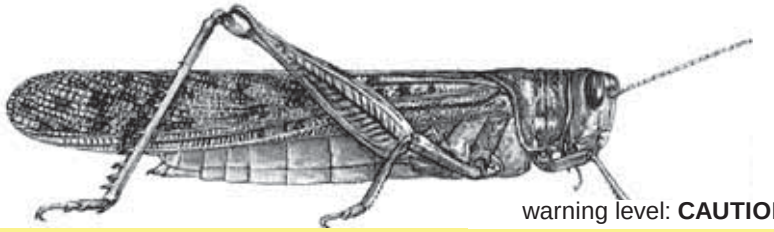


warning level: **CAUTION (Central Region)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 350

(3 December 2007)

General Situation during November 2007 Forecast until mid-January 2008

The Desert Locust situation worsened in eastern Africa during November. Hatching and band formation occurred in eastern Ethiopia, swarms were seen in Somalia and a few swarms invaded northeastern Kenya for the first time since 1961 and laid eggs. Hatching and band formation will occur during December in the three countries. Therefore, it is critical that intensive survey and control operations are undertaken; otherwise, new swarms could start to form at the end of the year and move further south in Kenya. Small swarms also formed in Sudan and moved towards Egypt and to the Red Sea coast where breeding was underway and will continue during the forecast period, causing locust numbers to increase further. All efforts should be made to monitor this developing and potentially dangerous situation closely and carefully, and to undertake control as necessary. The locust situation remained calm in the Western and Eastern regions.

Western Region. The situation continued to remain calm during November. Locust numbers increased slightly from small-scale breeding that took place in central **Mauritania**, in northern **Niger** and probably in northeastern **Chad**. During the forecast period, small-scale breeding is expected to occur in northwest Mauritania and locusts will increase further. Low numbers of adults will persist in parts of northern **Mali** and Niger, and in northeastern Chad. No locusts were reported in northwest Africa and no significant developments are expected.

Central Region. Breeding occurred during November in eastern **Ethiopia** where hatching and numerous bands formed in the Ogaden. Several swarms continued to lay eggs there while a few others moved south to southern **Somalia** and northeastern **Kenya**. Ground and aerial control operations were carried out in Ethiopia and teams in Kenya are preparing for hopper band control in December. Numerous adult groups and several swarms formed in the summer breeding area in the interior of **Sudan** and moved north and eastwards as vegetation dried out. Consequently, an increasing number of adults were seen in the Western Desert in **Egypt** and some adults reached Cairo. In the winter breeding areas along the Red Sea coast, hopper bands and a swarm formed in northeastern Sudan and bands were present in the Tokar Delta. Smaller scale breeding was in progress on the coast in southeastern Egypt, northern **Eritrea**, in **Yemen** including the Gulf of Aden coast, and probably in **Saudi Arabia**. Control operations were carried out in Sudan and Egypt. A few swarms are expected to arrive on the Red Sea coast from the interior in December and lay eggs. If more rains fall along the Red Sea coast, breeding will continue during the forecast period and cause locust numbers to increase further.

Eastern Region. Locust numbers continued to decline in the summer breeding areas along both sides of the Indo-Pakistan border during November. Two small swarms unexpectedly formed from local breeding in northern Baluchistan, **Pakistan** and were controlled in early November.

The FAO Desert Bulletin is issued monthly, supplemented by Updates during periods of increased Desert Locust activity, and is distributed by e-mail, FAO pouch and airmail by the Locusts and Other Migratory Pests Group, AGP Division, FAO, 00153 Rome, Italy. It is also available on the Internet.
Telephone: +39 06 570 52420 (7 days/week, 24 hr)
Facsimile: +39 06 570 55271
E-mail: eclo@fao.org
Internet: www.fao.org
DLIS: www.fao.org/ag/locusts

No. 350

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in November 2007

Very little rain fell during November in all regions. Yet, ecological conditions remained favourable for locust survival in parts of the northern Sahel in West Africa, and for breeding along parts of the Red Sea coast and in eastern Africa.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its steady southward retreat over West Africa, reaching 5N by the end of the month. Although, no significant rains fell in the region, enough green vegetation persisted in a few areas of the northern Sahel to allow low numbers of locusts to survive. In central Mauritania, vegetation remained green and ecological conditions were favourable for breeding in Tagant and southwestern Adrar. Green vegetation persisted in the main wadis in the Adrar des Iforas in northern Mali and in the Air Mountains in Niger. In northwest Africa, light showers fell in Morocco in a few places along the southern side of the Atlas Mountains and on the coast near Tan-tan during the last week of November.

In the **Central Region**, very little rain fell during November. Nevertheless, ecological conditions remained favourable in the summer breeding areas in the interior of Sudan in North Kordofan along Wadi Milk and near Abu Uruq, in the Baiyuda Desert, along the Nile and Atbara rivers and on the western side of the Red Sea Hills. On the coast, ecological conditions were not favourable for breeding except for a few places where light showers fell between Tokar Delta, Sudan and Mehimet, Eritrea and near Abu Ramad in southeastern Egypt. In Yemen, vegetation was drying out along parts of the Red Sea and Gulf of Aden coasts where only a few light showers fell at times during the month. In northwest Somalia, light to moderate rains fell on the coast, escarpment and plateau, and ecological conditions were improving. Light to moderate rain associated with a tropical disturbance fell in coastal and interior areas of southern and central Oman on 1-3 November, and some showers fell in coastal areas of eastern Yemen and northeast Somalia. During the first decade of the month, widespread light to moderate showers fell in eastern Ethiopia, central and southern Somalia, and in northeastern Kenya. Thereafter, only light showers fell in parts of southern Somalia and northeastern Kenya. Nevertheless, breeding conditions were favourable in all three countries.

In the **Eastern Region**, dry weather prevailed throughout November in the region and ecological conditions were not favourable for breeding. Vegetation was drying out in the Cholistan Desert in Pakistan near the border with India, and in most places of Rajasthan, India except for Barmer district.

Area Treated

Egypt	168 ha (1-26 November)
Ethiopia	40 ha (31 October)
	1,707 ha (9-23 November)
Pakistan	700 ha (26-31 October)
	250 ha (2-6 November)
Sudan	28,446 ha (1-23 November)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During November, locust numbers increased steadily because of small-scale breeding and hatching in northern Brakna, northeastern Trarza, Tagant and southwestern Adrar where scattered solitarious hoppers and adults were present. By the 20th, densities had reached up to 3,000 hoppers/ha and 3,500 adults/ha and, in a few places, up to four late instar hoppers/bush and one first instar hopper/m^2 were seen. Laying was also in progress in southwestern Adrar. No locusts were seen in Hodh Ech Chargui except for scattered mature adults at one place east of Nema (1636N/0715W).

• **FORECAST**

Small-scale breeding will continue in the centre and northwest, causing locust numbers to increase further with a possibility that a few small groups could form.

Mali

• **SITUATION**

During November, isolated solitarious locusts were reported on the 16th in the central part of the Adrar des Iforas near Etambar (1827N/0124E).

• **Forecast**

Isolated locusts are expected to persist in those areas that remain green in the Adrar des Iforas.

Niger

• **Situation**

During November, isolated immature solitarious adults were seen near Tahoua (1457N/0519E) and Arlit (1843N/0721E). Isolated solitarious late instar hoppers and immature and mature adults were present in the southeastern Air Mountains, and a group of immature adults was seen in the same area at Azangara (1705N/0854E) on the 13th.

• **Forecast**

Low numbers of locusts are likely to persist in parts of the Air Mountains and perhaps breed if conditions become favourable.

Chad

• **Situation**

No reports were received during November.

• **Forecast**

Small-scale breeding is expected to have occurred in the Fada area during November. During the forecast period, scattered adults may concentrate and could form small groups as vegetation continues to dry out in the northeast.

Senegal

• **Situation**

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

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

No reports were received during November.

• **Forecast**

Low numbers of locusts may be present in the south near Tamanrasset and Bir Bou Mokhtar but breeding is unlikely unless additional rainfall occurs.

Morocco

• **Situation**

No locusts were reported during October and November.

• **Forecast**

Scattered adults are likely to appear in the extreme south of Western Sahara and breed on a small-scale if rainfall occurs.

Libyan Arab Jamahiriya

• **Situation**

No locusts were seen during surveys carried out at the end of November in the southwest near Ghat (2459N/1011E) and in the southeast near Kufra (2411N/2315E).

• **Forecast**

There is a low risk that scattered adults and perhaps a few small groups could appear in the southeast near Jebel Uweinat from northern Sudan.

Tunisia

• **Situation**

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

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

In the summer breeding areas, groups of immature and mature solitarious, *transiens* and gregarious adults formed at densities up to 30,000 adults/ha in North Kordofan State between Sodiri (1423N/2906E), Wadi Milk and the Baiyuda Desert. Similar groups and a few dozen low-density swarms up to 5 km^2 in size formed on the western side of the Red Sea Hills near Haiya (1820N/3621E) and to a lesser extent along the Atbara and Nile rivers. Groups and bands of late instar hoppers and fledglings were present in a few places in the Baiyuda Desert south of Merowe (1830N/3149E), and mature adults were seen laying further north along the Nile near Dongola (1910N/3027E). During the third week, some of these swarms moved east to the Tokar Delta on the Red Sea coast where they were copulating, while other swarms moved northwest to the Egyptian border at Wadi Halfa (2147N/3122E) and northeast to Wadi Oko near Tomala (2002N/3551E).

In the winter breeding areas, numerous very small late instar hopper bands were present and fledging near the Egyptian border in Wadi Diib, giving rise to a few a small swarms by the third week. Groups of mature adults were also present nearby, and adults were seen on the coast north of Port Sudan. Breeding continued in the Tokar Delta where groups of mature

adults were present and hoppers formed small groups and bands. A low-density swarm was seen laying on the 19th.

Ground control teams treated 28,446 ha up to 23 November. Although it was indicated in Bulletin 349 that *Metarhizium* was used in October, this was incorrect.

• Forecast

Locust numbers will decline in the summer breeding areas of the interior as vegetation dries out and the remaining populations form small groups and swarms that will move in December towards the Red Sea coast. Consequently, locust numbers will increase on the coast, mainly in Tokar Delta, and in subcoastal areas in the north (W. Oko/Diib). Breeding will continue in these areas where hoppers and adults will form small groups, bands and perhaps a few swarms.

Eritrea

• **Situation**

During November, isolated adults were laying eggs on the northern Red Sea coast between Mehimet (1723N/3833E) and Karora (1745N/3820E) during the first and last weeks of the month.

No locusts were seen during surveys carried out in the western lowlands.

• **Forecast**

Small-scale hatching will take place and locust numbers will increase slightly on the Red Sea coast between Mehimet and Karora. Breeding could also extend to other areas along the coast towards Massawa if rainfall occurs.

Ethiopia

• **Situation**

On 31 October, second and third instar hopper bands were present at 7 places in the eastern Ogaden, east of Warder (0658N/4520E). Ground control operations were undertaken at four of these places, treating 40 ha.

During November, several mature swarms continued to move south in the Ogaden and laid eggs, reaching the Shebele River at Gode (0557N/4333E) on the 9th, Dolo (0410N/4203E) on the 16th and crossing the Dawa River into northeast Kenya on the 18th. There were also reports of a few swarms further west along the eastern side of the Harar Highlands. Eggs that were laid in October mainly hatched during the second week of November and numerous dense, small early instar hopper bands formed north of the Shebele River in Korahe and Warder zones. A few late instar bands were seen in third week from earlier hatching. Many of the infestations were concentrated between Warder (0658N/4520E) and the Somali border.

Control operations treated 1,707 ha from 9-23 November of which 1,400 ha were treated by air.

• **Forecast**

By early December, hatching is expected to commence south of the Shebele River where hopper bands will form, giving rise to small swarms in early January. From mid-December onwards, small swarms are expected to form in the Ogaden north of the Shebele and gradually move south towards Kenya.

Djibouti

• **Situation**

No reports were received during November.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

In the northwest, mature adults were present at a few places along the northwest coast near Bulhar (1023N/4425E) and Berbera (1028N/4502E). A 6 km^2 medium density mature swarm was reported just east of Berbera on the 24th. No locusts were seen on the plateau between Hargeisa (0931N/4402E) and Burao (0931N/4533E).

In the centre and south, medium and high density groups of solitarious and *transiens* late instar hoppers were seen during the second week east of Garowe (0824N/4828E) and near Galkayo (0646N/4725E). A small low-density mature swarm was seen further south near the Ethiopian border at Belet Weyne (0444N/4512E). In the following week, there was an unconfirmed report of locusts in the southern regions of Bay and Bakool, and a swarm was seen on the 20th moving from Qansahdere (0252N/4300E) west towards the Gedo region and the Kenyan border.

• **Forecast**

Egg laying may occur on the northwest coast near Berbera that could give rise to a few small hopper groups and bands by the end of the forecast period. Some swarms may have laid eggs in parts of the centre and south that could result in hatching and band formation during December.

Kenya

• **Situation**

On 18 November, a dense mature swarm flew over Mandera (0356N/4151E) in the North Eastern Province near the borders of Ethiopia and Somalia.

There were several reports during the next few days of at least one swarm of about 8 km^2 in size that dispersed in the Mandera area and was laying eggs. There were also reports of egg laying further south near Elwak (0249N/4056E) and an unconfirmed report near Wajir (0144N/4003E). Some crop damage occurred along the Dawa River.

• **Forecast**

Hatching will occur in the northeast during the second week of December and small bands will form, giving rise to small swarms by mid January. New swarms could appear from the north after mid-December.

Egypt

• **Situation**

During the last week of October, moderate densities of solitarious adults were present in the southwest near Jebel Uweinat (2154N/2458E).

During the first half of November, small-scale breeding occurred in Wadi Diib near the Red Sea coast and the Sudanese border where solitarious first to fourth instar hoppers were seen early in the month. Scattered immature and mature adults were present on the Red Sea coastal plains near Abu Ramad (2224N/3624E), in the Red Sea Hills near W. Allaqi and along the Lake Nasser shoreline between Abu Simbel (2219N/3138E) and Aswan (2405N/3256E). Some of the adults were *transiens* and forming small groups.

During the second half of the month, solitarious and *transiens* adults appeared further north on the Red Sea coast near Berenice (2359N/3524E), in the Red Sea Hills west of Marsa Alam (2504N/3454E) and there was a report of immature *transiens* adults in Cairo. Adults were also seen in the Western Desert north of Tushka (2247N/3126E), and mature groups were present at Farafra oasis (2710N/2818E). Control operations were carried out in most of these areas, treating 168 ha up to the 26th. At the end of the month, there was an unconfirmed report of gregarious immature adults in the southwest near Jebel Uweinat.

• **Forecast**

Small-scale breeding is likely to continue in the southeast on the coastal plains near Abu Ramad and extend along the coast towards Marsa Alam and inland towards Lake Nasser if rains fall in these areas.

Saudi Arabia

• **Situation**

No reports were received during November.

• **Forecast**

Small-scale breeding is likely to be in progress along parts of the Red Sea coast, especially in areas of recent rainfall, and will extend to those areas where rains fall during the forecast period, causing locust numbers to increase slightly.

Yemen

• **Situation**

During November, low numbers of scattered solitarious and *transiens* immature and mature adults persisted along the Red Sea coastal plains between Zabid (1410N/4318E) and Midi (1619N/4248E) and on the coastal plains west of Aden (1250N/4503E). Small-scale breeding occurred in both areas where isolated solitarious and *transiens* hoppers were present. Hopper densities were slightly higher, up to 4 hoppers/m^2, on the Gulf of Aden coast near Lahij (1303N/4453E).

• **Forecast**

Small-scale breeding is expected to continue along the Red Sea and Gulf of Aden coastal plains, causing locust numbers to increase slightly.

Oman

• **Situation**

No locusts were seen during surveys carried out on the Musandam Peninsula during November.

• **Forecast**

No significant developments are likely.

Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestine, Qatar, Syria, Tanzania, Turkey, UAE and Uganda

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During November, low numbers of solitarious immature and mature adults were present on the southeastern coast near Chabahar (2517N/6036E), and isolated hoppers of all instars were seen at a few places nearby. No locusts were seen elsewhere along the coast near Jask (2540N/5746E) and Bander-e Lengheh (2634N/5452E).

• **Forecast**

Low numbers of locusts are likely to persist on the southeastern coast.

Pakistan

• **Situation**

A late report indicated that ground control operations were carried out in the spring breeding areas in Baluchistan against 700 ha of fifth instar hoppers, fledglings and immature adults near Kharan (2832N/6526E) on 26-31 October. Two small immature swarms were treated on 2 and 6 November, covering 250 ha.

In the summer breeding areas, locust numbers continued to decline during the first half of November in the Cholistan Desert, and only isolated mature adults remained near the Indian border southeast of Rahimyar Khan (2822N/7020E) and Bahawalpur (2924N/7147E).

No locusts were reported during the second half of November.

• **Forecast**

Locusts will continue to decline in Cholistan but small residual populations may be present in the Kharan area in Baluchistan.

India

• **Situation**

No locusts were seen during surveys carried out in Rajasthan and Gujarat during the second half of October and in November.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

Locust reporting. During recession periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent twice/week within 48 hours of the last survey. Affected countries are also encouraged to prepare decadal bulletins summarizing the situation. All information should be sent by e-mail to the FAO/ECLO Desert Locust Information Service (eclo@fao.org). Information received by the end of the month will be included in the FAO Desert Locust Bulletin for the current month; otherwise, it will not appear until the following month. Reports should be sent even if no locusts were found or if no surveys were conducted.

eLocust2. FAO has developed a new version of eLocust in collaboration with affected countries and the French Space Agency (CNES/Novacom) that allows field officers to enter survey and control data directly in the field and transmit it in real time via satellite to their national locust centre. Data can also be downloaded to a PC and visualized on GoogleEarth. The software is in both English and French. FAO DLIS has distributed units to nearly all of the frontline countries. Photos and more information are available at: www.fao.org/ag/locusts/en/activ/DLIS/index.html

Desert 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 bulletin's header. The levels indicate the perceived risk or threat of current Desert Locust infestations to crops and appropriate actions are suggested for each level.

EMPRES websites. Detailed information on the EMPRES programme and the FAO regional locust commission is available on the Internet for the Central Region (www.crc-empres.org) and the Western Region (www.clcpro-empres.org).

Google group. FAO DLIS has established a Google group for national locust information officers to exchange opinions and share experiences regarding data management and analysis, GIS, eLocust2 and satellite imagery. Interested information officers should contact DLIS (eclo@fao.org) for details.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) has started to provide 16-day 250-metre resolution MODIS imagery for monitoring ecological conditions in the Desert Locust recession area, in addition to the daily rainfall estimates already available. These products can be downloaded in different formats suitable for GIS at: http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/

index.html. Comments and questions can be sent to Pietro Ceccato (pceccato@iri.columbia.edu).

New information on Locust Watch. The latest additions to the web site are:

- **Locust situation.** Several updates during November (home page and in Archives section)
- **CLCPRO.** Report of the 4th Executive Committee meeting and the 4th Session (Publications section – Reports)
- **Early warning.** Basic components for effective early warning (Activities section – DLIS)
- **Press release.** 11 November locust update in Sudan for the media (Archives section – Bulletins)

Links to the above information can be found in the *Latest Additions* section on Locust Watch.

2007 events. The following meetings are scheduled:

- **EMPRES/WR**. 3rd Steering Committee (3-4 December), Agadir (Morocco)
- **EMPRES/WR**. RAMSES and eLocust2 evaluation workshop (6-8 December), Agadir (Morocco)

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 of rainfall.

MODERATE

- 21 - 50 mm of rainfall.

HEAVY

- more than 50 mm of rainfall.

OTHER REPORTING TERMS

BREEDING

- the process of reproduction from copulation to fledging.

SUMMER RAINS AND BREEDING

- July - September/October

WINTER RAINS AND BREEDING

- October - January/February

SPRING RAINS AND BREEDING

- February - June/July

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.

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.

RECESSION

- period without widespread and heavy infestations by swarms.

REMISSION

- period of deep recession marked by the complete absence of gregarious populations.

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: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

CENTRAL

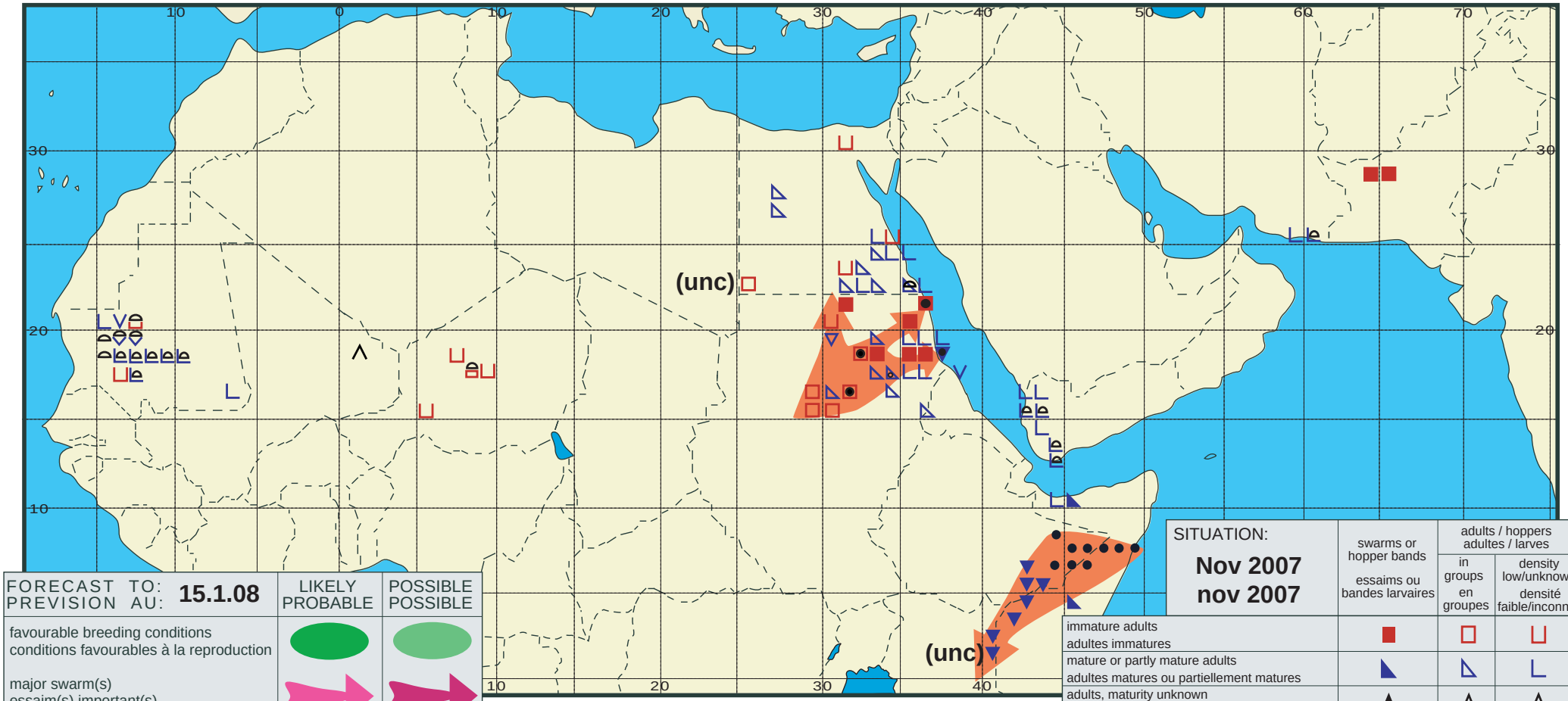
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

Desert Locust Summary
Criquet pèlerin - Situation résumée

350



FORECAST TO: / PREVISION AU: **15.1.08**	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: **Nov 2007** **nov 2007**	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	◣	◺	L
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)	◘	◙	⊕