

warning level: **THREAT (East Africa)**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations



No. 351

(3 January 2008)



General Situation during December 2007 Forecast until mid-February 2008

The Desert Locust situation remained serious in eastern Africa during December. Hatching and hopper band formation occurred in northeast Kenya from previous swarm laying. Although aerial and ground control operations were conducted in Kenya, operations could not be carried out on a similar scale in adjacent areas of eastern Ethiopia where large infestations of hopper bands were present. New swarms started to form shortly after mid-month in the Ogaden and moved to southern Ethiopia and northeastern Kenya. More swarms are likely to form in the coming weeks that could potentially threaten central and northwest Kenya, western Ethiopia and Uganda. Elsewhere, several swarms moved from the interior of Sudan to the Red Sea coast and a few groups probably crossed the sea to the coast of Saudi Arabia. Control operations were carried out against hopper bands on the coast of Sudan where breeding will continue during the forecast period and a few small swarms could form. All efforts should be made to monitor this developing and potentially dangerous situation closely and carefully, and to undertake control as necessary. The situation remained calm in the Western and Eastern regions.

Western Region. The situation continued to remain calm during December. Ground control operations were carried out against scattered adults in central and southern **Algeria** and, to a lesser extent in central

Mauritania. Limited breeding occurred in Mauritania and along the Malian border in southern Algeria. During the forecast period, small-scale breeding could occur in areas of recent rainfall in southern Algeria and **Western Sahara.**

Central Region. In early December, remaining mature swarms in eastern **Ethiopia** moved south the Oromiya region and to northeast **Kenya**. Hopper bands continued to develop in the Ogaden and several new swarms started forming shortly after mid-month and moved south to Kenya. As the swarms were very mobile, it was difficult to treat them. Locusts continued to increase in the winter breeding areas along the Red Sea coast in **Sudan** but were limited to the Tokar Delta where hatching occurred and control operations were carried out by air against numerous small hopper bands that formed. Breeding will continue during the forecast period and is likely to extend south along the coast to northern **Eritrea**. In **Egypt**, locust numbers declined on the Red Sea coast and in the interior where limited control was undertaken. Even though small adult groups were present on the coast of **Saudi Arabia** and scattered adults may be present on the coast in **Yemen**, breeding is unlikely unless additional rains fall. In **Oman**, ground teams treated groups of gregarious adults that were laying eggs on the central coast. In northwest **Somalia**, isolated adults were reported on the coast.

Eastern Region. Small-scale breeding occurred on the southeast coast of **Iran** during December and scattered hoppers and adults were present. No locusts were reported along both sides of the Indo-Pakistan border. Low numbers of locusts are likely to appear in the spring breeding areas of Baluchistan in western **Pakistan** during the forecast period.

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.

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Weather & Ecological Conditions in December 2007

Very little rain fell during December in all regions for the second consecutive month. Consequently, vegetation was drying out in all areas and breeding conditions were favourable only in limited areas, mainly along the western side of the Red Sea.

In the **Western Region**, mainly dry conditions prevailed during December in the Sahel and in northwest Africa. During the second week, light to moderate rains fell along the coast of Western Sahara, extending inland to Bir Moghreïn in northern Mauritania and perhaps to western Mauritania. This could cause ecological conditions to improve in these areas. Vegetation continued to dry out in the northern Sahel where ecological conditions were not favourable for breeding except in a few parts of Trarza and Adrar in central Mauritania, and along the border of Mali and Algeria near Bir Bou Mokhtar. Nevertheless, there may be sufficient vegetation to allow the survival of low numbers of locusts in central Mauritania, northern Mali and Niger, and central and southern Algeria.

In the **Central Region**, ecological conditions remained favourable during December in the winter breeding areas along the western side of the Red Sea. Light to moderate rains fell on the Red Sea coast in Sudan near Tokar Delta. Vegetation was green and conditions were favourable for breeding along the coast from Tokar to Mehimet on the northern coast in Eritrea. Ecological conditions were also favourable further north near Abu Ramad in southeastern Egypt where light to heavy rains fell. However, conditions were dry along the coastal plains and in adjacent interior areas between Tokar and Abu Ramad. On the eastern side of the Red Sea, ecological conditions were generally dry along the coastal plains of Saudi Arabia and Yemen. In northern Somalia, light rains fell on the coast at the end of the month, and vegetation was becoming green west of Berbera but was dry further east. In eastern Ethiopia and northeastern Kenya, vegetation was drying out because of a lack of rain but remained green mainly in irrigated areas. In central Oman, moderate rains fell on 4 December

along the coastal plains where vegetation was green and conditions were favourable for breeding.

In the **Eastern Region**, dry weather prevailed throughout December in the region and ecological conditions were not favourable for breeding. Nevertheless, vegetation remained green in parts of the spring breeding areas, mainly near the coast in southeastern Iran from rains that fell in late November. Green vegetation was also present in the Kharan, Shooli, and Kulanch valleys in Baluchistan, Pakistan.



Area Treated

Algeria	766 ha (December)
Egypt	10 ha (1-5 December)
Ethiopia	339 ha (December, incomplete)
Kenya	1,254 ha (December)
Mauritania	103 ha (December)
Oman	350 ha (December)
Saudi Arabia	27 ha (December)
Sudan	17,235 ha (1-30 November, corrected) 9,833 ha (1-31 December)



Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• SITUATION

During December, scattered solitary hoppers of all instars and immature and mature adults persisted in northeast Trarza, southwest Adrar, western Tagant and northeast Brakna. Most of the hopper infestations were present near Moudjeria (1752N/1219W), west of Chinguetti (2027N/1221W) and south of Oujett (2003N/1301W). Ground teams treated 103 ha in Adrar and Trarza during the month.

• FORECAST

Scattered hoppers and adults will persist in parts of the centre and northwest. Small-scale breeding could occur if additional rains fall. Adults may move further north to Tiris-Zemmour during periods of warm southerly winds and could breed on a small-scale in areas of recent rainfall near Bir Moghreïn.

Mali

• SITUATION

No locusts were reported during December.

• FORECAST

Isolated locusts are likely to be present and will persist in parts of the Adrar des Iforas. Limited

breeding may be in progress or could occur near the Algerian border.

Niger

- **SITUATION**

No reports were received during December.

- **FORECAST**

Low numbers of locusts are likely to be present and will persist in parts of the Air Mountains. Limited breeding could take place if conditions become favourable.

Chad

- **SITUATION**

No reports were received during December.

- **FORECAST**

No significant developments are likely.

Senegal

- **SITUATION**

No reports were received during December.

- **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**

During December, numerous infestations of solitary and *transiens* immature and mature adults at densities up to 1,500 adults/ha were present in the south near Tamanrasset (2250N/0528E), along the Malian border near Bir Bou Mokhtar (2120N/0056E), in the southeast near Illizi (2630N/0825E) and Djanet (2434N/0930E), and in the central Sahara near Adrar (2753N/0017W). Some hoppers were present near Bir Bou Mokhtar. Ground teams treated 766 ha in these areas during the month.

- **FORECAST**

Small infestations will persist in parts of the southern and central Sahara. Small-scale breeding could occur in areas of recent rainfall between In Salah, Djanet and Bir Bou Mokhtar causing locusts to increase slightly and perhaps form a few small groups.

Morocco

- **SITUATION**

No locusts were reported during December.

- **FORECAST**

Scattered adults are likely to appear in Western Sahara and breed on a small-scale in areas of recent rainfall.

Libyan Arab Jamahiriya

- **SITUATION**

A late report indicated that scattered solitary adults were seen at two places northwest of Kufra (2411N/2315E) on 27 November. No surveys were carried out and no locusts were reported during December.

- **FORECAST**

Scattered adults may appear in the southwest near Ghat and breed on a limited scale if rains fall.

Tunisia

- **SITUATION**

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

- **FORECAST**

No significant developments are likely.

CENTRAL REGION

Sudan

- **SITUATION**

During the first week of December, scattered solitary and gregarious mature adults and a few groups persisted in the summer breeding areas along the Atbara and Nile rivers between Atbara (1742N/3400E) and Abu Hamed (1932N/3320E) and west of the Red Sea Hills near Haiya (1820N/3621E). A one hectare low-density immature swarm was seen flying towards the northeast on the 1st at Dongola (1910N/3027E) and another immature swarm of 1 km² was seen on the 4th east of Haiya.

In the winter breeding areas along the Red Sea coast, small low-density immature and mature groups and swarms appeared in the Tokar Delta during the last week of November. Egg-laying took place during the first three weeks in December mainly in the Tokar Delta and to a lesser extent at two places on the coastal plains between Tokar (1827N/3741E) and Aiterba (1753N/3819E). Hatching started on about the 23rd and first instar hoppers formed numerous very small bands at densities up to 300 hoppers/m².

No locusts were seen during surveys along the coast between Port Sudan and the Egyptian border. Control teams treated 9,833 ha during December of which 9,200 were sprayed by air in the Tokar Delta.

- **Forecast**

Small hopper bands will continue to form in the Tokar Delta that, if uncontrolled, could lead to the formation of small immature groups and swarms



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starting in early February. Hatching and band formation is likely to occur during January on the coastal plains south of Tokar Delta.

Eritrea

• SITUATION

Isolated mature solitary adults were seen copulating on the northern plains of the Red Sea between Mehimet (1723N/3833E) and Karora (1745N/3820E) on 1-3 December.

• FORECAST

Small-scale breeding is almost certainly in progress along the Red Sea coastal plains between Mehimet and Karora and to a lesser extent further south towards Massawa. Breeding will continue and cause locust numbers to increase during the forecast period.

Ethiopia

• SITUATION

During December, numerous swarms moved from the Somali Region and spread southwest into the Oromiya region. On the 1st-2nd, small mature swarms appeared into Borena Zone between Negele (0520N/3935E), Arero (0445N/3849E) and Teltele (0504N/3723E), reaching as far south as the Kenyan border. On the 11-12th, a second wave of swarms was reported in Borena. Most of the swarms dispersed and were looking for suitable places to lay eggs in the gorges. Hatching and band formation occurred in Borena and nearby Liben Zone (Somali Region) from the first week of December onwards. By the last week, third and fourth instar hopper bands were present near the Kenyan border and along the Dawa River.

In the Somali region, numerous dense hopper bands were present throughout the month in the Ogaden near Kebri Dehar (0644N/4416E), Gode (0557N/4333E) and K'efalo (0537N/4408E). Damage was reported on crops and pastures. By the last week of December, most of the infestations were fifth instar bands and fledglings. On the 24th, a 3 km² immature swarm was seen south of Gode, indicating that new swarms were forming north and south of the Shebele River.

Control operations were undertaken mainly near Gode as many areas were inaccessible because of insecurity. Although details are lacking, at least 339 ha were treated during December, of which 160 ha were by air.

• FORECAST

Swarms are expected to form in the Ogaden during the first half of January and, thereafter, additional swarms are likely to form further south in Oromiya and along the Kenyan border. Most of the swarms are likely to move towards the south and southwest while some swarms could move west towards the Rift Valley and SNNPR Region.

Djibouti

• SITUATION

No reports were received during December.

• FORECAST

No significant developments are likely.

Somalia

• SITUATION

In the northwest, isolated mature solitary adults persisted along the coastal plains near Bulhar (1023N/4425E) and Berbera (1028N/4502E) during the last week of December. A few mature adults were also seen on the nearby escarpment. No information was available about locusts in central or southern parts of the country.

• FORECAST

Small-scale breeding is likely to occur on the northwest coast in areas of recent rains near Berbera. Consequently, hatching is expected and low numbers of hoppers will be present during the forecast period. In the south, small swarms could form from previously undetected breeding and move towards Kenya in January.

Kenya

• SITUATION

On 1 December, a mature low-density swarm was reported in the northeast along the Ethiopian border near Moyale (0331N/3903E). First and second instar hopper bands at densities of more than 400 hoppers/m² were first reported further east near Mandera (0356N/4151E) on the 4th from hatching that started in late November and continued until mid December. Control operations commenced on the 6th against numerous small but very dense hopper bands that continued to form up to 25 km west of Mandera. By the 21st, some hoppers had reached the fourth instar and, thereafter, no further hopper infestations were found.

On 19 December, a 15 km² medium-density immature swarm crossed the Dawa River from southeastern Ethiopia and settled southwest of Mandera near Karow (0353N/4141E). Several other immature swarms of generally less than 10 km² in size crossed the river into Mandera District until the 27th.

Control teams treated 1,254 ha until the end of the month, of which 1,200 ha were by air.

- **FORECAST**

There is a slight risk that some hopper infestations may not have been detected in the north. If so, these hoppers could form immature swarms in early January. These swarms will be supplemented by immature swarms that form in southeastern Ethiopia and cross the border. The new swarms are likely to be highly mobile and are expected to move towards the south and west where they could mature and lay eggs.

Uganda

- **SITUATION**

No reports were received during December.

- **FORECAST**

There is a moderate risk that a few immature swarms may appear in the east from Kenya and Ethiopia.

Tanzania

- **SITUATION**

No reports were received during December.

- **FORECAST**

There is a slight risk that a few immature swarms may appear in the north from Kenya, mature and lay eggs.

Egypt

- **SITUATION**

During December, locusts declined along the Red Sea coast and in the interior. Low numbers of solitary and few *transiens* immature adults were present along the Red Sea coast and in adjacent subcoastal areas between Abu Ramad (2224N/3624E) and Marsa Alam (2504N/3454E). Immature and mature adult groups were reported during the first week in the Western Desert near Sh. Oweinat (2219N/2845E) and close to Lake Nasser in Wadi Allaqi. Ground teams treated 10 ha at Allaqi. Solitary and *transiens* immature and mature adults were seen in the New Valley oases at Bahariya (2821N/2851E), Farafra (2710N/2818E), Abu Mingar (2630N/2740E) and Dakhla (2530N/2900E).

- **FORECAST**

Scattered adults will persist in parts of the Western Desert, along the Lake Nasser shoreline and on the Red Sea coastal plains south of Marsa Alam. Small-scale breeding is likely to occur on the coast if more rains fall.

Saudi Arabia

- **SITUATION**

On 4 December, small groups of gregarious immature adults that may have crossed the Red Sea from Sudan appeared on the coast near Jeddah (2130N/3910E), Rabigh (2247N/3901E), Yenbo (2405N/3802E), Badr (2347N/3847E), Medinah

(2430N/3935E) and Umm Lajj (2501N/3716E) at densities up to 500 adults/ha. During the remainder of the month, isolated immature and mature adults persisted in the above places. No locusts were seen on the coast near Lith (2008N/4016E), Qunfidah (1909N/4107E) and Jizan (1656N/4233E) or in the spring breeding areas in the interior between Hail (2731N/4141E) and Buraydah (2621N/4358E). Ground teams treated 27 ha near Medinah.

- **FORECAST**

Scattered adults will persist along parts of the Red Sea coastal plains and breed on a small scale if more rains fall during the forecast period.

Yemen

- **SITUATION**

No reports were received during December.

- **FORECAST**

Scattered adults are likely to be present and breeding on a small-scale along parts of the Red Sea and Gulf of Aden coastal plains. If so, this situation will continue if more rains fall during the forecast period and locust numbers will increase slightly.

Oman

- **SITUATION**

During the first week of December, very small patches and groups of gregarious mature adults were present at a few locations along the central eastern coastal plains near Al Jazer (1835N/5635E). Adults at densities up to 5 adults/m² were laying eggs. Ground control teams treated 350 ha.

Further north, immature solitary adults were seen near Adam on the 3rd and small groups of gregarious second and third instar hoppers were seen on the 24th northwest of Hayma. There was also an unconfirmed report of locusts south of Marmul (1808N/5516E). No locusts were seen during surveys in the northern Batinah coast or on the Musandam Peninsula.

- **FORECAST**

No significant developments are likely.

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

- **FORECAST**

No significant developments are likely.



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EASTERN REGION

Iran

• **SITUATION**

During December, low numbers of solitary mature adults persisted on the southeastern coast between Chabahar (2517N/6036E) and the Pakistani border in areas that received good rains in late November. Isolated third to fifth instar hoppers were present at two places on the nearby Vashnum Plains.

• **FORECAST**

Low numbers of locusts are likely to persist on the southeastern coast and could start to breed by the end of the forecast period if conditions remain favourable.

Pakistan

• **SITUATION**

No locusts were reported during the first half of December.

• **FORECAST**

Low numbers of locusts may be present in the Kharan area in Baluchistan. Scattered adults are expected to appear in spring breeding areas in coastal and interior areas of Baluchistan where they could start to breed by the end of the forecast period.

India

• **SITUATION**

No locusts were seen during surveys carried out in Rajasthan in December.

• **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) and threat (orange) periods, locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at

least 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 (ecl@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.

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 commissions 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 (ecl@fao.org) for details.

MODIS imagery. Columbia University's International Research Institute for Climate and Society (IRI) provides 16-day 250-metre resolution MODIS imagery as well as daily and decadal rainfall imagery for monitoring breeding conditions in the Desert Locust recession area. 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 addressed 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 December (home page and in Archives section)
- **FAO Technical Series No. 35.** Preparedness to prevent Desert Locust plagues in the Central Region: an historical overview by J. Magor et al (Publications section – Documents)

- **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.



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 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.



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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

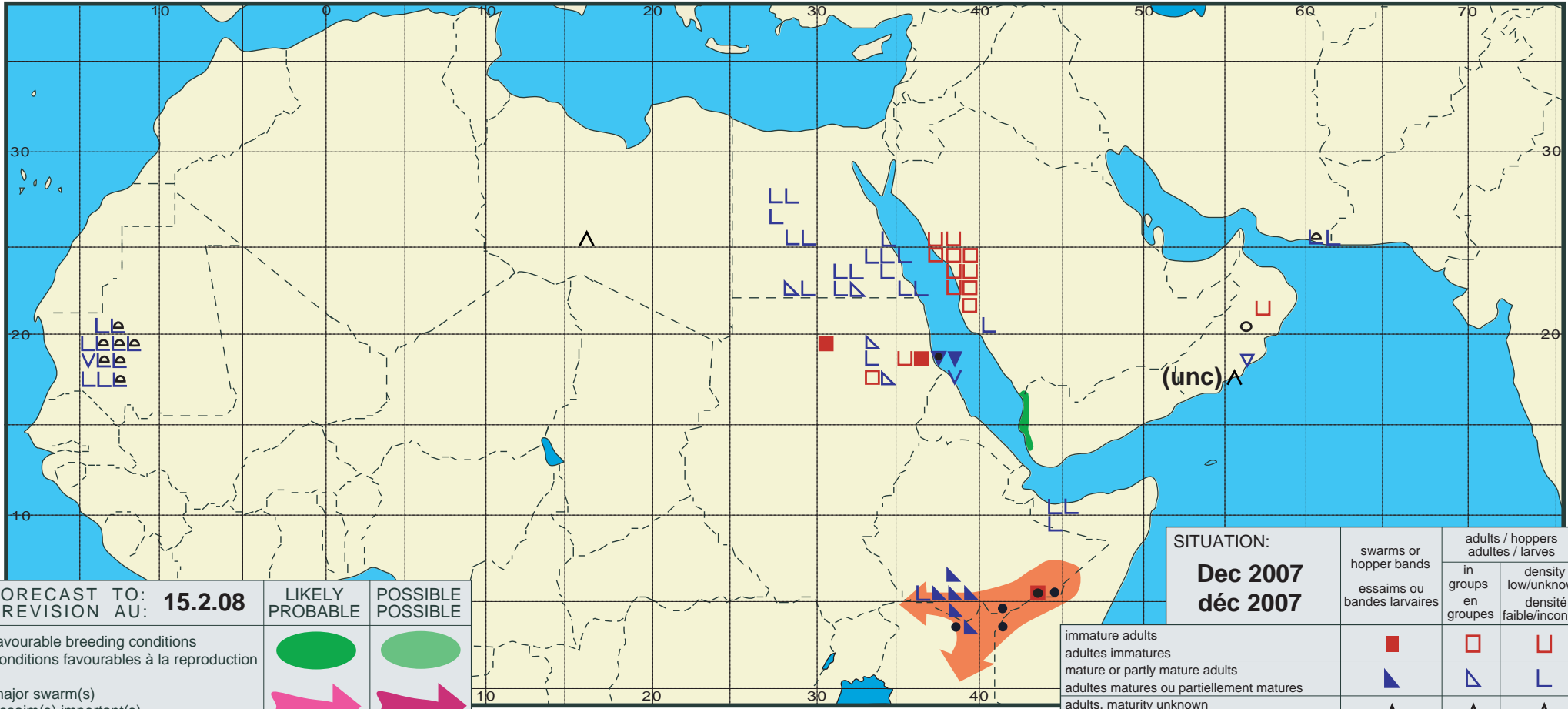
- locust-affected countries in South-West Asia: Afghanistan, India, Iran and Pakistan.



Desert Locust Summary

Criquet pèlerin - Situation résumée

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FORECAST TO: PREVISION AU: 15.2.08	LIKELY PROBABLE	POSSIBLE POSSIBLE
favourable breeding conditions conditions favorables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: Dec 2007 déc 2007	swarms or hopper bands	adults / hoppers	
	essaims ou bandes larvaires	in groups en groupes	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)			