Food and Agriculture Organization of the United Nations

No. 484 4 FEB 2019

Desert Locust Bulletin

General situation during January 2019
Forecast until mid-March 2019

WESTERN REGION: CALM

SITUATION. Local breeding occurred in northwest **Mauritania** and southern **Algeria**, and isolated adults were present in northern **Niger**. Ground teams treated 100 ha in Mauritania.

FORECAST. Low numbers of adults will persist in northwest **Mauritania**, northern **Mali** and **Niger**, and southern **Algeria**. Small-scale breeding will start in March south of the Atlas Mountains in **Morocco** and in northern **Mauritania** if rains fall.

CENTRAL REGION: THREAT

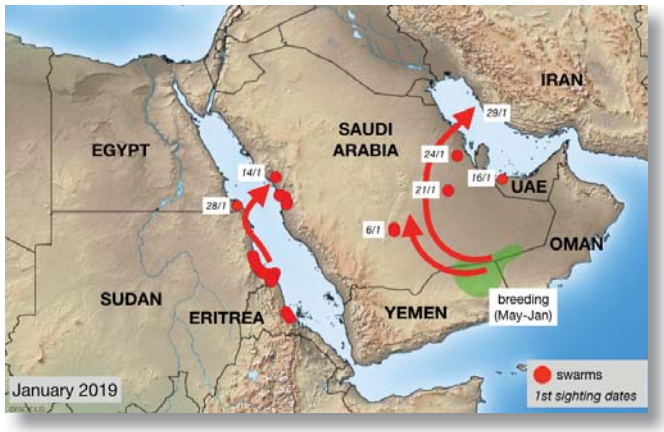
SITUATION. Locust numbers increased on the Red Sea coast of **Sudan**, **Eritrea** and **Egypt** where hopper and adult groups, hopper bands and swarms formed, and a few swarms moved to the coast of **Saudi Arabia**. Immature swarms invaded the interior of Saudi Arabia from the Empty Quarter and one swarm reached **UAE**. Control operations were in progress.

FORECAST. Second-generation breeding will cause more groups, bands and swarms to form on the Red Sea coast in **Sudan**, **Eritrea** and **Egypt**. A few swarms may move to northern Sudan and across the Red Sea to the coast and interior of **Saudi Arabia**.

EASTERN REGION: CAUTION

SITUATION. Adult groups arrived on the southern coast of **Iran** from Arabia at the end of the month and quickly matured.

FORECAST. Adult groups may move east towards southwest **Pakistan**. Laying and hatching will occur on the southern coast of **Iran**, giving rise to hopper groups and perhaps a few small bands.



Swarms form in the Central Region

An outbreak continued on the Red Sea coastal plains of Sudan and Eritrea where an increasing number of groups, bands and several swarms formed during January from a second generation of breeding. A few mature swarms appeared on the coast in southeast Egypt and northern Saudi Arabia that probably originated near the Sudan/Eritrea border. Immature swarms invaded farms along the western and northern edges of the Empty Quarter in the interior of Saudi Arabia, coming from the southeastern Empty Quarter near the Yemen/Oman border where two generations of breeding occurred after good rain from cyclones Mekunu (May) and Luban (October). A few of these swarms moved to UAE and southern Iran. Aerial operations were mounted in Sudan and Saudi Arabia in addition to ground control in both countries, Eritrea and Egypt, treating nearly 55 000 ha during January. During the forecast period, breeding will continue, causing more groups, bands and swarms to form. As vegetation dries out, adult groups and a few swarms are likely to move north along the Red Sea coast in Eritrea to Sudan, and from the Red Sea coast of Sudan to the Nile Valley in northern Sudan. There is a moderate risk that some swarms could cross the Red Sea to the coastal and interior areas of Saudi Arabia. Elsewhere, local breeding occurred in northwest Mauritania and southern Algeria. If rains fall, spring breeding is likely to commence in March along the southern side of the Atlas Mountains in northwest Africa.

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. Products are distributed by e-mail and Internet.

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Weather & Ecological Conditions in January 2019

Breeding conditions remained favourable along both sides of the Red Sea despite little rainfall. Green vegetation persisted in a few areas in the Western Region.

WESTERN REGION

No significant rain fell during January and conditions remained generally dry throughout the region. Nevertheless, small areas of green vegetation persisted in northwest Mauritania from Akjoujt to Oujeft, along the edges of irrigated agricultural perimeters in the Adrar Valley of central Algeria, and on the southern side of the Hoggar Mountains near Tamanrasset. Limited green vegetation also persisted in parts of the spring breeding area south of the Atlas Mountains in the Draa and Ziz-Ghris valleys of Morocco.

CENTRAL REGION

Light to moderate rains fell at times during January along parts of the Red Sea coast in Sudan near Tokar Delta where it was cloudy most of the month. Light showers occurred on the Eritrean coastal plains for two days only, 1 and 17 January. In Saudi Arabia, good rains fell during the last decade along parts of the northern Red Sea coastal plains between Masturah and Duba, in the northern Asir Mountains, and in the interior near Khaybar, Tabuk, Al Jawf and between Riyadh and Gassim. Ecological conditions were favourable for breeding on the Red Sea coast and in subcoastal areas of southeast Egypt, in Wadi Oko/ Diib in northeast Sudan, and along the coast from Port Sudan to Mersa Cuba, Eritrea. Breeding conditions were also favourable on the central and northern coastal plains of the Red Sea coast in Saudi Arabia between Lith and Yenbo but were less favourable on the southern coast and on the Tihama of Yemen because of poor rainfall during January. Favourable breeding conditions persisted along the southeastern edge of the Empty Quarter in Saudi Arabia near the Yemen/Oman border as a result of rains from Cyclone Luban in October. These conditions extended south into eastern Yemen and Al Maharah province on the plateau between Thamud and the Oman border.

EASTERN REGION

Very little rain fell during January except for showers on the southwest coastal plains in Iran near Bushehr. Nevertheless, ecological conditions were favourable along parts of the coast to Bandar Abbas. Light showers also fell coastal and subcoastal areas of Baluchistan in southwest Pakistan between Gwadar and Omara.

Area Treated

Nearly 55 000 ha were treated during January.

Egypt	1 660 ha (29–31 January)
Eritrea	6 965 ha (January)
Mauritania	100 ha (January)
Saudi Arabia	12 165 ha (6–30 January)
Sudan	34 028 ha (January)

Desert Locust Situation and Forecast

WESTERN REGION

Mauritania

• **SITUATION**

During January, scattered late instar solitarious hoppers, immature and mature solitarious adults were present at two places to the southwest and southeast of Oujeft (2003N/1301W) where breeding had occurred in December. Ground teams treated 100 ha.

• **FORECAST**

Local breeding may continue in the northwest between Akjoujt, Oujeft and Atar. Low numbers of adults may be present in the north where small-scale breeding could occur as temperatures warm up and if rains fall.

Mali

• **SITUATION**

No surveys were carried out and no locusts were reported in January.

• **FORECAST**

Low numbers of locusts are likely to be present and persist in the Tilemsi Valley as well as parts of Timetrine and the Adrar des Iforas.

Niger

• **SITUATION**

In early January, isolated immature and mature solitarious adults were seen at a few places in the Air Mountains to the north and east of Iferouane (1905N/0824E).

• **FORECAST**

Low numbers of locusts are likely to persist in parts of the Air Mountains and perhaps on the northern Tamesna Plains.

Chad

• **SITUATION**

No locust activity was reported during January.

• **FORECAST**

No significant developments are likely.

Senegal

• **SITUATION**

No locust activity was reported during January.

• **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, small-scale breeding continued west of Tamanrasset (2250N/0528E) where low numbers of third and fourth instar solitarious and *transiens* hoppers mixed with immature solitarious adults were seen at two places along Wadi Amded. No locusts were seen in the Adrar Valley of the Central Sahara.

• **FORECAST**

Low numbers of adults are likely to persist near Wadi Amded in the south and near irrigated perimeters in the Adrar Valley.

Morocco

• **SITUATION**

No surveys were carried out and no locusts were reported in January.

• **FORECAST**

Isolated adults may be present in parts of the Draa Valley and W. Sakia El Hamra in the Western Sahara. Small-scale breeding could commence at the end of the forecast period if rains fall.

Libya

• **SITUATION**

No reports were received in January.

• **FORECAST**

No significant developments are likely.

Tunisia

• **SITUATION**

No locust activity was reported during January.

• **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

During January, first-generation hoppers and adults continued to mature in outbreak areas on the central coast of the Red Sea from north of Port Sudan (1938N/3713E) to Tokar Delta (1827N/3741E). An increasing number of adult groups and swarms formed, matured and laid eggs as the month progressed, initially on the southern coast between Aiterba (1753N/3819E) and the Eritrean border, and then extending to the central coast. This led to substantial hatching and the formation of early instar hopper groups and bands after mid-month on the southern coast. Control operations treated 34 028 ha, of which 23 860 ha were by air. In the northeast, solitarious adults were maturing in Wadi Oko south of Tomala (2002N/3551E) and along the western side of the Red Sea Hills. No surveys were conducted near the Egyptian border where groups and a few small swarms may be present. No locusts were seen in the Nile Valley or in the northern interior near Merowe (1830N/3149E) and Dongola (1910N/3027E).

• **FORECAST**

Second-generation hatching and the formation of hopper groups and bands will continue on the central and southern coastal plains. Immature groups and small swarms are likely to start forming during the second half of February. There remains a high risk of cross-border movement on the coast between Sudan and Eritrea. Breeding is also likely to be in progress in Wadi Diib, giving rise to groups and a few small swarms. If conditions start to dry out, locusts are likely to move towards the Nile Valley or across the Red Sea.

Eritrea

• **SITUATION**

During January, groups of late-bred first-generation immature adults were maturing on the Red Sea coastal plains while a second generation of egg-laying by mature groups was in progress mainly on the central coast from south of Mehimet (1723N/3833E) to Mersa Cuba (1616N/3911E) and, to a lesser extent, near the Sudanese border. Substantial hatching occurred in both areas, giving rise to hopper groups and a few small bands. By the end of the month, some hoppers had reached fifth instar. Ground teams treated 6 965 ha.

• **FORECAST**

Second-generation breeding will continue on the central and northern Red Sea coastal plains with additional laying and hatching, causing more groups and bands to form. Second-generation fledging will commence at the beginning of February and increase during the month, giving rise to adult groups and small swarms. There remains a high risk of cross-border movement on the coast between Eritrea and Sudan. If conditions start to dry out, locusts are likely to move north along the coast or across the Red Sea.

Ethiopia

• **SITUATION**

No surveys were carried out and no locusts were reported in January.

• **FORECAST**

No significant developments are likely.

Djibouti

• **SITUATION**

No reports were received during January.

• **FORECAST**

No significant developments are likely.

Somalia

• **SITUATION**

No reports were received in January.

• **FORECAST**

Low numbers of adults may be present on the northwest coastal plains; however, breeding is not expected unless additional rains fall.

Egypt

• **SITUATION**

During January, additional egg-laying and hatching caused locust numbers to increase along the southern coastal plains of the Red Sea between Shalatyn (2308N/3535E) and the Sudan border. Solitarious hoppers of all instars were present and fledging started at mid-month. Limited breeding was detected in a few places north of Berenice (2359N/3524E). On 29–31 January, several mature groups and one small swarm were copulating and laying near Abu Ramad (2224N/3624E) and south of Halaib (2213N/3638E), and ground teams treated 1 660 ha. No locusts were present in the Lake Nasser area near Tushka (2247N/3126E), Abu Simbel (2219N/3138E) and Garf Husein (2317N/3252E).

• **FORECAST**

Additional hatching will occur in about mid-February, causing hopper groups and perhaps a few small bands to form along the Red Sea coast and adjacent subcoastal areas between Shalatyn and the Sudanese border. This could be supplemented by a few groups and small swarms arriving from adjacent areas of northeast Sudan.

Saudi Arabia

• **SITUATION**

During January, scattered immature and mature solitarious adult numbers increased along the Red Sea coast between Lith (2008N/4016E) and Yenbo (2405N/3802E). Small-scale breeding continued in a few places, giving rise to low numbers of solitarious hoppers of all instars. A small mature swarm arrived on the coast near Masturah (2309N/3851E) on the 14th, and several groups and small mature swarms appeared and laid eggs on the central coast near Lith and on the northern coast between Thuwal (2215N/3906E) and Yenbo during the last week. These populations may have arrived from outbreak areas on the western side of the Red Sea. In the interior, a small immature swarm arrived in farms along the western edge of the Empty Quarter northeast of Wadi Dawasir (2028N/4747E) on the 6th. Immature adult groups and a few more immature swarms continued to appear during the remainder of the month and moved north along the western and northern edges of the Empty Quarter to Al Aflaj (2206N/4657E) and Yabreen (2315N/4859E). An immature swarm reached Al Ahsa (2523N/4941E) on the 24th. These locusts originated from two generations of breeding in the Empty Quarter near the border of Oman and Yemen where good rains fell from cyclones Mekunu (May) and Luban (October). No locusts were seen along the Yemen border between Najran (1729N/4408E) and Sharawrah (1729N/4706E). Control operations treated 12 165 ha of which 3 300 ha were by air.

• **FORECAST**

Hatching and the formation of small hopper groups and bands are expected to occur on the central and northern Red Sea coastal plains that will start to fledge by mid-March. This could be supplemented by immature swarms arriving from the western side of the Red Sea from late February onwards. A few more groups and small swarms may appear south of Riyadh from breeding in the southeast Empty Quarter.

Yemen

• **SITUATION**

On 28 January, several groups of mature gregarious adults were seen copulating in Wadi Seaf (1618N/5100E) in the eastern province of Al Maharah near Remah (1727N/5034E). Two generations of breeding are thought to have occurred in Al Maharah on the southern edge of the Empty Quarter and along the Omani border where good rains fell in May and October from cyclones Mekunu and Luban, respectively.

• **FORECAST**

Breeding will continue in the eastern region between Thamud and the Omani border that is likely to lead to the formation of additional groups and small swarms. Scattered locusts are almost certainly present and breeding on a small scale along parts of the Red Sea coastal plains, and this will continue during the forecast period. This risk of any swarms arriving from across the Red Sea is low.

Oman

• **SITUATION**

During January, no locusts were seen in the northern interior near Buraimi (2415N/5547E), Ibri (2314N/5630E), Nizwa (2255N/5731E), the Wahiba Sands, and on the Batinah coast and the Musandam Peninsula. There were no reports of locusts in the southern province of Dhofar along the edge of the Empty Quarter where vegetation is thought to be drying out.

• **FORECAST**

As vegetation dries out near the edge of the Empty Quarter in Dhofar, breeding will come to an end and remaining adults are likely to concentrate, form groups or perhaps a few small swarms that will move towards the north and west.

Bahrain

• **FORECAST**

There is a low to moderate risk of a few adult groups or small swarms arriving from adjacent areas of the Arabian Peninsula that will most likely transit through the country.

Kuwait

• **FORECAST**

There is a low to moderate risk of a few adult groups or small swarms arriving in the south from adjacent areas of the Arabian Peninsula that will most likely transit through the country.

Qatar

• **FORECAST**

There is a low to moderate risk of a few adult groups or small swarms arriving from adjacent areas of the Arabian Peninsula that will most likely transit through the country.

UAE

• **SITUATION**

On 16 January, there were reports of an immature swarm on the western coast at Al Ruwais (2406N/5243E) and in the Al Dhafra district of Abu Dhabi (2417N/5429E). Control operations were mounted, and the situation was said to be under control the next day. The locusts most likely originated from breeding in the Empty Quarter of the Arabian Peninsula.

• **FORECAST**

There is a low to moderate risk of a few adult groups or small swarms arriving in the south and west from adjacent areas of the Arabian Peninsula.

Iraq, Israel, Jordan, Kenya, Lebanon, Palestine, South Sudan, Syria, Tanzania, Turkey and Uganda

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During the first decade of January, no locusts were seen on the southeast coast near Jask (2540N/5746E). On the 29th and 30th, groups of immature and mature *transiens* and gregarious adults appeared on the southwestern coastal areas between Bushehr (2854N/5050E) and Bander-e Lengheh (2634N/5452E). The locusts are likely to have migrated on about 24–27 January from the Arabian Peninsula where breeding occurred in the southeastern Empty Quarter.

• **FORECAST**

There remains a moderate risk of a few more adult groups or small swarms arriving along the southern coast from adjacent areas of the Arabian Peninsula. Laying and hatching will occur near Bander-e Lengheh, giving rise to hopper groups and perhaps a few small bands. Some adult groups may move further east towards Chabahar and Jaz Murian and breed in areas that receive rainfall.

Pakistan

• **SITUATION**

No surveys were carried out and no locusts were reported in January.

• **FORECAST**

There is a low to moderate risk that a few adult groups may appear from the west in coastal areas of Baluchistan and breed in areas of rainfall by the end of the forecast period.

India

• **SITUATION**

No locusts were seen in Rajasthan and Gujarat during January.

• **FORECAST**

No significant developments are likely.

Afghanistan

• **SITUATION**

No reports received.

• **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). Countries should report at least once/month and send RAMSES data with a brief interpretation within 48 hours of the latest survey.

Caution (yellow), threat (orange) and danger (red). During locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week.

Bulletins. Affected countries are encouraged to prepare decadal and monthly bulletins summarizing the situation.

Reporting. All information should be sent by e-mail to the FAO/ECLO 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 for the current month; 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.

Jelle Hielkema

It is with deep regret that we announce the death of Jelle Hielkema on 16 January 2019. Mr. Hielkema, a former FAO staff member, was instrumental in the introduction and use of remote sensing technologies for Desert Locust monitoring, forecasting and early warning. We would like to express our sincere condolences to his family and his government.

Calendar

The following activities are scheduled or planned:

- **CLCPRO. Preparation and validation of a new regional training plan IV (2019–2022), Oran, Algeria (4–7 February)**
- **CRC.** 31st Session, Amman, Jordan (17–21 February)
- **CRC.** 6th Regional aerial training course, Oman (March) [tbc]
- **CLCPRO.** 9th Regional workshop on Desert Locust information management in the Western Region, Tunis, Tunisia (8–11 April)
- **CLCPRO.** New survey officer training, Agadir, Morocco (21–27 April)
- **SWAC.** 25th Desert Locust joint survey in the spring breeding areas of Iran and Pakistan (April)
- **CRC/SWAC.** 11th Interregional workshop for Desert Locust Information Officers, Addis Ababa, Ethiopia (24–28 June)
- **CLCPRO.** 14th Executive committee meeting, Agadir, Morocco (24–28 June)
- **DLCC.** 41st Session [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 Desert Locust 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 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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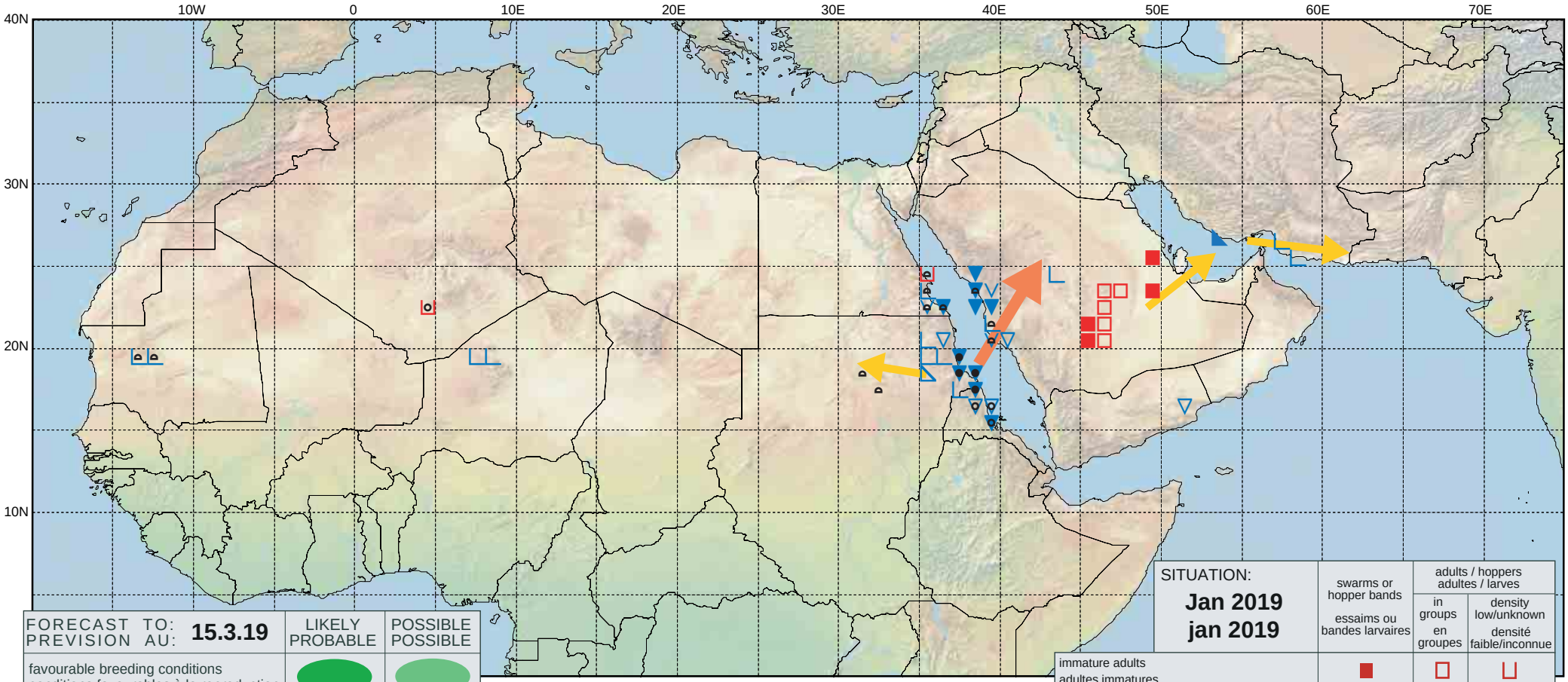

FORECAST TO: / PREVISION AU: **15.3.19**	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Jan 2019** / **jan 2019**	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 partly 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 symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊎