

Desert Locust Bulletin

General situation during December 2023 Forecast until mid-February 2024

WESTERN REGION: CALM

SITUATION. Isolated hoppers and adults as well as a few small immature groups in **Mauritania** (36 ha treated), isolated adults and a few hoppers in **Niger** and **Algeria**, and some adults in **Western Sahara** and **Morocco**.

FORECAST. Low numbers of solitary adults will remain in the northwest **Mauritania**, southern **Western Sahara**, **Morocco**, and northern **Niger**.

CENTRAL REGION: CAUTION

SITUATION. During the end of the first winter generation, more hopper groups and small bands were seen on the Red Sea coast of **Sudan** (22 677 ha treated), **Eritrea** (24 136 ha), **Saudi Arabia** (10 220 ha), and **Egypt** (2 868 ha) as well as the Gulf of Aden in northwest **Somalia** (4 189 ha). No survey in the Red Sea and Gulf of Aden coasts of **Yemen** except for a few hopper groups near Oman from the Tej cyclone in October.

FORECAST. Hoppers, adults, groups, and very small bands and swarms of the first winter generation will continue in January along the Red Sea coast of southeast **Egypt**, **Sudan**, **Eritrea**, and **Saudi Arabia** as well as the Gulf of Aden in northwest **Somalia** and perhaps in **Yemen**. A second generation could occur with hatching and hopper groups and bands from the second half of January and new adults appearing in early March. Some locusts are likely to migrate from Eritrea to Sudan.

EASTERN REGION: CALM

SITUATION. No locusts are present.

FORECAST. No significant developments are likely.



CENTRAL REGION OUTBREAKS CONTINUE

The four Desert Locust outbreaks that began in November persisted in December along the coasts of the Red Sea and Gulf of Aden in the Central Region. Copulating, laying, and hatching led to an increase in hopper groups and small bands during the first winter generation breeding in Sudan, Eritrea, Saudi Arabia, northwest Somalia, and southeast Egypt. Control operations in the five countries increased fivefold compared to November, with additional air control in Sudan and the exclusive use of biopesticides in Somalia. The forecast predicts that the first winter generation will end in January. The weather models predict below-normal rainfall along the Red Sea and Gulf of Aden coasts in the next few months. However, a second generation is likely to occur in January and February, specifically in Sudan, Eritrea, and Yemen, where rain is expected to be normal or above normal. Control operations should continue. Elsewhere, a few locusts occurred in parts of northwest Mauritania, Western Sahara, Morocco, Algeria, and Niger. No significant developments are likely in the Western and Eastern 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 December 2023

Very little rain fell during December in the winter season along the Red Sea and Gulf of Aden coasts, but annual vegetation was green.

WESTERN REGION

During December, there was no rain in the northern Sahel of West Africa, throughout the Sahara, and south of the Atlas Mountains from Morocco to Tunisia. Annual vegetation was dry except for a few places in northwest Mauritania, southern and central Western Sahara, and southern Algeria where it was slightly green.

CENTRAL REGION

During December, light and moderate rain fell in a few places on the Red Sea coast of Sudan and southeast Egypt as well as some rain northwest of Aden in Yemen during the first dekad. In Saudi Arabia, light rain fell during the first and third dekad in the central and northern parts of the Red Sea coast, while only northern parts during the second dekad. Practically no rain fell along the coast of Eritrea, Ethiopia, or northwest Somalia. Nevertheless, annual vegetation was green along both sides of the Red Sea coast from southeast Egypt to central Eritrea and from the northern coast of Saudi Arabia to Yemen as well as the Gulf of Aden in northwest Somalia. Dry vegetation was seen in the southern Red Sea coast in Eritrea. In Ethiopia, there was green vegetation along the southeastern part of the Somali region compared to the northern part which was dry. The weather models predict below-normal rainfall during most of the winter season along the Red Sea and Gulf of Aden coasts in the next few months except for parts of Sudan and Eritrea in February and Yemen in March where it might be above-normal rain.

EASTERN REGION

During December, light rain fell in parts of southwest Iran in the second part of the month, but vegetation was dry.



Area Treated

Control operations increased during December to 64 126 ha compared to 11 343 ha in November.

Egypt	2 868 ha
Eritrea	24 136 ha
Mauritania	36 ha
Saudi Arabia	10 220 ha
Somalia	4 189 ha
Sudan	22 677 ha



Desert Locust Situation and Forecast

WESTERN REGION

Isolated adults in northwest Mauritania and southern Western Sahara will persist in January but no rain or breeding are expected.

ALGERIA

• SITUATION

During December, a few scattered third to fifth instar solitary hoppers as well as immature and mature adults were seen in the southern Sahara west of Tamanrasset (2250N/0528E) near Oued Amded (2249N/0427E). Isolated maturing solitary adults were found in a few places further south near irrigated perimeters in In Guezzam (1934N/0546E) close to Niger. No locusts were present in the central Sahara near Adrar (2753N/0017W) and in the south near Timeiaouine (2026N/0148E) close to Mali.

• FORECAST

No significant developments are likely.

BURKINA FASO

• SITUATION

No locusts were reported during December.

• 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 solitary locusts are likely to be present in a few parts of the Adrar des Iforas.

MAURITANIA

• SITUATION

During December, isolated immature and mature solitary adults were present in the west between Nouakchott and Aguilal Faye (1827N/1444W) and in the northwest between Bennischab (1928N/1525W) and Akjoujt (1945N/1421W). A few small immature groups were seen in the first week northeast of

Nouakchott as well as two places of isolated hoppers. Control operations treated 36 ha.

• FORECAST

Low numbers of solitary adults will remain in the northwest and north.

MOROCCO

• SITUATION

During December, isolated immature solitary adults were present in a few places in the south between Dakhla (2530N/2900E) and Oum Dreyga (2406N/1316W). During the first dekad, a few isolated immature solitary adults were attracted at night south of the Atlas Mountains near Guelmim (2859N/1003W).

• FORECAST

Only a few adults will persist in the south.

NIGER

• SITUATION

During December, isolated immature solitary adults were present on the Tamesna Plains between In Abangharit (1754N/0559E) and Arlit (1843N/0721E). A few isolated two to fourth instar hoppers were seen at one place south of Arlit. No locusts were seen further south to Abalak (1522N/0621E).

• FORECAST

Low numbers of solitary adults will remain in parts of the Air Mountains.

SENEGAL

• SITUATION

No locusts were reported during December.

• FORECAST

No significant developments are likely.

TUNISIA

• SITUATION

No locusts were reported during December.

• FORECAST

No significant developments are likely.

BENIN, CABO VERDE, CAMEROON, CÔTE D'IVOIRE, GAMBIA, GHANA, GUINEA, GUINEA-BISSAU, LIBERIA, NIGERIA, SIERRA LEONE, AND TOGO

• FORECAST

No significant developments are likely.

CENTRAL REGION

A second generation of winter breeding should occur from January to April along the Red Sea and Gulf of Aden coasts of Sudan, Eritrea, southeast Egypt, Saudi Arabia, Yemen, and northwest Somalia, especially if more rain falls. Survey and control must continue in all countries.

DJIBOUTI

• SITUATION

During December, no locusts were seen in the southeast north of Ali Sabieh (1109N/4242E) on the last day of the year. However, there might have been an unconfirmed report of a small swarm on the 29th that came from the northwest Somalia.

• FORECAST

There is a low possibility that a few small groups or swarm could move around both sides of the border in eastern Djibouti and northwestern Somalia.

EGYPT

• SITUATION

During December, the first winter generation of hatching finished at the end of the month on the southeast coast from Berenice (2359N/3524E) to Halaib (2213N/3638E) and the Sudan border. As a result, hopper groups and a few small bands were present during the second half of the month while fledgling and immature adults started to appear in the last week. No locusts were seen in the subcoastal areas near El Sheikh El Shazly (2412N/3438E). Control operations treated 2 868 ha.

• FORECAST

During January, hopper groups and small bands will remain along the southeastern Red Sea coast. If more rain falls, a second generation could lay eggs from the end of January, with hatching and hopper groups starting in the second week of February and new adults from about mid-March.

ERITREA

• SITUATION

During December, the first winter generation of laying finished at the end of the month on the Red Sea coast from Tio (1441N/4057E) to Karora (1745N/3820E) and the Sudan border. As a result, more hopper groups were present on the central and northern coast from Massawa (1537N/3928E) to Karora as well as a few places near Tio. Immature groups appeared during the last dekad in the north where they moved along both sides of the border with Sudan. Control operations treated 24 136 ha.

• FORECAST

Hopper and adult groups as well as a few small bands and swarms will continue during January and the first half of February along the Red Sea coast. While some groups can move north to Sudan, a second generation could occur in Eritrea, if more rain falls, with laying, hatching and hopper groups and bands in late January and February, followed by new adult groups appearing in early March.

ETHIOPIA

• SITUATION

During December, isolated mature solitary adults were seen at two places in the Somali region west and east of Warder. No locusts were seen further north from Ayasha (1045N/4234E) south of Djibouti to the west of Dire Dawa (0935N/4150E).

• FORECAST

There is a possibility that a few small groups or swarms may arrive in the Somali region where they could move back and forward along the border with northwestern Somalia.

OMAN

• SITUATION

During December, no locusts were seen in the Musandam Peninsula, north along the Batinah coast, and in the interior near Buraimi (2415N/5547E) and Adam (2223N/5731E).

• FORECAST

No significant developments are likely.

SAUDI ARABIA

• SITUATION

During December, the first winter generation of hatching finished at the end of the month on the Red Sea coast from Qunfidah (1909N/4107E) in the centre to Masturah (2309N/3851E) in the north. As a result, more hopper groups and small bands were present throughout the month. Fledgling started in the beginning of December and immature and maturing groups were present in the last dekad mainly near Lith (2008N/4016E) with some near Masturah. No locusts were seen further south near Jizan (1656N/4233E) and north to Umm Lajj (2501N/3716E) as well as in the interior of the southern Empty Quarter. Control operations treated 10 220 ha.

• FORECAST

During January, late instar hopper groups and small bands will remain along the Red Sea coast from Qunfidah to Masturah, and adult groups will continue until early March. In the event of more rainfall, a second generation could lay eggs from January to March, with hatching occurring between late January and mid-March. New adults should appear by the end of February.

SOMALIA

• SITUATION

During December, the first winter generation of hatching finished at the end of the first dekad on the northwest coast from Berbera (1028N/4502E) west to Zeylac (1121N/4328E) and the Djibouti border. As a result, more hopper groups and small bands were present throughout the month. Fledgling started in the second week and immature groups and small swarms appeared in the last dekad. Control operations treated 4 189 ha using biopesticides.

• FORECAST

During the first half of January, late instar hopper groups and small bands will remain along the northwest coast. The presence of adult groups and small swarms will extend into January and February. With a little more rain, a second generation could start laying eggs from mid-January until the end of February, with hatching from the end of the month up to the end of February and new adults appearing in early March.

SUDAN

• SITUATION

During December, the first winter generation of hatching finished at the end of the first dekad on the Red Sea coast from Eritrea to Egypt. Consequently, there was an increase in the number of hopper groups and small bands during the month. In the second week, fledgling and immature groups formed, while a few mature groups were copulating near Karora (1745N/3820E) and the Eritrea border at the end of the month. Hoppers, adults, and some groups were observed in the northeast subcoastal region from Tomala (2002N/3551E) to Sufiya (2119N/3613E) and the Egypt border. Control operations treated 22 677 ha along the coast of which 3 550 ha were by air.

• FORECAST

Hoppers, adults, groups, and very small bands and swarms will continue during January along the Red Sea coast and subcoastal area. A second generation could occur with hatching and hopper groups and bands from the second half of January and new adult groups appearing in early March.

YEMEN

• SITUATION

During the second week of December, a few small hopper groups of second to fifth instar were seen on the southeast coast near Al Ghaydah (1612N/5210E) in the Al Maharah province. This indicates that breeding occurred from the Tej cyclone and rainfall on 23–25 October where locusts laid until about mid-November with hatching from the second dekad of November and fledgling from mid-December. The situation along the Red Sea coast is unknown due to no surveys.

• FORECAST

Hoppers and adults will continue along the Red Sea and Gulf of Aden coasts where a second generation of breeding could occur with hatching in January and groups of more rain falls. In the southeast, a few adult groups are likely to remain on the coast near Al Ghaydah as well as in parts of the interior from the Tej cyclone in the end of October.

BAHRAIN, DEMOCRATIC REPUBLIC OF THE CONGO, IRAQ, ISRAEL, JORDAN, KENYA, KUWAIT, LEBANON, PALESTINE, QATAR, SOUTH SUDAN, SYRIAN ARAB REPUBLIC, TÜRKIYE, UGANDA, UNITED ARAB EMIRATES, AND UNITED REPUBLIC OF TANZANIA

• FORECAST

No significant developments are likely.

EASTERN REGION

During the spring, seasonal models suggest increase temperature and slightly wetter rains may allow breeding on a small scale to start in south Iran and southwest Pakistan in February.

AFGHANISTAN

• SITUATION

No locust reports were received in December.

• FORECAST

No significant developments are likely.

INDIA

• SITUATION

During December, no locusts were seen in Rajasthan and Gujarat.

• FORECAST

No significant developments are likely.

ISLAMIC REPUBLIC OF IRAN

• SITUATION

During December, no locusts were seen in the interior of the southeast near the coast and the Jaz Murian Basis, the interior of the Fars region, and the southwest coast.

• FORECAST

Low numbers of solitarious adults may occur on the south coast in February as temperature and rain increase which could allow breeding on a small scale to start at the end of the forecast period.

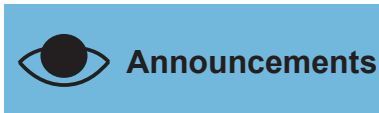
PAKISTAN

• SITUATION

No locusts were reported during December.

• FORECAST

A few locusts may occur on the southwest coast of Baluchistan in February as temperature and rain increase which could allow breeding on a small scale to start at the end of the forecast period.



Announcements

Locust warning levels

A colour-coded scheme indicates the alert level, perceived risk, or threat of current Desert Locust infestations to crops, and appropriate response:

- **Green** – calm situation (low alert); no threat to crops (*maintain regular monitoring*)
- **Yellow** – cautious situation (moderate alert); potential threat to crops (*increased vigilance, control may be needed*)
- **Orange** – serious situation (high alert); threat to crops (*survey and control must be undertaken*)
- **Red** – dangerous situation (very high alert); significant threat to crops (*intensive survey and control operations must be conducted*)

The scheme is applied to the Locust Watch web page and to the monthly bulletins and updates.

Locust reporting

RAMSES data. Countries should connect to the Internet and backup the RAMSES database whenever data are added or changed; do not wait until the end of the month.

Bulletins. Affected countries are encouraged to prepare decadal, fortnightly, or monthly bulletins that summarize and analyze 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 day 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.

eLocust3 digital tools

In addition to the original eLocust3 tablet, FAO has three free tools for data collection in the field:

- eLocust3m – a smartphone app for survey and control data, developed with PlantVillage (Android: play.google.com; iOS: appl.apple.com; how-to-use videos: tiny.cc/eL3mVideos)
- eLocust3g – a GPS app for emergencies, developed with Garmin (tiny.cc/eLocust3g)
- eLocust3w – an Internet form for emergencies, developed in Kobo (tiny.cc/eLocust3w)

The geo-referenced data collected by these tools feed into FAO's global early warning system and are critical for real-time monitoring, near-instant analysis, and planning field operations in each country.

[www.fao.org/ag/locusts/en/activ/2573/eL3suite/index.html]

Standard Operating Procedures (SOPs)

FAO has developed pocket-sized SOPs for use in the field on Desert Locust biology, survey, and control, including instructions on how to use eLocust3 tools, that are available in different languages.

[www.fao.org/ag/locusts/en/publicat/gl/sops/index.html]

Community awareness

As communities have an important role to play in Desert Locust management, FAO has developed:

- Posters – six simple, easy to understand posters, providing basic messaging on pesticide containers, safety measures, pesticide exposure, farmer advice, Desert Locust, and following instructions (www.fao.org/ag/locusts/en/publicat/2581/index.html)
- Animation – a simple SWABO animation for all readers to learn about the world's most dangerous migratory pest (www.youtube.com/watch?v=3TOhuA-v1m4)

Publicly available locust data

Desert Locust survey and control data are available for research and other non-commercial purposes:

- FAO Locust Hub (locust-hub-hqfao.hub.arcgis.com/)
- FAO Hand-in-Hand (data.apps.fao.org/)

2024 calendar

- **CRC.** Drone for control field trial, Jeddah, Saudi Arabia (11–15 February)



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 km² • band: 1–25 m²

Small

- swarm: 1–10 km² • band: 25–2,500 m²

Medium

- swarm: 10–100 km² • band: 2,500 m² – 10 ha

Large

- swarm: 100–500 km² • band: 10–50 ha

Very large

- swarm: 500+ km² • 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

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

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

JRC Greenness maps. Dynamic maps of green vegetation evolution every dekad
<https://locust.cgls.dev/s/6ddC96njJcRxZy7>

Lobelia Soil moisture maps. Dynamic maps of soil moisture detected every dekad
<https://fao-locust.lobelia.earth>

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

NOAA. HYSPLIT locust forecast trajectory model
<https://locusts.arl.noaa.gov>

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

Zoom Earth. Real time rainfall, winds and temperatures for locust migration
<https://zoom.earth>

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

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

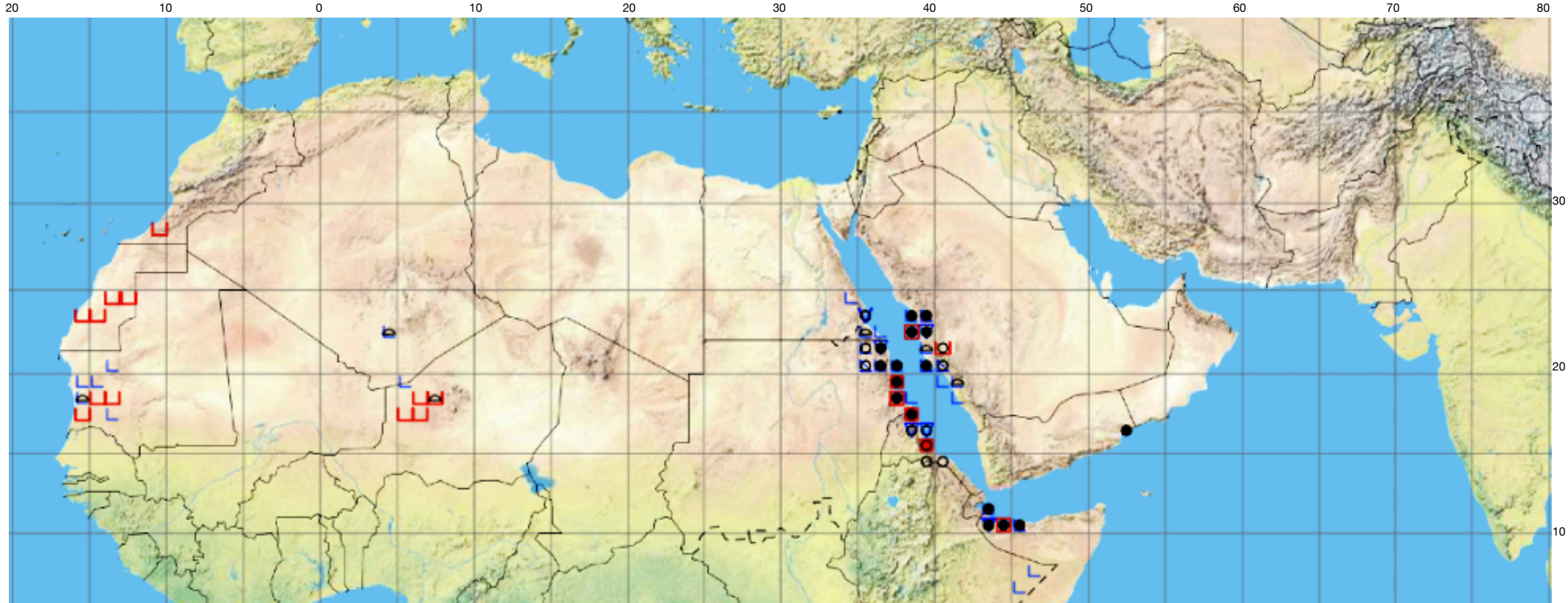
FAOLocust Twitter. The very latest updates posted as X/tweets
<http://www.twitter.com/faolocust>

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



Desert Locust Summary

Criquet pèlerin – Situation résumée



FORECAST TO :
PREVISION AU : **15.02.24**

LIKELY
PROBABLE

POSSIBLE
POSSIBLE

favourable breeding conditions
conditions favorables 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 2023
déc 2023

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)		