the summer breeding areas. Light showers fell as far north as El Fasher (North Darfur), Sodiri (North Kordofan), Khartoum, and north of Kassala. Light rain also fell in the southern portion of the western lowlands in Eritrea. Although mainly dry conditions prevailed, vegetation was becoming green in a few places.

EASTERN REGION

In the spring breeding areas, dry conditions prevailed despite light rainfall during the first decade in the interior of Baluchistan in southwest Pakistan. In the summer breeding areas, pre-monsoon rains fell along both sides of the Indo-Pakistan border from Cholistan to Tharparkar in Pakistan and in Rajasthan and Gujarat in India during the first two decades of June. Nevertheless, ecological conditions remained dry and unfavourable for breeding.

Area Treated

Control operations treated 89 697 ha in June compared to 52 515 ha in May.

Algeria	351 ha
Djibouti	10 ha
Ethiopia	6 436 ha
Saudi Arabia	2 235 ha
Somalia	80 330 ha
Sudan	330 ha
Yemen	5 ha

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

Low numbers of adults are likely to appear in the southeast and breed on a small scale with the onset of the summer rains.

Mali

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

Small-scale breeding is expected to occur with the onset of the summer rains in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna.

Niger

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

Low numbers of adults are likely to appear in the central pasture areas and on the Tamesna Plains where small-scale breeding is expected to occur with the onset of the summer rains.

Chad

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

Low numbers of adults are likely to appear in central and northern areas and breed on a small scale with the onset of the seasonal rains.

Senegal

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During June, local breeding occurred in the central Sahara near El Golea (3034N/0252E) and to the southwest where fourth and fifth instar solitarious hoppers formed a few small groups on the edges of the irrigated perimeters. As a result of May breeding, immature and mature solitarious adults formed a few small groups in the Adrar Valley (2753N/0017W) and scattered solitarious adults were maturing between Reggane (2643N/0010E) and In Salah (2712N/0229E). Ground teams treated 351 ha.

• **FORECAST**

Scattered adults may remain in the Adrar Valley where limited breeding could persist on the edges of irrigated fields.

Morocco

• **SITUATION**

During the third decade of June, scattered mature solitarious adults were seen east of Errachidia (3154N/0425W) along the southern side of the Atlas Mountains in the northeast.

• **FORECAST**

No significant developments are likely.

Libya

• **SITUATION**

No surveys were carried out and no locusts were reported during June.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During June, scattered adults were maturing in the Nile Valley between Khartoum (1533N/3235E) and Dongola (1910N/3027E), along the Atbara River from Ed Debba (1803N/3057E) to Kassala (1527N/3623E), east of the Nile and Atbara rivers to the Red Sea Hills, in Wadi Muqaddam northwest of Khartoum, and in North Kordofan between Umm Saiyala (1426N/3112E) and Abu Uruq (1554N/3027E). Some adults formed groups and laying was seen during the third week in the Nile Valley near Merowe (1830N/3149E) and along Wadi Muqaddam. During the last decade, a group of third to fifth instar hoppers from laying and hatching in May was present on a farm northwest of Khartoum. Ground teams treated 330 ha.

• **FORECAST**

Hatching by early July is likely to cause a few small hopper groups to form in the Nile Valley and Wadi Muqaddam that could fledge by mid-August. During July, small-scale breeding could take place over a relatively large area from North Darfur to the Red Sea Hills as the summer rains commence, causing locust numbers to increase further.

Eritrea

• **SITUATION**

A late report indicated that surveys were not conducted, and no locusts were present during May. No locusts were reported in June.

• **FORECAST**

Low numbers of adults are likely to appear in the western lowlands and breed on a small scale with the onset of the summer rains.

Ethiopia

• **SITUATION**

During June, hopper bands continued to form and develop in eastern Bale zone of Oromia region and in Nogob, Jarar and Fafan zones of western Somali region. Numerous hopper band infestations were present in the railway area of Siti zone near Ayasha (1045N/4234E) and the Somalia border where several immature swarms were seen on 20–29 June. In Afar region, isolated immature and mature solitarious adults were seen on the 1st west of Semera (1148N/4100E). On the 30th, an immature swarm was reported on the eastern escarpment of Amhara region near and Bati (1111N/4010E), suggesting that swarms may have started to move towards Afar. No locusts were seen in eastern Somali region or elsewhere in Oromia. Control operations treated 6 436 ha of which 953 ha were by air.

• **FORECAST**

More small immature swarms are likely to form in the railway area and, to a lesser extent, elsewhere in the Somali and eastern Oromia regions as fledging should be complete by mid-July. Low numbers of small swarms are expected to migrate to the Afar region, supplemented by other swarms from Somalia, Djibouti and perhaps a few from Yemen. Some swarms might continue to the northern highlands and the summer breeding areas in Sudan. Swarm maturation and egg-laying are expected to occur with the onset of the rains in Afar from late July onwards, causing hopper bands to form in August.

Djibouti

• **SITUATION**

During June, more small hopper bands of first to fifth instar hoppers were detected to the east of Grand Barra in the hills north of Ali Sabieh (1109N/4242E), suggesting that breeding was more widespread than originally thought, and undetected egg-laying and hatching occurred in May and the first half of June. On 11 June, a maturing swarm was seen southwest of Holhol (1118N/4255E). Several immature swarms and a few groups were seen in the southeast from Holhol to As-Eyla (1100N/4206E) and the Ethiopia border on the 25–28th, probably arriving from adjacent areas of Ethiopia and northwest Somalia as well as from local breeding. Ground teams treated 10 ha.

• **FORECAST**

Hopper bands in the Ali Sabieh region will continue to fledge, causing small immature groups and swarms to form during July. This is likely to be supplemented by other immature swarms and cross-border movements from adjacent areas of Ethiopia and northwest Somalia. If sufficient rain occurs in the south, there is a risk that some adults could persist, mature, and eventually breed.

Somalia

• **SITUATION**

During June, an increasing number of hopper bands formed and continued to develop on the coast, escarpment, and plateau of the northwest (Somaliland) between Boroma (0956N/4313E) and Burco (0931N/4533E) and, to a lesser extent, further east to northwest of Gardo (0930N/4905E) in Puntland. Fledging first commenced on the coast on the 13th; thereafter, an increasing number of small immature swarms formed. No further hopper bands were reported after the 26th. By the end of the month, coastal areas were nearly clear as the newly formed swarms had moved inland up the escarpment towards the plateau with a few continuing to adjacent areas of Ethiopia and Djibouti. Control operations treated 80 330 ha of which 61 420 ha were by air, involving insect growth regulators that helped reduce swarm formation.

• **FORECAST**

Small swarms are expected to move along the escarpment and plateau in the northwest where some could persist until vegetation dries out while others are likely to move into adjacent areas of Ethiopia and Djibouti. Any swarms in the northeast are likely to move west along the northern plateau. By the end of the forecast period, few locusts may be present, and the situation could become calm.

Kenya

• **SITUATION**

During June, surveys continued in northern and central counties, and no locusts were reported.

• **FORECAST**

Local breeding may have occurred in a few places of the north by any remnant populations that could give rise to small groups of adults during July. No significant developments are likely.

Egypt

• **SITUATION**

During June, isolated immature solitarious adults persisted on the Red Sea coast in the southeast between Abu Ramad (2224N/3624E) and the Sudan border and in subcoastal areas near El Sheikh El Shazly (2412N/3438E). Isolated mature solitarious adults were seen at one place near Lake Nasser and Tushka (2247N/3126E).

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During June, a half dozen third to fifth hopper bands were present in the far north near Qurayyat (3119N/3721E) and the Jordan border in the first half of the month. Scattered immature adults were present on the northern Red Sea coast near Yenbo (2405N/3802E) early in the month. On the 12–13th, a few immature swarms were seen between Tabuk (2823N/3635E) and the Jordan border. Several groups of immature adults appeared in the Hijaz Mountains near Medina and further south in the Asir Mountains near Taif (2115N/4021E), Bisha (2000N/4236E), Khamis Mushait (1819N/4245E), Abha (1813N/4230E), and close to the Yemen border up to 22 June. Ground teams treated 2 235 ha.

• **FORECAST**

A few groups and perhaps a few small immature swarms may persist in the Asir Mountains and move to Yemen in early July. Thereafter, no significant developments are likely.

Yemen

• **SITUATION**

During June, intensive surveys were carried out in the interior where low numbers of solitarious adults were seen maturing between Ataq (1435N/4649E) and

Bayhan (1452N/4545E), west of Al Abr (1608N/4714E), near Shabwah (1522N/4700E), in several wadis on the plateau north of Wadi Hadhramaut between Minwakh (1650N/4812E) and Thamud (1717N/4955E), and in the east near Hat (1719N/5205E) and the Oman border. On the 19th, an immature swarm was seen near Al Hazm (1610N/4446E) and on the following day near Sana'a (1521N/4412E), which may have come from earlier breeding in the Euphrates Valley close to the Iraq/Syria border. On the 26th, an immature swarm crossed into Saada Governorate from adjacent areas of Saudi Arabia. A few swarms were reported near Sada'a (1656N/4345E) during the following days. Ground teams treated 5 ha on the 19th.

• **FORECAST**

Small-scale breeding is likely to occur in areas of recent rainfall in the interior between Marib, Ataq and Thamud. This may be supplemented by immature groups and small swarms arriving from Saudi Arabia, the Yemen highlands, or the Horn of Africa in early July.

Oman

• **SITUATION**

During June, no locusts were seen in the northern interior between Ibra (2243N/5831E) and Nizwa (2255N/5731E), near Buraimi (2415N/5547E), on the northern coast between Jamma (2333N/5733E) and Sohar (2421N/5644E), and on the Musandam Peninsula.

• **FORECAST**

No significant developments are likely.

Iraq

• **SITUATION**

No locusts were reported during June.

• **FORECAST**

No significant developments are likely.

Jordan

• **SITUATION**

During the first week of June, small fourth instar hopper bands were scattered near farms in Zarqa Governorate south of Azraq (3150N/3649E) and close to the Saudi Arabia border. Thereafter, no further locusts were seen, and the situation remained calm.

• **FORECAST**

No significant developments are likely.

Bahrain, D.R. Congo, Israel, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UGANDA, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During June, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• **FORECAST**

No significant developments are likely.

Pakistan

• **SITUATION**

During June, no locusts were seen or reported in coastal and interior areas of Baluchistan, and in the summer breeding areas in Nara and Cholistan deserts.

• **FORECAST**

Low numbers of solitarious adults are likely to appear in Cholistan, Nara and Tharparkar during July where small-scale breeding is expected once the monsoon commences. No significant developments are likely.

India

• **SITUATION**

During June, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

Low numbers of solitarious adults are likely to appear in Rajasthan and Gujarat where small-scale breeding is expected once the monsoon commences. No significant developments are likely.

Afghanistan

• **SITUATION**

No locust reports were received during May.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues,

RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. [www.fao.org/locusts]

eLocust3 tools

FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data is critical for monitoring the situation and organizing control operations in each country and feeds into FAO's global early warning system.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch. French and Arabic versions will be available shortly. The PDF is meant for printing pocket-sized (A5) hard copies.
[http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
[http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust.
[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge.
[https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub.
[https://data.apps.fao.org]

Calendar

- **CLCPRO.** 10th session, Algiers, Algeria (October, tbc)
- **CRC.** 32nd session, Jeddah, Saudi Arabia (14–18 November)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas

- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas

- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas

- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding

- The process of reproduction from copulation to fledging

Recession

- Period without widespread and heavy infestations by swarms

Remission

- Period of deep recession marked by the complete absence of gregarious populations

Outbreak

- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge

- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

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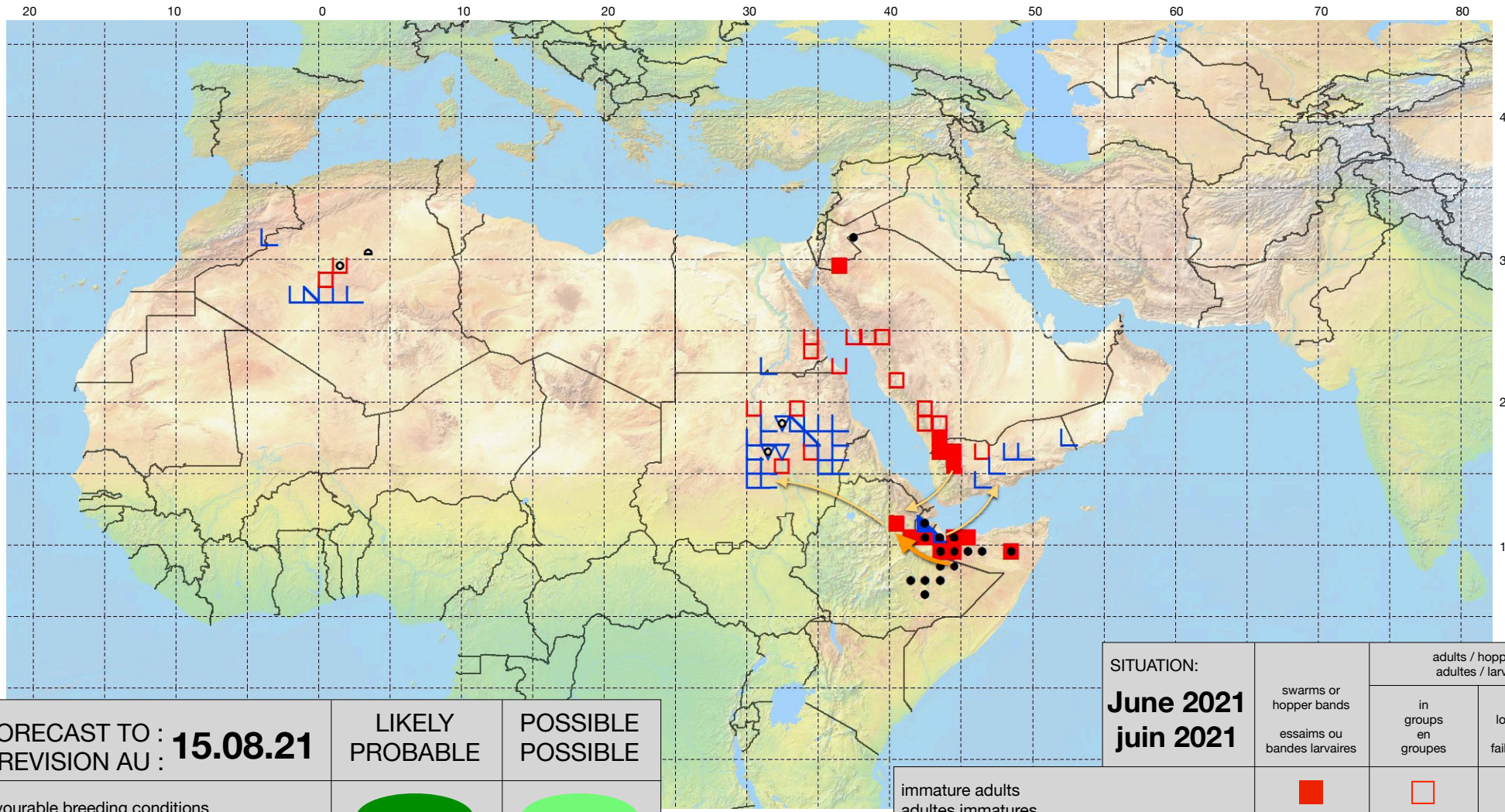


FORECAST TO : PREVISION AU : **15.08.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **June 2021 juin 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	⋀
egg laying or eggs pontes ou œufs	▼	▽	⋁
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	⌓

Food and Agriculture Organization of the United Nations

No. 514 3 AUGUST 2021

Desert Locust Bulletin

General situation during July 2021
Forecast until mid-September 2021

WESTERN REGION: CALM

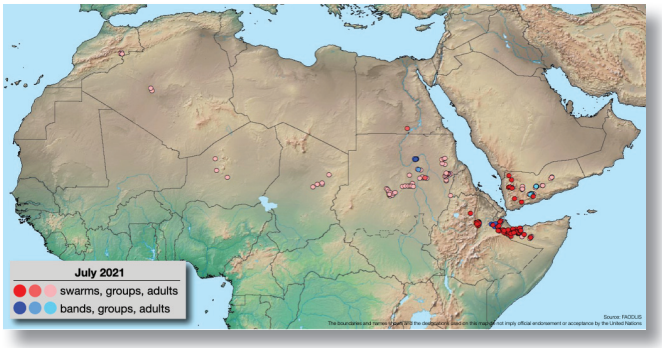
SITUATION. Scattered adults in **Morocco** (30 ha treated); isolated adults in central **Algeria** and **Niger**.
FORECAST. Small-scale breeding in the northern Sahel of **Mauritania**, **Mali**, **Niger,** and **Chad**.

CENTRAL REGION: THREAT

SITUATION. Control declines against last remaining hopper bands and immature swarms in northwest **Somalia** (27 162 ha treated), eastern **Ethiopia** (3 788 ha) and southeast **Djibouti** (55 ha); limited movement of swarms to northeast Ethiopia where rains allowed maturation, but few swarms seen. A few immature swarms in **Yemen** highlands move to interior where small-scale breeding is in progress. Bands and adult groups form from local breeding in northern Nile Valley of **Sudan** (525 ha). Immature adult group in southern **Egypt** (50 ha).
FORECAST. Laying, hatching, and band formation expected in northeast **Ethiopia** and southern **Djibouti**. A few immature swarms likely to persist in northwest **Somalia**. Scattered small-scale breeding in **Sudan** and western **Eritrea**. Breeding expected to increase in **Yemen** interior with possibility of small bands forming.

EASTERN REGION: CALM

SITUATION. No locusts present.
FORECAST. Small-scale breeding along both sides of the **Indo-Pakistan** border.



Summer breeding imminent in NE Ethiopia & elsewhere

Spring breeding has ended in eastern Ethiopia and northwest Somalia where control operations continue to decline as they reduce the number and size of the spring-bred immature swarms. As anticipated, at least several swarms migrated to northeast Ethiopia where above-average rains since mid-July allowed them to mature and probably lay eggs in the Afar Region and southern Djibouti. Although this could not be confirmed and very few swarms have been seen recently due to difficulties in accessing the breeding areas, hatching and hopper band formation should be expected from early August onwards that could give rise to new swarms after late September. A few swarms may have also continued to the highlands in northern Ethiopia where they could reappear in adjacent areas of Sudan and Eritrea for breeding. In Yemen, a few swarms moved through the highlands and at least one swarm reached the interior where good rains that fell during July will allow at least one generation of summer breeding and the formation of small hopper bands. So far, local breeding is already in progress. Widespread, good rains also fell throughout the summer breeding areas in the northern Sahel between Mauritania and western Eritrea as well as along the Indo-Pakistan border. As few locust infestations are present in these areas, breeding will be on a small scale and locust numbers will only increase slightly.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
E-mail: eclo@fao.org / faodlislocust@gmail.com
Internet: www.fao.org/ag/locusts
Facebook/Twitter: faolocust

Weather & Ecological Conditions in July 2021

Good rains fell throughout the summer breeding areas where conditions are improving. Above-normal rains in northeast Ethiopia.

WESTERN REGION

In the Sahel of West Africa, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards during July, reaching some 225 km further north than usual over northern Chad, north of Faya, in the second decade. During the first decade, light to moderate rains fell in northeast Mali (Adrar des Iforas, Tamesna), northern Niger (Tamesna), and northeast Chad while light rains fell in southeast Mauritania. During the remainder of the month, rainfall increased in these areas and moderate to heavy rains fell throughout the northern Sahel of Chad and in southern Tamesna of Mali and Niger. Rainfall was less widespread in Mauritania where moderate rains fell near Tidjikja and Aioun El Atrous, and light rains occurred near Kiffa and Nema. In southern Algeria, light to moderate rains fell near Tamanrasset and along the Mali border near Timeiaouine. Consequently, annual vegetation was becoming green and breeding conditions were improving in southern Tamesna of Mali and Niger, the central pasture areas in Niger, central and eastern Chad (southern Bahr el Gazel, southern Batha, Wadi Fira), and on a limited basis in southeast Mauritania near Timbedra.

CENTRAL REGION

In the Horn of Africa, above-normal rains fell in the Afar region of northeast Ethiopia, extending to the railway area north of Dire Dawa, Djibouti, northwest Somalia, and southern Eritrea. Annual vegetation was becoming green and breeding conditions were improving in southern Afar while green vegetation persisted on the plateau in northwest Somalia where temperatures declined, and strong winds prevailed. In the Arabian Peninsula, light to moderate rains fell along the Red Sea coast of Yemen during the first decade. Widespread moderate rains fell during the second decade throughout southern Saudi Arabia and the interior and Gulf of Aden coast of Yemen. Rainfall declined during the third decade but remained heavy in Yemen and southwest Saudi Arabia. Breeding conditions remain favourable in the interior of Yemen and may improve on the Red Sea coast near Jizan, Saudi Arabia and further south. In Sudan, the Inter-Tropical Convergence Zone (ITCZ) continued is seasonal movement northwards over the summer breeding areas of the interior, reaching north of Karima in the northern Nile Valley, some 250 km further north than usual, during the second decade. During the first decade, moderate rains fell in Darfur and light rains fell in southern North Kordofan. Rains improved during the second decade when moderate to heavy rains fell throughout North Kordofan and White Nile as well as the Bayuda Desert. Lighter rains continued during the third decade, extending to the Red Sea Hills south of Haiya. Good rains fell throughout the western lowlands in Eritrea. Consequently, annual vegetation was becoming green and breeding conditions improved in Darfur (west of El Fasher), in North Kordofan (central areas), north of Kassala, and in the western lowlands of Eritrea north of Teseney.

EASTERN REGION

The monsoon reached the western edge of the Indo-Pakistan summer breeding area on 13 July, which is about one week later than normal. During the third week, moderate rains fell in Rajasthan and adjacent areas of Tharparkar, Nara and Cholistan, and heavier rains fell near Jaisalmer, India and Nagarparkar, Pakistan. Rains were lighter during the last week of the month. So far, the cumulative rainfall total is normal in Rajasthan but below normal in Gujarat. As a result, annual vegetation was becoming green and breeding conditions were improving in most areas.

Area Treated

Control operations declined in July to 31 610 ha compared to 89 722 ha in June.

Djibouti	55 ha
Egypt	50 ha
Ethiopia	3 788 ha
Morocco	30 ha
Somalia	27 162 ha
Sudan	525 ha

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

- **SITUATION**

No surveys were carried out and no locusts were reported during July.

- **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly in areas of rainfall in the south and southeast.

Mali

- **SITUATION**

No surveys were carried out and no locusts were reported during July.

• **FORECAST**

Small-scale breeding will cause locust to numbers to increase slightly in areas of rainfall in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna.

Niger

• **SITUATION**

During the last week of July, isolated mature solitarious adults were seen at two places on the western edge of the Air Mountains between Agadez (1658N/0759E) and Arlit (1843N/0721E). Isolated immature adults were seen at one location southeast of the Air Mountains.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly in areas of rainfall in the central pasture areas and on the Tamesna Plains.

Chad

• **SITUATION**

During the last decade of July, isolated mature solitarious adults were seen at a few places near Kalait (1550N/2054E) in the east. No locusts were seen in central and northeastern areas between Moussoro (1338N/1629E) and Fada (1714N/2132E).

• **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly in central, eastern and northeastern areas.

Senegal

• **SITUATION**

No locusts were reported during July.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

Algeria

• **SITUATION**

During July, low numbers of immature and mature solitarious adults were present near irrigated perimeters in the Adrar Valley (2753N/0017W) of the central Sahara.

• **FORECAST**

Scattered adults may remain in the Adrar Valley where limited breeding could occur on the edges of irrigated fields. Small-scale may occur in areas of recent rainfall in the extreme south near Tamanrasset and borders of Mali and Niger.

Morocco

• **SITUATION**

During 1–4 July, mature solitarious adults seen at densities up to 800 adults/ha in irrigated palm farms east of Errachidia (3154N/0425W) along the southern side of the Atlas Mountains. Ground teams treated 30 ha.

• **FORECAST**

No significant developments are likely.

Libya

• **SITUATION**

No locusts were reported during July.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No reports were received during July.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During July, local breeding occurred in the northern Nile Valley near Karima (1832N/3148E) where a few second to fifth instar hopper bands and groups of hoppers and immature and mature adults formed in the second week. Mature solitarious adults were scattered throughout North Kordofan from Sodiri (1423N/2906E) to Khartoum Province, the Bayuda Desert, in the Nile Valley near Shendi (1641N/3322E), and along the western side of the Red Sea Hills from Kassala (1527N/3623E) and to north of Haiya (1820N/3621E). At the end of the month, an immature adult group was seen near Shendi. Ground teams treated 525 ha.

• **FORECAST**

Fledging will continue in the northern Nile Valley until about mid-August and few small adult groups could form. Small-scale breeding will cause locust numbers to increase within a large area between North Darfur and the Red Sea Hills.

Eritrea

• **SITUATION**

On 30 July, isolated mature solitarious adults were seen at one place in the southern part of the western lowlands about 10 km north of the Ethiopia border.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly in areas of rainfall in the western lowlands. A few small swarms from adjacent areas of northeast Ethiopia may appear in recent areas of rainfall on the southern coast.

Ethiopia

• **SITUATION**

During July, a few fifth instar hopper bands remained west of Ayasha (1045N/4234E) and south of Djibouti on the 1st. Several small immature swarms traversed west across the northern Rift Valley and began appearing along the

eastern escarpment of the Amhara Highlands on the 1st near Kombolcha (1105N/3944E) and continued to mid-month. Most of the swarms were concentrated in the foothills within an area of about 70 x 50 km and some had matured. One immature swarm was seen on the 1st in the Amhara Highlands about 150 km northwest of Kombolcha in North Wollo zone and near Ayasha on the 12th. There were also unconfirmed reports of a few swarms in southeast Tigray and near Gonder in northwest Amhara. Control operations treated 3 788 ha of which 3 538 ha were by air. No operations were conducted after 16 July.

• **FORECAST**

Swarm breeding is expected to occur on a small scale in Afar and west of the railway area south of Djibouti. Hatching and the formation of small hopper bands is likely to commence in early August and continue during September. There is a lower risk of limited breeding occurring in parts of the highlands in Amhara and Tigray.

Djibouti

• **SITUATION**

During the first week of July, a few small hopper bands were present in the southwest near As-Eyla (1100N/4206E) and to the east of Grand Barra in the hills north of Ali Sabieh (1109N/4242E) where breeding took place in June. There were also a few reports of immature swarms north of Ali Sabieh, probably from local breeding and adjacent areas of northwest Somalia. Ground teams treated 55 ha. No surveys were conducted after the first week of July.

• **FORECAST**

Small-scale breeding may occur in areas of recent rainfall in the south that could lead to hatching and hopper band formation from early August onwards.

Somalia

• **SITUATION**

During July, a few late instar hopper bands persisted in the northwest (Somaliland) on the escarpment between Hargeisa (0931N/4402E) and Berbera (1028N/4502E) and on the plateau near Boroma (0956N/4313E) until the 9th. The number and size of immature swarms declined steadily, remaining concentrated on the plateau near the escarpment between Boroma and Burco (0931N/4533E) with a few on the coast near Berbera and Bulhar (1023N/4425E), and one about 100 km east of Burao on the plateau. Cooler temperatures on the plateau and strong persistent winds limited swarm movement. There was a dramatic decline in control compared to June as operations using biopesticides treated 27 162 ha during July of which 26 147 ha were by air. No locusts were seen during surveys in the northeast (Puntland).

• **FORECAST**

A few small swarms are likely to persist on the plateau and concentrate in areas of recent rainfall. The swarms are expected to remain immature due to low temperatures.

Kenya

• **SITUATION**

During July, surveys continued in northern and central counties, and no locusts were reported.

• **FORECAST**

No significant developments are likely.

Egypt

• **SITUATION**

During July, ground teams treated 50 ha of a group of immature adults near Lake Nasser and Tushka (2247N/3126E) on the 18th. No locusts were seen on the Red Sea coast in the southeast between Abu Ramad (2224N/3624E) and the Sudan border and in adjacent subcoastal areas of Wad Diib.

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During July, no locusts were seen in the Asir Mountains from Taif (2115N/4021E) to the Yemen border, on the Red Sea coast near Qunfidah (1909N/4107E) and Jizan (1656N/4233E), and in the southwest interior near Najran (1729N/4408E).

• **FORECAST**

Locusts could appear and breed in areas of recent rainfall along the southern coastal plains near Jizan and in the interior near Najran.

Yemen

• **SITUATION**

During July, a few immature and mature swarms were present in the highlands between Sada'a (1656N/4345E) to Sana'a (1521N/4412E) in the first week. Thereafter, an immature swarm was seen further south near Ibb (1358N/4411E) in the second week and southwest of Al Baydha (1405N/4542E) in the third week. On the 23rd, a mature swarm reached the edge of the summer breeding areas in the interior south of Ataq (1435N/4649E). Scattered immature and mature solitarious adults were present in the interior near Marib (1527N/4519E) and in Wadi Hadhramaut and the plateau to the north. Small-scale breeding occurred near Nisab (1430N/4629E) and Shabwah (1522N/4700E), giving rise to low numbers of solitarious hoppers. No locusts were seen elsewhere in the interior, including on the plateau east of Wadi Hadhramaut to Oman.

• **FORECAST**

Locust numbers are expected to increase as small-scale breeding continues and extends in the interior from Marib and Ataq to Wadi Hadhramaut and the eastern plateau. A limited number of hopper bands could form from swarm laying.

Oman

• SITUATION

During July, no locusts were seen in the northern interior between Adam (2223N/5731E) and Buraimi (2415N/5547E), on the Musandam Peninsula, and in the south between Salalah (1700N/5405E) and Marmul (1808N/5516E).

• FORECAST

No significant developments are likely.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UGANDA, and UAE

• FORECAST

No significant developments are likely.

EASTERN REGION

Iran

• SITUATION

During July, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• FORECAST

No significant developments are likely.

Pakistan

• SITUATION

During July, no locusts were seen or reported in coastal and interior areas of Baluchistan, and in the summer breeding areas in Tharparkar, Nara and Cholistan deserts.

• FORECAST

Small-scale breeding is expected to occur in parts of Cholistan, Nara and Tharparkar. No significant developments are likely.

India

• SITUATION

During July, no locusts were seen by surveys in Rajasthan and Gujarat.

• FORECAST

Small-scale breeding is expected to occur in parts of Rajasthan and Gujarat. No significant developments are likely.

Afghanistan

• SITUATION

No locust reports were received during July.

• FORECAST

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa.
[www.fao.org/locusts]

eLocust3 tools

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Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch.

French and Arabic versions will be available shortly. The PDF is meant for printing pocket-sized (A5) hard copies. [http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited. [http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust. [https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge. [https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub. [https://data.apps.fao.org]

Calendar

- **CLCPRO.** 10th session, Algiers, Algeria (October, tbc)
- **CRC.** 32nd session, Jeddah, Saudi Arabia (14–18 November)
- **DLCC.** 42nd session, Nairobi, Kenya (8–11 March 2022, tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding

in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

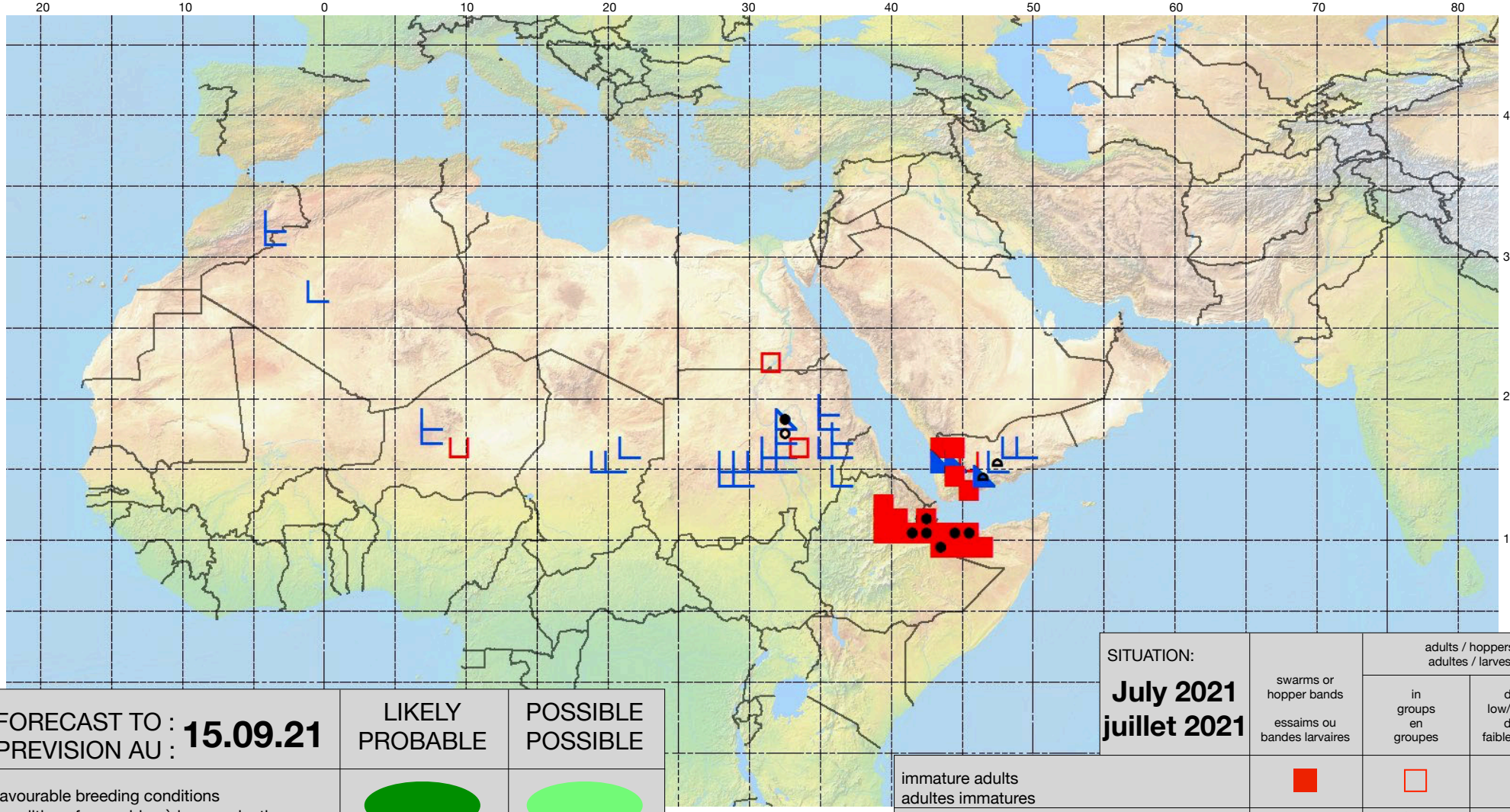
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

514



FORECAST TO : PREVISION AU : **15.09.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **July 2021 juillet 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	⊔

Food and Agriculture Organization of the United Nations

No. 515 3 SEPTEMBER 2021

Desert Locust Bulletin

General situation during August 2021
Forecast until mid-October 2021

WESTERN REGION: CALM

SITUATION. Scattered adults and small-scale breeding in **Chad**.

FORECAST. Small-scale breeding in the northern Sahel of **Mauritania**, **Mali**, **Niger,** and **Chad**.

CENTRAL REGION: THREAT

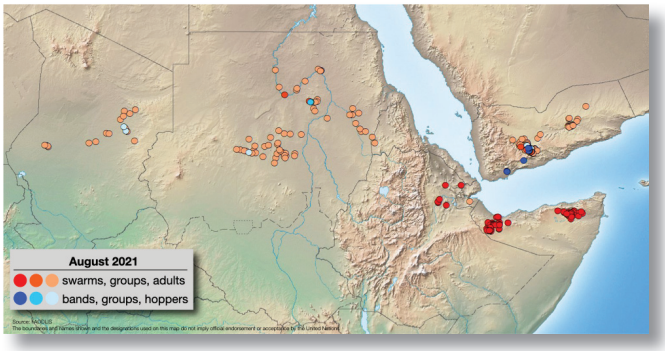
SITUATION. Control operations declined against a few remaining immature swarms in northern **Somalia** (11 985 ha treated); no access in northeast **Ethiopia** (Afar) where laying, hatching and band formation likely, a few bands form in the north; scattered adults in **Djibouti**. Scattered adults and small-scale breeding in **Sudan** with a few groups; scattered adults in western **Eritrea**. Breeding in **Yemen** interior and southern coast with few hopper bands forming; scattered adults elsewhere. Isolated adults in **Egypt**.

FORECAST. A few immature swarms likely to persist in northern **Somalia**. Band and swarm formation expected in northeast **Ethiopia** and perhaps southern **Djibouti** with swarms moving to **Eritrea**, eastern Ethiopia, and northern Somalia for maturation and breeding in October. New swarms could form in **Yemen** interior with eventual migration to coastal areas for winter breeding. Small groups may form in **Sudan** as vegetation dries out.

EASTERN REGION: CALM

SITUATION. No locusts present.

FORECAST. Small-scale breeding along both sides of the **Indo-Pakistan** border will decline as the monsoon retreats.



Bands likely in inaccessible areas of NE Ethiopia

A few small immature swarms persisted in northern Somalia where control operations declined. Although small-scale breeding was underway in Sudan, Chad and Yemen, no breeding was detected in other summer breeding areas in West Africa and along the Indo-Pakistan border despite good rains. The primary concern remains in northeast Ethiopia where hopper bands are likely to be forming but breeding areas cannot be accessed by ground and aerial teams due to insecurity. Similarly, limited breeding is likely to be underway in parts of northern Ethiopia, but limited access has hampered widespread field operations. Consequently, swarms are likely to start forming in northeast Ethiopia at the end of September and continue into October. As vegetation dries out, the swarms are expected to migrate north to winter breeding areas along the coast of Eritrea and eastwards to eastern Ethiopia and northern Somalia where they are expected to join any remaining immature swarms in northern Somalia, mature, and lay eggs with the onset of seasonal rains in October. Given the complete absence of data and information from the Afar region in northeast Ethiopia, it is nearly impossible to predict with precision the scale of the breeding and subsequent migration. Therefore, preparatory steps will need to be taken in advance to respond once swarms appear in adjacent areas. Elsewhere, breeding occurred in the interior of Yemen, giving rise to some hopper bands. New swarms could form from late September onwards and eventually move to winter breeding areas along the Red Sea in Yemen and southwest Saudi Arabia.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

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Internet: www.fao.org/ag/locusts
Facebook/Twitter: faolocust

Weather & Ecological Conditions in August 2021

Breeding conditions remained favourable in northeast Ethiopia as well as in the Sahel of West Africa and Sudan.

WESTERN REGION

In the Sahel of West Africa, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards during August, reaching its peak northward position about mid-month over Mauritania (Ouadane), the Mali/Niger/Algeria border, and northeast Chad (Fada). In Mauritania, the ITCZ was about 115 km further north than usual during the second decade while it was slightly further south than normal over northeast Mali and northwest Niger. Nevertheless, good rains fell in all the summer breeding areas of the northern Sahel from western Mauritania to eastern Chad, especially during the first two decades of the month. Thereafter, rains started to decline in some areas as the ITCZ began its southerly retreat. Consequently, ecological conditions were favourable for breeding throughout southern Mauritania, northern Mali and Niger, and in Chad. In northwest Africa, mainly dry conditions prevailed.

CENTRAL REGION

In the Horn of Africa, above-normal rains continued to fall at times in the Afar region of northeast Ethiopia that extended to the railway area north of Dire Dawa, Djibouti, northwest Somalia, and southern Eritrea. A few showers were reported in northeast Somalia. Consequently, breeding conditions remained favourable in Afar and low-lying valleys in Amhara while sufficient vegetation was present for locust survival on the Somali plateau. In Sudan, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal movement northwards, reaching Dongola during the first decade, which was some 130 km further north than usual. However, it retreated more than 200 km further south than usual during the second decade, lying near Abu Uruq in North Kordofan. Consequently, good rains fell from North Kordofan to the Red Sea Hills during the first decade, but thereafter rainfall declined and mainly occurred in the southern portion of the summer breeding area. Good rains extended into the western lowlands of Eritrea. As a result, breeding conditions remained favourable within a large area between Chad and Eritrea. In the Arabian Peninsula, good rains fell during the first decade in coastal and interior areas of southwest Saudi Arabia between Jizan and Najran, and in Yemen on the Red Sea and Gulf of Aden coast, highlands, and southern interior areas between Marib and Shabwah. Good rains continued during the second decade in Yemen in coastal and highland areas. Ecological conditions were favourable for breeding along the coastal plains from Jizan, Saudi Arabia to Aden, Yemen as well as in parts of the interior in southern Yemen.

EASTERN REGION

The monsoon performed poorly during August in the summer breeding areas along both sides of the Indo-Pakistan border, resulting in little rainfall except for some showers in northern areas of Rajasthan and adjacent Cholistan, Pakistan. From the second decade onwards, there was a substantial deficit of rainfall in Rajasthan. Consequently, green vegetation and favourable breeding conditions were limited.

Area Treated

Control operations declined substantially in August to 12 165 ha compared to 31 610 ha in July.

Somalia	11 985 ha
Sudan	180 ha

Desert Locust Situation and Forecast

WESTERN REGION

ALGERIA

• **SITUATION**

During August, no locusts were seen in the Adrar Valley (2753N/0017W) of the central Sahara and near Tamanrasset (2250N/0528E) in the south.

• **FORECAST**

Scattered adults may remain in the Adrar Valley where limited breeding could occur on the edges of irrigated fields. Small-scale may occur in areas of recent rainfall in the extreme south near the borders of Mali and Niger.

CHAD

• **SITUATION**

During August, isolated immature and mature solitarious adults were present in a few places in Kanem, Batha, and in the northeast between Kalait (1550N/2054E) and Fada (1714N/2132E). Small-scale breeding occurred near Kalait where isolated third and fourth instar hoppers were seen during the last decade.

• forecast

Small-scale breeding is likely to occur in areas of recent rainfall from Kanem to the northeast, causing locust numbers to increase slightly. Once vegetation begins to dry out, a few small groups may form in some areas.

Libya

• **SITUATION**

No locusts were reported during August.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

No surveys were carried out and no locusts were reported during August.

• **FORECAST**

Small-scale breeding will cause locust to numbers to increase slightly in areas of rainfall in the Adrar des Iforas, Tilemsi Valley, Timetrine and Tamesna.

Mauritania

• **SITUATION**

No surveys were carried out and no locusts were reported during August.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly in areas of rainfall in the south and southeast during September and decline thereafter.

Morocco

• **SITUATION**

No locusts were reported during August.

• **FORECAST**

No significant developments are likely.

Niger

• **SITUATION**

During August, no locusts were seen on the Tamesna Plains between In Abangharit (1754N/0559E) and Arlit (1843N/0721E) and in the Air Mountains.

• **FORECAST**

Small-scale breeding is likely to occur in areas of recent rainfall on the Tamesna Plains and in the Air Mountains, causing locust numbers to increase slightly. Once vegetation begins to dry out, a few small groups may form in some areas.

Senegal

• **SITUATION**

No locusts were reported during August.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during August.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Djibouti

• **SITUATION**

On 19 August, scattered immature and mature solitarious adults were seen south of Arta (1131N/4251E) near Petit Bara. No locusts were seen in the south or north.

• **FORECAST**

Small-scale breeding is likely to occur in areas of recent rainfall in the south that could cause adults to form a few small immature groups and swarms from late September onwards.

Egypt

• **SITUATION**

During August, a few isolated immature solitarious adults were seen near farms west of Al Minya (2805N/3045E) mixed with African Migratory Locusts. No locusts were seen near Lake Nasser and on the Red Sea coast in the southeast.

• **FORECAST**

No significant developments are likely.

Eritrea

• **SITUATION**

On 5 August, scattered mature solitarious adults were seen at one place in the southern part of the western lowlands near Teseney (1506N/3639E). No locusts were reported thereafter.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly in areas of rainfall in the western lowlands. At the end of the forecast period, a few small immature swarms from Afar in northeast Ethiopia may appear in the highlands moving towards the Red Sea coast.

Ethiopia

• **SITUATION**

During August, several mature swarms were reported in the Afar region near Semera and close to the Djibouti/Eritrea border up to the 17th. As ecological conditions were favourable, the swarms almost certainly laid eggs and hatching and band formation are likely to have occurred by the end of the month. However, this could not be confirmed as all ground and aerial operations were suspended due to insecurity. Elsewhere, no locusts were seen during surveys carried out in the Somali region from Dire Dawa (0935N/4150E) and Ayasha (1045N/4234E) to Jijiga (0922N/4250E) and Degeh Bur (0813N/4333E) and in

the southeast between El Kere (0550N/4205E) and Dolo (0410N/4203E).

• **FORECAST**

Hatching and band formation are likely to continue during early September in the Afar region where immature swarms could start to form at the end of September and continue during October. As conditions dry out, the swarms are expected to move north to Eritrea and southeast to the Somali region where breeding could occur if rains fall.

Kenya

• **SITUATION**

During August, surveys continued in northern and central counties, and no locusts were reported.

• **FORECAST**

No significant developments are likely.

Oman

• **SITUATION**

During August, no locusts were seen in the northern interior between Ibra (2243N/5831E) and Buraimi (2415N/5547E), on the Musandam Peninsula, the Batinah coast, in the northeast near Sur (2234N/5930E), and on the interior plateau in the south near Thumrait (1736N/5401E).

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During August, no locusts were seen in the southwest close to the Yemen border on the Red Sea coast near Jizan (1656N/4233E) and in the interior near Najran (1729N/4408E).

• **FORECAST**

Low numbers of locusts could appear along the southern coastal plains near Jizan and breed on a small scale in areas of recent rainfall.

Somalia

• **SITUATION**

During August, locust infestations continued to decline in the northwest (Somaliland) where several small immature swarms persisted on the plateau north of Hargeisa (0931N/4402E). At times, a few small immature swarms were seen on the coast near Bulhar (1023N/4425E). After mid-month, a few adults were maturing. In the northeast (Puntland), a few immature swarms were seen at times between Erigavo (1040N/4720E) and Iskushuban (1017N/5014E), which are likely to have come from Somaliland. By the end of the month, the number of sightings had increased in Puntland and decreased in Somaliland. No locusts were seen in central areas as far south as Galkayo (0646N/4725E). Control operations treated 11 985 ha of which 11 498 ha were by air.

• **FORECAST**

A few small swarms are likely to persist on the plateau and concentrate in areas of recent rainfall in the northwest and northeast. The swarms are expected to remain immature until seasonal rains occur in October that could allow for a generation of breeding.

Sudan

• **SITUATION**

During August, low numbers of mature solitarious adults were scattered throughout the summer breeding areas in North Kordofan between Hamrat Esh Sheikh (1438N/2756E), Umm Saiyala (1426N/3112E), and Abu Uruq (1554N/3027E), in the Bayuda Desert, and near the Atbara River between Ed Damer (1734N/3358E) and Kassala (1527N/3623E). In the Nile Valley, scattered immature and mature solitarious adults were present between Dongola (1910N/3027E) and Abu Hamed (1932N/3320E), including a group of immature adults near Ed Debba (1803N/3057E). Small-scale breeding occurred in North Kordofan near Sodiri (1423N/2906E) where first to fourth instar solitarious hoppers were seen at the end of the month. Breeding also occurred in the Bayuda Desert where a few groups of hoppers and adults were present. No locusts were seen in West and North Darfur, West Kordofan, Khartoum, Gezira, Blue Nile, Sennar, Gedaref, and Red Sea states. Ground teams treated 180 ha on 3 August.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase slightly within a large area between North Darfur and the Red Sea Hills. Once vegetation dries out, a few small groups may form.

Yemen

• **SITUATION**

During August, small-scale breeding occurred in the interior between Bayhan (1452N/4545E) and Ataq (1435N/4649E) where mainly scattered solitarious adults and a few groups were seen laying eggs. Hatching started during the second week, giving rise to hoppers and bands. A few bands were also detected at the base of the foothills in coastal and subcoastal areas north of Aden (1250N/4503E) and south of Al Baydha (1405N/4542E). Elsewhere in the interior, scattered mature solitarious adults were seen near Shabwah (1522N/4700E), near Sayun (1559N/4844E) in Wadi Hadhramaut, and on the plateau towards Thamud (1717N/4955E). No locusts were seen in Marib and Al-Mahra governorates.

• **FORECAST**

Locust numbers will continue to increase due to breeding and more band formation in southern areas of the interior where a few small swarms are likely to form from mid-September onwards, especially if vegetation begins to dry out. Any swarms that do form are likely to eventually reach the Red Sea and Gulf of Aden coast for winter breeding.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UGANDA, and UAE

• FORECAST

No significant developments are likely.

EASTERN REGION

Afghanistan

• SITUATION

No locust reports were received during August.

• FORECAST

No significant developments are likely.

India

• SITUATION

During August, no locusts were seen by surveys in Rajasthan and Gujarat.

• FORECAST

Small-scale breeding may occur in parts of Rajasthan and Gujarat. No significant developments are likely.

Iran

• SITUATION

During August, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• FORECAST

No significant developments are likely.

Pakistan

• SITUATION

During August, no locusts were seen or reported in the summer breeding areas in Tharparkar, Nara and Cholistan deserts as well as west of Karachi in the Lasbela (2614N/6619E) area.

• FORECAST

Small-scale breeding may occur in parts of Cholistan, Nara and Tharparkar. No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa.
[www.fao.org/locusts]

eLocust3 tools

In addition to the original eLocust3 tablet, FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data are critical for monitoring the situation and organizing control operations in each country, and feeds into FAO's global early warning system in near real time.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

eLocust3mPRO

The eLocust3m mobile app now includes a PRO module to be used by well-trained locust teams for entering complete data on ecology, weather, locust, control, and safety. Teams that return to network coverage at the end of the day can use eLocust3mPRO while those teams that remain for several days in areas without coverage should continue to use the original eLocust3 tablet that sends data via satellite. The updated eLocust3m app will be available for Android smartphones on the Google Play Store.
[https://play.google.com/store/apps/details?id=plantvillage.locustsurvey&hl=en&gl=US]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch.

Amharic and Somali versions are available now while French and Arabic versions will be coming soon. The SOPs are pocket-sized and meant to be used in the field. [http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited. [http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

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Hand-in-Hand geospatial platform

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Calendar

- **CLCPRO.** 10th session, Algiers, Algeria (tbc)
- **CRC.** 32nd session, Jeddah, Saudi Arabia (14–18 November)
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Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding

in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

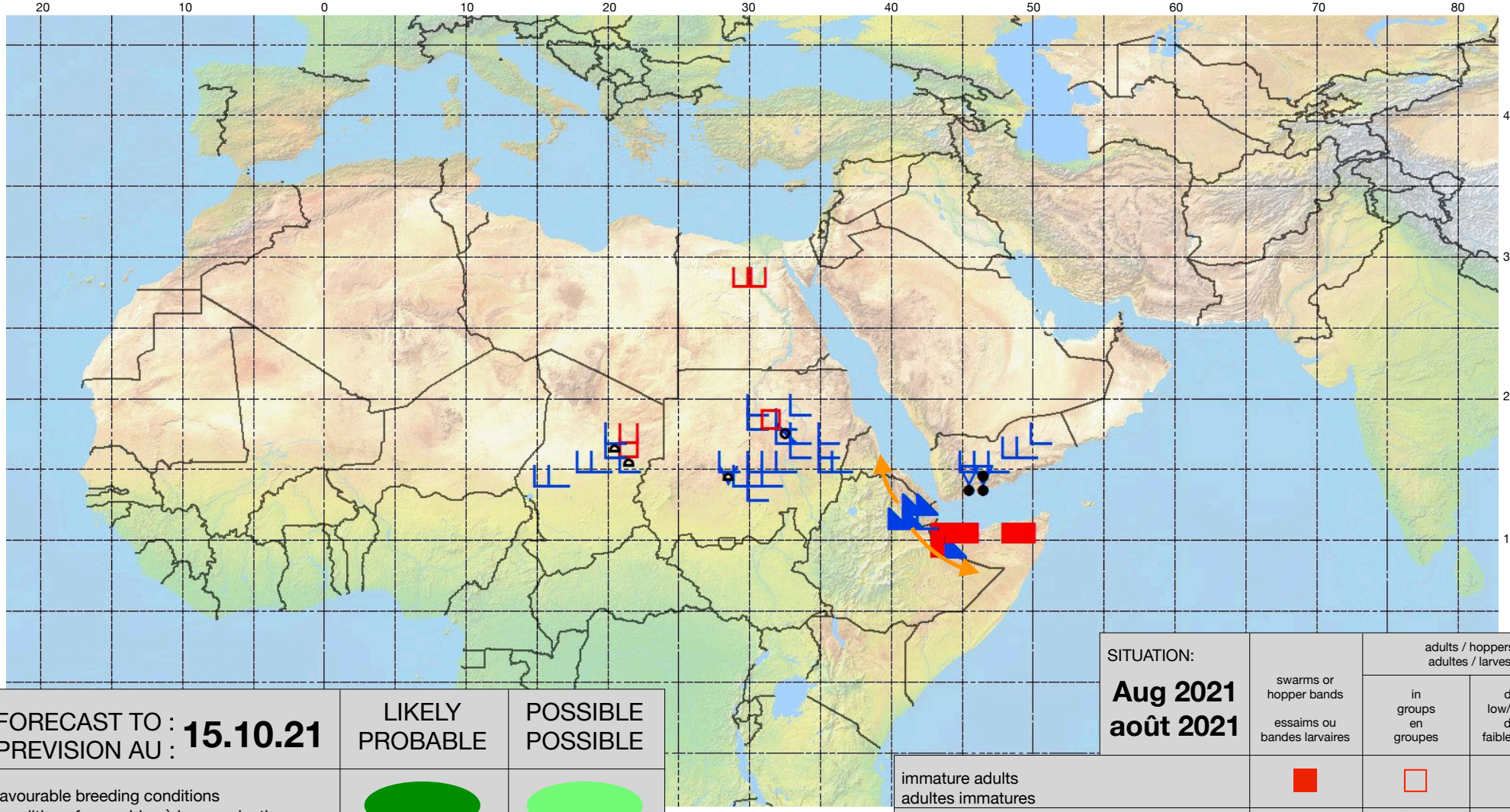
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

515



FORECAST TO : PREVISION AU : **15.10.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Aug 2021 août 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	◘	◙	⊔

Food and Agriculture Organization of the United Nations

No. 516 1 OCTOBER 2021

Desert Locust Bulletin

General situation during September 2021
Forecast until mid-November 2021

WESTERN REGION: CALM

SITUATION. Scattered hoppers and adults from local breeding in **Mali** and **Chad**.

FORECAST. No significant developments.

CENTRAL REGION: THREAT

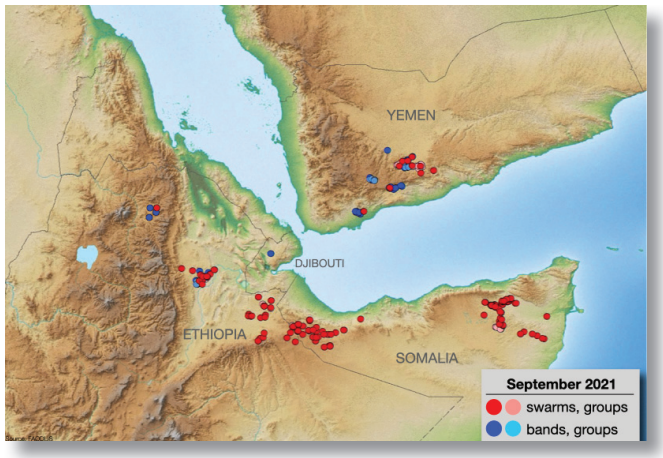
SITUATION. Control operations continue in northern **Somalia** (9 972 ha treated) and started in eastern **Ethiopia** (3 657 ha) against a few remaining small spring-bred immature swarms; hopper bands and new immature swarms form in the northeast (Afar) and north (Tigray, Amhara) of Ethiopia where survey and control were limited due to access and insecurity; hopper bands form in **Djibouti**. Hopper bands and swarms form in **Yemen** interior (417 ha) where control limited by beekeepers. Small-scale breeding in **Sudan** (1 400 ha) with a few hopper and adult groups. Isolated adults in **Egypt**.

FORECAST. More immature swarms will form in northeast and northern **Ethiopia** and move to the **Eritrea** Red Sea coast and eastern Ethiopia, including adjacent areas of northern **Somalia**. Maturation and breeding will occur with the onset of the rains in both destinations. A few small swarms may also form in **Djibouti** and move to Somalia. More small swarms will form in the **Yemen** interior, some of which could move to the Gulf of Aden coast and Red Sea coast of Yemen and **Saudi Arabia** for winter breeding while others may cross to northern Somalia. A few small groups may form in **Sudan** and move to the Red Sea coast for winter breeding.

EASTERN REGION: CALM

SITUATION. No locusts present.

FORECAST. No significant developments.



New swarms form in NE Ethiopia

The locust situation remains serious in the Horn of Africa and Yemen. As anticipated, new immature swarms began to form after mid-September in the summer breeding areas of northeast Ethiopia and most likely in adjacent areas of the northern highlands where hopper bands were reported. The scale of the breeding is not well known, and control operations could not be conducted due to insecurity. Although limited field operations began to resume in some areas by the end of the month, more small immature swarms will form in Afar, Tigray, and Amhara regions of Ethiopia during October. As vegetation dries out, they will migrate north through the highlands to Eritrea and the Red Sea coast as well as east perhaps through Djibouti at times to eastern Ethiopia and northern Somalia. October rains that are expected in the Somali region of eastern Ethiopia and adjacent plateau and coastal areas of northern Somalia will allow the summer-bred swarms and the remaining spring-bred swarms to mature and lay eggs, giving rise to hatching and hopper band formation from about early November onwards. Similarly, any swarms that reach the Red Sea coast of Eritrea from northern Ethiopia are likely to mature and breed once winter rains commence. Although limited control operations were carried out in the interior of Yemen, more small swarms are expected to form and move to coastal areas along the Red Sea and Gulf of Aden for eventual breeding. A few swarms may cross to northern Somalia while any swarms that reach the Red Sea coast of Yemen could continue to adjacent coastal areas of southwest Saudi Arabia. Elsewhere, the situation is calm.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

Telephone: +39 06 570 52420 (7 days/week, 24 hr)
E-mail: eclo@fao.org / faodislocust@gmail.com
Internet: www.fao.org/ag/locusts
Facebook/Twitter: faolocust

Weather & Ecological Conditions in September 2021

Seasonal rains came to an end in most summer breeding areas and vegetation was starting to dry out.

WESTERN REGION

In the Sahel of West Africa, the Inter-Tropical Convergence Zone (ITCZ) began its seasonal retreat southwards during the first decade of the month, moving further south than normal over Mauritania, Mali, and Niger. However, it remained more than 100 km further north than usual over Mauritania during the second decade. As a result, showers were lighter and less frequent in northern parts of the Sahel compared to August. Rains declined in all breeding areas of the northern Sahel after the first week. Consequently, vegetation began to dry out in some areas at the end of the month, for example, in southern Mauritania and western Chad, but remained green in central and eastern areas of Chad. Light rain fell at times during the second decade in west and northwest Mauritania, extending into southern areas of the Western Sahara. In northwest Africa, dry conditions prevailed.

CENTRAL REGION

In the Horn of Africa, light to moderate rain continued to fall in central and southern areas of Afar region in northeast Ethiopia and adjacent areas in Djibouti during the first decade. Thereafter, rainfall declined in all areas. Good rains fell in the Harar Highlands of eastern Ethiopia while heavier rains fell in the northern highlands. Sporadic showers occurred during the second decade along parts of the plateau in northern Somalia. In Sudan, the Inter-Tropical Convergence Zone (ITCZ) was more than 150 km further north during the first decade of September, hovering over the Bayuda Desert. Thereafter, it began its seasonal retreat southwards to Khartoum in the second decade. Consequently, light to moderate showers fell between Khartoum and Berber during the first decade with light rains at times in North Darfur, North Kordofan and in the east between the Nile Valley and the Red Sea Hills, extending to the western lowlands in Eritrea. Rainfall declined during the second decade in all areas and only light rains fell near Kassala and in western Eritrea. Nevertheless, vegetation remained green in most places except near Kassala where it was starting to dry out. In Yemen, very little rain fell in the interior, but vegetation remained green in southern parts near Ataq. In the winter breeding areas, light to moderate rains fell along the Red Sea coast of Yemen and, to a lesser extent, on the Gulf of Aden coast in the southwest during the first decade. Light rains continued during the second decade on the Red Sea coast in Yemen and extended to the Jizan coast in Saudi Arabia. Dry conditions prevailed in northern Oman.

EASTERN REGION

Light to moderate rains fell during the second week of September in Rajasthan of India, and adjacent areas of Tharparkar in Pakistan. Heavier rains fell further south in Gujarat, which had very little impact on the breeding areas to the north. During the remainder of the month, very little rain fell except for some sporadic showers during the last decade in Rajasthan. The seasonal withdrawal of the monsoon from Rajasthan which normally occurs about mid-September was delayed this year by at least two weeks because of Cyclone Gulab to the south. Consequently, rainfall this year in Rajasthan was higher than normal, allowing vegetation to remain green in most areas to the end of the month.

Area Treated

There was a slight increase in control operations during September to 15 446 ha compared to 12 165 ha in August.

Ethiopia	3 657 ha
Somalia	9 972 ha
Sudan	1 400 ha
Yemen	417 ha

Desert Locust Situation and Forecast

WESTERN REGION

ALGERIA

• SITUATION

During September, no locusts were seen in the Adrar Valley (2753N/0017W) of the central Sahara.

• FORECAST

No significant developments are likely.

CHAD

• SITUATION

During September, isolated second to sixth instar solitarious hoppers were present near Ziguey (1443N/1547E) in Kanem and near Kalait (1550N/2054E) and Fada (1714N/2132E) in the northeast. Isolated solitarious adults were maturing in these areas as well as in the Beurkia area (ca. 1524N/1800E) in southern Borkou and in parts of Biltine in the east.

• forecast

Isolated adults are likely to persist in areas that remain green between Kanem and Fada.

Libya

• **SITUATION**

No locusts were reported during September.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

During September, small-scale breeding was detected in the Adrar des Iforas of the northeast where scattered solitarious hoppers of all instars and isolated immature and mature solitarious adults were seen near Aguelhoc (1927N/0052E).

• **FORECAST**

Low numbers of locusts are likely to persist in parts of Timetrine and the Adrar des Iforas.

Mauritania

• **SITUATION**

No surveys were carried out and no locusts were reported during September.

• **FORECAST**

Low numbers of locusts maybe present and could persist in areas of recent rainfall in Inchiri and western Trarza.

Morocco

• **SITUATION**

No locusts were reported during September.

• **FORECAST**

No significant developments are likely.

Niger

• **SITUATION**

No locust surveys were carried out and no locusts were reported during September.

• **FORECAST**

Although small-scale breeding probably occurred in parts of the Tamesna Plains, only low numbers of adults are likely to persist in areas that remain green; thereafter, they may move into the Air Mountains.

Senegal

• **SITUATION**

No reports were received in September.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during September.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Djibouti

• **SITUATION**

On 7 September, two fifth instar hopper bands were seen in the northern interior near Dorra (1209N/4228E) in Tadjourah region.

• **FORECAST**

Small immature groups and swarms are expected to form in a few western and southern areas during October and move towards Somalia. A few small swarms from northeast Ethiopia may also transit through the country towards northwest Somalia.

Egypt

• **SITUATION**

During September, isolated immature solitarious adults were seen at the end of the month in the south near Lake Nasser and Tushka (2247N/3126E). No locusts were seen on the Red Sea coast in the southeast.

• **FORECAST**

No significant developments are likely.

Eritrea

• **SITUATION**

No locusts were seen during surveys in the western lowlands near Teseney (1506N/3639E) on 26–28 September.

• **FORECAST**

A low to moderate number of small immature swarms are likely to appear in the highlands from northern Ethiopia and move to the Red Sea coast for eventual maturation and egg-laying.

Ethiopia

• **SITUATION**

During September, there was an isolated report of second instar hopper bands during the first week in central Afar between Semera (1148N/4100E) and Chifra (1136N/4001E), followed by third to fifth instar bands after mid-month and the formation of new immature swarms, starting on the 20th. In Tigray, first instar hopper bands were seen in the first week south of Mekele (1329N/3928E) from earlier swarm breeding in July that affected at least seven woredas in the southeast. By the end of the month, new immature swarms were forming. A similar situation was reported in adjacent areas of Amhara (Wag Hemra) and Afar. Although communities and local experts were doing some limited control operations, most breeding areas were not accessible in Afar, Amhara, and Tigray. In the Somali region, an

increasing number of small immature swarms was seen after mid-month between Dire Dawa (0935N/4150E), Ayasha (1045N/4234E), and Jijiga (0922N/4250E) that were probably a mixture of remnant spring-bred swarms from adjacent areas of northwest Somalia and newly formed summer-bred swarms in Afar. Control operations treated 3 657 ha of which 3 102 ha were by air.

• **FORECAST**

An increasing number of immature swarms are expected to form in Afar, eastern Amhara and southeast Tigray regions from where they will migrate north to Eritrea and east to the eastern parts of the Somali region and adjacent areas of northern Somalia. Once rain falls in the Somali region, the swarms will mature and lay eggs that will start to hatch towards the end of the forecast period.

Kenya

• **SITUATION**

During September, surveys continued in northern and central counties, and no locusts were reported.

• **FORECAST**

No significant developments are likely.

Oman

• **SITUATION**

During September, no locusts were seen in the northern interior between Adam (2223N/5731E) and Buraimi (2415N/5547E), on the Musandam Peninsula, and along the Batinah coast.

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During September, no locusts were seen in the southwest close to the Yemen border on the Red Sea coast near Jizan (1656N/4233E) and in the interior near Najran (1729N/4408E).

• **FORECAST**

Low numbers of locusts could appear along the southern coastal plains near Jizan and breed on a small scale in areas that receive rainfall. This may be supplemented by a few swarms arriving from adjacent areas of Yemen.

Somalia

• **SITUATION**

During September, a limited number of small spring-bred swarms persisted on the plateau where they remained immature. As the month progressed, they become more active with increased sightings in the northwest (Somaliland) between Boroma (0956N/4313E) and Hargeisa (0931N/4402E) and in the northeast (Puntland) between Erigavo (1040N/4720E) and Iskushuban (1017N/5014E). Limited cross-border movements occurred west of Hargeisa. By the end of the month, a few swarms were starting to mature in the northeast. Scattered maturing adults were seen on the northwest coast near Silil (1058N/4326E). Control operations treated 9 972 ha of which 4 181 ha were by air.

• **FORECAST**

Low numbers of small swarms will persist on the plateau in the northwest and northeast with some cross border movements in the northwest. October rains should allow the swarms to mature and lay eggs on the plateau and perhaps on the northwest coast. This will cause hatching and band formation during November. Additional immature swarms are expected to arrive from northeast Ethiopia and perhaps a few from southern Yemen.

Sudan

• **SITUATION**

During September, small-scale breeding occurred in North Kordofan where second to fifth instar solitarious hoppers were present between El Obeid (1311N/3010E) and Abu Uruq (1554N/3027E) in the first week. Breeding also took place in the Bayuda Desert where small groups of late instar hoppers and immature adults formed during the second half of the month. Scattered immature and mature solitarious adults were present in both areas as well as in the east near Kassala (1527N/3623E). Scattered mature solitarious adults were also seen in the northern Nile Valley near Ed Debba (1803N/3057E), Dongola (1910N/3027E), and Wadi Halfa (2147N/3122E). Ground teams treated 1 400 ha.

• **FORECAST**

A few more small groups of hoppers and adults are likely to form in the Bayuda Desert and perhaps in parts of North Kordofan as vegetation dries out. Locusts may appear between the Nile Valley and the Red Sea Hills as adults move from the summer breeding areas to the Red Sea coast for winter breeding. There is low risk that a few small immature swarms from northern Ethiopia may arrive along the southern coastal plains.

Yemen

• **SITUATION**

During September, hopper groups and bands continued to be present in the interior between Bayhan (1452N/4545E) and Ataq (1435N/4649E), in the southern highlands near Al Baydha (1405N/4542E), and on the southern coast north of Lahij (1303N/4453E). Fledging commenced in these areas during the first week, giving rise to groups and several swarms of immature adults. Adults from earlier breeding matured and formed groups and at least one swarm near Ataq. The situation remains unclear in other areas of the interior due to insecurity and a lack of surveys. Control operations were limited by the presence of beekeepers, treating 417 ha.

• **FORECAST**

More adult groups and small swarms are expected to form from breeding in the interior. As vegetation dries out, the

swarms are likely to move into the highlands and to the coastal plains along the Gulf of Aden and the Red Sea where they will mature and breed once rainfall occurs.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UGANDA, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Afghanistan

• **SITUATION**

No locust reports were received during September.

• **FORECAST**

No significant developments are likely.

India

• **SITUATION**

During September, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Iran

• **SITUATION**

During September, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• **FORECAST**

No significant developments are likely.

Pakistan

• **SITUATION**

During September, no locusts were seen or reported in the summer breeding areas in Tharparkar, Nara and Cholistan deserts as well as west of Karachi in the Lasbela (2614N/6619E) area.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. [www.fao.org/locusts]

eLocust3 tools

In addition to the original eLocust3 tablet, FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data are critical for monitoring the situation and organizing control operations in each country, and feeds into FAO's global early warning system in near real time.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

eLocust3mPRO

The eLocust3m mobile app now includes a PRO module to be used by well-trained locust teams for entering complete data on ecology, weather, locust, control, and safety. Teams that return to network coverage at the end of the day can use eLocust3mPRO while those teams that remain for several days in areas without coverage should continue to use the original eLocust3 tablet that sends data via satellite. The updated eLocust3m app is available for Android smartphones on the Google Play Store.
[https://play.google.com/store/apps/details?id=plantvillage.locustsurvey&hl=en&gl=US]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch.

Amharic and Somali versions are available for Biology, Survey, and Control. The SOPs are pocket-sized and meant to be used in the field.
[http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
[http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust.
[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge.
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Hand-in-Hand geospatial platform

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Calendar

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- **DLCC.** 42nd session, Nairobi, Kenya (8–11 March 2022, tbc)
- **CLCPRO.** 10th session, Algiers, Algeria (tbc)

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- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding

in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

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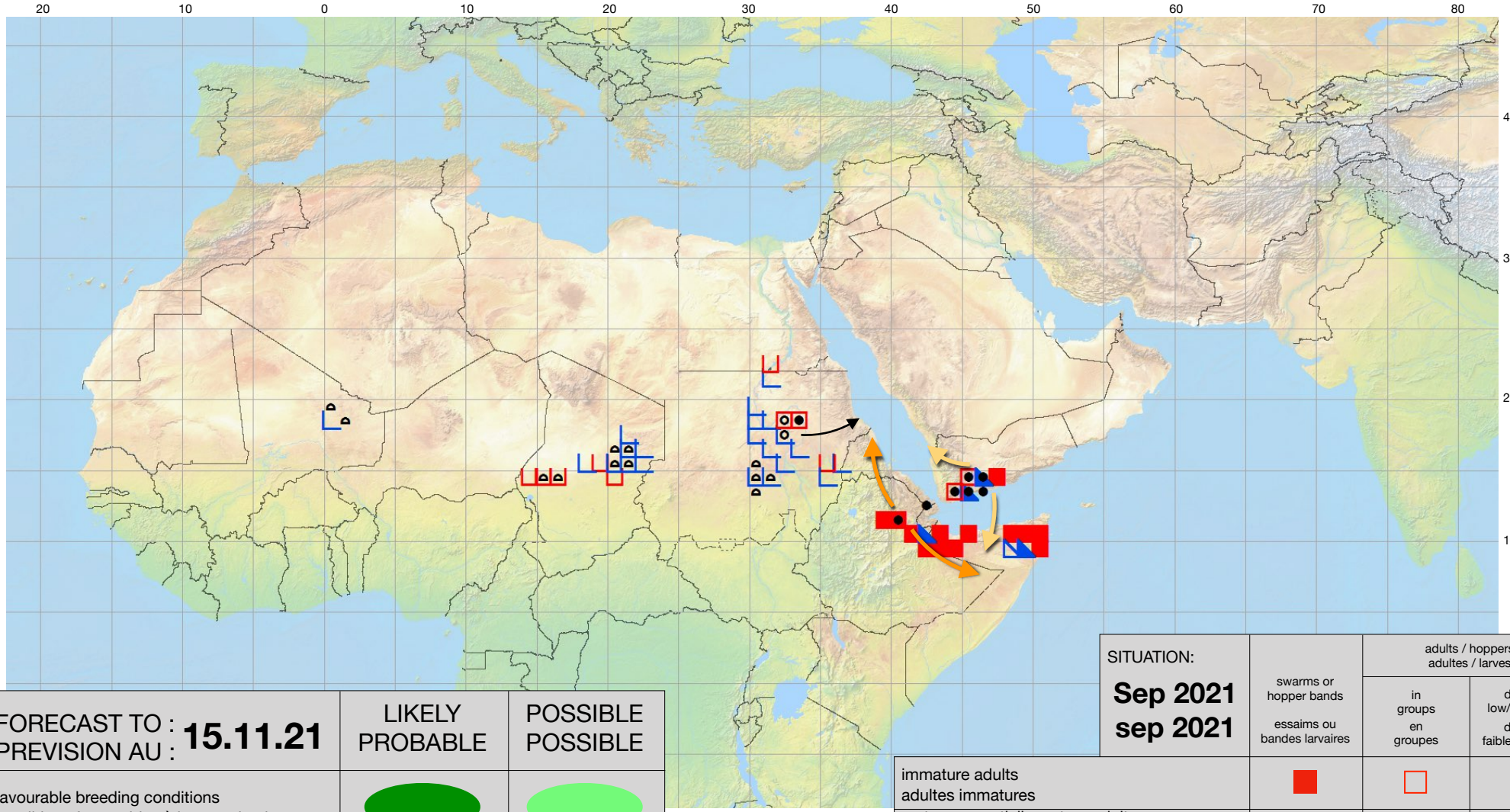


FORECAST TO : PREVISION AU : **15.11.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Sep 2021** **sep 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	●	○	⌓

Food and Agriculture Organization of the United Nations

No. 517 3 NOVEMBER 2021

Desert Locust Bulletin

General situation during October 2021
Forecast until mid-December 2021

WESTERN REGION: CALM

SITUATION. Scattered hoppers and adults from local breeding in **Niger**; scattered adults in **Chad** and **Morocco**.

FORECAST. No significant developments.

CENTRAL REGION: THREAT

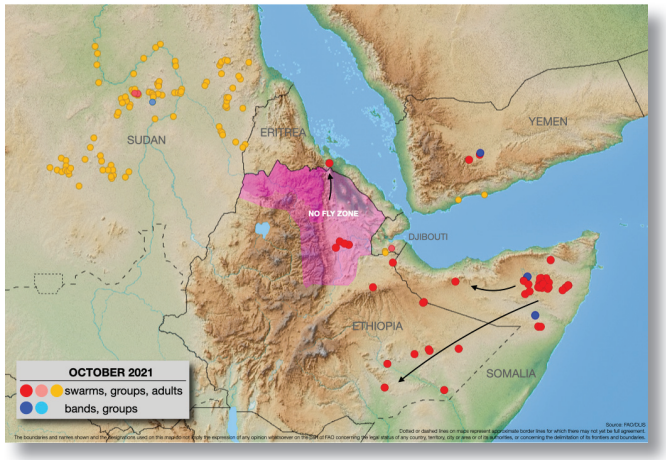
SITUATION. Smarms mature in northern **Somalia** and laying, hatching and early instar bands form in the northeast; control operations continue (7 486 ha treated); unconfirmed locusts in central Somalia. Immature swarms in northeast (Afar) and northern (Tigray, unconfirmed) **Ethiopia** but survey and control not possible due to insecurity; a few mature swarms appear in eastern Ethiopia (138 ha treated), and one moved south towards Kenya. A few small adult groups in **Djibouti**. Few hopper bands and swarms form in **Yemen** interior but operations limited by insecurity. Scattered adults in **Sudan** interior (346 ha) with a few groups of hoppers and adults. Isolated adults in **Egypt**.

FORECAST. Swarm breeding in northern **Somalia** plateau, northwest coast, and eastern **Ethiopia** will cause hatching and band formation; risk of a few current swarms migrating south to **Kenya** border where breeding could occur. Breeding also possible in central Somalia. New swarms start to form in northeast Somalia in mid-December. A few current swarms from northern Ethiopia will migrate to the **Eritrea** Red Sea coast and breed. A few swarms from **Yemen** interior to migrate to Red Sea coast of Yemen and perhaps southwest **Saudi Arabia** and breed. Scattered adults from **Sudan** interior move to Red Sea coast and breed.

EASTERN REGION: CALM

SITUATION. No locusts present.

FORECAST. No significant developments.



Swarms mature and lay eggs in NE Somalia

The current upsurge continues in the Horn of Africa and Yemen but on a much smaller scale than one year ago. As anticipated, the few spring-bred swarms remaining in northeast Somalia matured and laid eggs that hatched and new hopper bands started forming. A few of these swarms moved to northwest Somalia and eastern Ethiopia with at least one small swarm nearly reaching the Kenya border on usually strong and persistent northerly winds at the end of the month. More hopper bands are expected to form in northern Somalia and extend to eastern Ethiopia and perhaps central Somalia. A few small mature swarms could reach northern Kenya in the coming weeks and breed. Depending on rainfall and the success of survey and control operations, new immature swarms could start to form by mid-December that may eventually threaten Kenya. Control operations against immature swarms reported in northeast and northern Ethiopia were not possible due to insecurity. One mature swarm from this area reached the Eritrea coast at the end of the month where breeding will occur. Insecurity limited operations in the interior of Yemen where a few small hopper bands and swarms were present. A few swarms are likely to migrate to the Red Sea coast for winter breeding. A few small groups of hoppers and adults formed in the interior of Sudan as summer breeding came to an end and vegetation was drying out. Remaining adults will move to the Red Sea coast for small-scale winter breeding. The situation remained calm in the other regions where only scattered adults were present in Niger and Chad from summer breeding.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

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Internet: www.fao.org/ag/locusts
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Weather & Ecological Conditions in October 2021

Conditions became favourable for limited breeding in the Horn of Africa. Cyclone Shaheen brought heavy rains but little impact on Desert Locust.

WESTERN REGION

In the Sahel of West Africa, the position of the Inter-Tropical Convergence Zone (ITCZ) was some 200 km further south than normal and continued its seasonal retreat southwards during October. By mid-month, the ITCZ was well south of the breeding area in the northern Sahel. Consequently, very little rain fell between Mauritania and Chad except for light showers in central Chad during the second decade. Even though little rain fell, vegetation remained green on the Tamesna Plains and in parts of southeast Air Mountains in northern Niger and in central and northeastern areas of Chad. By the end of the month, vegetation was starting to dry out in these areas. In northwest Mauritania, light showers may have fallen during the last decade in northern Inchiri and adjacent areas of the Adrar Settouf region in the southern Western Sahara in Morocco. In northwest Africa, dry conditions prevailed except for limited green vegetation near irrigated perimeters in the Adrar Valley in the central Sahara of Algeria.

CENTRAL REGION

In the Horn of Africa, light rains fell in the Afar and Tigray regions of northeast and northern Ethiopia and in some coastal and plateau areas of northern Somalia during the first decade of October but declined thereafter, and very little rain fell during the rest of the month. Annual vegetation became green from these and earlier rains mainly on the plateau in northern Somalia between Burao, Erigavo, Gardo, Garowe and Las Anod, and to the south of this area in the eastern portion of the Somali region in Ethiopia from north of Kebri Dehar to the Somalia border. Soil moisture was sufficient for egg-laying in most of these areas. In central and southern Somalia, vegetation also became green mainly between the Shebelle and Juba rivers. Light rains fell in some of these areas during the second half of the month. No significant rain fell in southern Ethiopia. In Sudan, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal retreated southwards and was at least 150 km further south than usual. After mid-month, it was located south of El Obeid and well outside of the summer breeding areas of Sudan and western Eritrea. Consequently, no significant rain fell in both countries, but vegetation remained green in most areas during the first half of the month. Thereafter, it began to dry out. In the winter breeding areas along the Red Sea, dry conditions prevailed along the coastal plains from Djibouti to Egypt; however, light rain fell at times early in the month between Assab and Mersa Fatma in Eritrea and towards the end of the month in the Tokar Delta of Sudan. More rain fell on the eastern side of the Red Sea, especially on the coast of Yemen and adjacent areas near Jizan, Saudi Arabia, during the first decade of October. This should allow breeding conditions to become favourable. Elsewhere in Yemen, heavy rains caused flooding on the southern coast at Mukalla on the 1st and light rains fell at times in the interior during the first decade. Consequently, vegetation remained green, and conditions were favourable for breeding in the interior. In Oman, cyclone Shaheen with maximum winds of 150 km/h made landfall on the northern coast on 3 October, causing heavy rains and flooding with nearly 400 mm of rain falling in some areas. It rapidly weakened as it moved inland after the 4th.

EASTERN REGION

Although the monsoon withdrew from the summer breeding areas along the Indo-Pakistan border and no significant rain fell, vegetation remained green. By the end of the month, vegetation was starting to dry out. Heavy rains and local flooding associated with Cyclone Shaheen occurred along the coastal plains in southwest Pakistan and southeast Iran from Karachi, Pakistan to Jask, Iran on 1–3 October. The cyclone moved west across the northern Arabian Sea from India to northern Oman. The impact on Desert Locust is expected to be very minimal due to the absence of any locusts.

Area Treated

Control operations declined substantially in October, treating 7 970 ha compared to 15 526 ha in September.

Ethiopia	138 ha
	3 737 ha (September, revised)
Somalia	7 486 ha
Sudan	346 ha

Desert Locust Situation and Forecast

WESTERN REGION

ALGERIA

• **SITUATION**

During October, no locusts were seen in the Adrar Valley (2753N/0017W) of the central Sahara and further south in the southern Sahara near Tamanrasset (2250N/0528E).

• **FORECAST**

No significant developments are likely.

Chad

• **SITUATION**

During October, mainly isolated mature solitarious adults were present in the west near Ziguey (1443N/1547E) in Kanem, in central areas east of Salal (1448N/1712E), in the east near Arada (1501N/2040E), and in the northeast between Kalait (1550N/2054E) and Fada (1714N/2132E). Locust numbers declined as the month progressed.

• forecast

Locust numbers will decline and only a few isolated adults are likely to remain in some areas of the central and northern Sahel. No significant developments are likely.

Libya

• **SITUATION**

No locusts were reported during October.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

No reports were received during October.

• **FORECAST**

Low numbers of locusts are likely to persist in parts of Timetrine and the Adrar des Iforas.

Mauritania

• **SITUATION**

During October, no locusts were seen in the west and northwest regions of Brakna, Trarza, Inchiri, and Dakhlett Nouadhibou.

• **FORECAST**

Isolated locusts may be present and could persist in areas of recent rainfall in Inchiri.

Morocco

• **SITUATION**

During October, isolated mature solitarious adults were seen at one place in the Western Sahara near Haouza (2707N/1112W) in Wadi Sakia El Hamra. No locusts were seen further south between Bir Anzarane (2353N/1431W) and Laayoune (2709N/1311W).

• **FORECAST**

No significant developments are likely.

Niger

• **SITUATION**

During October, isolated solitarious hoppers were present on the Tamesna Plains near In Abangharit (1754N/0559E) and in the southeast Air Mountains from small-scale breeding in September. Mostly isolated immature and mature solitarious adults were seen on the plains between In Gall (1651N/0701E) and the Algeria border near Assamakka (1920N/0546E), and along the south and southeast edges of the Air Mountains.

• **FORECAST**

Locust numbers will decline on the Tamesna Plains and low numbers of adults are likely to persist in parts of the Air Mountains. No significant developments are likely.

Senegal

• **SITUATION**

No locusts were reported during October.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during October.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Djibouti

• **SITUATION**

During October, a few scattered immature and mature solitarious adults were present in the south to the southwest of Ali Sabieh (1109N/4242E) near the Ethiopian border. A group of immature adults was seen near Ali Sabieh on the 19th. No locusts were seen elsewhere in the east and on the Obock (1158N/4317E) coast in the north.

• **FORECAST**

There may be limited cross-border movements by a few small swarms from adjacent areas of Ethiopia and northwest Somalia in early November. While most of the swarms should transit through the country, a few could remain in any sandy areas that receive rainfall and breed.

Egypt

• **SITUATION**

During October, isolated immature solitarious adults persisted in the Lake Nasser area near Tushka (2247N/3126E). No locusts were seen on the Red Sea coast in the southeast near Shalatyn (2308N/3535E).

• **FORECAST**

Low numbers of isolated adults may appear on the Red Sea coast in the southeast by the end of the forecast period and breed on a small scale in any areas that receive rainfall.

Eritrea

• **SITUATION**

During the first week of October, no locusts were seen in the southern part of the western lowlands near Teseney (1506N/3639E) and the Sudan border. At the end of the

month, a very small mature swarm arrived from the south onto the Red Sea coastal plains in the Buya area to the west of Mersa Fatma (1454N/4018E).

• **FORECAST**

There is a moderate to high risk that small immature swarms will appear in the highlands from northern Ethiopia during November and move to the Red Sea coast for maturation and egg-laying.

Ethiopia

• **SITUATION**

During October, there were a few reports of summer-bred immature swarms in Afar region between Chifra (1136N/4001E) and Semera (1148N/4100E) on the 1-2nd. No further swarms were seen during the next two weeks as surveys were mainly confined to roads and most areas could not be accessed due to insecurity. Surveys ceased after mid-month. The situation remained equally unclear in Tigray and Amhara regions where there were unconfirmed reports of locusts during the first week. In Somali region, an immature swarm was seen near Dire Dawa (0935N/4150E) on the 1st and east of Jijiga (0922N/4250E) on the Somalia border on the 5th. No other swarms were seen in the western part of the region during intensive surveys. On the 22nd, a mature swarm was first seen in eastern Somali region near Warder (0658N/4520E) that probably arrived from northeast Somalia. At the end of the month, a few small mature swarms moved further south beyond Kebri Dehar (0644N/4416E) and south of the Shebelle River near El Kere (0550N/4205E), El Migir (0518N/4245E), and on the 30th close to the Somalia border near Mustakhil (0515N/4444E) in the Shebelle River valley. Aerial control operations treated 138 ha on the 5th.

• **FORECAST**

Low numbers of immature and mature swarms from Afar and northeast Somalia are likely to appear in the Somali region, mainly southeast of Jijiga and north of the Shebelle River, where they will mature and lay eggs in areas of recent rainfall. A few swarms may continue south of the Shebelle River to southern areas near the Kenya border. Subsequent hatching and band formation are expected from about mid-November onwards. Elsewhere, a limited number of swarms are likely to transit through the northern highlands of Amhara and Tigray to Eritrea.

Kenya

• **SITUATION**

During October, surveys continued in northern and central counties, and no locusts were reported.

• **FORECAST**

In November, there is a low to moderate risk that a few small mature swarms from southeast Ethiopia could appear at times of strong northerly winds in the far north along the Ethiopian border between Mandera and Lake Turkana, and eventually breed. Otherwise, immature swarms that form from upcoming breeding in eastern Somalia and northern Somalia are not expected to appear in Mandera, Wajir, and Marsabit until the end of December.

Oman

• **SITUATION**

During October, no locusts were seen in the northern interior between Adam (2223N/5731E) and Nizwa (2255N/5731E), on the Musandam Peninsula, and along the Batinah coast.

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During October, no locusts were seen in the southwest interior near Najran (1729N/4408E) and the Yemen border and along the Red Sea coastal plains near Jizan (1656N/4233E) and Qunfidah (1909N/4107E).

• **FORECAST**

Low numbers of locusts are likely to appear along the southern coastal plains near Jizan and Qunfidah where small-scale breeding could occur in areas that receive rainfall. This may be supplemented by a few swarms arriving from adjacent areas of Yemen.

Somalia

• **SITUATION**

During October, a limited number of spring-bred immature swarms were present on the plateau in the northeast (Puntland) east of Gardo (0930N/4905E) during the first week. Mature swarms were present throughout the month in the Gardo area, and some were copulating to the northwest of Gardo on the 18-24th. Hatching was detected on the 28th with first instar hoppers were forming small but dense bands. A few maturing swarms were seen on the 18th further south in Nugaal region to the southeast of Garowe (0824N/4829E). In the northwest (Somaliland), no locusts were seen during extensive surveys except for a mature swarm on the Ethiopian border east of Ayasha on the 20th and northwest of Burao (0931N/4533E) on the 27th. No locusts were seen elsewhere on the plateau and coast. Control operations treated 7 486 ha of which 3 447 ha were by air. At the end of the month, there were unconfirmed reports of mature locusts in the central regions of Bakool and Hiraan near Belet Weyne (0444N/4512E) that may coincide with reports of mature swarms in adjacent areas of Ethiopia.

• **FORECAST**

Small mature swarms are likely to appear in parts of the northern plateau and further south towards Galgaduud, Hiraan, and Bakool. Breeding is expected to increase in areas of recent rainfall where hatching and an increasing number of small hopper bands will form during November. Fledging could commence in the first week of December, giving rise to new immature swarms from the second week

onwards. Breeding will also occur on the northwest coast in areas of recent rainfall that could lead to hatching and band formation from late November onwards.

Sudan

• **SITUATION**

During the first three weeks of October, scattered immature and mature solitarious adults were present in North Kordofan between Hamrat Esh Sheikh (1438N/2756E), Abu Uruq (1554N/3027E), and Umm Saiyala (1426N/3112E), in the Bayuda Desert, and along the Nile Valley from Shendi (1641N/3322E) to Dongola (1910N/3027E). Solitarious hoppers and few groups of hoppers and solitarious adults persisted in the Bayuda Desert and small-scale breeding continued in a few places by groups of adults during the first half of the month. An increasing number of mature solitarious adults was seen in the east from the Nile Valley to the Red Sea Hills between Kassala (1527N/3623E) and Sinkat (1855N/3648E), and limited laying occurred in the first week. Ground teams treated 346 ha.

• **FORECAST**

A few more small groups of hoppers and adults are likely to form in the Bayuda Desert, but these will decline as vegetation dries out and adults move eastwards. Consequently, an increasingly number of adults will appear along the western side of the Red Sea Hills, in Wadi Oko/ Diib in the northeast, and on the coastal plains between Port Sudan and Tokar Delta. Small-scale breeding will occur on the coast in areas that receive rainfall. Limited breeding could also occur west of the Red Sea Hills. There remains a low risk that a few small immature swarms from northern Ethiopia may arrive on the southern coastal plains.

Yemen

• **SITUATION**

During October, very few surveys could be carried out safely in the interior. A mature swarm was reported at the beginning of the month near Bayhan (1452N/4545E), and a very small mature swarm and late instar hopper bands were present to the northeast at the end of the month. On the southern coast, scattered mature adults were present near Zinjibar (1306N/4523E) and Ahwar (1333N/4644E), and laying was reported near Ahwar on the 20th.

• **FORECAST**

More small swarms are expected to form from breeding in the interior and move to the Red Sea and Gulf of Aden coastal plains where they will breed, giving rise to small hopper groups and bands.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UGANDA, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Afghanistan

• **SITUATION**

No locust reports were received during October.

• **FORECAST**

No significant developments are likely.

India

• **SITUATION**

During October, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Iran

• **SITUATION**

During October, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• **FORECAST**

No significant developments are likely.

Pakistan

• **SITUATION**

During October, no locusts were seen or reported in the summer breeding areas in Tharparkar, Nara and Cholistan deserts as well as west of Karachi in the Lasbela (2614N/6619E) area.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. [www.fao.org/locusts]

eLocust3 tools

In addition to the original eLocust3 tablet, FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data are critical for monitoring the situation and organizing control operations in each country, and feeds into FAO's global early warning system in near real time.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

eLocust3mPRO

The eLocust3m mobile app now includes a PRO module to be used by well-trained locust teams for entering complete data on ecology, weather, locust, control, and safety. Teams that return to network coverage at the end of the day can use eLocust3mPRO while those teams that remain for several days in areas without coverage should continue to use the original eLocust3 tablet that sends data via satellite. The updated eLocust3m app is available for Android smartphones on the Google Play Store.
[https://play.google.com/store/apps/details?id=plantvillage.locustsurvey&hl=en&gl=US]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch. Amharic and Somali versions are available for Biology, Survey, and Control. The SOPs are pocket-sized and meant to be used in the field.
[http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
[http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust.
[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge.
[https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub.
[https://data.apps.fao.org]

Calendar

- **CRC.** 32nd session, Jeddah, Saudi Arabia (14–18 November)
- **DLCC.** 42nd session, Nairobi, Kenya (8–11 March 2022, tbc)
- **CLCPRO.** 10th session, Algiers, Algeria (tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large

- swarm: 100–500 km^2
- band: 10–50 ha

Very large

- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light

- 1–20 mm

Moderate

- 21–50 mm

Heavy

- more than 50 mm

Summer rains and breeding areas

- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas

- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas

- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding

- The process of reproduction from copulation to fledging

Recession

- Period without widespread and heavy infestations by swarms

Remission

- Period of deep recession marked by the complete absence of gregarious populations

Outbreak

- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge

- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

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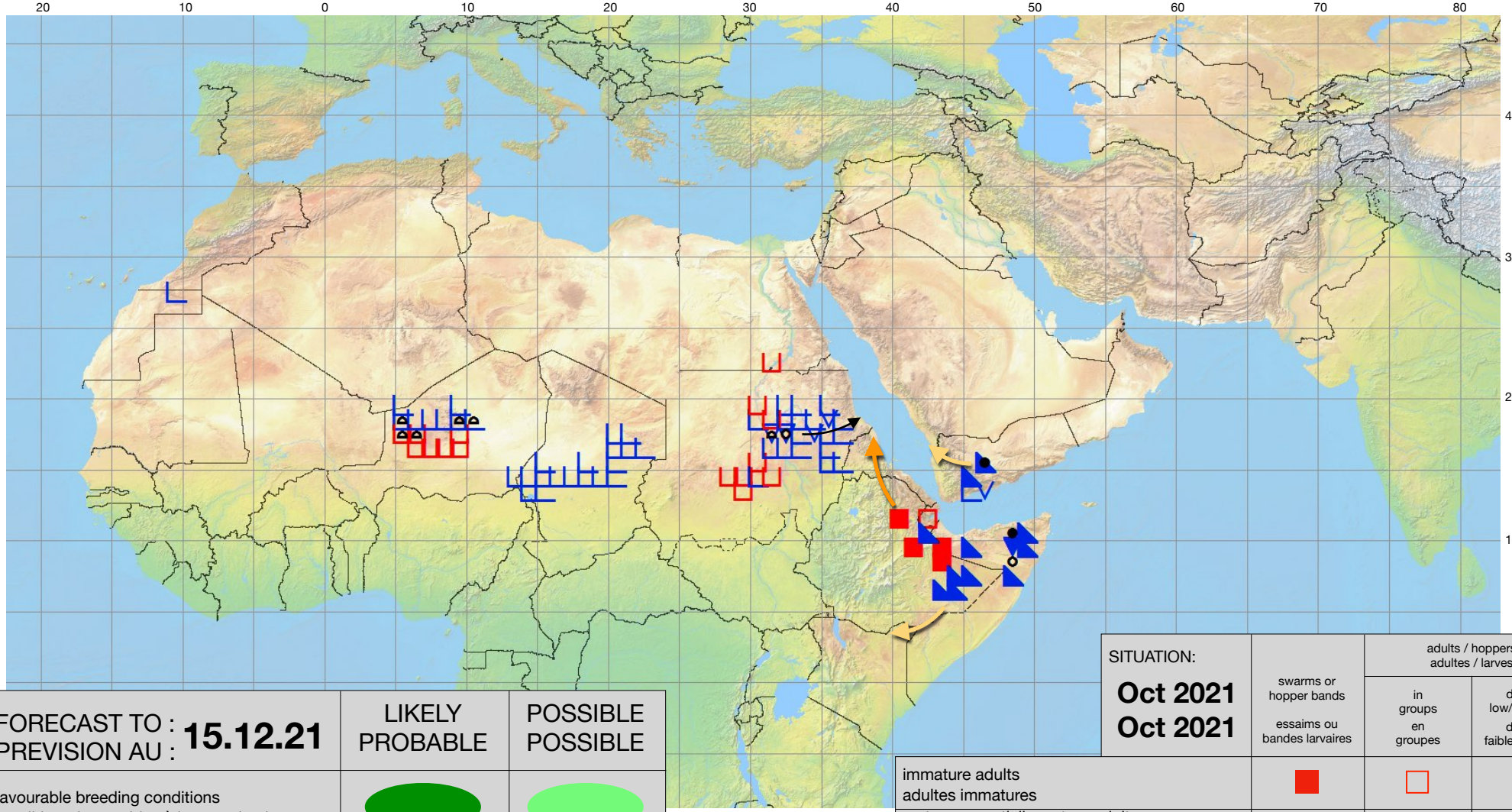


FORECAST TO : PREVISION AU : **15.12.21**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Oct 2021** **Oct 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	●	○	⌓

Food and Agriculture Organization of the United Nations

No. 518 2 DECEMBER 2021

Desert Locust Bulletin

General situation during November 2021
Forecast until mid-January 2022

WESTERN REGION: CALM

SITUATION. Scattered hoppers and adults from local breeding in **Mali**; isolated adults in **Algeria**, **Morocco**, **Niger**, and **Mauritania**.

FORECAST. No significant developments.

CENTRAL REGION: THREAT

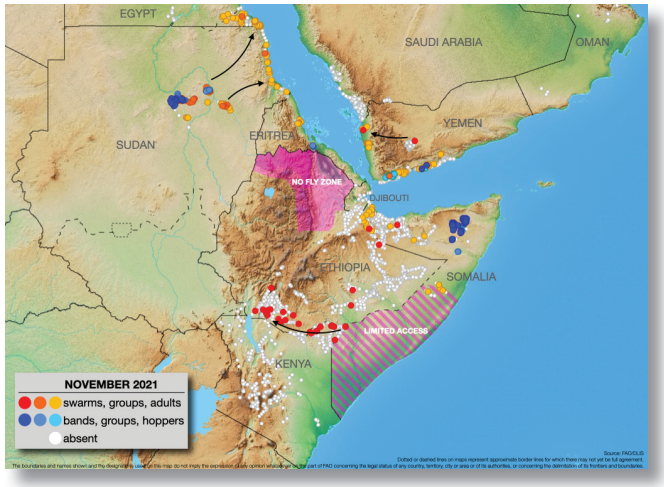
SITUATION. Control operations continue against numerous small hopper bands in northeast **Somalia** (18 405 ha treated). Mature swarms that arrived in early November in northeast **Kenya** moved to southern **Ethiopia** (2 126 ha). More bands and groups of hoppers and adults form in the interior of **Sudan** (17 735 ha) and scattered adults and one mature group appear on Red Sea coast; scattered adults appear and lay on Red Sea coast in southeast **Egypt** (100 ha). Hopper groups on Red Sea coast in **Eritrea** (97 ha) and scattered adults on the northern coast. Small-scale breeding on southern **Yemen** coast, immature swarm in the interior, and mature swarm laying and scattered adults on Red Sea coast.

FORECAST. A limited number of swarms will form in northeast **Somalia** from early December onwards. Egg laying, hatching and band formation are likely along the **Ethiopia/Kenya** border, supplemented by the arrival of several small immature swarms from northeast Somalia after mid-December. Some swarms could also reach southern Somalia. Small-scale breeding will occur along both sides of the Red Sea in coastal areas of southeast **Egypt**, **Sudan**, **Eritrea**, **Yemen**, and **Saudi Arabia** but may be limited by poor rainfall that is predicted.

EASTERN REGION: CALM

SITUATION. No locusts present.

FORECAST. No significant developments.



Control operations continue in NE Somalia

Although the current upsurge continues in the Horn of Africa on a much-reduced scale, two hot spots currently remain. First, aerial and ground control operations continue in northeast Somalia against an increasing number of very small, but numerous hopper bands that formed during November. As some infestations will be missed and cannot be treated, a limited number of new small immature swarms will form from the second week of December onwards. As vegetation dries out, the swarms will migrate south to southern Ethiopia and southern Somalia where they could start to appear in northeast Kenya in mid-December and spread west across the northern counties. The scale of any swarm migration from northeast Somalia is likely to be limited, depending on the success of current survey and control operations. Second, a few small spring-bred mature swarms from northeast Somalia arrived in northeast Kenya during the first week of November and then moved back into southern Ethiopia where control operations are in progress. These swarms are likely to lay eggs that will hatch, and small hopper bands could form along the Ethiopia/Kenya border in December. Elsewhere, hopper groups were treated on the southern coast of Eritrea that developed from a few swarms that arrived from northern Ethiopia and laid eggs in October. Remaining summer infestations were treated in northern Sudan. Small-scale breeding occurred on the southern coast of Yemen. Low numbers of adults began to appear in winter breeding areas along the Red Sea where upcoming breeding may be limited by poor rains. The situation remains calm in other regions.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

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Weather & Ecological Conditions in November 2021

Dry conditions in the Horn of Africa limited breeding. Breeding conditions improving along both sides of the Red Sea.

WESTERN REGION

In the Sahel of West Africa, very little rain fell during November except for some possible light showers in northwest Mauritania during the first decade. Consequently, ecological conditions were mainly dry except for annual vegetation that was becoming green in the Adrar Settouf area of the Western Sahara near the Mauritania border. Elsewhere, green vegetation persisted in a few limited areas of northern Mali (Adrar des Iforas), Niger (Air Mountains), and in northeast Chad. In Northwest Africa, green vegetation was present in a few places of central and southern Algeria, mainly near irrigated perimeters in the Adrar Valley and further south along the Niger border. Elsewhere, dry conditions prevailed.

CENTRAL REGION

In the Horn of Africa, seasonal winds were mainly from the south but, as the month progressed, these winds retreated southwards and were replaced by northeasterly winds. By the end of the month, the northeasterly winds reached as far south as the Shebelle River in eastern Ethiopia. In early November, there were a few consecutive days of strong northeasterly winds that reached as far south as northeast Kenya. Very little rain fell in the region except for light showers during the first decade in southern Ethiopia south of Arba Minch. During the last decade, good rains fell in the extreme southeast of Ethiopia on the Kenya border as well as in some adjacent areas of northern Mandera and Wajir counties in northern Kenya, and in southern Somalia. On 24 –25 November, a tropical depression brought rainfall to the extreme tip of northeast Somalia, mainly in the hills north of Iskushuban with lighter showers east and north of Gardo to Bosaso. Consequently, breeding conditions were only favourable in northeast Somalia where green vegetation was present and were less favourable in the Somali region of eastern Ethiopia where mainly dry conditions prevailed due to poor rainfall. Breeding conditions were improving in southern Ethiopia and adjacent areas of northern Kenya. In the winter breeding areas along both sides of the Red Sea, rain began to fall in areas that were previously dry. During the first decade, light rain fell at times on the Red Sea coast of Eritrea. During the second decade, good rains fell over the northern Red Sea from Port Sudan to Marsa Alam in southeast Egypt and from Jeddah, Saudi Arabia to the Gulf of Aqaba. During the third decade, there was a complete absence of rain. Consequently, breeding conditions are likely to be improving in those areas of recent rainfall as well as on the Red Sea coast of Yemen from October rains. Along both sides of the Gulf of Aden, vegetation was drying out along the southern coast of Yemen and dry conditions persisted in northwest Somalia.

EASTERN REGION

Dry conditions prevailed and no significant rain fell in the region during November except for possible light showers at times in coastal areas of southeast Iran near Jask and Bandar Abbas. Consequently, conditions were not favourable for breeding.

Area Treated

Control operations increased substantially in November, treating 38 483 ha compared to 7 970 ha in October.

Egypt	100 ha
Eritrea	97 ha
Ethiopia	2 126 ha
Somalia	18 405 ha
Sudan	17 735 ha

Desert Locust Situation and Forecast

WESTERN REGION

Algeria

• **SITUATION**

During November, isolated mature solitarious adults were seen at a few places in the extreme south near In Guezzam (1934N/0546E). No locusts were seen in the Adrar Valley (2753N/0017W) of the central Sahara and near Tamanrasset (2250N/0528E) in the south.

• **FORECAST**

No significant developments are likely.

Chad

• **SITUATION**

No locusts were reported during November.

• forecast

No significant developments are likely.

Libya

• **SITUATION**

No locusts were reported during November.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

During November, small-scale breeding occurred in the Adrar des Iforas south of Kidal (1827N/0125E) where scattered third and fourth instar solitarious hoppers were present. Scattered immature and mature solitarious adults were seen further west in Timetrine.

• **FORECAST**

Low numbers of locusts are likely to persist in parts of Timetrine and the Adrar des Iforas.

Mauritania

• **SITUATION**

During November, no locusts were seen in the west and northwest regions of Brakna, Inchiri, and Dakhlett Nouadhibou except for isolated mature solitarious adults north of Magta Lahjar (1730N/1305W).

• **FORECAST**

No significant developments are likely.

Morocco

• **SITUATION**

During November, isolated immature solitarious adults were seen in the extreme south of the Western Sahara near Bir Gandouz (2136N/1628W) and the Mauritania border. No locusts were seen further north to Bir Anzarane (2353N/1431W), in Wadi Sakia El Hamra, and south of the Atlas Mountains in the Draa Valley.

• **FORECAST**

No significant developments are likely.

Niger

• **SITUATION**

During November, isolated solitarious adults were maturing in the southern Air Mountains.

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Air Mountains. No significant developments are likely.

Senegal

• **SITUATION**

No locusts were reported during November.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No reports were received during November.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Djibouti

• **SITUATION**

During November, no locusts were seen during surveys in the southeast near Ali Sabieh (1109N/4242E), along the coastal plains from Djibouti (113431N430847E) to Obock (1158N/4317E), and in the northern interior near Bouyya (1223N/4422E).

• **FORECAST**

Small-scale breeding may occur on the coastal plains between Djibouti and the Somalia border if rains fall.

Egypt

• **SITUATION**

During November, scattered immature and mature solitarious and *transiens* adults appeared on the southern coastal plains of the Red Sea between the Sudan border and Shalatyn (2308N/3535E) after mid-month. During the last week, ground teams treated 100 ha of adult that were laying. No locusts were seen elsewhere on the coast or in the interior near Lake Nasser.

• **FORECAST**

Small-scale breeding is likely to occur on the southern coastal plains of the Red Sea between Shalatyn and Halaib but may be limited by poor rainfall that is expected.

Eritrea

• **SITUATION**

During November, groups of gregarious hoppers formed on the Red Sea coast to the west of Mersa Fatma (1454N/4018E) in the Buya area from egg-laying that commenced during the second week of October by at least one mature swarm that arrived from northern Ethiopia as well as another swarm seen on the 25th. By 17 November, some hoppers had reached the fourth instar. Ground teams treated 97 ha. Elsewhere, scattered immature solitarious adults were present further north along the coast near Mersa Cuba (1616N/3911E).

• **FORECAST**

A few small adult groups could form in the Buya area from early December onwards. Small-scale breeding is likely to occur on the central and northern coastal plains that receive rainfall.

Ethiopia

• **SITUATION**

During November, a mature swarm was seen in the Somali region north of Degeh Bur (0813N/4333E) near the Somalia border on the 1st. Another mature swarm was seen south

of the Shebelle River near El Kere (0550N/4205E) as a few mature swarms from northeast Somalia continued to migrate southwards, crossing back and forth along the Kenya border to reach south of Arero (0445N/3849E) on the 6th. During the second half of the month, several small mature swarms were concentrated in southern parts of SNNP and Oromia regions between Arero, Mega (0403N/3819E), and Teltele (0504N/3723E). No locusts were seen elsewhere in the Somali region. Control operations treated 2 126 ha of which 1 926 ha were by air.

• **FORECAST**

Breeding is likely to occur in the south between Teltele and the Kenya border, giving rise to hatching and the formation of small hopper bands during December. This could be supplemented by immature swarms from northeast Somalia moving through the Somali region to reach the south.

Kenya

• **SITUATION**

During November, a small mature swarm from northeast Somalia arrived near Mandera in the northeast on the afternoon of the 1st. In the subsequent days, a few more small swarms arrived and moved west towards Moyale in the first week. Although many swarms were reported more than once and some were moving back and forth across the Ethiopia border, it is thought that there were no more than about four swarms in all. Even though they were mature, they were not quite ready to lay eggs. No further swarms were seen after the 8th. Elsewhere, no locusts were seen or reported.

• **FORECAST**

There remains a risk of limited breeding in the extreme north of Marsabit, Wajir, and Mandera counties along the Ethiopia border by the swarms that arrived in early November, which could give rise to small hopper bands in December. Low to moderate numbers of immature swarms from northeast Somalia are likely to appear in the northeast from mid-December onwards and spread to other northern counties towards Turkana and Isiolo.

Oman

• **SITUATION**

During November, no locusts were seen in the northern interior between Adam (2223N/5731E) and Nizwa (2255N/5731E), near Buraimi (2415N/5547E), on the Musandam Peninsula, along the Batinah coast, and in the south near Thumrait (1736N/5401E).

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During November, no locusts were seen in the southwest interior near Najran (1729N/4408E) and the Yemen border and along the Red Sea coastal plains from Jizan (1656N/4233E) to Qunfidah (1909N/4107E).

• **FORECAST**

Low numbers of locusts are likely to appear along the coastal plains from Jizan to Duba and breed on a small scale in areas of recent rains. This may be supplemented by a few swarms from adjacent areas of Yemen arriving near Jizan.

Somalia

• **SITUATION**

During November, breeding increased in the northeast (Puntland) where laying continued in the first week and substantial hatching took place until just after mid-month. Consequently, numerous small hopper bands formed and by the end of the month a few had reached fifth instar. Most of the breeding was concentrated northwest of Gardo (0930N/4905E) but other areas may also be affected. In the northwest, a mature swarm was seen near Boroma (0956N/4313E) and one near Sheikh (0956N/4511E) during the first week. Thereafter, scattered immature and mature solitarious adults were present on the plateau escarpment, and northwest coast near the Ethiopia border as well as in central areas near Galkayo (0646N/4725E). Control operations treated 18 405 ha of which 2 557 ha were by air.

• **FORECAST**

In the northeast, fledging will commence at the beginning of December and continue for about three weeks, giving rise to an increasing number of small immature swarms from the second week onwards. While some swarms may initially persist, most are expected to move south towards central and southern Somalia, southern Ethiopia, and northeast Kenya during the second half of December. The scale of the movement is likely to be limited but will depend on current operations. In the northwest, small-scale breeding could occur on the coast if rains fall.

South Sudan

• **SITUATION**

No reports received during November.

• **FORECAST**

There is a low to moderate risk that a few small mature swarms may appear in Eastern Equatoria from adjacent areas of southern Ethiopia in early December.

Sudan

• **SITUATION**

During November, an increasing number of hopper bands and groups of hoppers, immature and mature adults formed in the Bayuda Desert south of Ed Debba (1803N/3057E) and west of Berber (1801N/3400E) as vegetation dried out. Some of these groups moved to the Atbara River where mature solitarious adults were also present. Low numbers of mature solitarious adults began to appear from mid-month onwards along the entire Red Sea coastal plains, including

one group of mature adults on the 25th in the north near Eit (2009N/3706E). Control operations treated 17 735 ha in the interior of which 5 600 ha were by air.

• **FORECAST**

Locust infestations will decline in the Bayuda Desert. Small-scale breeding will occur along much of the Red Sea coastal plains and in subcoastal areas of the northeast but may be limited by poor rainfall that is expected. Nevertheless, there remains a risk that small hopper groups could form in some areas during January.

Yemen

• **SITUATION**

During November, small-scale breeding was underway on the southern coast near Ahwar where a few small hopper bands formed in northwest of Aden near Am Rija (1302N/4434E) where scattered solitarious hoppers of all instars were present. Scattered immature and mature solitarious adults were seen between these two areas and near Mayfa'a (1416N/4735E). One group of immature adults formed near Am Rija. On the 28th, an immature swarm was seen near Bayhan (1452N/4545E). On the Red Sea coast, a mature swarm was laying eggs on the 11th near Al Zuhrah (1541N/4300E) and scattered immature and mature adults were present near Bajil (1458N/4314E) and Suq Abs (1600N/4312E).

• **FORECAST**

A few small groups of adults may form along the southern coast as vegetation dries out. Breeding will occur on the Red Sea coastal plains where a few hoppers bands and immature swarms could form in the north in December and January, respectively.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UGANDA, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Afghanistan

• **SITUATION**

No locust reports were received during November.

• **FORECAST**

No significant developments are likely.

India

• **SITUATION**

During November, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Iran

• **SITUATION**

During November, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• **FORECAST**

No significant developments are likely.

Pakistan

• **SITUATION**

During November, no locusts were seen or reported in the summer breeding areas in Nara desert and west of Karachi in the Lasbela (2614N/6619E) area.

• **FORECAST**

No significant developments are likely.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

Calm (green) periods. Countries should report at least once/month and send RAMSES data with a brief interpretation.

Caution (yellow), threat (orange) and danger (red) periods. During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent regularly every three days.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation and share them with other countries.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa. [www.fao.org/locusts]

eLocust3 tools

In addition to the original eLocust3 tablet, FAO has developed three new free tools – a mobile app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data are critical for monitoring the situation and organizing control operations in each country, and feeds into FAO's global early warning system in near real time.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

eLocust3mPRO

The eLocust3m mobile app now includes a PRO module to be used by well-trained locust teams for entering complete data on ecology, weather, locust, control, and safety. Teams that return to network coverage at the end of the day can use eLocust3mPRO while those teams that remain for several days in areas without coverage should continue to use the original eLocust3 tablet that sends data via satellite. The updated eLocust3m app is available for Android smartphones on the Google Play Store.
[https://play.google.com/store/apps/details?id=plantvillage.locustsurvey&hl=en&gl=US]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch. Amharic and Somali versions are available for Biology, Survey, and Control. The SOPs are pocket-sized and meant to be used in the field.
[http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
[http://www.fao.org/ag/locusts/en/publicat/2581/index.html]

Desert Locust animation

FAO in collaboration with SWABO has produced a simple animation that explains the danger of Desert Locust.
[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

FAO in partnership with ESRI operates a centralized hub for the latest Desert Locust data and progress on the emergency response to the Desert Locust upsurge.
[https://locust-hub-hqfao.hub.arcgis.com]

Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub.
[https://data.apps.fao.org]

Calendar

- **CRC.** 32nd session, Jeddah, Saudi Arabia (tbc)
- **DLCC.** 42nd session, Nairobi, Kenya (8–11 March 2022, tbc)
- **CLCPRO.** 10th session, Algiers, Algeria (tbc)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

Non-gregarious adults and hoppers

Isolated (few)
- very few present and no mutual reaction occurring
- 0–1 adult/400 m foot transect (or less than 25/ha)

Scattered (some, low numbers)
- enough present for mutual reaction to be possible but no ground or basking groups seen
- 1–20 adults/400 m foot transect (or 25–500/ha)

Group
- forming ground or basking groups
- 20+ adults/400 m foot transect (or 500+/ha)

Adult swarm and hopper band sizes

Very small
- swarm: less than 1 km^2
- band: 1–25 m^2

Small
- swarm: 1–10 km^2
- band: 25–2,500 m^2

Medium
- swarm: 10–100 km^2
- band: 2,500 m^2 – 10 ha

Large
- swarm: 100–500 km^2
- band: 10–50 ha

Very large
- swarm: 500+ km^2
- band: 50+ ha

Rainfall

Light
- 1–20 mm

Moderate
- 21–50 mm

Heavy
- more than 50 mm

Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas

- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas

- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding

- The process of reproduction from copulation to fledging

Recession

- Period without widespread and heavy infestations by swarms

Remission

- Period of deep recession marked by the complete absence of gregarious populations

Outbreak

- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge

- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague

- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline

- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green

- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow

- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange

- *Threat*. Threat to crops; survey and control operations must be undertaken

Red

- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

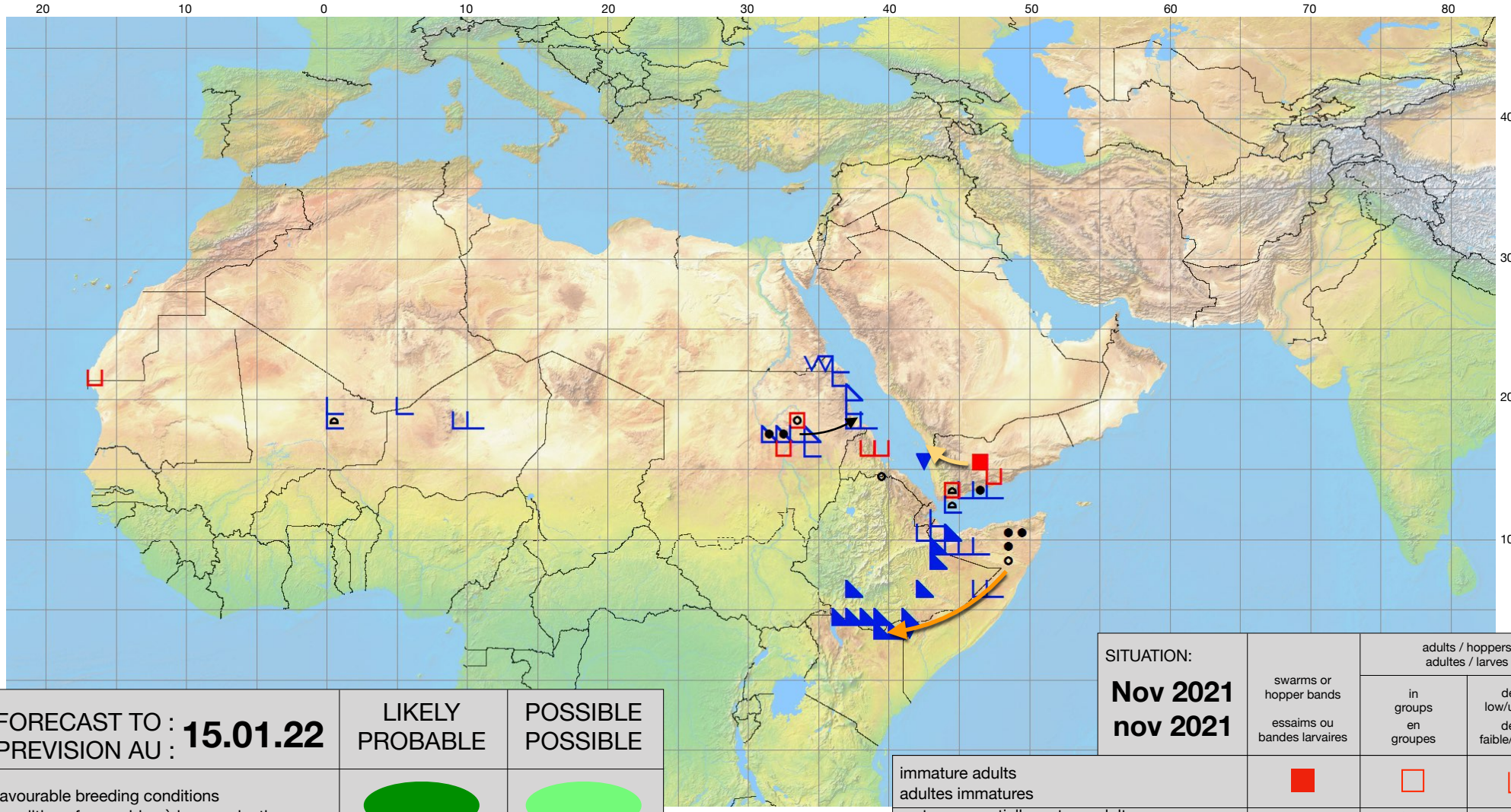
FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

518



FORECAST TO : PREVISION AU : **15.01.22**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Nov 2021** **nov 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	●	○	⌓

Food and Agriculture Organization of the United Nations

No. 519 4 JANUARY 2022

Desert Locust Bulletin

General situation during December 2021
Forecast until mid-February 2022

WESTERN REGION: CALM

SITUATION. Scattered hoppers and adults from local breeding in **Niger**.

FORECAST. No significant developments.

CENTRAL REGION: THREAT

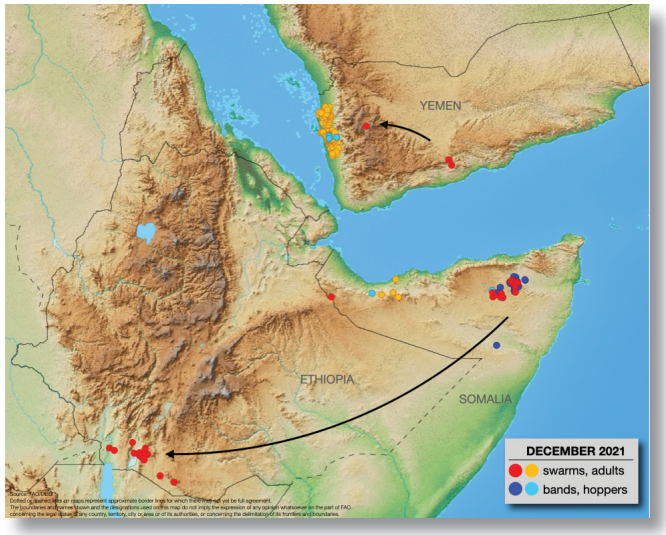
SITUATION. Control operations continue against numerous small late instar hopper bands in northeast **Somalia** (24 356 ha treated) where fledging started at mid-month, causing several small immature swarms to form. A few immature and mature swarms were present in southern **Ethiopia** (1 956 ha). Small adult groups declined in the interior of **Sudan** (1 550 ha) due to control and as adults moved to the Red Sea coast, causing scattered mature adults to increase slightly on the coast and in the northeast. Local breeding continues in southeast **Egypt** (6 ha). Isolated adults are present on the coast of **Eritrea**. Small-scale breeding started on the Red Sea coast of **Yemen** where scattered adults are present.

FORECAST. A few small immature swarms are likely to migrate from northeast **Somalia** to southern **Ethiopia** and northern **Kenya** in January; some swarms could also reach southern Somalia. The swarms are not likely to mature and breed until the long rains start in about April. Undetected breeding by summer-bred mature swarms may have occurred during December near the Ethiopia/Kenya border. Small-scale breeding will occur but may be limited by poor rains in coastal areas along both sides of the Red Sea in southeast **Egypt**, **Sudan**, **Eritrea**, **Yemen**, and **Saudi Arabia**, and on both sides of the Gulf of Aden.

EASTERN REGION: CALM

SITUATION. No locusts present.

FORECAST. Isolated adults may appear in spring breeding areas of southeast **Iran** and southwest **Pakistan** in February; no significant developments.



Small swarms form in NE Somalia

Desert Locusts remained confined to northeast Somalia and southern Ethiopia where control operations continued to reduce infestations during December. As expected, hoppers began to fledge at mid-month and formed several small immature swarms in northeast Somalia. The few swarms are limited in size and have so far remained mostly in the breeding areas. Nevertheless, it is likely that a few small swarms will move south through central and southern Somalia and adjacent areas of eastern Ethiopia to reach southern Ethiopia and northern Kenya during January. An early movement may have already occurred in late December when a few immature swarms were seen in southern Ethiopia near the Rift Valley where control operations were underway against small summer-bred mature swarms that so far have not bred. There should be sufficient teams and resources to undertake control operations well before the current swarms mature and breed, which would not occur until about April. Low numbers of solitarious adults are present in the winter breeding areas along both sides of the Red Sea in southeast Egypt, Sudan, Eritrea, and Yemen, and on the Gulf of Aden coast in northwest Somalia. Small-scale breeding commenced in Egypt, Yemen, and Somalia but numbers should remain low based on current predictions of poor rainfall during the winter. Consequently, the outlook is optimistic and suggests the upsurge will continue to decline. The situation remains calm in other regions.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service (DLIS) at FAO HQ in Rome, Italy. DLIS continuously monitors the global Desert Locust situation, weather and ecology to provide early warning based on survey and control results from affected countries, combined with remote sensing, historical data and models. The bulletin is supplemented by Alerts and Updates during periods of increased Desert Locust activity.

Telephone: +39 06 570 52420 (7 days/week, 24 hr)
E-mail: eclo@fao.org / faodlislocust@gmail.com
Internet: www.fao.org/ag/locusts
Facebook/Twitter: faolocust

Weather & Ecological Conditions in December 2021

Dry conditions in the Horn of Africa limited breeding. Breeding conditions improving along both sides of the Red Sea.

WESTERN REGION

Very little rain fell in the region during December except for parts of northwest Mauritania where light showers may have occurred during the second decade in Dakhlet Nouadhibou and western Inchiri. Consequently, ecological conditions remained dry and unfavourable for locusts except in Algeria near irrigated perimeters in the Adrar Valley of the central Sahara, west of Tamanrasset in the south, and near the Niger border and In Guezzam.

CENTRAL REGION

No significant rain fell in the region during December. Consequently, ecological conditions continued to dry out in the Horn of Africa and in the interior of Sudan and Yemen. In the winter breeding areas along both sides of the Red Sea, light showers may have fallen near the Sudan/Egypt border and on the central coast of Saudi Arabia between Jeddah and Masturah at mid-month. Despite poor rainfall, annual vegetation was green in some coastal and subcoastal areas of southeast Egypt between the Sudan border and El Sheikh El Shazly, on the coast of Sudan from Port Sudan to Eritrea, on the coast of Eritrea near Akbanazouf Plain, on the coast of Saudi Arabia near Jizan, Qunfidah, and Masturah, and on the coast of Yemen from Zabid to Suq Abs. Vegetation was becoming green in a few places on the northwest coast of Somalia.

EASTERN REGION

Dry conditions prevailed and no significant rain fell in the region during December. Consequently, conditions were not favourable for breeding.

Area Treated

Control operations declined to 27 868 ha in December compared to 38 483 ha in November.

Egypt	6 ha
Ethiopia	1 956 ha
Somalia	24 356 ha
Sudan	1 550 ha

Desert Locust Situation and Forecast

WESTERN REGION

Algeria

• **SITUATION**

During December, no locusts were seen in the Adrar Valley (2753N/0017W) of the central Sahara and in the south near Tamanrasset (2250N/0528E).

• **FORECAST**

No significant developments are likely.

Chad

• **SITUATION**

No locusts were reported during December.

• forecast

No significant developments are likely.

Libya

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

No significant developments are likely.

Mali

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

Low numbers of locusts are likely to persist in parts of Timetrine and the Adrar des Iforas.

Mauritania

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

No significant developments are likely.

Morocco

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

No significant developments are likely.

Niger

• **SITUATION**

During December, scattered immature and mature solitarious adults persisted to the southeast of the Air Mountains and isolated solitarious hoppers were present at one place. Isolated immature and mature solitarious adults, including a few small concentrations, were seen on the Tamesna Plains south of In Abangharit (1754N/0559E) and south of Assamakka (1920N/0546E).

• **FORECAST**

Low numbers of adults are likely to persist in parts of the Air Mountains. No significant developments are likely.

Senegal

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during November and December.

• **FORECAST**

No significant developments are likely.

Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Nigeria, Sierra Leone, and Togo

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Djibouti

• **SITUATION**

During December, no locusts were seen during surveys in the southeast near Ali Sabieh (1109N/4242E) and in the northern interior near Obock (1158N/4317E).

• **FORECAST**

No significant developments are likely.

Egypt

• **SITUATION**

During December, scattered mature solitarious were present in the southeast along the Red Sea coastal plains and subcoastal areas between El Sheikh El Shazly (2412N/3438E) and the Sudan border. A few copulating adults were seen during the first week and early instar hoppers, including a few small groups and bands of *transiens* hoppers, were present during the third week, indicating that laying started during the last week of November with hatching from the second week of December onwards. No locusts were seen in the interior near Lake Nasser. Ground teams treated 6 ha.

• **FORECAST**

Fledging of current hoppers will commence in mid-January, which could give rise to a few small groups of immature adults. Small-scale breeding could continue along the Red Sea coastal plains in the southeast if more rains fall.

Eritrea

• **SITUATION**

During December, no locusts were seen during surveys along the Red Sea coastal plains between Massawa (1537N/3928E) and the Sudan border. However, locals reported isolated immature solitarious adults in the Afabet (1612N/3841E) area. On the southern coast, isolated mature solitary adults were seen in the Buya area west of Mersa Fatma (1454N/4018E) where breeding occurred last month.

• **FORECAST**

Low numbers of adults may be present and breeding on a small scale in areas of recent rainfall along the southern coastal plains of the Red Sea between Tio and Assab. Small-scale breeding could occur in central and northern coastal areas if more rains fall.

Ethiopia

• **SITUATION**

During December, several mature swarms persisted in the southern parts of SNNPR and Oromia regions between Konso (0520N/3726E) and the Kenya border. There was no indication that breeding took place. An immature swarm was first reported on the 20th, followed by a few more reports of small immature swarms on the 28–29th. These swarms may have arrived from northeast Somalia. No locusts were seen during surveys elsewhere in Oromia and SNNPR as well as in Somali region. Aerial operations treated 1 956 ha.

• **FORECAST**

Breeding may be in progress in the south between Teltele and the Kenya border, giving rise to hatching and the formation of small hopper bands. This could be supplemented by immature swarms from northeast Somalia moving through the Somali region to reach the south during January.

Kenya

• **SITUATION**

No locusts were seen or reported during December.

• **FORECAST**

Low numbers of small immature swarms from northeast Somalia are likely to appear in the northeast during the first two weeks of January and spread to other northern counties towards Turkana and Isiolo.

Oman

• **SITUATION**

During December, no locusts were seen in the northern interior between Ibra (2243N/5831E) and Buraimi (2415N/5547E), on the Musandam Peninsula, and along the Batinah coast.

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During December, no locusts were seen in the southwest interior near Najran (1729N/4408E) and the Yemen border, and along the Red Sea coastal plains from

Jizan (1656N/4233E) to Qunfidah (1909N/4107E) and further north near Rabigh (2247N/3901E).

• **FORECAST**

Low numbers of locusts are likely to appear in some areas along the coastal plains from Jizan to Duba. Small-scale breeding may occur in areas of recent rain near Jizan and in other places that receive rain.

Somalia

• **SITUATION**

During the first three weeks of December, numerous small mid-late instar hopper bands were present in the northeast (Puntland) where they were concentrated in three main areas to the north and northwest of Gardo (0930N/4905E). Hoppers started to fledge on the 14th, giving rise to an increasing number of small immature swarms during the last two weeks of the month. The swarms remained mostly in the breeding areas with a slight westward shift towards eastern Somaliland. There were no reports of a southward movement. In the northwest (Somaliland), scattered immature and mature solitarious adults were present on the escarpment and the coastal plains near Berbera (1028N/4502E). Scattered fourth instar solitarious hoppers were seen on the escarpment south of Bulhar (1023N/4425E) at mid-month, indicating that small-scale breeding had commenced. Control operations treated 24 356 ha of which 5 754 ha were by air.

• **FORECAST**

A limited number of small immature swarms may drift slightly westwards along the plateau before moving south and southwest through central and southern Somalia and adjacent areas of eastern Ethiopia to southern Ethiopia and northern Kenya. In Somaliland, small-scale breeding is likely to cause locust to increase slightly on the northwest coast if rainfall occurs.

Sudan

• **SITUATION**

During December, small groups of immature adults were present in the Bayuda Desert south of Ed Debba (1803N/3057E) in the first week and ground teams treated 1 550 ha. On the Red Sea coastal plains, scattered mature solitarious adults were seen in a few places between the borders of Eritrea and Egypt, and in the northeast along Wadi Oko/Diib from Tomala (2002N/3551E) to the Egypt border.

• **FORECAST**

Locust infestations will end in the Bayuda Desert. Small-scale breeding will occur along much of the Red Sea coastal plains and in subcoastal areas of the northeast but may be limited by poor rainfall that is expected. Nevertheless, there remains a risk that small hopper groups could form in some areas.

Yemen

• **SITUATION**

During December, an immature swarm, most likely from local breeding, was seen in the south on the 9th south of Ataq (1435N/4649E) on the 9th and 25th while another immature swarm was seen near Sana'a (1521N/4412E) on the 28th. Scattered immature and mature solitarious adults were present along the Red Sea coastal plains between Zabid (1410N/4318E) and Suq Abs (1600N/4312E). A few third and fourth instar solitarious hoppers were seen during the third week from laying and hatching in November.

• **FORECAST**

Fledging will start in early January in areas of current breeding along the Red Sea coastal plains. Small-scale breeding will continue and cause locust numbers to increase slightly on the Red Sea coast and may occur on the Gulf of Aden coast in the south.

Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UGANDA, and UAE

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Afghanistan

• **SITUATION**

No locust reports were received during December.

• **FORECAST**

No significant developments are likely.

India

• **SITUATION**

During December, no locusts were seen by surveys in Rajasthan and Gujarat.

• **FORECAST**

No significant developments are likely.

Iran

• **SITUATION**

During December, no locusts were seen or reported in coastal and interior areas of the south, and in the northeast.

• **FORECAST**

Isolated adults may start to appear the end of the forecast period in coastal areas of the southeast.

Pakistan

• **SITUATION**

No locusts were reported during December.

• **FORECAST**

Isolated adults may start to appear the end of the forecast period in coastal areas of the southwest.

Announcements

Locust warning levels

A colour-coded scheme indicates the seriousness of the current Desert Locust situation: **green** for *calm*, **yellow** for *caution*, **orange** for *threat*, and **red** for *danger*. The scheme is applied to the Locust Watch web page and to the monthly bulletins. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

Locust reporting

RAMSES data. Countries should connect to the Internet and backup the RAMSES database whenever data are added or changed. There is no longer the need to send data directly to DLIS.

Bulletins. Affected countries are encouraged to prepare fortnightly or monthly bulletins summarizing the situation and share them with other countries. During periods of increased locust activity, decadal bulletins may also be issued.

Reporting. All information should be sent by e-mail to the FAO Desert Locust Information Service (eclo@fao.org and faodlislocust@gmail.com). Reports received by the first two days of the new month will be included in the FAO Desert Locust Bulletin; otherwise, they will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

Desert Locust upsurge and response

On 17 January 2020, the Director-General of FAO activated the L3 protocols, the highest emergency level in the United Nations system, in FAO to allow fast-tracking an effective response to the upsurge in the Horn of Africa.
[www.fao.org/locusts]

eLocust3 tools

In addition to the original eLocust3 tablet, FAO has developed three new free tools – a smartphone app (eLocust3m), a GPS app (eLocust3g), and an Internet form (eLocust3w) – for improving survey and control reporting by field teams and communities. The data are critical for monitoring the situation and organizing control operations in each country, and feeds into FAO's global early warning system in near real time.
[http://www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

eLocust3mPRO

The eLocust3m mobile app now includes a PRO module to be used by well-trained locust teams for entering complete data on ecology, weather, locust, control, and safety. Teams that return to network coverage at the end of the day can use eLocust3mPRO while those teams that remain for several days in areas without coverage should continue to use the original eLocust3 tablet that sends data via satellite. The updated eLocust3m app is available for Android smartphones on the Google Play Store.
[https://play.google.com/store/apps/details?id=plantvillage.locustsurvey&hl=en&gl=US]

Desert Locust Standard Operating Procedures (SOPs)

A new SOP on Biology as well as an updated Ground Survey SOP, including instructions on how to use eLocust3, eLocust3g and eLocust3m, are available on Locust Watch. Amharic and Somali versions are available for Biology, Survey, and Control. The SOPs are pocket-sized and meant to be used in the field.
[http://www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Desert Locust posters

FAO in collaboration with OCHA has developed six simple, easy to understand posters for communities that may be affected by locusts. The purpose is to provide basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions. The posters can be edited.
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[https://www.youtube.com/watch?v=3TOhuA-v1m4]

Locust Hub

Desert Locust survey and control data are available for research and other non-commercial purposes and can be downloaded from the FAO Locust Hub in partnership with ESRI.
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Hand-in-Hand geospatial platform

FAO has developed the Hand-in-Hand geospatial platform that also integrates Desert Locust data from the Locust Hub.
[https://data.apps.fao.org]

Alison Steedman (1947–2021)

It is with deep regret to announce the passing of Alison Steedman on 15 October 2021. Ms Steedman worked with the Anti-Locust Research Centre (ALRC) / Centre for Overseas Pest Research (COPR) in the UK from 1968 to 1976. She was involved in the daily operations of the Desert Locust Information Service (DLIS) at COPR before it was handed over to FAO and was the editor of the *Locust Handbook*. We would like to express our sincere condolences to her family and government.

Calendar

- **Clubhouse discussion.** When will the current Desert Locust upsurge end? https://www.clubhouse.com/join/desert-locust/uJm5jw3T/PALLqd1m (12 January 2022, 16h GMT)
- **CRC.** 32nd session, Jeddah, Saudi Arabia (20–24 February 2022, tbc)
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Very large
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Rainfall

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- 1–20 mm

Moderate
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Heavy
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Summer rains and breeding areas
- July–September/October
- Sahel of West Africa, Sudan, western Eritrea; Indo-Pakistan border

Winter rains and breeding areas
- October–January/February
- Red Sea and Gulf of Aden coasts; northwest Mauritania, Western Sahara

Spring rains and breeding areas
- February–June/July
- Northwest Africa, Arabian Peninsula interior, Somali plateau, Iran/Pakistan border

Other reporting terms

Breeding
- The process of reproduction from copulation to fledging

Recession
- Period without widespread and heavy infestations by swarms

Remission
- Period of deep recession marked by the complete absence of gregarious populations

Outbreak
- A marked increase in locust numbers due to concentration, multiplication and gregarisation which, unless checked, can lead to the formation of hopper bands and swarms

Upsurge
- A period following a recession marked initially by a very large increase in locust numbers and contemporaneous outbreaks followed by the production of two or more successive seasons of transient-to- gregarious breeding in complimentary seasonal breeding areas in the same or neighbouring Desert Locust regions

Plague
- A period of one or more years of widespread and heavy infestations, the majority of which occur as bands or swarms. A major plague exists when two or more regions are affected simultaneously

Decline
- A period characterised by breeding failure and/or successful control leading to the dissociation of swarming populations and the onset of recessions; can be regional or major

Warning levels

Green
- *Calm*. No threat to crops; maintain regular surveys and monitoring

Yellow
- *Caution*. Potential threat to crops; increased vigilance is required; control operations may be needed

Orange
- *Threat*. Threat to crops; survey and control operations must be undertaken

Red
- *Danger*. Significant threat to crops; intensive survey and control operations must be undertaken

Regions

Western

- Locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during upsurges and plagues only: Benin, Burkina Faso, Cameroon, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierre Leone and Togo

Central

- Locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during upsurges and plagues only: Bahrain, D.R. Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria, Tanzania, Turkey, UAE and Uganda

Eastern

- Locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.

Useful tools and resources

FAO Locust Watch. Information, maps, activities, publications, archives, FAQs, links
http://www.fao.org/ag/locusts

FAO/ESRI Locust Hub. Desert Locust maps and data download, and emergency response progress
https://locust-hub-hqfao.hub.arcgis.com

FAO regional commissions. Western Region (CLCPRO), Central Region (CRC), South-West Asia (SWAC)
http://www.fao.org/ag/locusts

IRI RFE. Rainfall estimates every day, decade and month
http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html

IRI Greenness maps. Dynamic maps of green vegetation evolution every decade
http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

NASA WORLDVIEW. Satellite imagery in real time
https://worldview.earthdata.nasa.gov

Windy. Real time rainfall, winds and temperatures for locust migration
http://www.windy.com

eLocust3 suite. Digital tools for data collection in the field (mobile app, web form, GPS)
http://www.fao.org/ag/locusts/en/activ/DLIS/eL3suite/index.html

eLocust3 training videos. A set of 15 introductory training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHEdv1jAPaF02TCfpcnYoFQT

RAMSESv4 training videos. A set of basic training videos are available on YouTube
https://www.youtube.com/playlist?list=PLf7Fc-oGpFHGyzXqE22j8-mPDhhGNq5So

RAMSESv4 and eLocust3. Installer, updates, videos, inventory and support
https://sites.google.com/site/rv4elocust3updates/home

FAOLocust Twitter. The very latest updates posted as tweets
http://www.twitter.com/faolocust

FAOLocust Facebook. Information exchange using social media
http://www.facebook.com/faolocust

FAOLocust Slideshare. Locust presentations and photos
http://www.slideshare.net/faolocust

eLERT. Online database of resources and technical specifications for locust emergencies
http://sites.google.com/site/elertsite

Desert Locust Summary
Criquet pèlerin – Situation résumée

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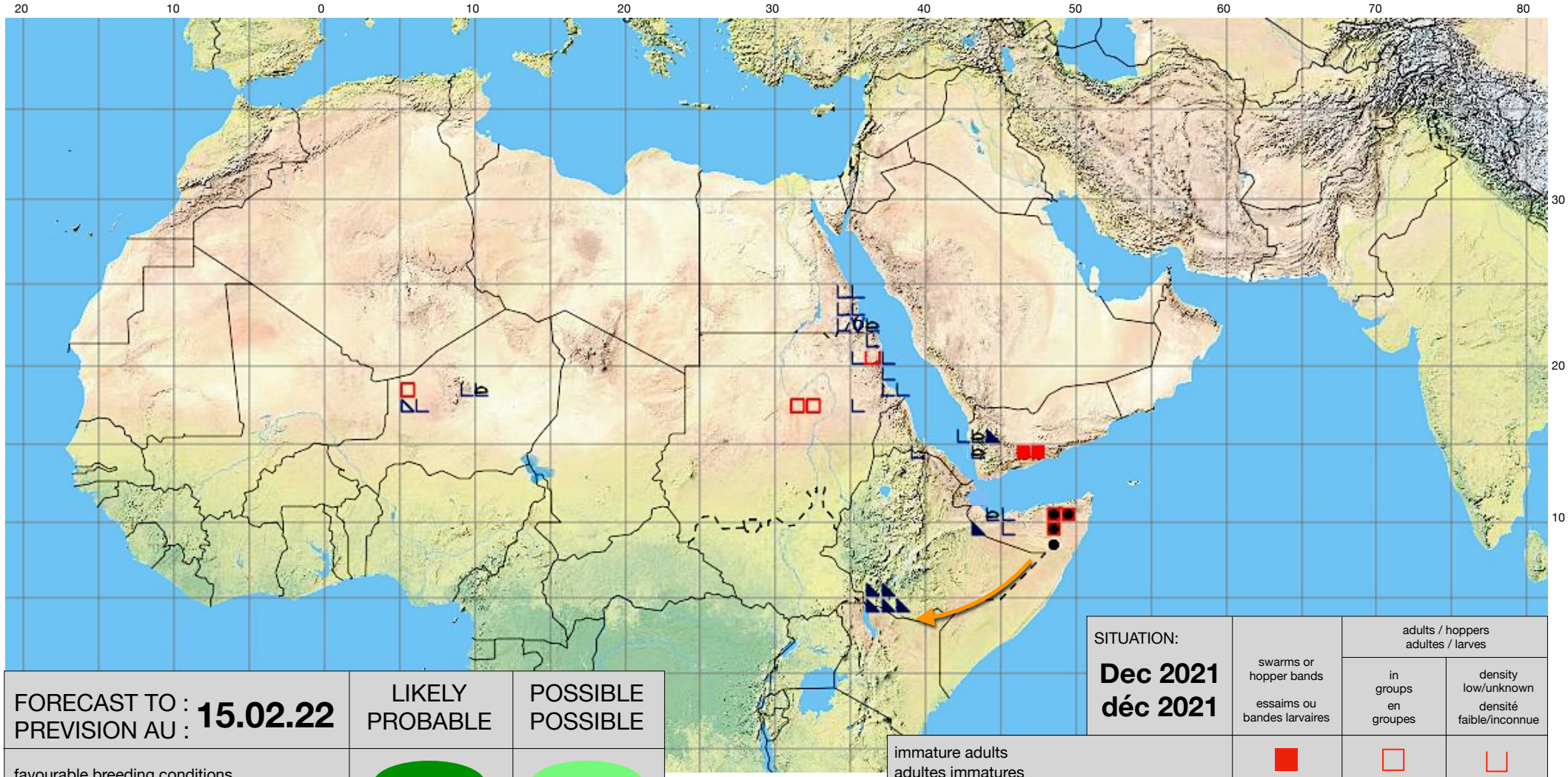

FORECAST TO : PREVISION AU : **15.02.22**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Dec 2021 déc 2021**	swarms or hopper bands essaims ou bandes larvaires	adults / hoppers adultes / larves	
		in groups en groupes	density low/unknown densité faible/inconnue
immature adults adultes immatures	■	□	⊔
mature or partially mature adults adultes matures ou partiellement matures	◣	◺	∟
adults, maturity unknown adultes, maturité inconnue	▲	△	∧
egg laying or eggs pontes ou œufs	▼	▽	∨
hoppers larves	●	○	⌓
hoppers & adults (combined example) larves et adultes (symboles combinés)	●■	○□	⌓⊔

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Threat Level = Serious (Central Region)

19 April 2021. Desert Locusts appear in Jordan and Syria

A few small mature Desert Locust adult groups and swarmlets appeared in the past few days in Jordan and Syria. The infestations are extremely limited in size and do not represent a large-scale invasion. Small-scale control operations have been carried out in both countries.

In Jordan, a few small groups and swarmlets first began appearing on 14–15 April in the south near Mudawwara and in the east near Ruwaished and the Rawdat Al-Bandan Reserve. Aerial control operations were immediately mounted by the Air Force, treating at least 300 ha.

In Syria, small mature groups arrived in the Euphrates Valley near the Iraq border on 17 April near Ash-Shafah and crossed the river to Al Sayyal in Abu Kamal district of the southeast. The adults settled near crops where local control operations were quickly undertaken and have treated about 120 ha so far.

The rare arrival of Desert Locust in Jordan and Syria are thought to be a single, unusual event caused by several days of strong southerly winds that brought the adult groups and swarmlets from currently infested areas several hundred kilometres to the south in northern Saudi Arabia near Tabuk and Al Jawf. The adults themselves originated from extensive breeding this past winter along the northern Red Sea coastal plains in Saudi Arabia. Although substantial control operations have been carried out by Saudi Arabia, treating more than 200,000 ha this year, it is common that some infestations escape detection and control because the breeding areas are so vast and remote.

While further arrivals are unlikely to occur in Jordan and Syria, there remains a risk that some of the mature adults may have laid eggs. If this is the case, hatching can be expected in about two weeks and small hopper groups and bands could form. If so, control teams should wait at least a week to ensure that all hatching is finished before treating in order to avoid spraying the same area more than once.

Elsewhere, the situation remains unchanged in the Horn of Africa where control operations continue against a decreasing number of immature swarms in Ethiopia, Kenya and Somalia.

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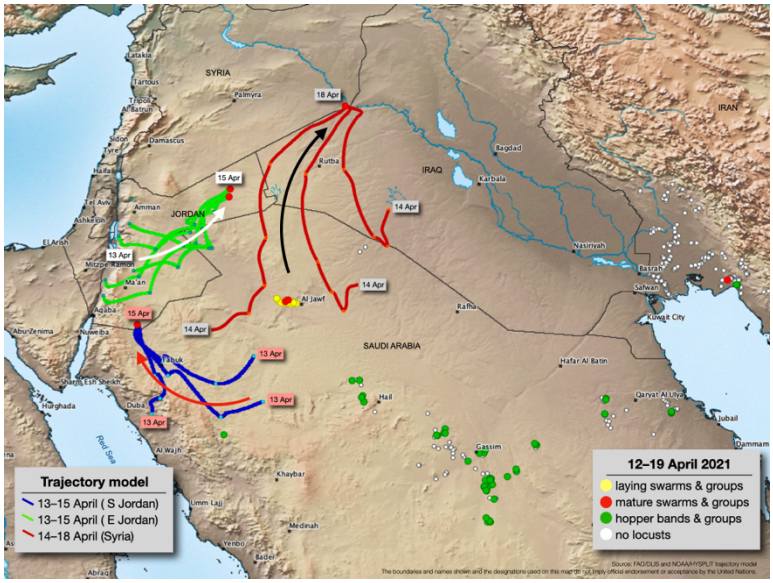

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Threat Level = Serious (Central Region)

23 April 2021. Desert Locusts spread in Jordan and Syria, appearing in Lebanon

Small groups of mature Desert Locust adults continued to appear in Jordan. While brief periods of southerly winds caused a further spread into western and central areas as well as northwards into western Syria and eastern Lebanon, the groups also moved in several different directions at other times due to variable winds. The infestations are limited in size and number. Small-scale control operations have been carried out in most areas.

In Jordan, more small groups of mature adults were seen on 18–19 April in the southern districts of Amman and near Kerak. On the 21st, similar infestations were mainly concentrated near Azraq but were also reported northeast of Ma'an and in the Jordan Valley.

In eastern Syria, a few small groups of mature adults moved northwest along the Euphrates Valley from Al Bukamal to Deir ez-Zur. In the west, a few small groups of mature adults were seen north of the Jordan border near Suwayda on 18–19 April and then further north near Qarah on the 22nd. Egg-laying was seen on the 23rd in the Qalamun Mountains north of Damascus.

In Lebanon, a few small groups of mature adults crossed the Anti-Lebanon Mountains from Syria into the Bekaa Valley near Aarsal and Ras Baalbek on 22 April. On the following day, a few returned to Syria near Flitah as the winds shifted. Control operations were quickly launched in both areas.

In western Iraq, there was a late report of mature adult groups seen near Rutba two weeks ago on 8 April.

The rare appearance of Desert Locust in these countries is a result of extensive breeding during this past winter along the northern Red Sea coastal plains in Saudi Arabia. In March, adult groups and swarms moved from the coast to the interior of Saudi Arabia where they scattered throughout a large portion of the north and laid eggs that have given rise to hopper bands recently. However, strong southerly winds carried some of the mature adult groups north from Saudi Arabia to Jordan, Iraq and Syria. Although control operations have treated more than 200,000 ha in Saudi Arabia this year, it is common that some infestations escape detection and control because of the vast and remote breeding areas.

A few more small groups of mature adults may arrive in Jordan and Syria, spreading northwards during southerly winds that are expected on 24–25 April. As the adults are already mature, there remains a risk that limited egg-laying will take place in moist sandy areas. If this is the case, hatching can be expected in about two weeks and small hopper groups and bands could form. If so, control teams should wait at least a week to ensure that all hatching is finished before treating in order to avoid spraying the same area more than once.

Elsewhere, widespread rains this past week have caused some of the swarms remaining in Ethiopia and Kenya to mature. Consequently, egg-laying, hatching and band formation are expected in May but at a much smaller scale than last year. Control operations continue.

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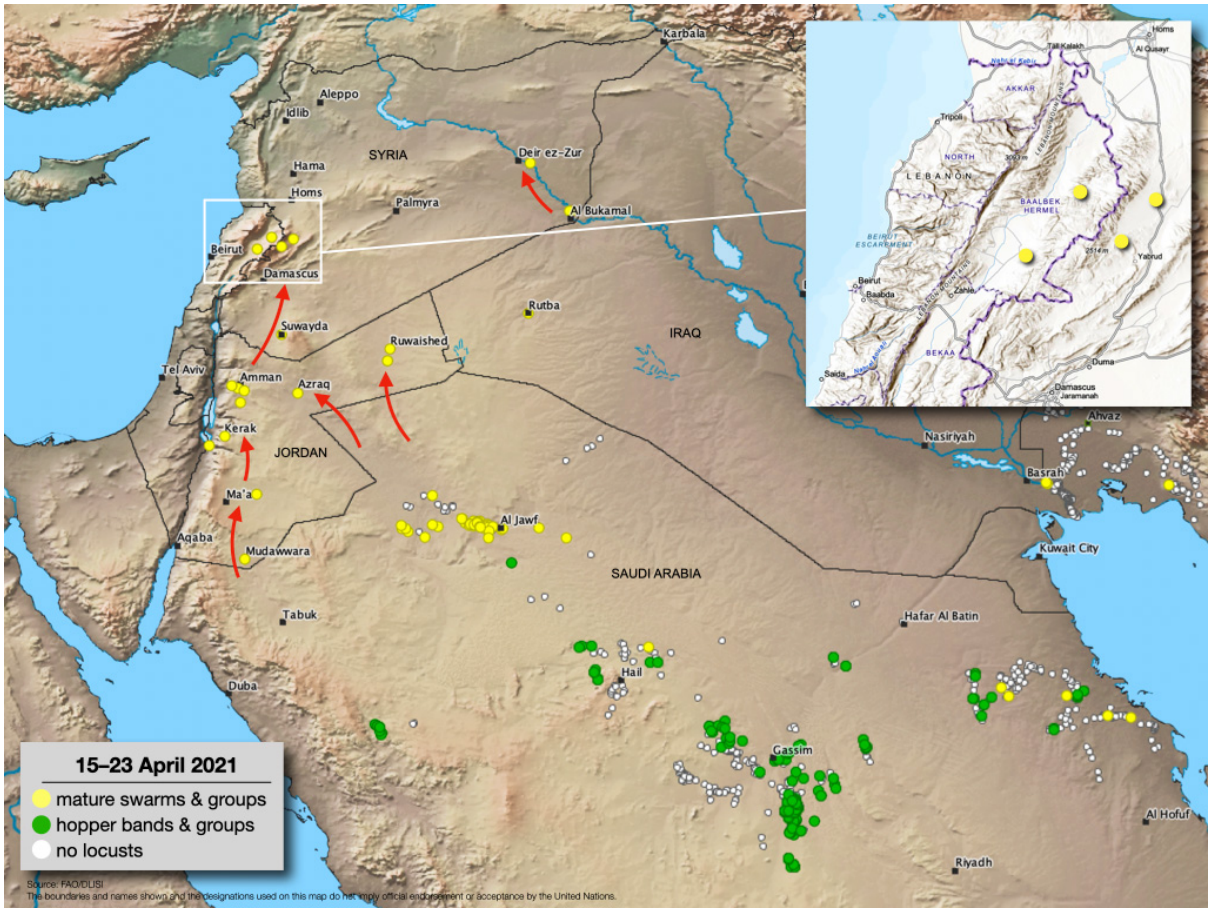
Karbala
Aleppo
Idlib
SYRIA
Hama
Homs
Palmyra
Deir ez-Zur
Al Bukamal
Beirut
Damascus
Rutba
Suwayda
Ruwaished
IRAQ
Tel Aviv
Amman
Azraq
Kerak
JORDAN
Ma'an
Aqaba
Mudawwara
Al Jawf
SAUDI ARABIA
Tabuk
Hail
Duba
Gassim
Hafar Al Batin
Nasiriyah
Basrah
Ahvaz
Kuwait City
Al Hofuf
Riyadh
LEBANON
NORTH
AKKAR
BAALBEK HERMEL
BEKAA
BEIRUT ESCARPMENT
Tripoli
Beirut
Baalbda
Zahle
Saida
Duma
Damascus
Jaramanah
Yabrud
Tal Kalakh
Homs
Al Qusayr
15–23 April 2021
mature swarms & groups
hopper bands & groups
no locusts
Source: FAO/DLIS
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Threat Level = Serious (Central Region)

13 April 2021. Upsurge declining in Horn of Africa where rains start

Desert Locust swarms are continuing to decline in Kenya, Ethiopia and Somalia as a result of ongoing control operations. However, good rains have fallen this month in parts of northern Kenya and southern Ethiopia that should allow current swarms to mature and lay eggs. This is likely to give rise to hatching and the formation of hopper bands during May. Compared to one year ago, the scale and extent of the upcoming breeding will be significantly smaller, and the teams, aircraft and other control resources that are currently in place should be able to manage the anticipated breeding.

Even though the situation continues to improve, it is paramount that all countries sustain their current survey and control efforts in reducing existing swarms as well as detecting and controlling any breeding in the coming months. Intense vigilance must be maintained until the autumn.

Currently, the majority of the locust infestations in the region are present in Ethiopia where immature swarms persist to the east of the Rift Valley in the Bale Mountains and Harar Highlands. Both these areas have received rainfall that has runoff towards the eastern lowlands where breeding is expected to occur. In the past week, immature and mature swarms have recently appeared in some of these areas, primarily in the Somali region from south of Jijiga to Kebri Dehar. Although the situation remains calm further south, a few small swarms may be present in southern Oromia and SNNP.

In Somalia, a few immature swarms were treated in the northeast between Galkayo and Gardo while there have been no recent reports of swarms in the northwest. In Kenya, a few elusive small swarms persist in Samburu county where they are maturing.

The further decline of the current upsurge in the Horn of Africa depends on rainfall and control operations during this spring and summer. If only limited breeding occurs in northern Kenya and southern Ethiopia from now until June, followed by poor rains in northeast Ethiopia during the summer, and assuming that survey and control operations can be maintained, then the situation is likely to return to normal by autumn.

Elsewhere, limited control operations continue against hopper bands on the Red Sea coast in Sudan. Control operations also continue against hopper groups and bands in the interior of Saudi Arabia where more hatching and band formation are expected within a widespread area. In Iran, control operations are underway against a few mature adult groups and swarms in the southwest where breeding is imminent.

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Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

12 AUGUST 2021. BREEDING LIKELY IN NORTHEAST ETHIOPIA

OVERVIEW. Aerial control operations continue against a few small immature swarms on the plateau in northwest **Somalia** while one swarm was seen in the northeast. Limited swarm breeding is thought to be underway in northern **Ethiopia** where good rains have fallen, but the security situation has deteriorated in the Afar region during the past week, hampering survey and control operations by air and ground. In **Yemen**, small-scale breeding is underway in the interior. Elsewhere, the situation remains calm, and no significant developments are likely.

WHY IT MATTERS. Swarms are not likely to move from Ethiopia and Somalia to Eritrea, Sudan, Yemen, and Saudi Arabia now. Instead, the swarms in northern Somalia may move back and forth across the Ethiopia/Somalia border where they are likely to persist and remain immature due to dry conditions. The mature swarms in northeast Ethiopia will finish laying eggs in areas of recent rain, including adjacent areas of southern Djibouti. Hatching and band formation are expected to take place this month in Afar, causing locust numbers to increase and leading to the formation of new immature swarms from late September onwards. Although the scale of the anticipated breeding will be much smaller than in the past two years, if the necessary survey and control operations cannot be carried out safely in Afar, then a greater number of swarms are likely to form than originally anticipated that would migrate east and threaten eastern Ethiopia and northern Somalia in October.

CONTEXT. Continued insecurity could prolong the current upsurge in the Horn of Africa.

- **SOMALIA.** Aerial control operations continue against a low number of immature swarms that persist on the plateau in the northwest (Somaliland). At least one small swarm moved east to the northeast (Puntland) in the past week. A few swarms are likely to stay on the plateau and remain immature.
- **ETHIOPIA.** Low numbers of mature swarms are likely to be present and laying eggs in areas of recent rainfall in Afar with hatching and band formation imminent. However, most all areas can no longer be accessed due to a recent deterioration in security.
- **YEMEN.** Good rains fell in parts of the interior and small-scale breeding is underway with a few groups of hoppers and adults; no invasions are expected.
- **SUDAN.** Scattered adults in the interior where small-scale breeding will occur; no invasions are expected.
- **SAUDI ARABIA.** No locusts in the southwest; no invasions are expected.
- **W AFRICA.** Scattered adults in Niger and Chad where small-scale breeding will occur.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan, and India.

TAKEAWAY. Current field operations in northern Somalia should be maintained while upscaling of surveys is needed in northeast Ethiopia and Djibouti.

- **Central Region** (SERIOUS) – increase operations in Djibouti and, if possible, northeast Ethiopia
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)

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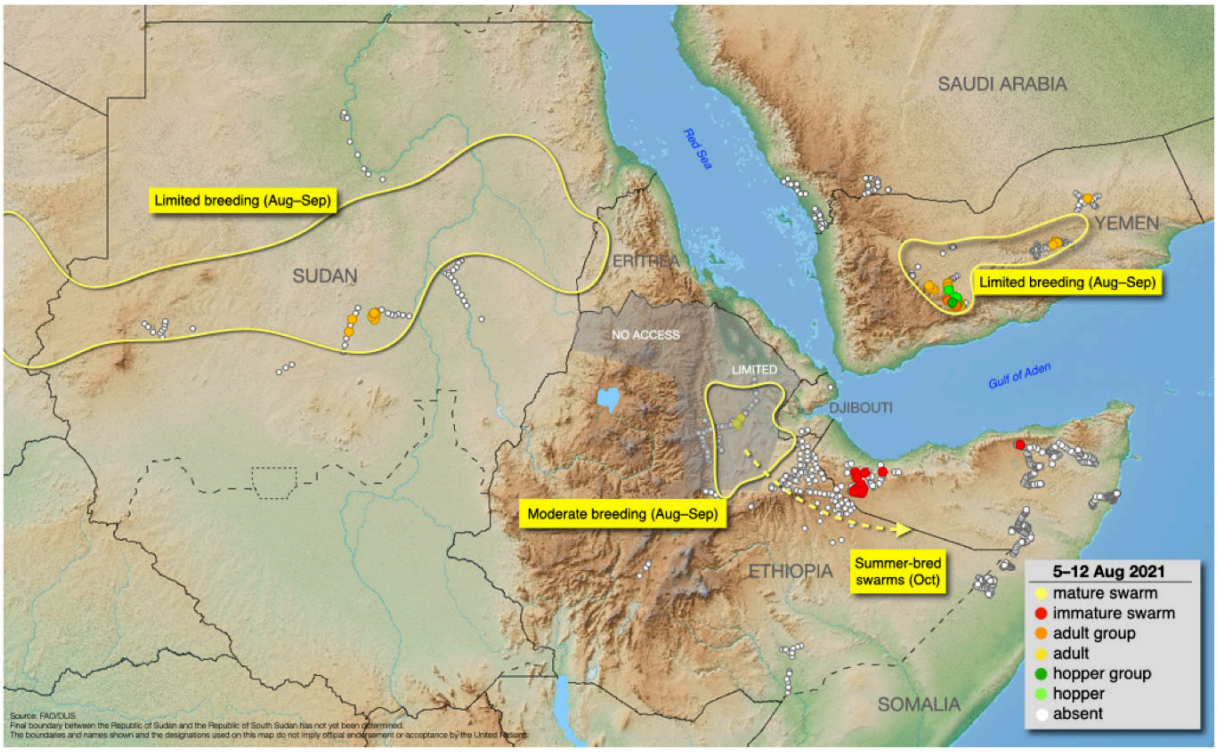

CURRENT SITUATION. Moderate breeding is likely to be underway in northeast Ethiopia and small-scale breeding, normal for this time of year, is expected in Yemen and Sudan.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

25 AUGUST 2021. REMNANT SWARMS IN N SOMALIA

OVERVIEW. A few small immature swarms remain on the plateau in northwest **Somalia** while several more immature swarms were seen recently in the northeast as a result of arrivals from northwest Somalia and undetected local breeding. Aerial control operations are underway in both areas. Hatching and the formation of small hopper bands are almost certainly underway in northeast **Ethiopia**, but this could not be confirmed as the area cannot be accessed due to security concerns. In **Yemen**, a few hopper bands have formed on the southern coast and small-scale breeding is underway in the interior. Elsewhere, the situation remains calm, and no significant developments are likely.

WHY IT MATTERS. It was anticipated that there was a good possibility to bring the current upsurge to an end with an effective control campaign this summer in northeast Ethiopia. However, ground and aerial teams are unable to access the breeding locations in the Afar region to conduct survey and control operations due to insecurity. Consequently, locusts will continue to increase unabated in that region and new immature swarms are likely to start forming in the last days of September and continue into October. As vegetation dries out in Afar, some of the swarms are likely to migrate north towards the winter breeding areas along the coast in Eritrea while others will move east to the eastern Somali region in Ethiopia and adjacent areas of northern Somalia. The extent of subsequent breeding in both areas is difficult to predict because it depends on the scale of summer breeding in northeast Ethiopia, which is not likely to be well known, and rains that fall during the last quarter of this year. Contingency preparations will need to be taken to address these uncertainties.

CONTEXT. Continued insecurity could prolong the current upsurge in the Horn of Africa.

- **SOMALIA.** Limited aerial control operations continue against a few remnant immature swarms on the plateau and coast in the northwest (Somaliland); a few more swarms were sighted in the northeast (Puntland) likely from earlier undetected local breeding and arriving from the northwest.
- **ETHIOPIA.** Hatching and hopper band formation likely to be underway in Afar but cannot be confirmed or addressed due to insecurity and no access; no locusts in Somali region.
- **YEMEN.** Limited hopper bands on southern coast; small-scale breeding in the interior.
- **SUDAN.** Scattered adults in the interior where small-scale breeding likely to be underway.
- **SAUDI ARABIA.** No locusts in the southwest; no invasions are expected.
- **W AFRICA.** Scattered adults in Chad and small-scale breeding likely to be in progress.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan, and India.

TAKEAWAY. Current field operations in northern Somalia should be maintained while upscaling of surveys is needed in northeast Ethiopia and Djibouti.

- **Central Region** (SERIOUS) – increase operations in Djibouti and, if possible, northeast Ethiopia
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)

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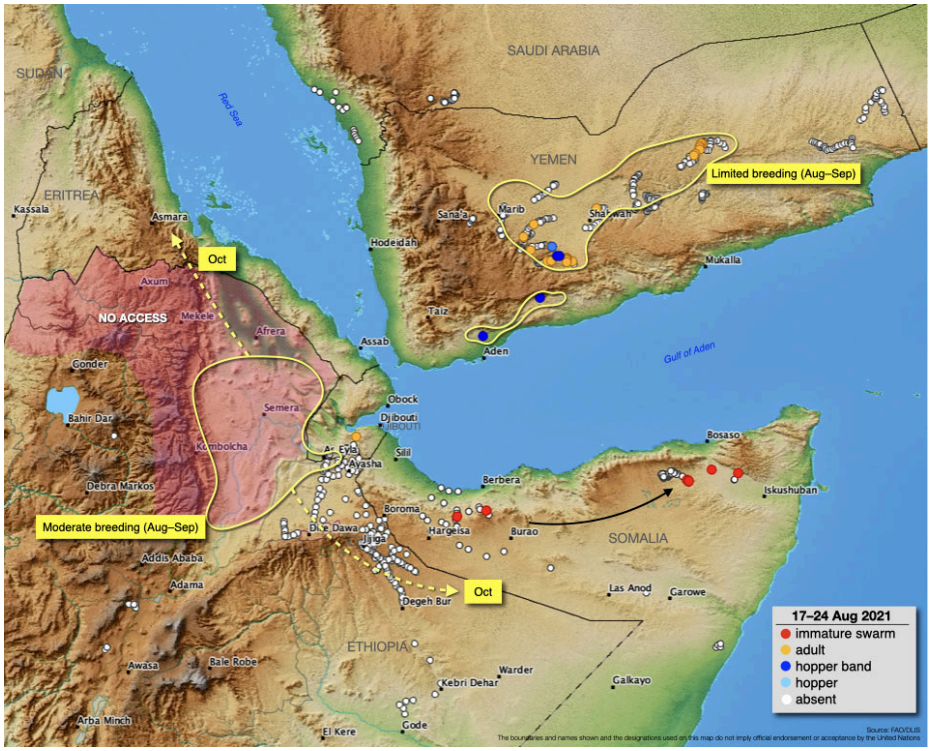

CURRENT SITUATION. Moderate breeding is likely to be underway in northeast Ethiopia and small-scale breeding is in progress in Yemen.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

5 AUGUST 2021. FAVOURABLE BREEDING CONDITIONS

OVERVIEW. In the past week, only a very few mature swarms have been detected in northeast **Ethiopia** (Afar region) while several swarms remain immature on the plateau in northwest **Somalia**. The prevailing strong winds and cool temperatures have limited swarm activity in northwest Somalia as well as control operations, which are just now increasing as the winds have dropped in the past few days. No control has been carried out in Ethiopia due to a lack of targets and some areas could not be surveyed because of persistent accessibility issues. In **Yemen**, surveys are increasing in the interior where only low numbers of locusts are currently present.

WHY IT MATTERS. Good rains have fallen in northeast Ethiopia and parts of southern Djibouti that have caused conditions to become favourable for breeding. It is now critical for ground and aerial teams to find and treat any remaining mature swarms before they lay eggs to limit breeding. But it will also be necessary to prepare for eventual control operations against hopper bands that will form once hatching takes place later this month, especially in those areas where breeding could not be detected. Nevertheless, the upcoming breeding and control operations are expected to be on a much smaller scale than in the past two years and will be concentrated mainly in the Afar region.

CONTEXT. The start of breeding is likely to be underway in the summer breeding areas.

- **SOMALIA.** Aerial control operations continue, whenever possible, against several immature swarms that remain on the escarpment and plateau in the northwest (Somaliland). Additional ground teams are being deployed.
- **ETHIOPIA.** Low numbers of mature swarms are likely to be present and laying eggs in areas of recent rainfall in Afar. However, few swarms have been seen recently by field teams and some areas cannot be fully accessed.
- **YEMEN.** An immature swarm was moving about in the southern highlands, and low numbers of adults are present in the interior where good rains fell earlier.
- **ERITREA.** Low numbers of adults in the western lowlands near the Ethiopia border for summer breeding.
- **SUDAN.** Scattered adults in the interior for summer breeding.
- **W AFRICA.** Scattered adults in Niger and Chad for summer breeding.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Current field operations in northern Somalia should be maintained while upscaling of surveys is needed in northeast Ethiopia and Djibouti.

- **Central Region** (SERIOUS) – increase operations in northeast Ethiopia and southern Djibouti
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)

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CURRENT SITUATION. Conditions are favourable for moderate breeding in northeast Ethiopia and small-scale breeding in Yemen and Sudan.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

14 DECEMBER 2021. FLEDGING STARTS IN NE SOMALIA

OVERVIEW. The fledging of hoppers into immature adults commenced today in northeast Somalia where aerial and ground control operations continue against late instar hopper bands. The operations have been extremely effective in reducing the infestations and delaying fledging by at least one week. In southern Ethiopia, limited aerial control operations continue against a couple of small mature swarms that persist in the Rift Valley of SNNP near the Kenya border. Low numbers of solitarious locusts are present in winter breeding areas along both sides of the Red Sea.

WHY IT MATTERS. The current success of control operations in northeast Somalia has undoubtedly limited the number and size of immature swarms that will form in the next two weeks. Nevertheless, a few small swarms from undetected and untreated areas should start to form in the coming week given current temperatures. Since vegetation is drying out and the prevailing winds are from the northeast, the swarms are likely to migrate southwards, passing over central Somalia and eastern Ethiopia to reach southeast Ethiopia, northeast Kenya, and southern Somalia on about 24 December or thereafter. Upon arrival, the swarms should continue further west in Wajir, Marsabit, Samburu, and Turkana counties of Kenya and southern parts of Oromia and SNNP regions in Ethiopia. The threat of swarm arrival in these areas should subside by early January. It will take at least one month for the swarms to mature and be ready to lay eggs. By that time, however, conditions are not likely to be favourable since it will be the dry season. Consequently, the swarms may remain immature until the long rains arrive in April/May, which would allow maturation and egg-laying. Given this scenario, field teams are expected to have the necessary resources, experience, and time to control the swarms before April and bring the current upsurge to an end.

CONTEXT. Two hot spots, in Somali and Ethiopia, remain in the Horn of Africa.

- **SOMALIA.** Control operations continue against small late instar hopper bands in the NE where fledging started today, which will cause a few small immature swarms to form after about a week.
- **ETHIOPIA.** Control continues against a few small mature swarms that persist in the Rift Valley of southern SNNP near the Kenya border.
- **KENYA.** No locusts seen, but limited breeding could be underway along northern border.
- **ERITREA.** Scattered adults on the central Red Sea coast.
- **YEMEN.** Scattered adults on the Red Sea coast.
- **SUDAN.** Infestations declining in the interior; scattered adults on the Red Sea coast.
- **EGYPT.** Scattered adults on the Red Sea coast in the southeast.
- **SAUDI ARABIA.** No locusts on the southern coast of Red Sea but may arrive from nearby Yemen.

TAKEAWAY. Maintain current efforts to reduce swarm formation in the Horn of Africa.

- **Central Region** (SERIOUS) – maintain operations (Ethiopia, Somalia); increase vigilance (N. Kenya)
- **Western Region** (CALM) – no significant activities
- **Eastern Region** (CALM) – no significant activities

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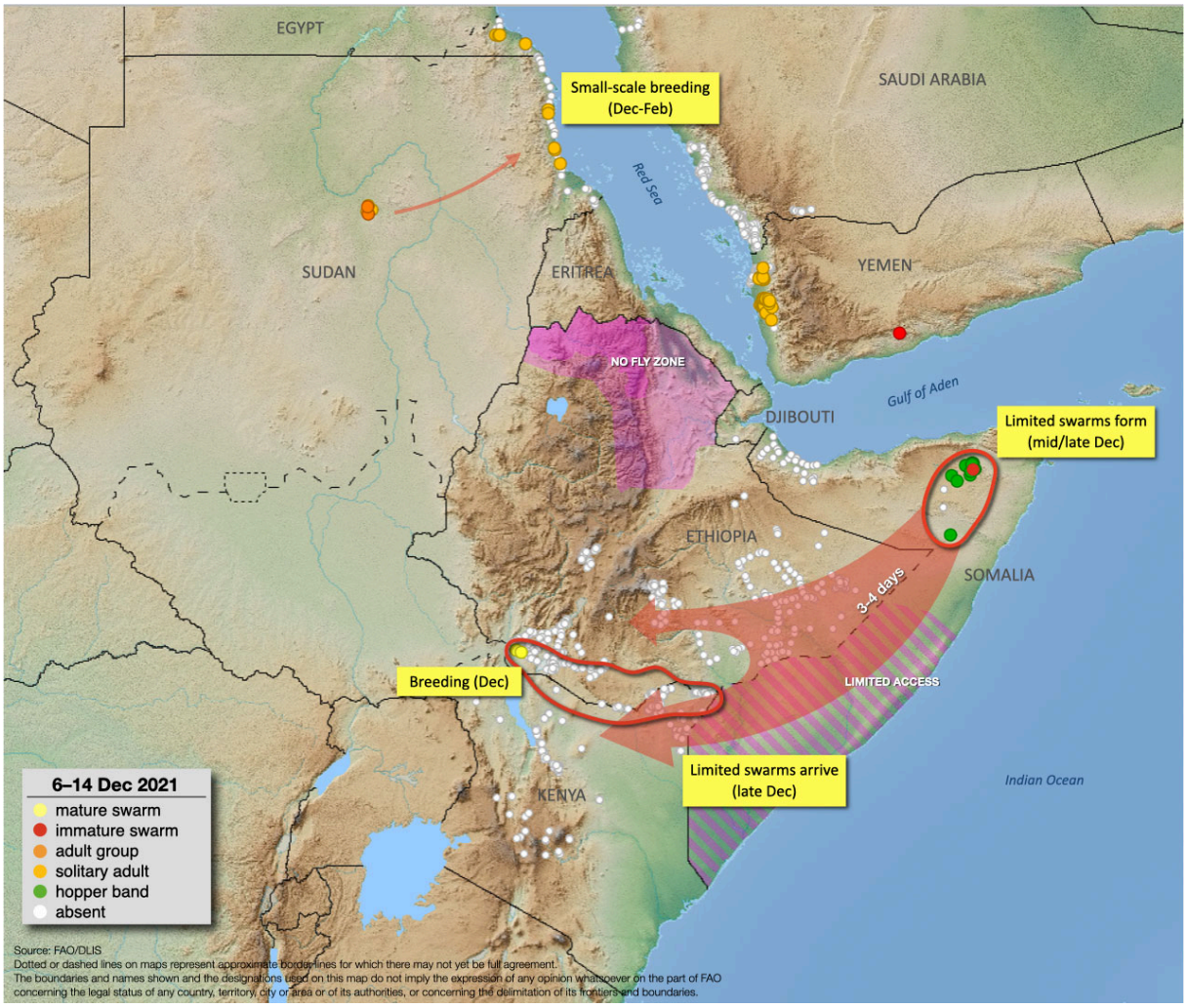

CURRENT SITUATION. Fledging commenced today in NE Somalia where control operations continue against late instar hopper bands. Control also continues against a few small mature swarms remaining in S Ethiopia. Low numbers of adults are present in winter breeding areas along both sides of the Red Sea.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

23 DECEMBER 2021. SMALL SWARMS FORM IN NE SOMALIA

OVERVIEW. As late instar hopper bands continue to fledge, more new small immature swarms are forming in northeast Somalia where aerial and ground control operations are in progress north of Garowe. Limited aerial control operations continue against a few small immature and mature swarms that persist in the Rift Valley of SNNP near the Kenya border. Low numbers of solitarious locusts are present in winter breeding areas along both sides of the Red Sea and on the Gulf of Aden coast of northwest Somalia, and limited breeding has started in a few places.

WHY IT MATTERS. The current success of control operations in northeast Somalia is limiting the number and size of immature swarms that will form in the next two weeks. By the end of this month, nearly all hopper bands will have fledged. Consequently, a few more small swarms will form. So far, the new swarms have not moved much from the breeding areas; however, this will change as they become stronger and vegetation dries out, giving rise to a southwards migration that passes over central Somalia and eastern Ethiopia to reach southeast Ethiopia, northeast Kenya, and southern Somalia at any time in the coming week. Upon arrival, the swarms should continue further west in Wajir, Marsabit, Samburu, and Turkana counties of Kenya and southern parts of Oromia and SNNP regions in Ethiopia. The threat of swarm arrival in these areas should subside by mid-January. It will take at least one month for the swarms to mature and be ready to lay eggs. By that time, however, conditions in southern Ethiopia and northern Kenya are unlikely to be favourable since it will be the dry season. Consequently, the swarms may remain immature until the long rains arrive in April/May, which would allow maturation and egg-laying. Given this scenario, field teams are expected to have the necessary resources, experience, and time to control the swarms before April and bring the current upsurge to an end.

CONTEXT. New swarms form in northeast Somalia but have yet to start migrating southwards.

- **SOMALIA.** Control operations continue against small late instar hopper bands and newly formed immature swarms in the NE; scattered adults in the northwest with limited breeding.
- **ETHIOPIA.** Control continues against a few small swarms that persist in the Rift Valley of southern SNNP near the Kenya border.
- **KENYA.** No locusts seen, but limited breeding could be underway along the northern border.
- **RED SEA.** Scattered adults on the coast of Yemen, Sudan, and SE Egypt while limited breeding started in Egypt and Yemen; no locusts on the coast of Saudi Arabia and Eritrea.

TAKEAWAY. Maintain current efforts to reduce swarm formation in the Horn of Africa.

- **Central Region** (SERIOUS) – maintain operations (Ethiopia, Somalia); increase vigilance (N. Kenya)
- **Western Region** (CALM) – no significant activities
- **Eastern Region** (CALM) – no significant activities

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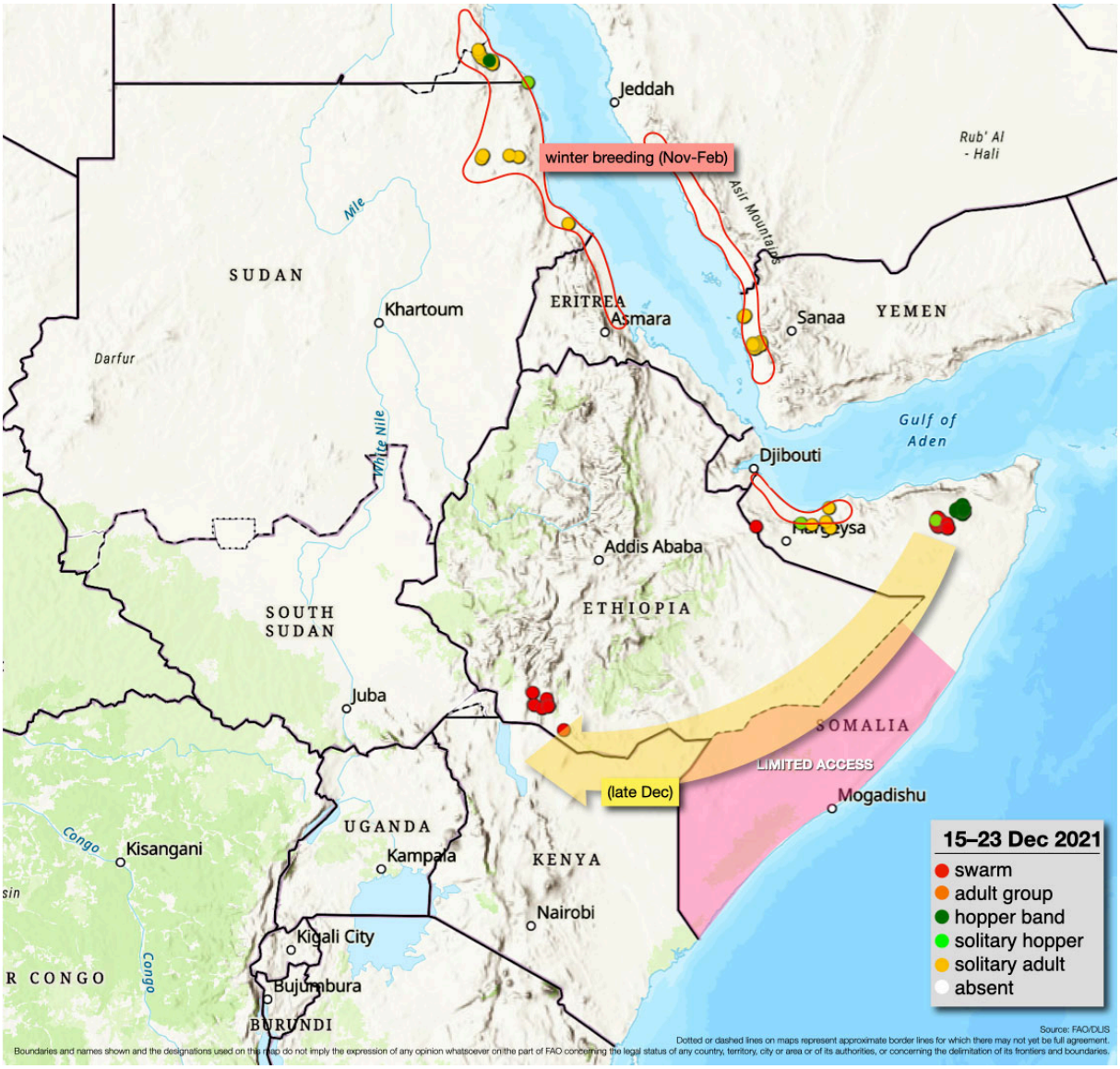

CURRENT SITUATION. Control operations continue against small late instar hopper bands and new swarms in NE Somalia, and against a few small mature swarms remaining in S Ethiopia. Low numbers of adults are present in winter breeding areas along both sides of the Red Sea where breeding has started in some places.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

22 JULY 2021. SWARMS MATURE WITH RAINS IN NE ETHIOPIA

OVERVIEW. As a result of ongoing intensive aerial control operations, the number and size of immature swarms in northwest **Somalia** continues is declining. Strong winds have limited swarm movement and hamper aerial operations at times. Although no new swarms have arrived in northeast **Ethiopia** during the past week, good rains have fallen and some of the swarms have moved towards the western lowlands of Afar where they have matured and are likely to be ready to lay eggs. A few swarms may have reached the highlands in Amhara and eastern Tigray where they are expected to continue to the summer breeding areas in Sudan. In **Yemen**, one immature swarm seen earlier in the highlands moved further south where it is likely to continue to areas of recent rainfall in the interior.

WHY IT MATTERS. Effective survey and control operations in northern Somalia and eastern Ethiopia are key in reducing breeding that will occur in northeast Ethiopia from now until September. Seasonal rains have commenced in Afar and above normal rainfall is expected during the next four weeks that will allow one generation of breeding between now and September. The current swarms will complete their maturation and lay eggs that should begin to hatch in early August, giving rise to hopper bands, which could eventually lead to the formation of new immature swarms from late September onwards. The risk of swarms from Yemen arriving in Afar continues to decline.

CONTEXT. Important infestations remain in the Horn of Africa while other regions are calm.

- **SOMALIA.** Aerial control operations continue against a few remaining immature swarms on the coast, escarpment and plateau in the northwest (Somaliland). Swarm movement is limited due to cooler temperatures on the plateau and strong winds.
- **ETHIOPIA.** Earlier swarms along the eastern escarpment of the Amhara highlands near Kombolcha have moved eastwards to the foothills and lowlands in western Afar where some have matured and ready to lay eggs in areas of recent rainfall. Aerial operations have shifted from Semera to Kombolcha.
- **YEMEN.** An immature swarm seen earlier in the highlands has moved further south to northeast of Aden; small-scale breeding is underway in parts of the interior where good rains have fallen.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Current field operations should be upscaled in northeast Ethiopia and maintained in northern Somalia, Djibouti and Yemen.

- **Central Region** (SERIOUS) – increase operations in Afar and eastern Amhara (Ethiopia)
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)

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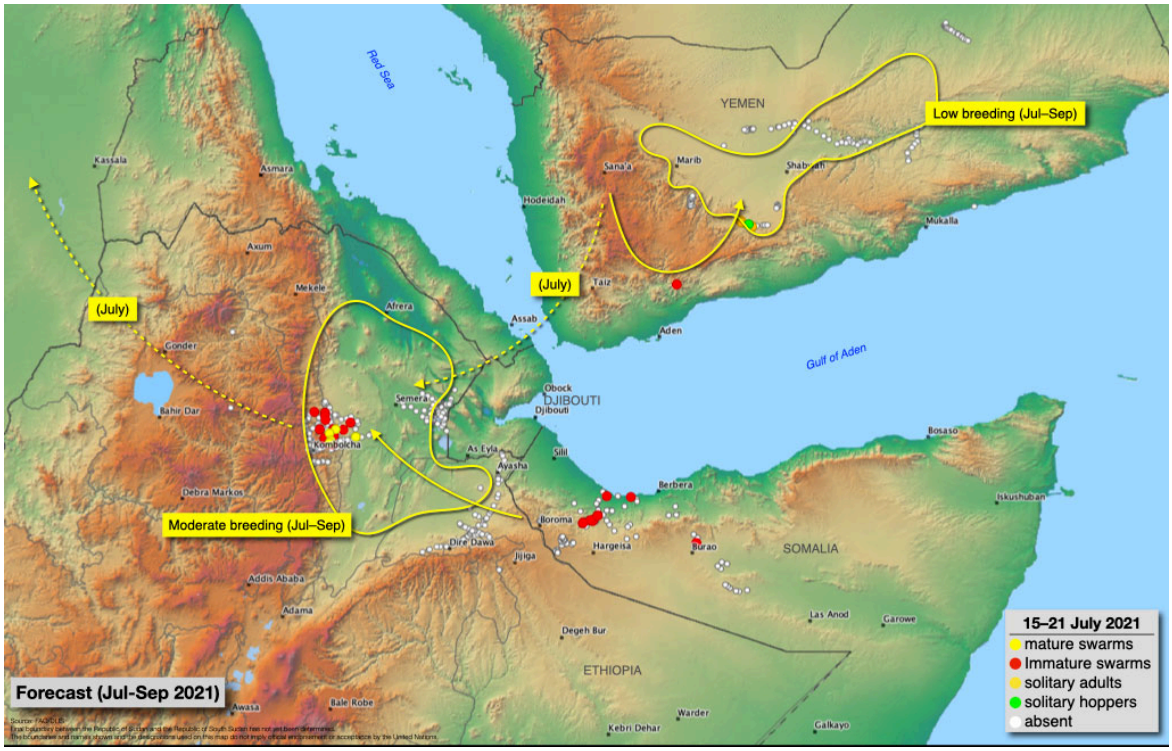

CURRENT SITUATION. Aerial control operations continue against swarms in NW Somalia as swarms mature in NE Ethiopia where good rains have fallen.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

29 JULY 2021. GOOD RAINS IN DJIBOUTI AND NE ETHIOPIA

OVERVIEW. A few small immature swarms persist in northwest **Somalia** where aerial survey and control operations continue on the plateau and escarpment. The situation is less clear in northeast **Ethiopia** because surveys are limited since many areas are difficult to access now. As good rains have fallen in the Afar region during the past week, some swarms are almost certainly present and probably ready to lay eggs. Some early egg-laying may have already occurred in parts of Afar. The situation is likely to be similar in southern **Djibouti** where unusually good rains fell in the past days. In **Yemen**, an immature swarm reached the southern edge of the summer breeding area in the interior where good rains have fallen recently.

WHY IT MATTERS. While effective control operations in northwest Somalia have reduced the scale of swarm migration to northeast Ethiopia, the upcoming months will be crucial in determining the continuation of the upsurge. One generation of summer breeding is expected to occur during August and September in the Afar region of Ethiopia, which is likely to extend into adjacent areas of southern Djibouti. Consequently, new summer-bred swarms could start to form from late September onwards. In the next few weeks, the situation may seem to be calm with few locust reports as the current swarms finish laying eggs and before the subsequent hopper bands are detected. Nevertheless, it is important to maintain and upscale surveys to detect the location and scale of breeding and plan control operations.

CONTEXT. Important infestations remain in parts of the Horn of Africa while other regions are calm.

- **SOMALIA.** Aerial control operations continue against a few remaining immature swarms on the escarpment and plateau in the northwest (Somaliland). Swarm movement remains limited due to cooler temperatures on the plateau and strong winds.
- **ETHIOPIA.** No reports of locusts due to access issues in Afar but there are unconfirmed sightings of swarms in a few areas. Other swarms are likely to be present and breeding is imminent in areas of recent rainfall. Aerial operations have shifted from Kombolcha to Dire Dawa.
- **YEMEN.** An immature swarm seen earlier in the highlands has reached the southern edge of the summer breeding areas near Ataq in the interior. Despite a lack of surveys this past week, small-scale breeding is expected to be continuing in parts of the interior where good rains have fallen.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Current field operations in northern Somalia should be maintained while upscaling of surveys is needed in northeast Ethiopia, Djibouti and Yemen.

- **Central Region** (SERIOUS) – increase operations in northeast Ethiopia and southern Djibouti
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)

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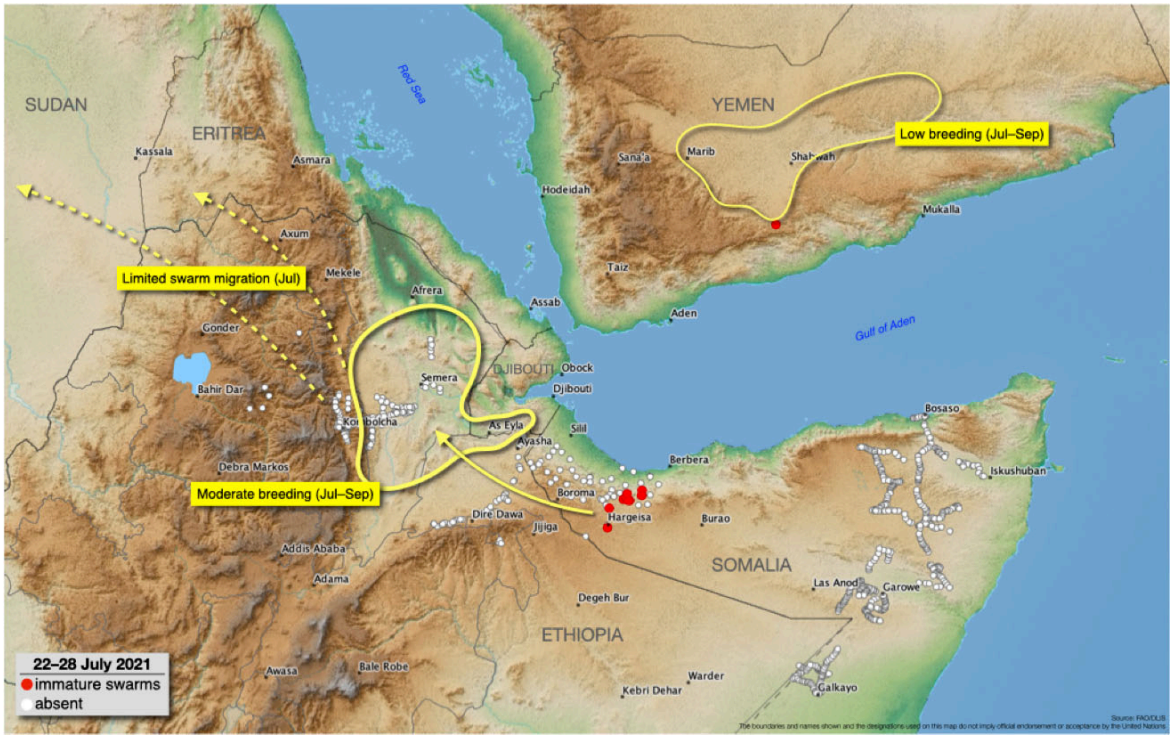

CURRENT SITUATION. Limited aerial control operations continue against a few swarms in NW Somalia while no locusts have been reported recently in NE Ethiopia due to access issues.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

2 JULY 2021. SWARMS IN SOMALIA

OVERVIEW. After an initial short-lived decline, immature swarms are increasing in northwest Somalia where control operations and local movements are in progress. There has been a recent increase in swarm sightings in adjacent areas of Ethiopia and Djibouti. While some of this may be due to local breeding, it may also be the first signs of the expected migration towards northeast Ethiopia. On 30 June, an immature swarm was seen on the eastern escarpment near the Amhara/Afar border. There is a risk that a few swarms could continue through the northern highlands to Sudan. In Yemen, a few swarms from the north appeared recently in the northern highlands. While most of these swarms should move to the interior for summer breeding, a few could migrate to Afar.

WHY IT MATTERS. The effectiveness of current survey and control operations in northern Somalia and eastern Ethiopia determines the scale of swarm migration to northeast Ethiopia. Similarly, the scale of breeding this summer in the Afar region is influenced by the number of swarms arriving from the east and Yemen, and rainfall from July to September, which is predicted to be higher than normal this year.

CONTEXT. Important infestations remain in the Horn of Africa while other regions are calm.

- **SOMALIA.** Aerial and ground operations reduced locust infestations on the coast, escarpment, and plateau in the northwest (Somaliland) where very few swarms have been seen in the past few days.
- **ETHIOPIA.** A few late instar hopper bands and several immature swarms are present in the railway area near Ayasha and the borders of Djibouti and Somalia.
- **DJIBOUTI.** Small late instar hopper bands and immature swarms are present in the south.
- **SAUDI ARABIA.** No locusts have been seen since 22 June.
- **YEMEN.** An immature swarm was seen in the highlands north of Sana'a on 30 June.
- **SUDAN.** Local breeding and scattered adults with a few small groups are present in the interior.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Current field operations as well as extreme vigilance should be maintained in Ethiopia, northern Somalia, Djibouti and Yemen.

- **Central Region** (SERIOUS) – heightened alert and preparedness in Afar (Ethiopia)
- **Eastern Region** (CALM) – initiate summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – initiate summer surveys (northern Sahel)

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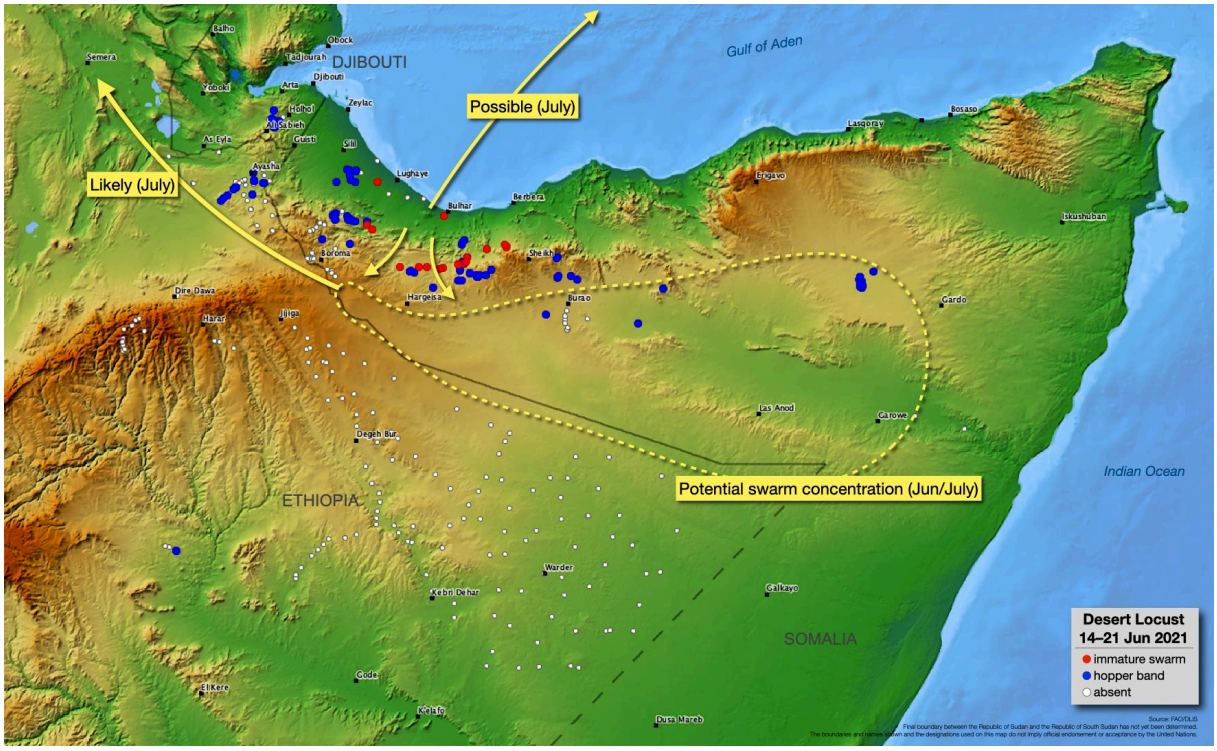

CURRENT SITUATION. Hopper bands are present in NW Somalia and adjacent areas of eastern Ethiopia and Djibouti. Several small immature swarms have started to form on the coast and escarpment in NW Somalia.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

8 JULY 2021. SWARMS ARRIVING IN NORTHEAST ETHIOPIA

OVERVIEW. Intensive aerial control operations continue against numerous immature swarms in northwest **Somalia**. Some of the swarms have started to migrate as there has been an increase in sightings and cross-border movements during the past few days in southern **Djibouti**, eastern **Ethiopia** and in the Afar region of northeast Ethiopia along the eastern escarpment of the Amhara Highlands. More swarms are expected to appear in Afar during the coming week and some may reach the northern highlands where they may continue to the summer breeding areas in the interior of Sudan. A few swarms could also arrive in Afar from **Yemen**.

WHY IT MATTERS. The effectiveness of current survey and control operations in northern Somalia and eastern Ethiopia will influence the magnitude of swarm migration to northeast Ethiopia. So far, migration has been limited but more swarms are likely to arrive this month, mature and lay eggs. The scale of the migration as well as the timing and location of July–September rainfall, which is predicted to be higher than normal this year, will determine the level of breeding this summer in the Afar region.

CONTEXT. Important infestations remain in the Horn of Africa while other regions are calm.

- **SOMALIA.** Mainly aerial control operations continue against immature swarms and the few remaining late instar hopper bands on the escarpment and plateau in the northwest (Somaliland); no locust seen during surveys in the northeast (Puntland).
- **ETHIOPIA.** A few immature swarms have arrived in Afar along the eastern escarpment of the Amhara highlands and one swarm continued into the highlands; other swarms are forming and appearing in the railway area near Ayasha where a few late instar hoppers bands are still present.
- **DJIBOUTI.** More immature swarms have been seen recently in the south coming from local breeding as well as adjacent areas of Somalia and Ethiopia.
- **YEMEN.** A few immature swarms persist in the highlands north of Sana'a; scattered adults are present in the interior where limited breeding is underway.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Current field operations should be upscaled in northeast Ethiopia and maintained in eastern Ethiopia, northern Somalia, Djibouti and Yemen.

- **Central Region** (SERIOUS) – increase operations in Afar (Ethiopia)
- **Eastern Region** (CALM) – initiate summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – initiate summer surveys (northern Sahel)

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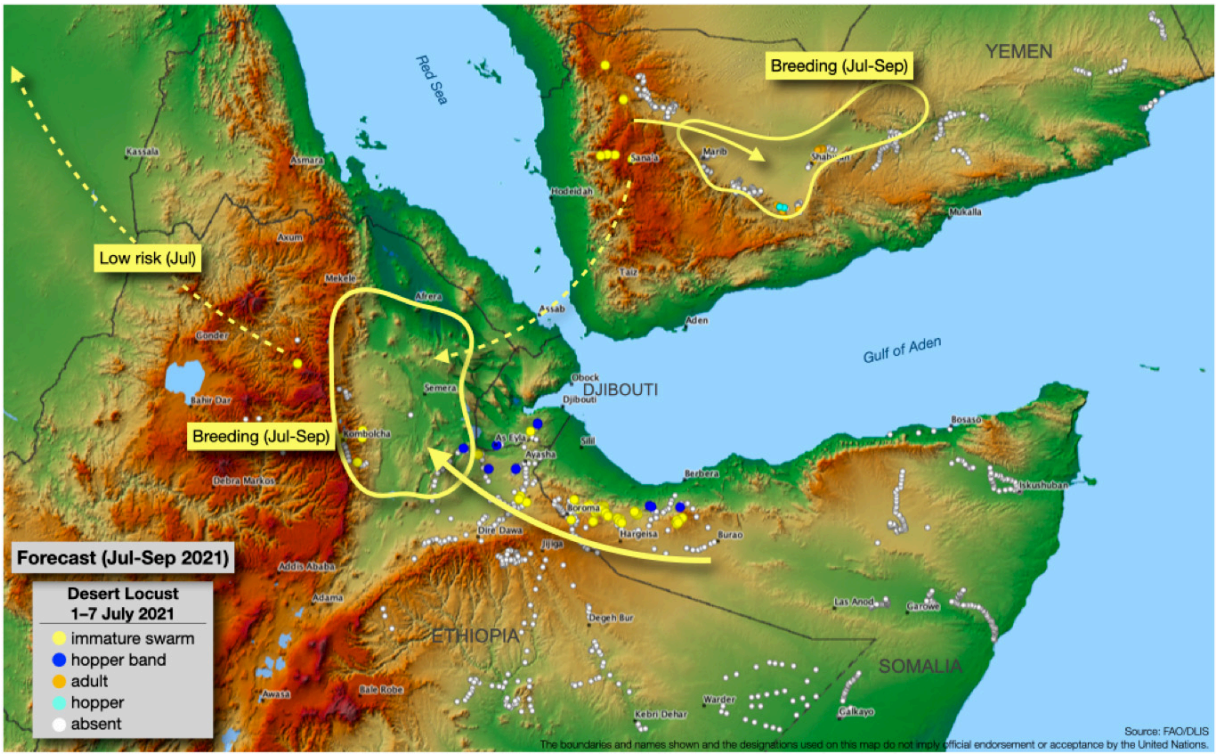

CURRENT SITUATION. Few hopper bands remain as mainly immature swarms are present in NW Somalia and adjacent areas of eastern Ethiopia and Djibouti. A few immature swarms have started to arrive in NE Ethiopia.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

15 JULY 2021. SWARMS CONTINUE IN NORTHEAST ETHIOPIA

OVERVIEW. Important Desert Locust infestations persist in the Horn of Africa where intensive aerial control operations are continuing against immature swarms in northwest **Somalia** and, to a lesser extent, in northeast **Ethiopia** where a few swarms are present along the eastern escarpment of the northern highlands in eastern Amhara and western Afar regions. Light rains have fallen in northwest Somalia and northeast Afar. Low numbers of swarms from northwest Somalia and perhaps Yemen are expected to appear in Afar during the coming week. A few of these swarms may move into the northern highlands where they should continue to the summer breeding areas in the interior of Sudan.

WHY IT MATTERS. Effective survey and control operations in northern Somalia and eastern Ethiopia are key in reducing breeding that will occur in northeast Ethiopia in the coming months. This is even more important as rains have already started to fall in Afar and are expected to be above normal from now until September. This will allow the swarms to finish their maturation and lay eggs, which are expected to start to hatch in early August, giving rise to hopper bands that could eventually lead to the formation of new immature swarms from late September onwards.

CONTEXT. Important infestations remain in the Horn of Africa while other regions are calm.

- **SOMALIA.** Mainly aerial control operations continue against immature swarms on the plateau in the northwest (Somaliland); no locusts seen during surveys in the northeast (Puntland).
- **ETHIOPIA.** Control operations are underway against earlier swarms that arrived and split up along the eastern escarpment of the Amhara highlands near Kombolcha. There are recent reports from a number of nearby districts as well as a swarm moving north towards Chifra today; a few immature swarms remain in the railway area near Ayasha.
- **DJIBOUTI.** An immature swarm is present north of Ali Sabieh.
- **YEMEN.** An immature swarm was seen in the highlands near Sana'a while another moved further south towards Taiz; small-scale breeding is underway in parts of the interior.
- **SUDAN.** Limited control was carried out against groups of hoppers and adults in the northern Nile Valley near Karima.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Current field operations should be upscaled in northeast Ethiopia and maintained in eastern Ethiopia, northern Somalia, Djibouti and Yemen.

- **Central Region** (SERIOUS) – increase operations in Afar and eastern Amhara (Ethiopia)
- **Eastern Region** (CALM) – initiate summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – initiate summer surveys (northern Sahel)

Photo: Immature swarm settled in eastern escarpment of Amhara highlands north of Kombolcha and west of Chifra today (courtesy of Ethiopia Ops Team).

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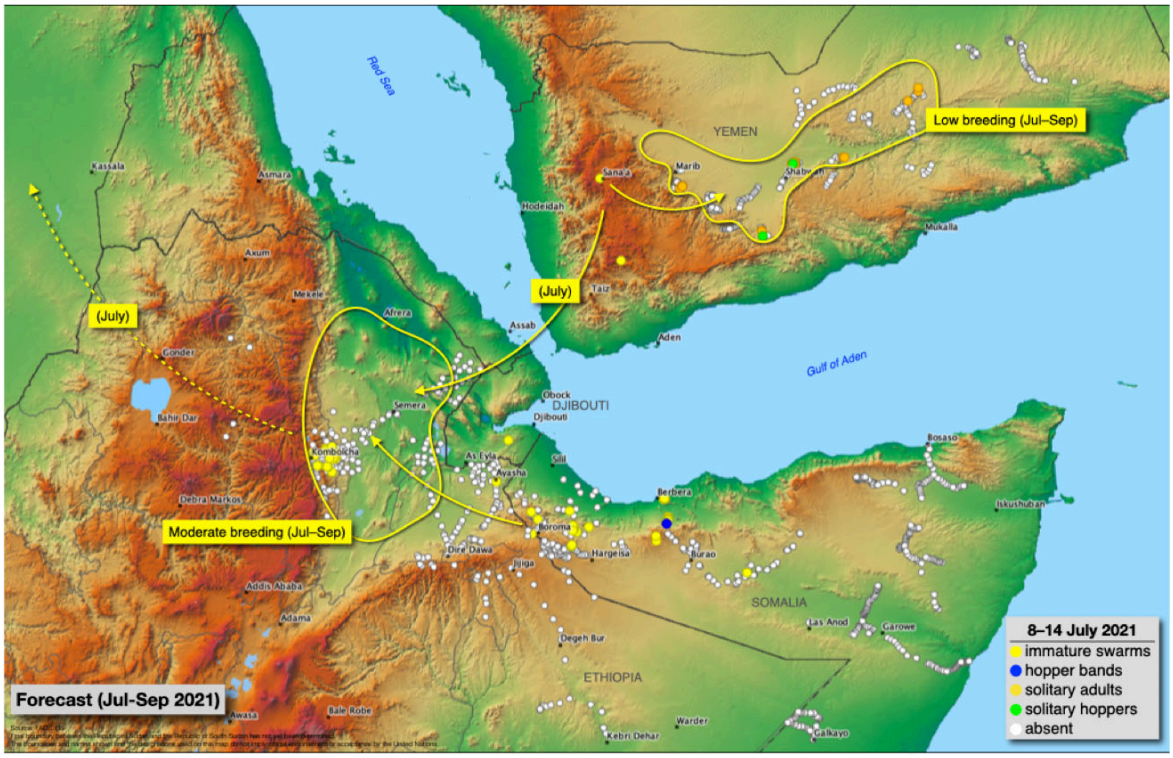

CURRENT SITUATION. Breeding has nearly ended in northwest Somalia where the majority of immature swarms will migrate through adjacent areas of eastern Ethiopia and Djibouti to northeast Ethiopia. There is a low risk a few swarms may arrive from Yemen.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

21 JUN 2021. NEW SWARMS FORMING IN SOMALIA

OVERVIEW. New immature swarms are forming from hopper band infestations in northwest **Somalia**; however, the number and sizes of the swarms remain low so far. Hopper bands continue to be present in parts of eastern **Ethiopia**. Control operations continue in both countries. While prevailing winds are likely to concentrate most of the swarms on the plateau of northern Somalia where they should persist until vegetation dries out, there is a low risk that a few small swarms could migrate across the Gulf of Aden to southern Yemen and others may try to reach the Indo-Pakistan summer breeding areas via the eastern coast of Oman.

WHY IT MATTERS. The current developments have been anticipated and locust numbers in the Horn of Africa are lower than last year at this time. Nevertheless, new swarms that form during June and July are expected to move west to the Afar region in northeast Ethiopia where above-normal summer rains are predicted that would allow one generation of breeding from August to October. The scale of this migration will depend on the success of current survey and control operations in eastern Ethiopia and northern Somalia.

CONTEXT. Important infestations persist in Somalia and Ethiopia.

- **SOMALIA.** Aerial and ground operations are making good progress against numerous hopper bands on the coast, escarpment, and plateau in the northwest (Somaliland); consequently, only a few small immature swarms have formed so far. Control operations continue against smaller hopper band infestations in the northeast (Puntland).
- **ETHIOPIA.** Hopper bands continue to develop in eastern Bale zone of Oromia region and the railway area near Ayasha in western Somali region; no infestations seen by aerial surveys in eastern Somali region.
- **DJIBOUTI.** Control is underway against small late instar hopper bands in the southeast.
- **SAUDI ARABIA.** Several small groups of immature adults were treated in the Asir Mountains of the southwest. No locusts seen in the northern interior.
- **YEMEN.** No significant infestations seen recently in the interior; surveys continue.
- **SUDAN.** Small groups of immature and mature adults, some laying eggs, are present in the Nile Valley where ground control operations are underway.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Intensive ground and aerial operations should continue in eastern Ethiopia and northern Somalia to reduce swarm formation by detecting and treating as many hopper bands and new swarms as possible.

- **Central Region** (SERIOUS) – maintain survey and control (Ethiopia, Somalia); heightened alert in Yemen and Oman
- **Eastern Region** (CALM) – heightened alert in summer breeding areas (Indo-Pakistan)
- **Western Region** (CALM) – initiate summer surveys next month (northern Sahel)

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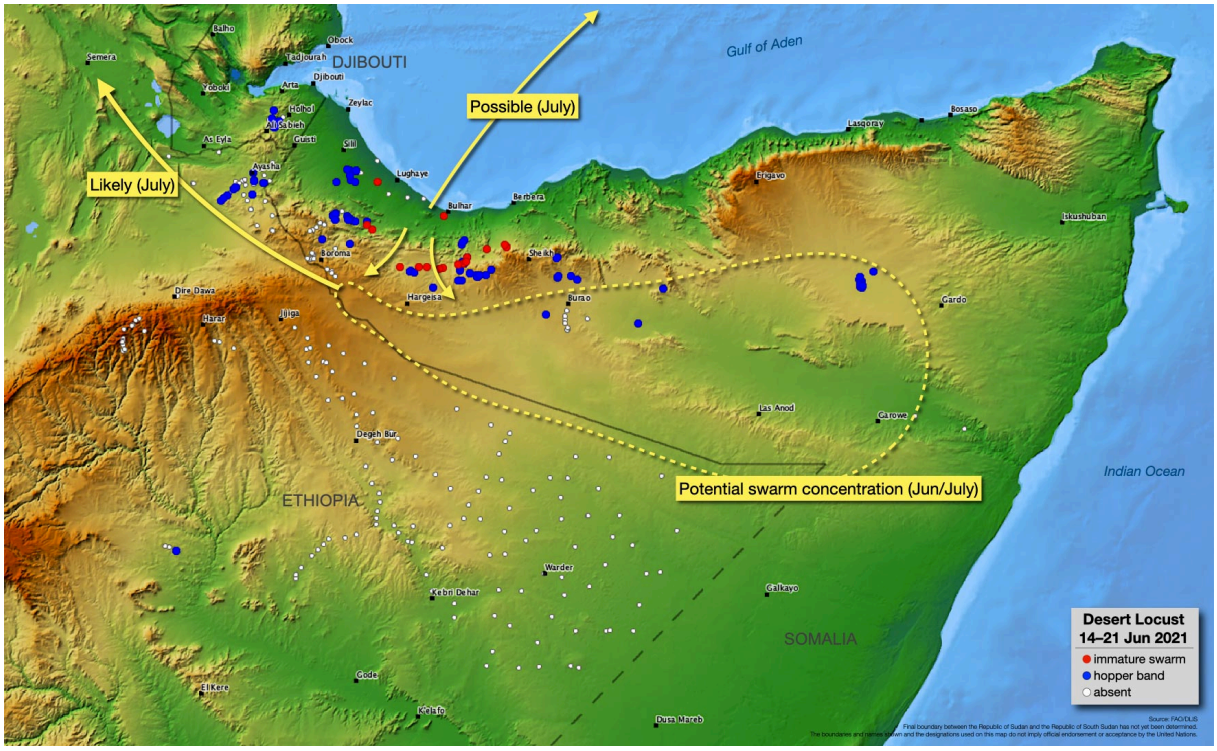

CURRENT SITUATION. Hopper bands are present in NW Somalia and adjacent areas of eastern Ethiopia and Djibouti. Several small immature swarms have started to form on the coast and escarpment in NW Somalia.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

29 JUN 2021. MORE SWARMS IN THE HORN OF AFRICA

OVERVIEW. New immature swarms continue to form from hopper band infestations in northern **Somalia** and eastern **Ethiopia**. Although the swarms are small and not very dense so far, they are becoming more mobile with cross-border movements between northwest Somalia, eastern Ethiopia, and southern Djibouti. Control operations are in progress. Most of the swarms are expected to concentrate on the plateau in northern Somalia. Once vegetation dries out, they are likely to move to the Afar region in northeast Ethiopia. However, there is a low risk that a limited number of small swarms could migrate across the Gulf of Aden to southern Yemen. In addition, there is a slight possibility that a few swarms may try to reach the Indo-Pakistan summer breeding areas via the eastern coast of Oman.

WHY IT MATTERS. The current developments have been anticipated and locust numbers in the Horn of Africa are lower than last year at this time. Nevertheless, new swarms that form during July are expected to move west to the Afar region in northeast Ethiopia where above-normal summer rains are predicted that would allow one generation of breeding from August to October. The success of current survey and control operations will determine the scale of any migration and breeding in Afar during this summer.

CONTEXT. Important infestations persist in Somalia and Ethiopia.

- **SOMALIA.** Aerial and ground operations continue to make good progress against remaining late instar hopper bands and newly formed immature swarms in the northwest (Somaliland) and, to a lesser extent, in the northeast (Puntland).
- **ETHIOPIA.** Control operations continue in the railway area near Ayasha of western Somali region where nearly all hopper bands have fledged, and an increasing number of small immature swarms have been sighted.
- **DJIBOUTI.** A few late instar hopper bands persist in the southeast where an increasing number of immature swarms have been seen in the past few days.
- **SAUDI ARABIA.** A few small groups of immature adults were seen near Khamis Mushait and Yemen in the Asir Mountains of the southwest on the 22nd.
- **YEMEN.** A few immature swarms were seen coming from the north and moving around near Sada'a on 26–28 June. Scattered solitarious adults are present in Shabwah.
- **SUDAN.** A few small hopper and adult groups are present near the Nile Valley while scattered adults have been seen in North Kordofan and near Kassala.
- **SW ASIA.** No locusts seen during recent surveys in Iran, Pakistan and India.

TAKEAWAY. Intensive ground and aerial operations must continue in eastern Ethiopia and northern Somalia to reduce swarm formation by detecting and treating as many remaining hopper bands and new swarms as possible.

- **Central Region** (SERIOUS) – maintain survey and control (Ethiopia, Somalia); heightened alert in Yemen and Oman; initiate summer surveys (Sudan)
- **Eastern Region** (CALM) – heightened alert in summer breeding areas (Indo-Pakistan)
- **Western Region** (CALM) – initiate summer surveys (northern Sahel)

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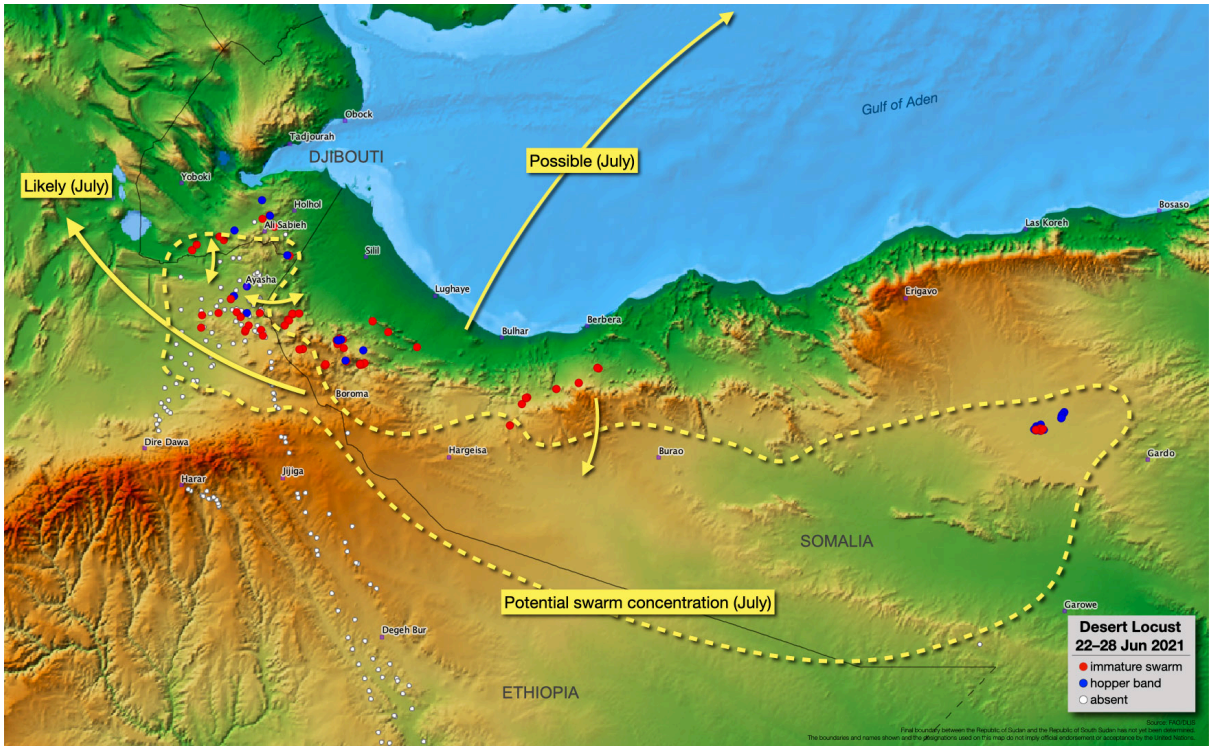

CURRENT SITUATION. Immature swarms are forming and moving to the plateau in NW Somalia and adjacent areas of eastern Ethiopia and Djibouti.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

3 JUNE 2021. MORE HATCHING AND BANDS FORM IN ETHIOPIA & SOMALIA

OVERVIEW. Despite an earlier decline, the current upsurge prevails in the **Horn of Africa** where good rains allowed breeding to continue with hatching and more hopper bands forming in eastern **Ethiopia** and northern **Somalia**.

WHY IT MATTERS. In addition to aerial operations, ground survey and control teams will play an important role in finding and reducing hopper band infestations this month before they fledge and form a new generation of immature swarms starting in late June and continuing into July. The swarms are expected to move to the Afar region in northeast Ethiopia for summer breeding in August and September where above-normal rains are forecasted.

CONTEXT. Locusts remain active in the Horn of Africa but are declining in the Arabian Peninsula.

- **Saudi Arabia and Yemen:** Hopper bands have declined in the northern interior of Saudi Arabia due to control and drying conditions. Nevertheless, immature adult groups and perhaps a few small swarms could form and move south to the interior of Yemen where only solitarious adults are present but conditions are favourable for breeding.
- **Near East:** Control operations were undertaken in parts of Iraq, Jordan, Syria and Lebanon against hoppers that hatched and formed small groups and bands as a result of earlier breeding by adult groups and small swarms that arrived in April.
- **SW Asia:** Although control operations continue in southwest Iran against hopper groups, a few small groups of immature adults could form and move east to the Indo/Pakistan border. Although small scale breeding is likely to commence with the onset of the monsoon in July, locust numbers should remain low.
- **West Africa and Sudan:** Once the summer rains begin, small-scale breeding is expected to occur in the Sahel of West Africa and Sudan from July onwards.

TAKEAWAY. Increased ground survey and control operations are required in Ethiopia and Somalia to treat hopper bands and reduce the scale of eventual swarm formation. Teams are already in the Yemen interior to detect any arrivals from Saudi Arabia and subsequent breeding.

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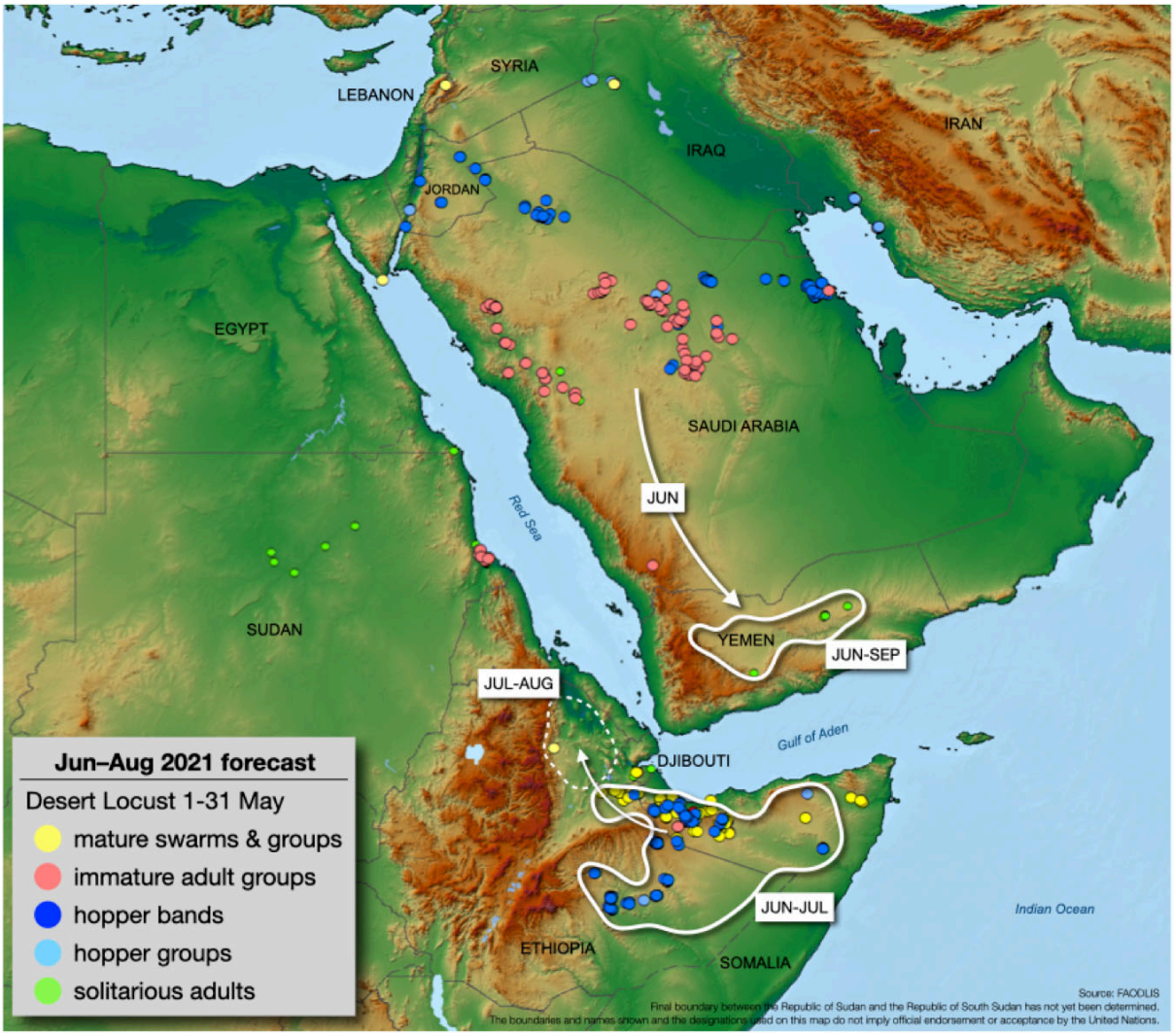
SYRIA
LEBANON
IRAN
IRAQ
JORDAN
EGYPT
SAUDI ARABIA
JUN
Red Sea
SUDAN
YEMEN
JUN-SEP
JUL-AUG
Gulf of Aden
DJIBOUTI
JUN-JUL
Indian Ocean
ETHIOPIA
SOMALIA
Jun–Aug 2021 forecast
Desert Locust 1-31 May
mature swarms & groups
immature adult groups
hopper bands
hopper groups
solitarious adults
Source: FAO/DLIS
Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

11 JUN 2021. SWARMS ABOUT TO FORM IN SOMALIA

OVERVIEW. Numerous hopper bands have formed in northwest **Somalia** and, to a lesser extent, in eastern **Ethiopia**. More hopper bands are likely to be present in areas that have not yet been surveyed. Although substantial control operations are underway, new swarms will start to form next week, which are likely to persist in northern Somalia until conditions dry out. Nevertheless, there is a risk that some swarms could move north to Yemen and west to northeast Ethiopia.

WHY IT MATTERS. Unexpectedly good rains in late April and early May have caused widespread breeding and a further increase in locust numbers in the Horn of Africa. While locust numbers are lower than last year at this time, it signifies that the current upsurge is not yet over. New smarms that form later this month and during July are expected to move west to the Afar region in northeast Ethiopia for summer breeding from August to October. This could allow the upsurge to continue to at least the end of this year.

CONTEXT. The most important infestations are in Somalia and Ethiopia.

- SOMALIA. Hundreds of late instar hopper bands are present on the coast and the escarpment in the northwest (Somaliland) where aircraft are undertaking barrier spraying, supplemented by ground teams, to prevent the hoppers from becoming adults. Early instar hopper bands are present on the northern plateau where egg-laying occurred later. Infestations are likely to continue further east to Puntland, but some areas are not accessible.
- ETHIOPIA. Hopper bands continue to develop in eastern Bale zone of Oromia region and the Somali region (Fafan, Jarar, Nogob, Siti; and probably further east in Korahe and Dollo).
- DJIBOUTI. Control is underway against small hopper bands in the southeast where limited hatching occurred.
- SAUDI ARABIA. Control operations continue against a few mid instar hopper bands near Al Jawf in the north and immature adult groups in the Asir Mountains of the southwest.
- YEMEN. Scattered adults are present on the plateau north of Wadi Hadhramaut and near Oman.
- JORDAN. Control teams were still treating a few hopper bands last week near Zarqa that formed during May.
- IRAN. No locusts seen during recent surveys throughout the south.

TAKEAWAY. Operations should extend to eastern Somali region (Ethiopia) and all accessible areas of the northern plateau in Somalia to reduce swarm formation by detecting and treating as many hopper bands as possible.

- Central Region (SERIOUS) – increase survey and control (Ethiopia, Somalia, Saudi Arabia), increase preparedness, survey and possible control (Yemen interior)
- Eastern Region (CALM) – initiate summer surveys next month (Indo-Pakistan)
- Western Region (CALM) – initiate summer surveys next month (northern Sahel)

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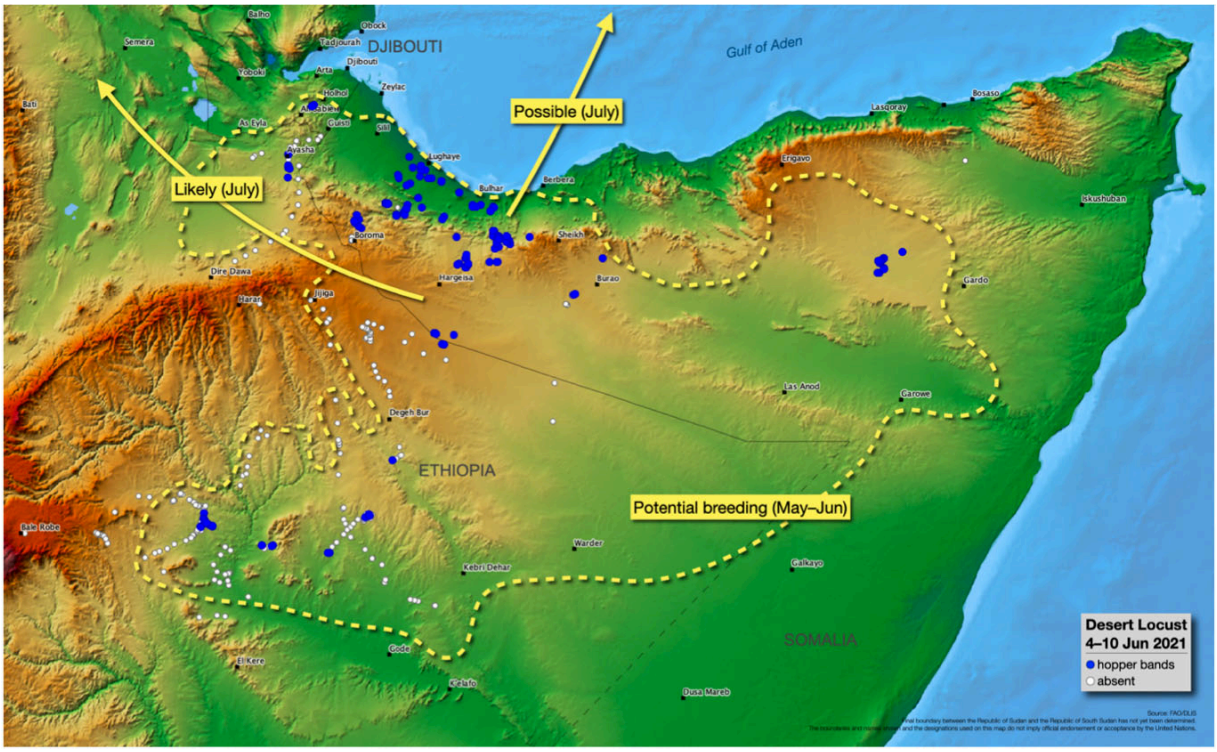
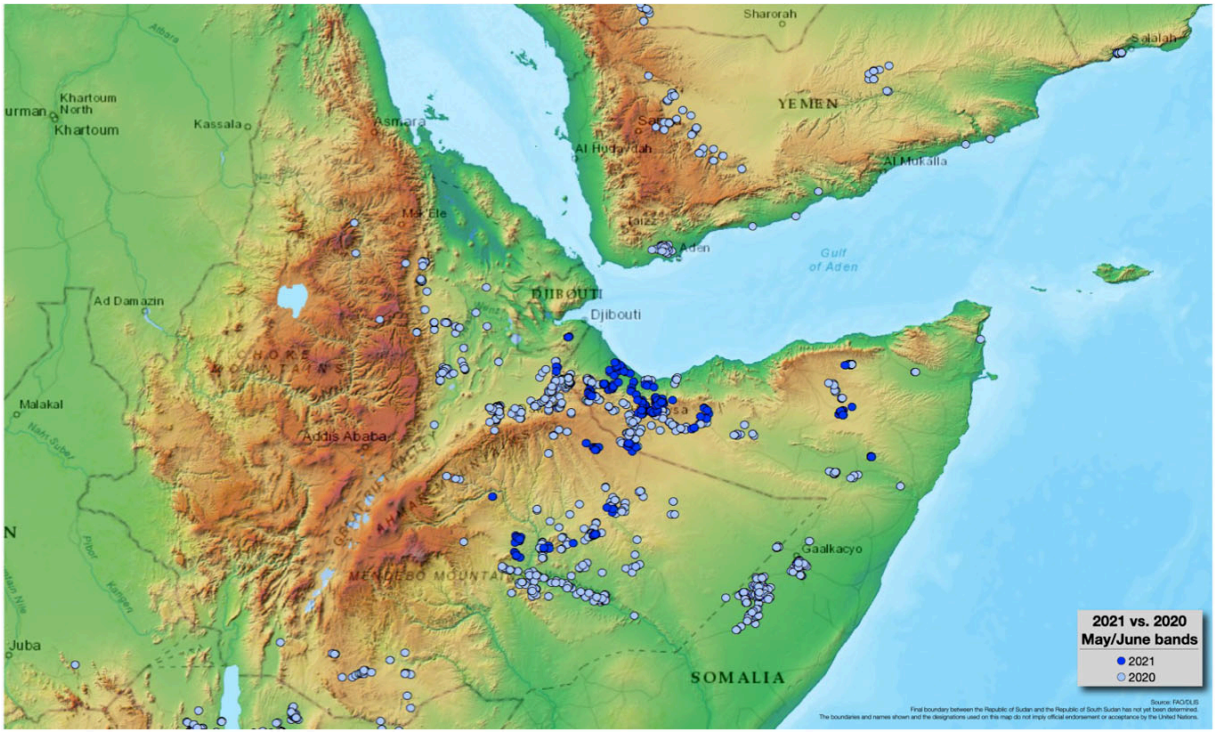


CURRENT SITUATION. Hopper bands are mainly concentrated in NW Somalia and in parts of eastern Ethiopia. Large swaths remain unsurveyed within the potential breeding area.



2020 COMPARISON. So far this month, current hopper band infestations are less numerous than one year ago when spring breeding also occurred in southern and northeastern Ethiopia, central Somalia, northern Kenya, and Yemen. This year's breeding is further north, reaching the coast of northwest Somalia and nearby Djibouti.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

27 MAY 2021. MORE BANDS FORM IN ETHIOPIA AND SOMALIA

OVERVIEW. Ground teams are detecting an increasing number of early instar hopper bands that are forming in eastern **Ethiopia** and northwest **Somalia** as more eggs hatch. This will continue until about mid-June as mature swarms are still laying eggs in some places. Ground and aerial control operations are in progress. In **Saudi Arabia**, control operations continue in the spring breeding areas of the interior where groups of immature adults have formed and are likely to migrate south to **Yemen** for eventual breeding in the interior. So far, a few groups have already migrated to within about 100 km of Yemen.

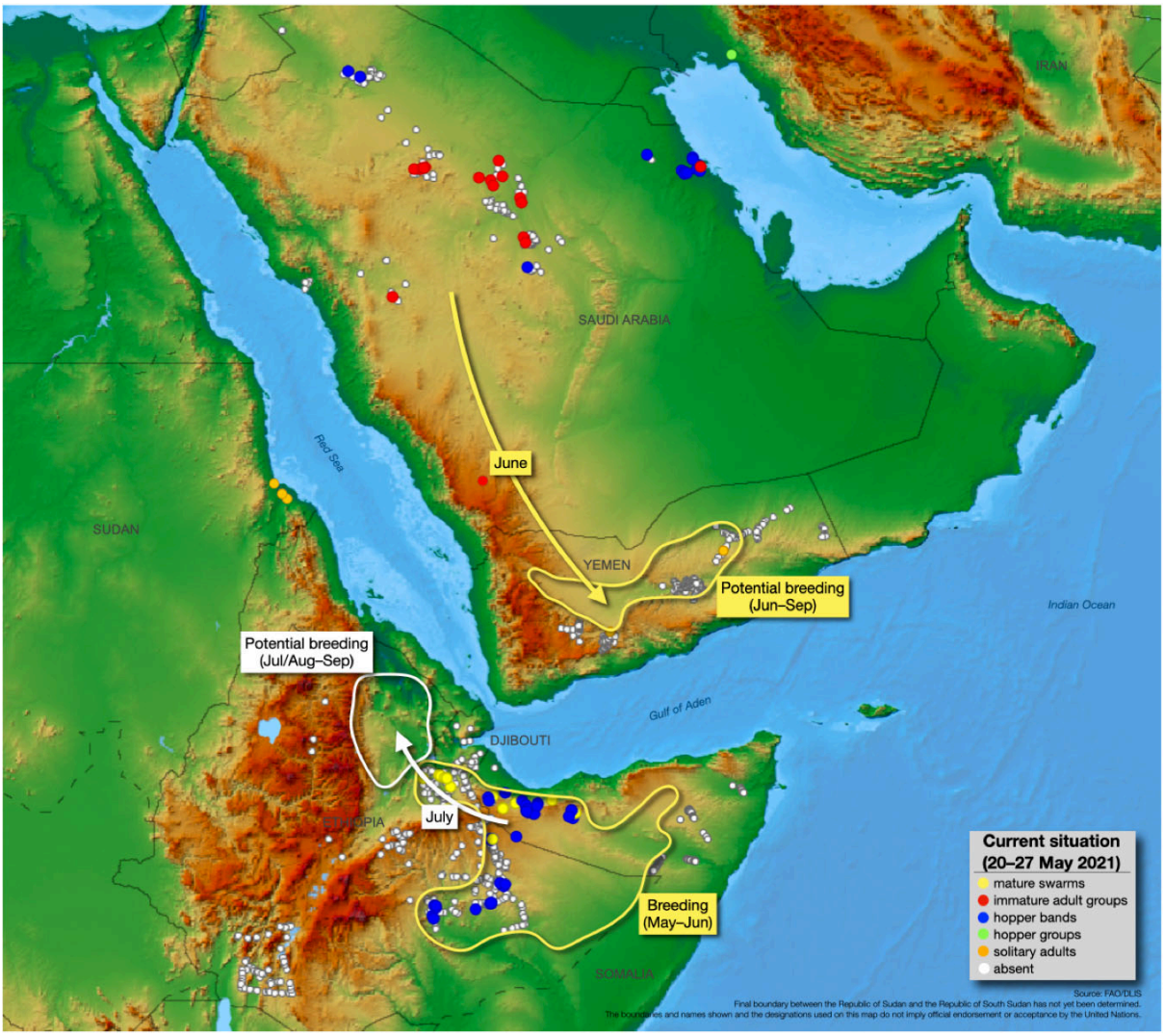
WHY IT MATTERS. A new round of breeding signifies the potential for a further increase in locust numbers in the Horn of Africa. If hopper band infestations are not adequately detected and treated, new smarms could form from late June onwards and move west during July to the Afar region in northeast Ethiopia for summer breeding. Locust numbers could build up in the interior of Yemen that may eventually threaten the Horn of Africa.

CONTEXT. Locusts are currently active in the Horn of Africa and Saudi Arabia.

- In Ethiopia, more hatching and band formation is taking place in eastern Bale zone of Oromia region and the Somali region, mainly in the western zones of Afder, Erer, Fafan, Jarar, and Nogob zones but most likely underway in other woredas and zones. Mature swarms persist south of Djibouti in Siti zone where hatching and band formation are imminent.
- In Somalia, hatching continues and more bands are forming on the escarpment and plateau in the northwest (Somaliland) where mature swarms are still laying eggs; there are unconfirmed reports of mature swarms in the northeast (Puntland).
- In Saudi Arabia, control operations continue against a few early instar hopper bands in the north near Al Jawf, fifth instar hopper bands and fledglings in the east near Jubail, and immature adult groups between Riyadh and Hail. Today, a few immature adult groups appeared in the Asir Mountains in the southwest near Khamis Mushait.
- In Yemen, scattered adults in the interior areas of Shabwah and Hadhramaut.
- In Sudan, locusts declined on the Red Sea coast and only scattered adults persist near Tokar.
- In Iran, a few early instar hopper groups remain on the southwest coast near Bushehr.
- In Iraq, control operations ended against hopper groups in the upper Euphrates Valley near Syria. No new reports from Jordan, Lebanon and Syria.

TAKEAWAY. Increased ground operations are required in Ethiopia and Somalia to treat hopper bands and reduce eventual swarm formation but only after hatching has completely finished, avoiding repeated treatments of the same area.

- Central Region (SERIOUS) – increase survey and control (Ethiopia, Somalia, Saudi Arabia), increase preparedness, survey and possible control (Yemen interior)
- Eastern Region (CALM) – maintain control (Iran)
- Western Region (CALM) – no activities


IRAN
SAUDI ARABIA
Red Sea
June
SUDAN
YEMEN
Potential breeding
(Jun–Sep)
Indian Ocean
Potential breeding
(Jul/Aug–Sep)
Gulf of Aden
DJIBOUTI
July
ETHIOPIA
Breeding
(May–Jun)
SOMALIA
Current situation
(20–27 May 2021)
mature swarms
immature adult groups
hopper bands
hopper groups
solitary adults
absent
Source: FAO/DLIS
Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Threat Level = Serious (Central Region)

17 MAY 2021. HATCHING AND BAND FORMATION BEGIN IN HORN OF AFRICA

OVERVIEW. As anticipated, hatching has been detected in eastern **Ethiopia** and northwest **Somalia** where swarms have been laying eggs since late April. The hatchlings are forming small hopper bands that so far have been seen in a few places. More hatching and band formation are expected throughout eastern Ethiopia and northern Somalia during the remainder of this month. New groups of immature adults are forming in **Saudi Arabia** that could move south to **Yemen** for breeding in the interior.

WHY IT MATTERS. A new round of breeding signifies the potential for a further increase in locust numbers in the Horn of Africa. If hopper band infestations are not adequately detected and treated, new smarms could form from mid-June onwards and move west to the Afar region in northeast Ethiopia for summer breeding. Locust numbers could build up in the interior of Yemen that may eventually threaten the Horn of Africa.

CONTEXT. Locusts are currently active in the Horn of Africa and Saudi Arabia.

- In Ethiopia, mature swarms are laying eggs south of Djibouti near Aysha. Hatching and band formation are in progress in Nogob zone, western Somali region.
- In Somalia, hatching and band formation have started in the northwest (Somaliland) where mature swarms continue to lay eggs; mature swarms are present in the northeast (Puntland).
- In Djibouti, a mature swarm was seen south of Arta.
- In Saudi Arabia, control operations continue against early instar hopper bands in the north near Al Jawf, late instar hopper bands in the east between Gassim and Jubail, and new groups of immature adults that are forming further south.
- In Sudan, locusts declined on the Red Sea coast where only scattered adults remain near Tokar.
- In Iran, control operations are underway against a few hopper groups on the southwest coast near Bushehr.
- In Israel, hatching occurred on one farm in the Araba Valley near Yahel where migrating birds controlled the first instar hopper groups.
- No new reports from Iraq, Jordan, Lebanon and Syria.

TAKEAWAY. Increased vigilance must be maintained in Ethiopia and Somalia where a hopper band campaign should be mounted to reduce eventual swarm formation but only after hatching has completely finished, avoiding repeated treatments of the same area.

- Central Region (SERIOUS) – increase survey and control (Ethiopia, Somalia, Saudi Arabia), increase preparedness and surveys (Yemen interior)
- Eastern Region (CALM) – maintain control (Iran) and survey (Pakistan)
- Western Region (CALM) – no activities

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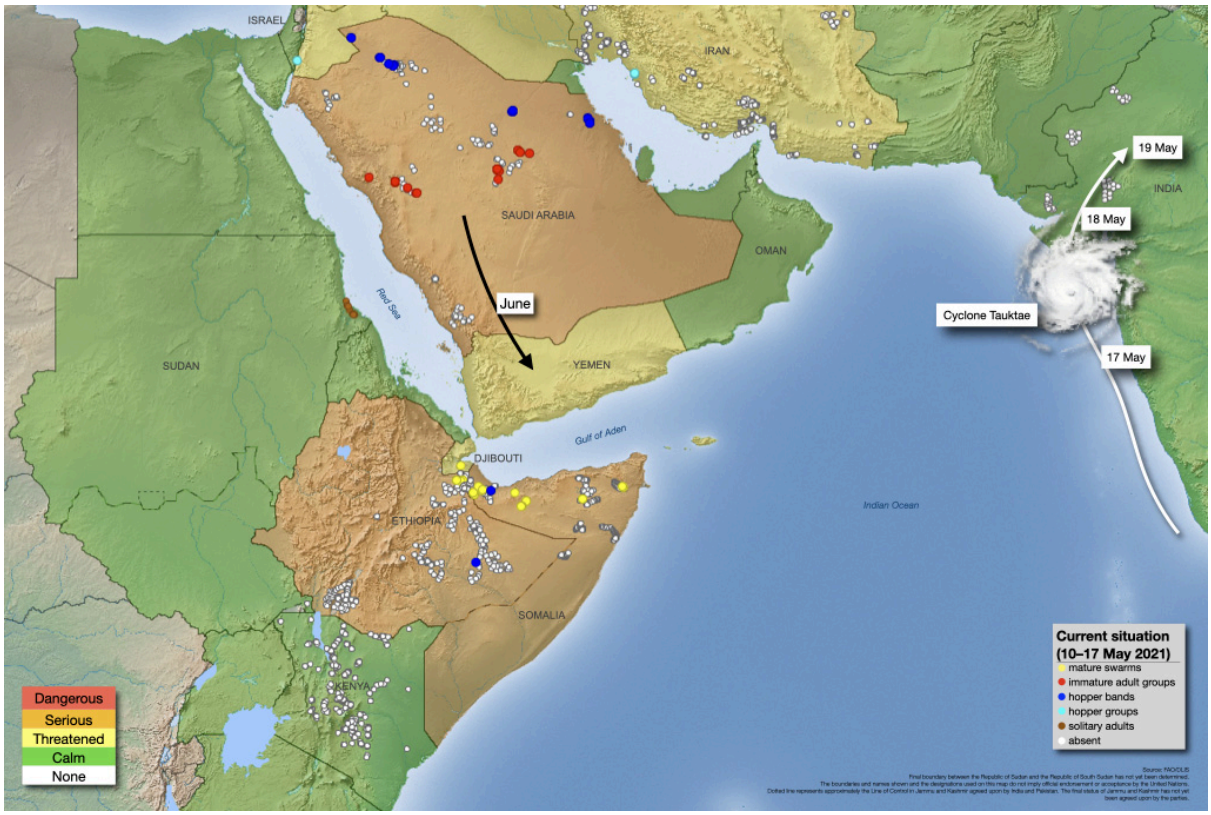
ISRAEL
IRAN
SAUDI ARABIA
OMAN
Red Sea
June
YEMEN
SUDAN
Gulf of Aden
DJIBOUTI
ETHIOPIA
Indian Ocean
SOMALIA
KENYA
19 May
INDIA
18 May
Cyclone Tauktae
17 May
Dangerous
Serious
Threatened
Calm
None
Current situation
(10–17 May 2021)
mature swarms
immature adult groups
hopper bands
hopper groups
solitary adults
absent

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

11 NOVEMBER 2021. POOR RAINS MAY LIMIT BREEDING

OVERVIEW. At least one more small mature swarm arrived in northeast Kenya three days ago. About three separate swarms have arrived since 1 November; however, it is difficult to be precise because the swarms tend to split up, sometimes regroup, cross back and forth into southern Ethiopia, and are often reported more than once as they move west from Mandera towards Moyale. In Somalia, small early instar hopper bands are present in the northeast from local breeding while more solitarious adults were seen along the Ethiopian border in the northwest. In Yemen, breeding is underway along parts of the southern coast and a few small hopper bands have formed. Surveys are yet to commence in winter breeding areas on the Red Sea coastal plains. No locusts have been seen in adjacent areas of southwest Saudi Arabia. No reports from Eritrea and Sudan.

WHY IT MATTERS. The small mature swarms that have appeared so far in northeast Kenya and the possibility of a few more small swarms arriving in the coming weeks means that limited breeding is likely to occur in the extreme north of Mandera, Wajir, and Marsabit counties near the Ethiopia border, causing small hopper bands to form in December. In Somalia, new swarms could start to form in about mid-December from current hopper bands in the northeast and small-scale breeding could commence shortly in the northwest. However, breeding elsewhere along the plateau in northern and central Somalia as well as adjacent areas of eastern Ethiopia to nearly the Juba River is likely to be very limited since little rain has fallen in the past month. According to the latest predictions, more rainfall is unlikely in these areas in the coming month. Therefore, the potential threat and scale of any swarms migrating to Kenya towards the end of this year will depend on the success of current survey and control operations in northern Somalia, the continuation of supplementary survey and control efforts in eastern Ethiopia, and whether more rains fall during the next four weeks. Given these uncertainties, intensive efforts should be focused on Somalia, Ethiopia, and northern Kenya. As current breeding on the southern coast of Yemen is likely to cause locust numbers to increase, survey and control efforts should be upscaled. A few swarms from northern Ethiopia and the interior of Yemen are still expected to appear in the winter breeding areas along the Red Sea coast of Eritrea and Yemen, respectively.

CONTEXT. Current breeding has been limited by poor rains in the Horn of Africa.

- **SOMALIA.** Control operations continue against small early instar hopper bands in the NE; solitarious adults in the NW that may breed.
- **ETHIOPIA.** A few mature swarms seen near the Kenya border.
- **ERITREA.** A few small swarms from northern Ethiopia likely to appear on the Red Sea coast.
- **YEMEN.** Small hopper bands form on the southern coast from local breeding; a few small swarms from the interior may reach the Red Sea coast.
- **SAUDI ARABIA.** No locusts in the southwest but may arrive from nearby Yemen.

TAKEAWAY. Intensify current survey and control efforts to reduce breeding in the Horn of Africa.

- **Central Region** (SERIOUS) – maintain operations (Ethiopia, Somalia); increase operations (Eritrea, N. Kenya, Yemen)
- **Western Region** (CALM) – no significant activities
- **Eastern Region** (CALM) – no significant activities

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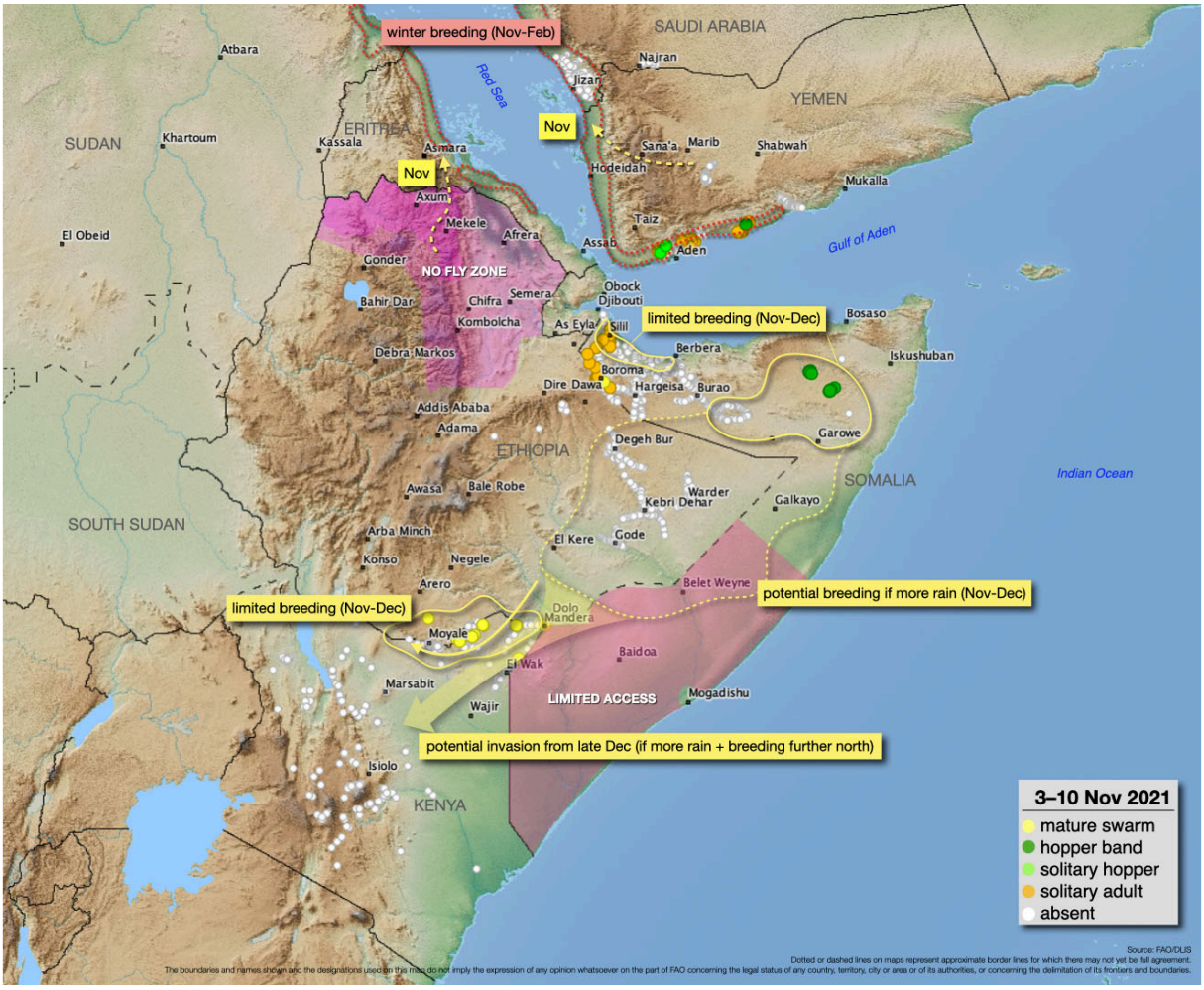

CURRENT SITUATION. Control is in progress against small hopper bands in NE Somalia from local breeding. More solitarious adults appear in NW Somalia. It is mainly dry in eastern Ethiopia and central Somalia, which may explain why a few small mature swarms appeared in SE Ethiopia and NE Kenya.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

24 NOVEMBER 2021. A FEW SWARMS IN SOUTHERN ETHIOPIA

OVERVIEW. A few small mature swarms, most likely those that arrived on the Ethiopia/Kenya border earlier this month, have concentrated in southern Ethiopia between Konso and the Kenya border where control operations are underway. There have been no further reports of locusts in Kenya and elsewhere in Ethiopia. Aerial and ground control operations continue against small hopper bands in northeast Somalia while scattered adults persist in the northwest. Limited ground control operations are underway on the central Red Sea coast of Eritrea between Faro and Gelalo where groups of hoppers are present from earlier breeding by swarms that originated from northeast Ethiopia. Small-scale breeding continues on the southern coast of Yemen where hoppers and a few small groups of adults are present. No reports from Sudan.

WHY IT MATTERS. The swarms that arrived in southern Ethiopia are likely to breed, giving rise to small hopper bands in December. Some breeding may also extend to border areas in northern Kenya from Mandera to Marsabit. In northeast Somalia, new swarms could start to form in about mid-December and small-scale breeding could occur in areas that receive rainfall on the northern plateau and northwest coast. Any breeding in eastern Ethiopia and central Somalia is likely to be extremely limited due to poor rainfall, which is not expected to improve. Therefore, the potential threat and scale of any swarm migration to Kenya towards the end of this year depends on the success of current survey and control operations in northern Somalia and the continuation of monitoring efforts and control, if necessary, in eastern Ethiopia. Intensive efforts should remain focused in Somalia, Ethiopia, and northern Kenya. Surveys should be increased in the winter breeding areas along both sides of the Red Sea. In Eritrea, a few small swarms could form in early December where they are likely to remain and eventually breed.

CONTEXT. Current breeding continues to be confined by poor rains in the Horn of Africa.

- **SOMALIA.** Control operations continue against small hopper bands in the NE that could form swarms in mid-December; solitarious adults in the NW that may breed.
- **ETHIOPIA.** A few mature swarms seen in southern Oromia near the Kenya border.
- **KENYA.** No locusts seen in the past two weeks, but breeding could occur along northern border.
- **ERITREA.** A few small swarms may form in early December from current hoppers groups on the central Red Sea coast.
- **YEMEN.** Breeding expected on the Red Sea coast.
- **SAUDI ARABIA.** No locusts in the southwest but may arrive from nearby Yemen.

TAKEAWAY. Intensify current survey and control efforts to reduce breeding in the Horn of Africa.

- **Central Region** (SERIOUS) – maintain operations (Ethiopia, Somalia); increase operations (Eritrea, N. Kenya, Yemen)
- **Western Region** (CALM) – no significant activities
- **Eastern Region** (CALM) – no significant activities

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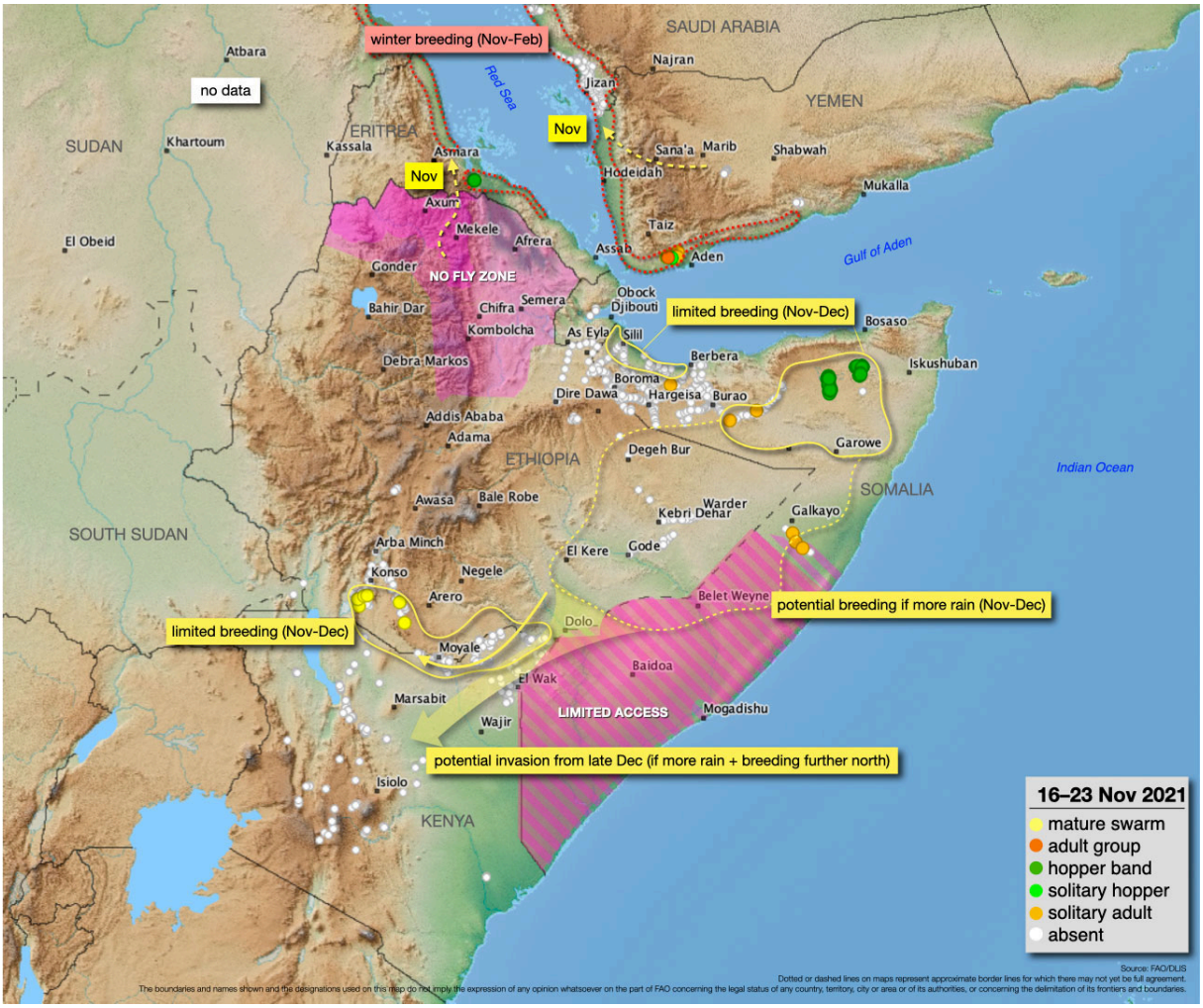

CURRENT SITUATION. Control is in progress against small hopper bands in NE Somalia from local breeding. Solitarious adults persist in NW Somalia. Small mature swarms are present in S Ethiopia. Limited breeding in Eritrea and Yemen.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

3 NOVEMBER 2021. SWARM ARRIVES IN NE KENYA & ERITREA

OVERVIEW. In the afternoon of 1 November, a small mature swarm arrived in Mandera county of northeast Kenya near the Ethiopia border west of Rhamu. Since then, the swarm moved about 100 km west towards Moyale. The swarm is thought to have come from northeast Somalia and migrated south along the Ethiopia/Somalia border during three days of unusually strong and persistent northerly winds as suggested by sightings in eastern Ethiopia and central Somalia as well as by a trajectory model. While the swarm is mature, it is not quite ready to lay eggs yet. This may suggest how it was able to migrate a relatively long distance. Elsewhere, a mature swarm from northern Ethiopia arrived on the southern Red Sea coast in Eritrea at the end of October.

WHY IT MATTERS. The arrival of the swarm in Kenya does not suggest a full-scale invasion of large numerous swarms. Instead, it indicates that a few small swarms are moving south from northeast Somalia where most of the swarms are remaining to lay eggs that are now hatching and forming small hopper bands. Breeding during November is expected to occur mainly on the plateau and northwest coast in northern Somalia and in the Somali region of eastern Ethiopia as far south as the Shabelle River. However, a few of the less mature swarms could continue further south towards Kenya at times in the coming weeks, arriving in the northeast where they are likely to move west along the Ethiopia border. This further confirms the strategic importance of maximizing efforts now to monitor and control the situation in eastern Ethiopia and northern Somalia to reduce breeding during November and the anticipated formation of new swarms from about mid-December onwards when the prevailing winds over the Horn of Africa will be from the north. The success of these efforts will determine the potential threat to Kenya at the end of this year. In any case, monitoring and preparedness should be upscaled immediately in northern Kenya, and control operations undertaken whenever possible. The swarm that arrived in Eritrea confirms that some swarms are present in Tigray, Amhara and Afar regions of northern Ethiopia where insecurity prevents field operations. FAO first warned in late August that swarms were likely to migrate to Eritrea in October, and a few more swarms could appear this month and reach the Red Sea coast for winter breeding.

CONTEXT. A new generation of breeding is commencing in eastern Ethiopia and northern Somalia.

- **SOMALIA.** Hatching and hopper band formation are underway in the NE and likely in the NW
- **ETHIOPIA.** A few mature swarms in eastern Somali region; breeding expected.
- **ERITREA.** A mature swarm in late October on the Red Sea coast near Mersa Fatma; a few more expected.
- **YEMEN.** A few bands and swarms in the interior; shift to Red Sea coast is expected.
- **SAUDI ARABIA.** No locusts in the southwest.
- **SW ASIA.** No locusts in Iran, Pakistan, and India.
- **WEST AFRICA.** Calm.

TAKEAWAY. Start surveys on the Red Sea coast in Eritrea; increase ground surveys in Ethiopia and Somalia; increase monitoring and preparedness in N Kenya.

- **Central Region** (SERIOUS) – increase ground surveys (Eritrea, Ethiopia, Kenya, Somalia, Yemen)
- **Western Region** (CALM) – no significant activities
- **Eastern Region** (CALM) – no significant activities

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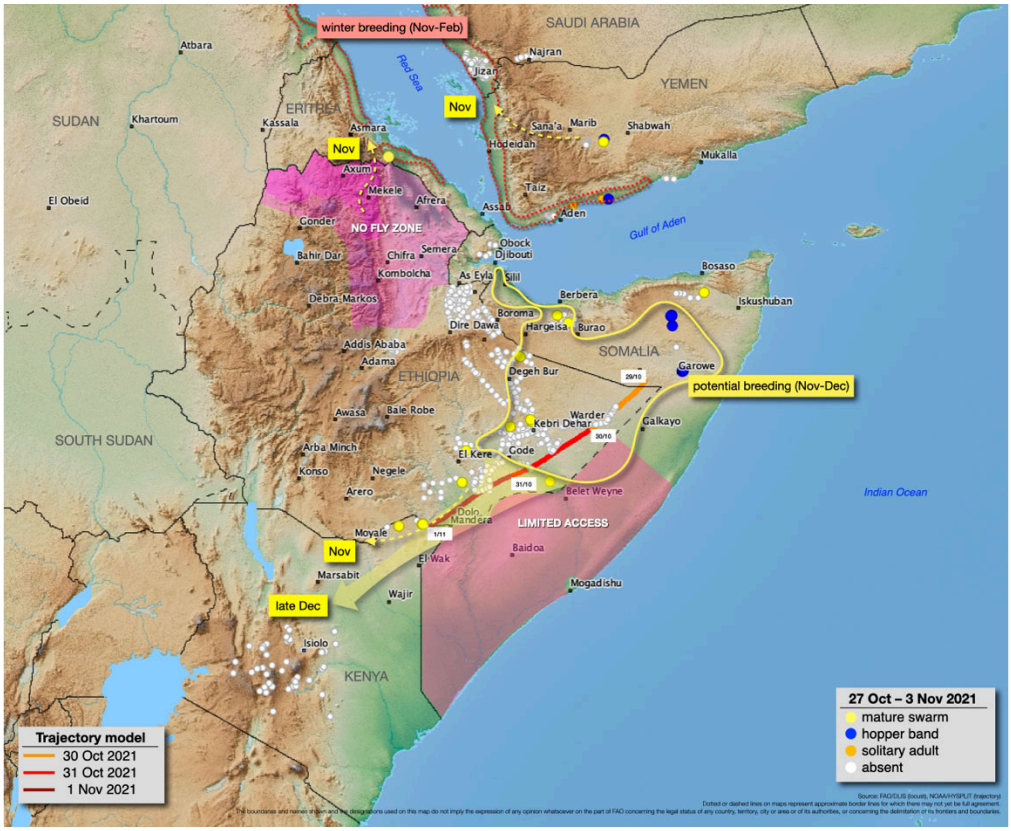

CURRENT SITUATION. Breeding is underway in NE Somalia where small hopper bands are forming. Similar breeding is expected in NW Somalia and E Ethiopia. The situation remains unclear in N/NE Ethiopia but at least one mature swarm arrived in Eritrea where winter breeding is expected. A small mature swarm reached NE Kenya.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

14 OCTOBER 2021. SWARMS LIKELY TO MOVE FROM NE ETHIOPIA

OVERVIEW. The few spring-bred swarms that have remained in northeast **Somalia** are now mature and starting to copulate. No swarms have been reported recently in northwest Somalia, **Djibouti**, or **Ethiopia**. Nevertheless, a few summer-bred swarms are likely to have formed in parts of Afar and adjacent areas of southeast Tigray and eastern Amhara regions. Unfortunately, this cannot be confirmed as most areas are not accessible. No surveys have been conducted recently in **Yemen** where a few summer-bred swarms are likely to be present in parts of the interior. In **Sudan**, only low numbers of scattered adults are present in the interior with local breeding in the Bayuda Desert north of Khartoum where a few groups are forming as vegetation dries out. Elsewhere, the situation remains calm.

WHY IT MATTERS. As vegetation dries out in the breeding areas of northeast Ethiopia, any swarms that form are expected to migrate north through the Ethiopian Highlands to the Red Sea coast of Eritrea and southeast to eastern Ethiopia and northern Somalia. Although the scale of this migration is nearly impossible to predict due to conflict and a lack of reporting, the swarm numbers and sizes should be limited and certainly much less than last year at this time. In any case, breeding is likely to occur in areas that receive rainfall during October and November in the Somali region of eastern Ethiopia, on the plateau in northern Somalia, on the coast of northwest Somalia, and the Red Sea coast in Eritrea. Similarly, a limited number of swarms will migrate from the summer breeding areas in the interior of Yemen to the Red Sea and Gulf of Aden coastal plains for winter breeding. There is a low risk that a few small swarms could eventually reach the coast of Sudan and Saudi Arabia while others may cross the Gulf of Aden from Yemen to northern Somalia. Given the current uncertainty of the scale of migration and upcoming rains, surveys should be mounted in the above areas and maintained until at least the end of this year and early next year. While every effort should be made to reduce the number of swarms before they lay eggs, this may not be entirely possible so control against the new generation of hopper bands is likely to be required towards the end of this year.

CONTEXT. Insecurity hampers field operations in parts of northern Ethiopia and Yemen.

- **SOMALIA.** The few remnant swarms have matured in the northeast where they are copulating.
- **ETHIOPIA.** No locusts seen in Somali region and parts of central Afar.
- **DJIBOUTI.** No locusts in the east.
- **YEMEN** and **ERITREA.** No recent surveys.
- **SUDAN.** Calm; few hopper and adult groups in the Bayuda Desert north of Khartoum.
- **SAUDI ARABIA.** No locusts in the southwest.
- **WEST AFRICA.** Calm.
- **SW ASIA.** No locusts in Iran, Pakistan, and India.

TAKEAWAY. Current field operations in Somalia and Ethiopia should be maintained while surveys should start on the Red Sea coast in Eritrea.

- **Central Region** (SERIOUS) –increase surveys (Djibouti); maintain surveys (N Somalia, E Ethiopia); start surveys on Red Sea coast (Eritrea)
- **Western Region** (CALM) – improve monitoring and reporting (Mauritania, Niger)
- **Eastern Region** (CALM) – no significant activities

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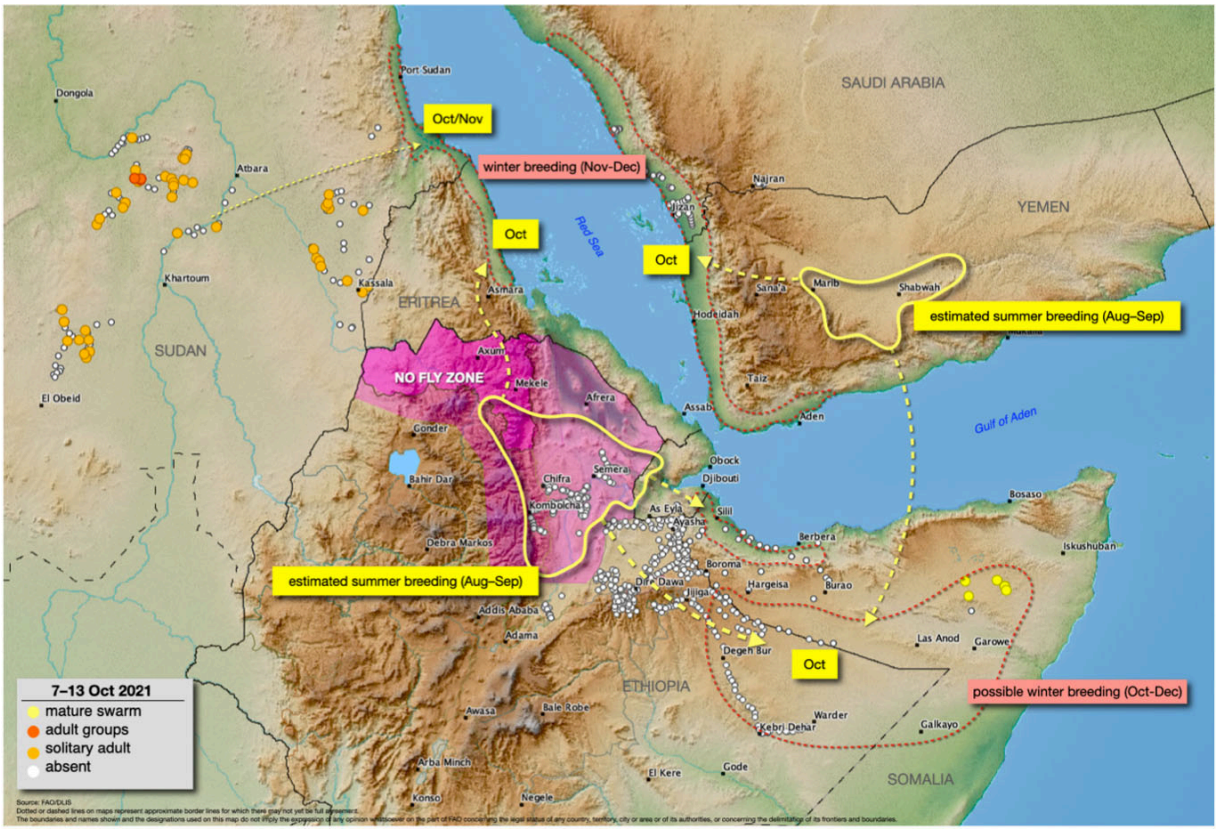


CURRENT SITUATION. The situation remains unclear in northeast and northern Ethiopia where immature swarms may be present, which could migrate to Eritrea, eastern Ethiopia and northern Somalia and eventually breed in areas that receive rainfall. The situation is also unclear in Yemen where summer-bred swarms are likely to move to coastal areas for breeding this winter.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

16 SEPTEMBER 2021. BREEDING IN NORTHERN ETHIOPIA

OVERVIEW. New reports confirm that breeding is underway in at least four woredas of southeast Tigray in northern **Ethiopia** where hoppers are forming small bands. Reports were also received of early instar bands in adjacent areas of Afar and probably eastern Amhara regions. A few small immature swarms appeared in the past days near Ayasha along the railway area in eastern Ethiopia just south of Djibouti and on the plateau in northwest and northeast **Somalia**. These swarms are remnants from spring breeding rather than newly formed summer-bred swarms, which will not occur for another three weeks or so. In **Yemen**, more small immature swarms are forming from local breeding and hopper bands that are present in the southern interior. Elsewhere, the situation remains calm with only small-scale breeding in areas of recent rainfall in **Mali**, **Chad** and **Sudan**.

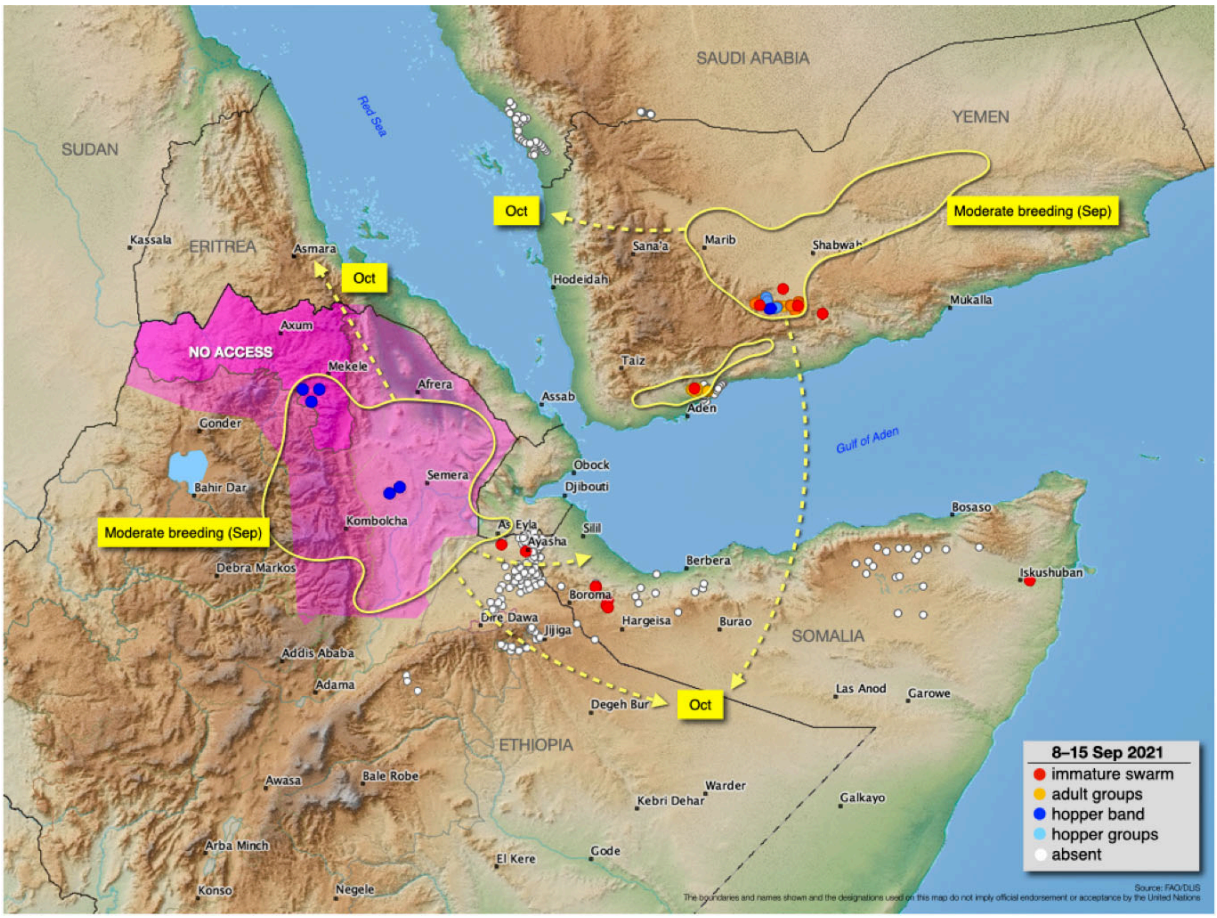
WHY IT MATTERS. Summer breeding in Ethiopia has extended beyond the Afar region into the highlands of southeast Tigray and eastern Amhara. Survey and control operations have been compromised in all areas due to insecurity and inaccessibility since July. It is hoped that safe access can be restored; otherwise, it will be difficult to treat current hopper band infestations and reduce the formation of swarms that is likely to commence in early October. Once vegetation dries out in the current breeding areas of northern and northeastern Ethiopia, the new swarms are expected to move northwards through the highlands to reach the Red Sea coastal plains in Eritrea and eastwards to the Somali region in eastern Ethiopia and adjacent areas of northern Somalia to join any remnant spring-bred swarms that may still be present. Rainfall during October and November would allow the swarms to mature and ecological conditions to be favourable for egg-laying, hatching and hopper band formation until the end of the year. In addition, any swarms that are not treated in the interior of Yemen are likely to move during October to the Red Sea coast of Yemen and perhaps across the Gulf of Aden to northern Somalia and eastern Ethiopia. Consequently, the current upsurge is likely to continue, albeit at a lower level than one year ago, during the remainder of this year.

CONTEXT. Continued insecurity is prolonging the current upsurge in the Horn of Africa.

- **SOMALIA.** A few remnant immature swarms in the northwest and northeast.
- **ETHIOPIA.** Hopper bands in Afar (Mille zone) and SE Tigray; hatching in Afar and Amhara; immature swarm near Ayasha (Somali); only limited operations due to insecurity and New Year.
- **DJIBOUTI** and **ERITREA.** No surveys.
- **YEMEN.** Hopper bands and new swarms forming in the interior; limited control underway.
- **SUDAN.** Calm with low numbers of adults and small-scale breeding in the interior.
- **SAUDI ARABIA.** No locusts in the southwest; no invasions are expected.
- **W AFRICA.** Calm with low numbers of adults and small-scale breeding in Chad.
- **SW ASIA.** No locusts in Iran, Pakistan, and India.

TAKEAWAY. Current field operations in northern Somalia and eastern Ethiopia should be maintained while upscaling of surveys is needed in northern Ethiopia and southern Djibouti.

- **Central Region** (SERIOUS) – increase operations in Djibouti and northern Ethiopia
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)



CURRENT SITUATION. Hopper bands are forming in northern and northeastern Ethiopia while a few remnant spring-bred immature swarms have been seen recently in northern Somalia and eastern Ethiopia. More swarms are forming in the summer breeding areas of the Yemen interior.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

23 SEPTEMBER 2021. NEW SWARMS FORMING IN NE ETHIOPIA

OVERVIEW. As expected, new summer-bred immature swarms have started to form in the past few days between the Awash and Mille rivers in the Afar region of northeastern **Ethiopia** where late instar hopper bands are still present. The scale of the breeding, which is likely to extend to other areas of Afar as well as adjacent areas of southeast Tigray and eastern Amhara regions, is not well known as most places cannot be accessed by ground teams and there is an imposed No Fly Zone for survey and control aircraft. Small remnant spring-bred immature swarms are present in eastern Ethiopia between Dire Dawa and Djibouti, and on the plateau in northwest and northeast **Somalia**. Survey and control operations are in progress in all these areas. In **Yemen**, more immature swarms are forming from hopper band infestations in the interior. However, field operations are somewhat limited due to beekeepers and new areas of conflict. Elsewhere, the situation remains calm.

WHY IT MATTERS. More immature swarms will form during the coming weeks in the inaccessible breeding areas of northeast and northern Ethiopia. As vegetation dries out, the swarms are expected to move northwards through the highlands of Tigray to reach the Red Sea coastal plains in Eritrea and eastwards to the Somali region in eastern Ethiopia and adjacent areas of northern Somalia to join remnant spring-bred swarms that are still present. While below-average rains are forecasted for October and November, they should be sufficient to allow the swarms to mature and lay eggs, which will hatch and give rise to hopper bands until the end of the year. In addition, any swarms that cannot be treated in the interior of Yemen are likely to move during October to the Red Sea coast of Yemen and perhaps across the Gulf of Aden to northern Somalia and eastern Ethiopia.

CONTEXT. Insecurity is hampering field operations in parts of Ethiopia and Yemen.

- **SOMALIA.** A few remnant immature swarms in the northwest and northeast.
- **ETHIOPIA.** Hopper bands with new immature swarms forming in Afar (Mille zone); remnant swarms south of Djibouti.
- **DJIBOUTI** and **ERITREA.** No surveys.
- **YEMEN.** Hopper bands and more new swarms forming in the interior; limited control only.
- **SUDAN.** Calm with a few groups of hoppers and adults in the interior.
- **SAUDI ARABIA.** No locusts in the southwest.
- **WEST AFRICA.** Calm with local breeding in Mali and Chad.
- **SW ASIA.** No locusts in Iran, Pakistan, and India.

TAKEAWAY. Current field operations in northern Somalia and eastern Ethiopia should be maintained while upscaling of surveys is needed in northern Ethiopia and southern Djibouti.

- **Central Region** (SERIOUS) – increase operations (Djibouti, northern Ethiopia); vigilance (Eritrea)
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – improve monitoring and reporting (Mauritania, Niger)

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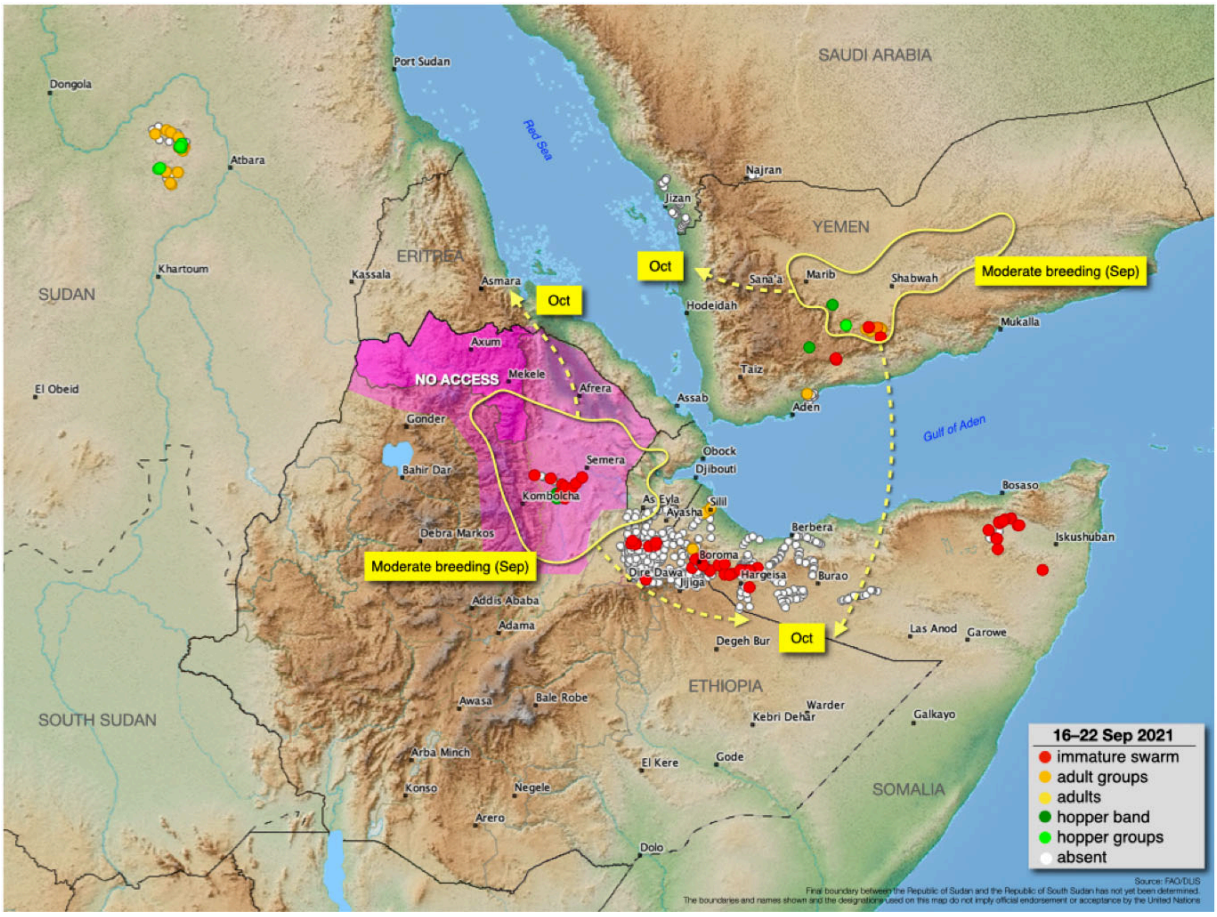

CURRENT SITUATION. New immature swarms are starting to form in summer breeding areas of Afar in northeast Ethiopia while small remnant immature swarms persist in eastern Ethiopia and norther Somalia. More immature swarms form in the interior of Yemen.

Food and Agriculture Organization of the United Nations

DESERT LOCUST UPDATE

DESERT LOCUST INFORMATION SERVICE

Danger Level = Serious (Central Region)

8 SEPTEMBER 2021. LOCUSTS IN NORTHERN ETHIOPIA

OVERVIEW. New reports indicate that hopper bands are forming in eastern Amhara region of northern **Ethiopia** and swarms were seen in Tigray southwest of Mekele. Hopper bands are almost certainly forming in the Afar region but breeding areas cannot be accessed due to conflict. A few immature swarms persist in the hills of northeast **Somalia** where access is difficult. Hopper bands and new immature swarms are forming in the interior of **Yemen** where ground control operations are limited due to the presence of beekeepers. Elsewhere, the situation remains calm in the summer breeding areas from Mauritania to Eritrea and along both sides of the Indo-Pakistan border.

WHY IT MATTERS. The reports of hopper bands in Amhara and swarms in Tigray confirm earlier suspicions that breeding has extended beyond Afar into the highlands of northern Ethiopia. The swarms in Tigray are most likely mature and probably found suitable areas for breeding. As the current situation does not allow survey and control operations, new swarms are expected to form in northern and northeast Ethiopia in October that would threaten Eritrea (moving through the highlands to reach the Red Sea coastal plains), eastern Ethiopia (Somali region) and northern Somalia (northwest coast and plateau) where rains generally start in about October or November. This would allow the summer-bred swarms to mature and lay eggs, giving rise to another generation of hopper bands before the end of the year. While the scale of current breeding is less than a year ago, the inability to undertake field operations in northern and northeast Ethiopia is of grave concern. In Yemen, it was expected that new swarms would form in the interior this month, but it is worrisome that control operations against current hopper bands to reduce the number of new swarms may be compromised by beekeepers. If so, this could lead to an increased risk of a few swarms invading northern Somalia in October or November.

CONTEXT. Continued insecurity is prolonging the current upsurge in the Horn of Africa.

- **SOMALIA.** A few swarms in the northeast (Puntland); no locusts in the northwest (Somaliland).
- **ETHIOPIA.** Hopper band formation likely in Afar, Amhara and Tigray; only limited operations possible in Amhara due to insecurity; no locusts in Somali region.
- **DJIBOUTI.** Late instar hopper band in interior of Tadjourah region.
- **YEMEN.** Hopper bands and new swarms forming in the interior; limited control underway.
- **SUDAN.** Calm with low numbers of adults and small-scale breeding in the interior.
- **SAUDI ARABIA.** No locusts in the southwest; no invasions are expected.
- **W AFRICA.** Calm with low numbers of adults and small-scale breeding in Chad.
- **SW ASIA.** No locusts in Iran, Pakistan, and India.

TAKEAWAY. Current field operations in northern Somalia and eastern Ethiopia should be maintained while upscaling of surveys is needed in northern Ethiopia and southern Djibouti.

- **Central Region** (SERIOUS) – increase operations in Djibouti and, if possible, northern Ethiopia
- **Eastern Region** (CALM) – continue summer surveys (Indo-Pakistan)
- **Western Region** (CALM) – continue summer surveys (northern Sahel)

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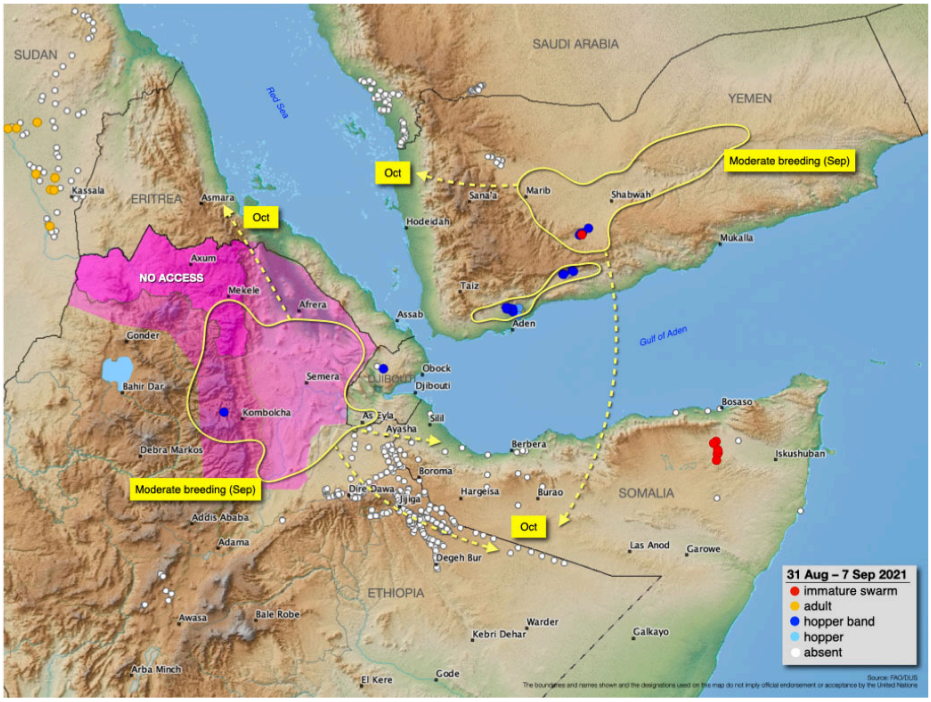

CURRENT SITUATION. As anticipated, breeding is underway extended in northern regions of Ethiopia (Amhara, Tigray) in addition to the northeast (Afar). Summer-bred swarms are forming in the Yemen interior.