Food and Agriculture Organization of the United Nations

No. 542 5 December 2023

Desert Locust Bulletin

General situation during November 2023
Forecast until mid-January 2024

WESTERN REGION: CALM

SITUATION. Isolated and scattered adults in **Mauritania** (179 ha treated), **Niger**, **Western Sahara** and **Morocco**, and **Algeria**; isolated hoppers and a few small groups in western Mauritania.

FORECAST. Low numbers of solitarious adults will remain in the northwest and north of **Mauritania**, southern **Western Sahara** and **Morocco**, and in central **Algeria**.

CENTRAL REGION: CAUTION

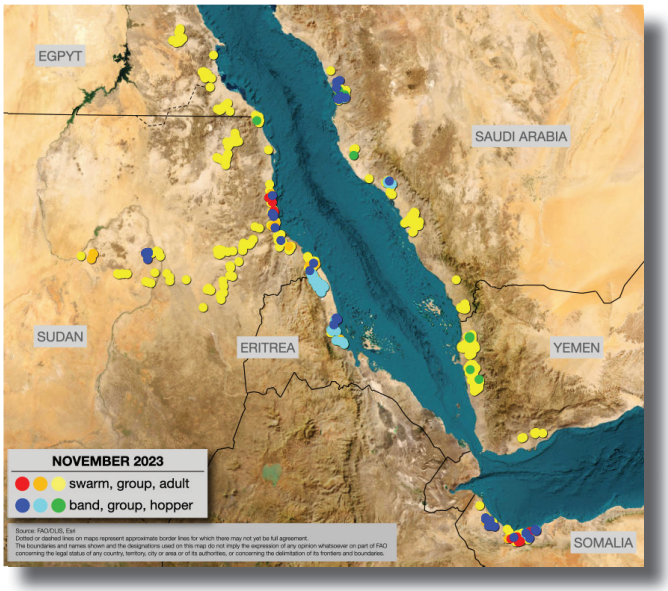
SITUATION. Local outbreaks developed along the Red Sea coast of **Sudan** (1 628 ha treated), **Eritrea** (8 665 ha), **Saudi Arabia** (687 ha), and the Gulf of Aden coast in northwest **Somalia** (178 ha) due to adults, groups and swarms laying with hatching and hopper groups and bands from the first generation of winter breeding. **Egypt** and **Yemen** had only scattered locusts. The summer area in the interior of Sudan was nearly finished.

FORECAST. The first generation of winter breeding will increase during December and January. If more rains occur, a second generation will develop from the second half of January to April, causing more groups as well as some bands and swarms to form in **Sudan**, **Eritrea**, **Saudi Arabia**, **Somalia**, and perhaps **Yemen** and **Egypt**.

EASTERN REGION: CALM

SITUATION. No locusts are present.

FORECAST. No significant developments are likely.



CENTRAL REGION OUTBREAKS

Four local Desert Locust outbreaks developed during November. The winter season started earlier than normal this year along the Red Sea and Gulf of Aden coasts due to the Indian Ocean Dipole and El Niño in the Horn of Africa. A few swarms laid in Sudan and Somalia while groups occurred in Eritrea and Saudi Arabia. Hatching started and hopper groups and bands increased during the breeding in Sudan, Eritrea, Somalia, and Saudi Arabia where control was done. Yemen had some hoppers and adults while Egypt had a few adults. In the Western Region, low numbers of adults were seen in Mauritania, Niger, Western Sahara, and Algeria. During the forecast, breeding will cause locusts to increase during the first generation along the Red Sea and Gulf of Aden coasts from December and January. The latest weather models predict more rain than normal along both sides of the Gulf of Aden and perhaps the southern Red Sea coast, but the northern Red Sea coast is uncertain. Nevertheless, a second generation of breeding is expected from late January to April which would cause locust numbers to increase further with more groups, bands, and some swarms to form. Control operations should continue. No significant development is 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 November 2023

Good rains fell on both sides of the Red Sea and Gulf of Aden coasts during the winter season this year.

WESTERN REGION

During November, 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 drying out or already dry in most places. However, there was some limited green vegetation in the interdune areas in northwest and northern Mauritania and parts of southwest Western Sahara. In the central Sahara of Algeria, there was some vegetation in the irrigated areas.

CENTRAL REGION

During November, above-normal rains continued to occur on the Red Sea and Gulf of Aden coasts for the winter season. During the first dekad, good light to moderate rain fell along the Red Sea coast from southeast Egypt to central Eritrea, from the northern Red Sea coast of Saudi Arabia to the northern coast of Yemen, along the coast and interior of northwest Somalia, and the plateau of eastern Ethiopia. During the second dekad, only rain fell on the coastal plains of Sudan and central Saud Arabia as well as the coast and interior areas of northwest Somalia. During the third dekad, very little rain fell except for drizzle in a few places on the central and northern coast of Eritrea. As a result, annual vegetation improved on all areas along the coast and subcoastal areas. Due to the El Niño and the Indian Ocean Dipole this year, the weather models suggest that there is uncertainty about rainfall in the winter season, especially along the northern Red Sea coast.

EASTERN REGION

During November, light rain fell in parts of southeast Iran and southwest Pakistan, but vegetation was mainly dry. In the Indo-Pakistan areas, no rain occurred, and annual vegetation was drying out in most places.

Area Treated

Control operations increased in November to 11 337 ha due to four outbreaks compared to 4 575 ha in October.

Eritrea	8 665 ha
Mauritania	179 ha
Saudi Arabia	687 ha
Somalia	178 ha
Sudan	1 628 ha

Desert Locust Situation and Forecast

WESTERN REGION

Scattered adults in northwest Mauritania and perhaps southern Western Sahara will persist in December but no rain or breeding are expected.

Algeria

• **SITUATION**

During November, a few isolated immature solitarious adults were seen in the central Sahara near Adrar (2753N/0017W) and in the south near Timeiaouine (2026N/0148E) close to Mali, while a couple of mature solitarious adults were copulating west of Tamanrasset (2250N/0528E). No locusts were present further south near In Guezzam (1934N/0546E) close to Niger.

• **FORECAST**

No significant developments are likely.

Burkina Faso

• **SITUATION**

No locusts were reported during November.

• **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**

No locusts were reported during November.

• **FORECAST**

Low numbers of solitarious locusts are likely to be present in a few parts of the Adrar des Iforas.

Mauritania

• **SITUATION**

During November, a few small groups of fifth instar hoppers were seen in the west between Nouakchott and Aguilal Faye (1827N/1444W) while isolated hoppers were observed in the northwest between Bennichab (1928N/1525W) to the west of Oujeft (2003N/1301W). Isolated and scattered immature and mature adults were present in both places as well as further north from Zouerate (2244N/1221W) to the south of Bir

Moghrein (2510N/1135W) in Tiris-Zemmour. Control operations treated 179 ha.

• **FORECAST**

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

Morocco

• **SITUATION**

During November, isolated immature and mature solitarious adults were seen in a few places in the south between Bir Gandouz (2136N/1628W) and Ma'Tallah (2223N/1502W).

• **FORECAST**

Only a few adults will persist in the south.

Niger

• **SITUATION**

During November, isolated immature solitarious adults were present southeast of Agadez (1658N/0759E) and east of Timia (1809N/0846E) in the Air Mountains. In the central pasture, a few isolated immatures and mature solitarious adults were seen north of Tasker (1507N/1041E).

• **FORECAST**

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

Senegal

• **SITUATION**

No locusts were reported during November.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locusts were reported during November.

• **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

The first generation of winter breeding and above-normal rainfall continued along the Red Sea and Gulf of Aden coasts of Sudan, Eritrea, southeast Egypt, Saudi Arabia, Yemen, and northwest Somalia in November. Locusts will increase further if more rain occurs, and a second generation develops from the second half of January to April.

Djibouti

• **SITUATION**

No locust reports were received in November.

• **FORECAST**

No significant developments are likely.

Egypt

• **SITUATION**

During November, isolated immature and mature solitarious adults were seen in a few places along the southeast Red Sea coast from Berenice (2359N/3524E) to Halaib (2213N/3638E) and the Sudan border. Copulating was present on 19 November in two places in the subcoastal areas near El Sheikh El Shazly (2412N/3438E). No locusts were seen elsewhere on the subcoastal area further north near Marsa Alam (2504N/3454E) and Hurghada (2717N/3347E), and in the interior near Abu Simbel (2219N/3138E) and Tushka (2247N/3126E).

• **FORECAST**

Small-scale breeding will occur on the southeastern Red Sea coast and subcoastal areas with hatching and solitarious hoppers in December and January.

Eritrea

• **SITUATION**

During November, a local outbreak developed along the Red Sea coast where winter breeding started, and groups of mature adults were seen in the north between Mehimet (1723N/3833E) and the Sudan border as well as further south from Mersa Gulbub (1633N/3908E) to Massawa (1537N/3928E). Laying started during the last dekad of October and continued to the end of November. Hatching occurred and small first to fourth instar groups were present near the border with Sudan at the end of the month while first to second instar groups were seen further south after mid-month. Control operations treated 8 665 ha.

• **FORECAST**

Hoppers and groups should finish by about mid-January during the first winter generation on the Red Sea coast. Fledgling, immature adults and small groups are expected to begin during the second half of December. If more rain occurs, especially at the end of December or early January, a second generation should start to lay during the second half of January.

Ethiopia

• **SITUATION**

During November, no locusts were seen in the lowland areas near Chifra (1136N/4001E) in the Afar region and in one place south of Ayasha (1045N/4234E) in the northern Somali region.

• **FORECAST**

No significant developments are likely.

Oman

• **SITUATION**

During November, no locusts were seen in the Musandam Peninsula, north along the Batinah coast, in the interior from Buraimi (2415N/5547E) to Adam (2223N/5731E), and in the southern coast near Salalah (1700N/5405E).

• **FORECAST**

No significant developments are likely.

Saudi Arabia

• **SITUATION**

During November, a local outbreak developed along the Red Sea coast where scattered locusts and a few groups of laying, hatching and first to third instar hoppers and groups were present in the central Red Sea coast near Lith (2008N/4016E) and in the northern coast between Thuwal (2215N/3906E) and Masturah (2309N/3851E), which is the first winter generation this year. Isolated and scattered immature and mature solitarious adults were seen on the southern coast near Jizan (1656N/4233E) and further north near Qunfidah (1909N/4107E). Control operations treated 687 ha.

• **FORECAST**

Hatching should finish by mid-December and hoppers and groups concluded by about mid-January during the first winter generation on the coast. Adults and groups will mature, and the second generation should start to lay during the second half of January. There is a possibility that a few adult groups migrated to the southern Empty Quarter where they could breed from the cyclone at the end of October in eastern Yemen.

Somalia

• **SITUATION**

During November, a local outbreak developed along the Gulf of Aden coast where scattered mature adults, some groups and a few small swarms were seen during the first half of the month in the northwest coast within about 200 km from west of Silil (1058N/4326E) to Berbera (1028N/4502E). In these areas, the first winter generation laying and hatching occurred. By the end of the month, hoppers and a few small groups and bands had reached the fourth instar. Control operations treated 178 ha.

• **FORECAST**

Hoppers and small groups and bands will continue along the northwest coast until mid-January. Fledgling, immature adults, small groups and perhaps a few little swarms are expected to begin during the second half of December. If more rain occurs, especially at the end of December or early January, a second generation of laying could start in the second half January.

Sudan

• **SITUATION**

During November, a local outbreak developed along the Red Sea coast and subcoastal area in the northeast of the winter season where mature adults and a few small groups and swarms appeared and lay. Hatching occurred in the second dekad and very small gregarious first to second instar bands were present during the rest of the month, mainly between Port Sudan (1938N/3713E) to Tokar (1827N/3741E) with a few further south near Karora (1745N/3820E) and the Eritrea border, and further north near Fodukwan (2145N/3644E) and the Egypt border. Copulating occurred in the northeast subcoastal area near Sufiya (2119N/3613E). In the interior of the summer area, scattered late instar hoppers, immature and mature adults, and some groups were still in the Bayuda Desert and along the Nile Valley from west of Merowe (1830N/3149E) to Atbara (1742N/3400E). East of the Nile, scattered solitarious adults were nearly finished to the Red Sea Hills. Control operations treated 1 628 ha..

• **FORECAST**

Hatching and hoppers, groups and very small bands will continue during December along the Red Sea coast and subcoastal area. Fledgling, immature adults, small groups and perhaps a few little swarms are expected to begin during the second half of December. If more rain occurs, especially at the end of December or early January, a second generation should start to lay during the second half of January.

Yemen

• **SITUATION**

During November, scattered mature solitarious adults were present on the Red Sea coast from Zabid (1410N/4318E) to Suq Abs (1600N/4312E). A few scattered second to fourth instar hoppers and immature adults were seen north of Hodeidah (1450N/4258E) and near Suq Abs during the first winter generation. Along the western part of the Gulf of Aden, mostly a few isolated immature and mature solitarious adults were seen between Am Rija (1302N/4434E) and Zinjibar (1306N/4523E).

• **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. There is a possibility that a few adult groups migrated from the cyclone in the end of October to the Empty Quarter between eastern Yemen and southern Saudi Arabia and perhaps breed.

Bahrain, Democratic Republic of the Congo, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Palestine, Qatar, South Sudan, Syria Arab Republic, Türkiye, Uganda, United Arab Emirates, and United Republic of Tanzania

• **FORECAST**

No significant developments are likely.

EASTERN REGION

During the spring breeding, seasonal models suggest slightly wetter rains may start in southeast Iran and southwest Pakistan in February.

Afghanistan

• **SITUATION**

No locust reports were received in November.

• **FORECAST**

No significant developments are likely.

India

• **SITUATION**

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

• **FORECAST**

No significant developments are likely.

Islamic Republic of Iran

• **SITUATION**

During November, 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**

No significant developments are likely.

Pakistan

• **SITUATION**

No locusts were reported during November.

• **FORECAST**

No significant developments are likely.

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/)

2023–2024 calendar

- **CLCPRO.** 16th session of the Executive Committee, Nouakchott, Mauritania (11–15 December)
- **SWAC.** 33rd session, Rome (18–20 December)
- **SWAC.** Desert Locust Information Officer workshop, Rome (21–22 December)
- **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 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

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.ldeo.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

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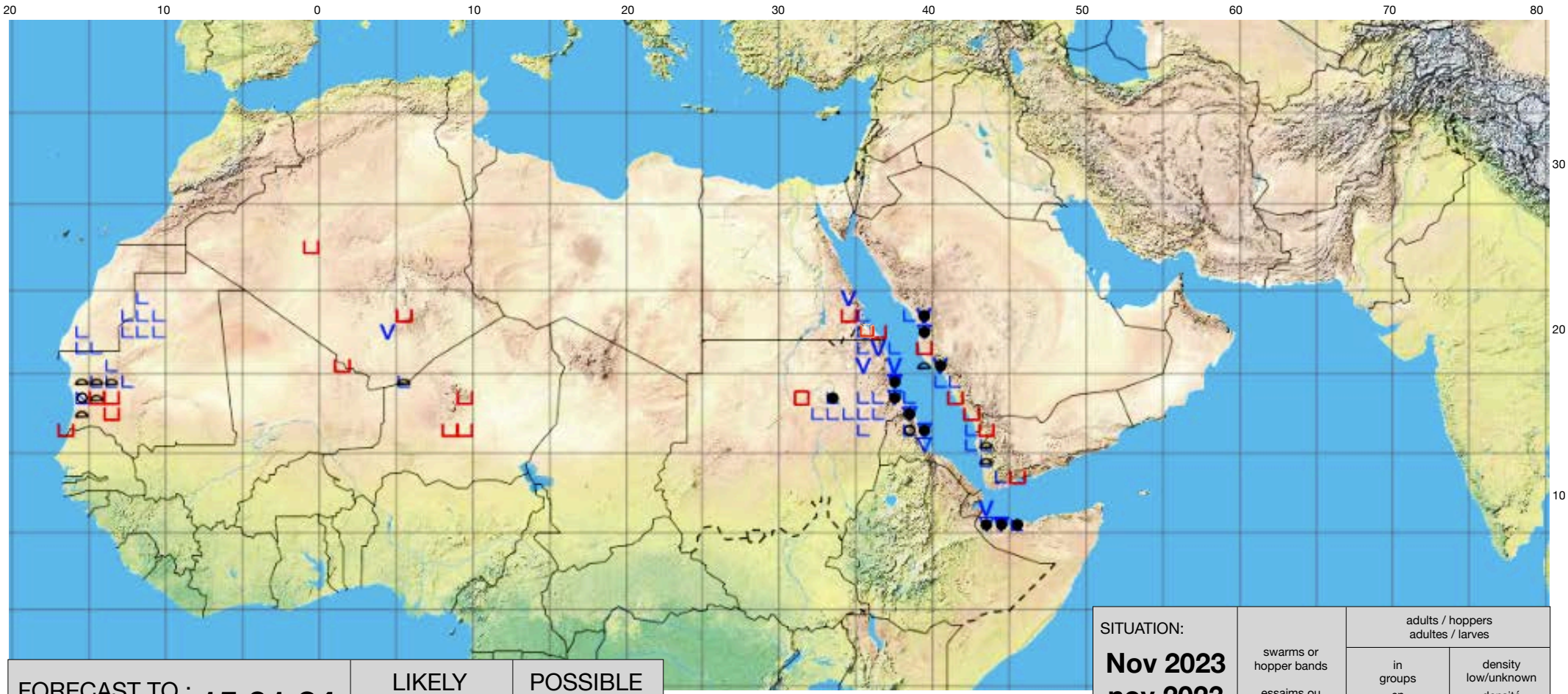

FORECAST TO : PREVISION AU : **15.01.24**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarms(s) essaim(s) limité(s)		
non swarming adults adults non essaimant		

SITUATION: **Nov 2023 nov 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)	●	○	◡