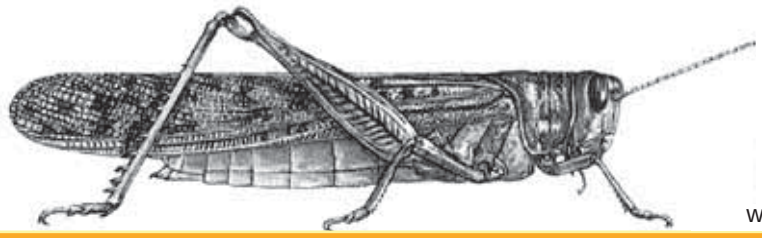

warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 412**

(4 Feb 2013)

General Situation during January 2013 Forecast until mid-March 2013

The Desert Locust situation deteriorated further in the winter breeding areas along the Red Sea during January. Locust numbers increased substantially as eggs hatched and hoppers formed numerous groups and bands in southeast Egypt, Sudan, northeast Eritrea and in Saudi Arabia. Swarms were also reported in these countries. Control operations were undertaken, including aerial operations in Sudan and Saudi Arabia. There is a high risk that a second generation of breeding will occur in the coming months that will cause locust numbers to increase further. All efforts are required to control the infestations in order to reduce potential migration to the spring breeding areas in the interior of Saudi Arabia. In Northwest Africa, groups and at least one small swarm formed in the Western Sahara and moved into adjacent areas of northwest Mauritania, and control operations were undertaken. The situation remained calm in the Sahel of West Africa.

Western Region. The locust situation continued to improve in the region during January. Nevertheless, hopper groups and small bands formed in the southern **Western Sahara** that gave rise to small adult groups, which moved into adjacent areas of northwest **Mauritania** where at least one small swarm was reported near the coast. Limited control operations were carried out in **Morocco** and Mauritania. In **Algeria**, a few egg-laying adult groups were treated near irrigated areas in the central Sahara. In the Sahel, locust numbers continued to decline in northern **Niger** where only isolated adults remained in the Air Mountains. During the forecast period, low numbers of locusts will persist in parts of northwest Mauritania, in adjacent areas of the Western Sahara, and in parts of northern **Mali** and Niger. An increasing number of adults are likely to appear along the southern side of the Atlas Mountains in Morocco and Algeria as temperatures warm up in March and small-scale breeding could occur in areas that receive rainfall.

Central Region. Locust numbers increased significantly during January along the coastal plains in southeast **Egypt**, **Sudan**, northeast **Eritrea**, and in **Saudi Arabia** where hopper bands and swarms formed. Although substantial control operations were carried out in Sudan, Saudi Arabia, and Egypt and, to a lesser extent, in Eritrea, a second generation of breeding is likely to occur during the forecast period that would cause locust numbers to increase further and more hopper bands and swarms to form. Survey and control operations must continue in order to reduce the number of infestations and their migration to the large and vast spring breeding areas in the interior of Saudi Arabia from March onwards. Elsewhere, isolated adults were present on the northern coast of **Oman** where small-scale breeding could occur if rains fall.

Eastern Region. No locusts were reported in the region during January. Low numbers of adults are likely to appear in a few areas on the coast of Baluchistan in western **Pakistan** and southeast **Iran**, and breed on a small scale in areas that receive rainfall. No significant developments are likely.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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No. 412

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in January 2013

Although little rain fell during January, ecological conditions remained favourable in the winter breeding areas along both sides of the Red Sea and in parts of Northwest Africa.

In the **Western Region**, very little rain fell in the region during January. Low temperatures prevailed in most areas, limiting Desert Locust migration and delaying maturation. Ecological conditions were favourable for breeding in the Adrar Settouf area of southern Western Sahara, in parts of western and central Algeria near Tindouf and Adrar, respectively, in a few wadis in the Hoggar Mountains and Tassili Plateau in the southeast, and in parts of northwest and northern Mauritania. Conditions were less favourable along the southern side of the Atlas Mountains in Morocco, including the Draa Valley. In the Sahel, vegetation continued to dry out in northern Mali, Niger and Chad. This may cause locusts to concentrate in the few places that remain green.

In the **Central Region**, showers fell at times during January along parts of the Red Sea coastal plains in Egypt, Sudan, Eritrea, Saudi Arabia and Yemen. Although the rains were mainly light and limited to relatively small areas, they should be sufficient to allow the continuation of green vegetation and breeding. Very little rain fell elsewhere in the region, including the winter breeding areas on both sides of the Gulf of Aden in southern Yemen and northwest Somalia.

In the **Eastern Region**, rain fell in parts of the spring breeding areas in southeastern Iran and western Pakistan during January, allowing ecological conditions to become sufficiently favourable for small-scale breeding. In Iran, moderate rain fell in the western part of the Jaz Murian Basin, and vegetation was becoming green there as well as on the southeastern coastal plains west of Chabahar.

Area Treated

During January, control operations treated nearly 60,000 ha, compared to 32,000 ha in December.

Egypt	10,792 ha (January)
Eritrea	700 ha (26 Dec - 4 January)
Mauritania	2,282 ha (January)
Morocco	2,156 ha (January)
Saudi Arabia	19,615 ha (January)
Sudan	23,352 ha (January)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During the first half of January, the situation continued to improve as locust infestations declined in the northwest and centre of the country where only low numbers of mainly immature solitarious adults were present near Tidjikja (1833N/1126W), between Akjoujt (1945N/1421W) and Atar (2032N/1308W), on the coast near the Ban d'Arguin National Park, and in the extreme north near Bir Moghrein (2510N/1135W). Third to fifth instar hoppers were present near Akjoujt. During the third week, small groups and swarmlets of immature *transiens* adults, at densities up to 8,000 adults/ha, appeared in the Nouadhibou area of the northwest from adjacent areas of Western Sahara. Ground teams treated 2,282 ha in January.

• **FORECAST**

Locusts will slowly mature in the northwest and could lay eggs in any areas that remain suitable. Hatching may occur by the end of the forecast period, giving rise to small groups of hoppers.

Mali

• **SITUATION**

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

• **FORECAST**

Low numbers of adults are likely to be present and could persist in a few areas of the Adrar des Iforas and Tamesna. No significant developments are likely.

Niger

• **SITUATION**

During January, locust numbers continued to decline and the situation improved. Only isolated immature solitarious, *transiens* and gregarious adults were present in parts of the Air Mountains

northeast of Iferouane (1905N/0824E), between Arlit (1843N/0721E) and Agadez (1700N/0756E), and on the Tamesna Plains near Tassara (1650N/0550E). Small-scale breeding occurred in the Air where mainly third instar solitarious hoppers were seen at mid-month.

• **FORECAST**

Low numbers of locusts will persist and could form a few small groups in the Air Mountains and, to a lesser extent, in Tamesna. A few small groups could move northwards during periods of warm southerly winds.

Chad

• **SITUATION**

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

• **FORECAST**

A few adults may be present and could persist in parts of the northeast. No significant developments are likely.

Senegal

• **SITUATION**

No surveys were carried out and no locusts were 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, ground teams treated 27 ha of solitarious and *transiens* adult groups that were copulating in irrigated areas in the central Sahara near Adrar (2753N/0017W). No locusts were seen near Djanet (2434N/0930E), Tamanrasset (2250N/0528E) and Tindouf (2741N/0811W).

• **FORECAST**

Small-scale breeding may continue near irrigated areas in the central Sahara. During periods of warm southerly winds, there is a low risk of a few small groups of adults arriving from infestations that could remain in the northern Sahel. As temperatures warm up in March, an increasing number of adults are likely to appear along the southern side of the Atlas Mountains where small-scale breeding could occur.

Morocco

• **SITUATION**

During the first decade of January, late instar hopper groups, a few small low-density bands and groups of immature adults, at densities up to 10,000 adults/ha, were present in the Adrar Settouf area of southern Western Sahara near Ma'Tallah (2223N/1502W). Groups of immature adults were also present along the coast near Dakhla (2342N/1555W) while scattered mature adults were seen further north towards Guelta Zemmur (2508N/1222W). Locust infestations declined from mid-month onwards. Mainly low numbers of mature solitarious adults persisted along the southern side of the Atlas Mountains in Oued Draa near Guelmim (2859N/1003W) and in the northeast near Figuig (3207N/0113W). Control teams treated 2,156 ha in January.

• **FORECAST**

A limited number of adult groups may continue to form in the Adrar Settouf, slowly mature and lay eggs that could hatch and give rise to small hopper groups by the end of the forecast period. As temperatures warm up in March, an increasing number of adults are likely to appear along the southern side of the Atlas Mountains where small-scale breeding could occur.

Libya

• **SITUATION**

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

• **FORECAST**

Scattered adults are likely to be present in the southwest where they will slowly mature and breed if rains fall. During periods of warm southerly winds, a few small groups of adults could arrive in western and central areas from infestations that could remain in the northern Sahel.

Tunisia

• **SITUATION**

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

• **FORECAST**

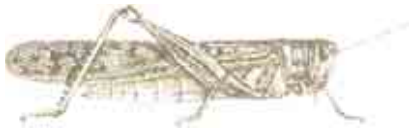
No significant developments are likely.

CENTRAL REGION

Sudan

• **SITUATION**

The situation deteriorated in January as breeding continued on the northern coastal plains of the Red Sea between Oseif (2146N/3651E) and the Egyptian border where adults groups laid eggs in early January,



and in adjacent areas of the interior in Wadi Diib along the western side of the Red Sea Hills where adults and at least two swarms laid eggs at mid-month. Hopper groups and numerous small bands continued to form in both areas. Fledgling commenced at mid-month and at least one immature swarm of 4 km^2 formed. Gregarious adults were seen copulating in Wadi Diib at the end of January. Hopper groups were seen south of Wadi Diib in Wadi Oko near Tomala (2002N/3551E). Isolated mature solitarious adults were present on the central coast near Port Sudan (1938N/3713E) and on the southern coast in the Tokar Delta (1827N/3741E). At mid-month, a few mature adult groups and three very small swarms laid eggs along the Eritrean border near Karora (1745N/3820E) and first to third instar hopper bands were present at the end of January. Control teams treated 23,352 ha, including 5,980 ha by air, in January.

• **Forecast**

A second generation of breeding could cause locust numbers to increase significantly along the Red Sea coast and in subcoastal areas near the Egyptian and Eritrean borders, especially if additional rains fall. Small hopper bands and swarms are expected to form. All efforts are required to control the infestations to prevent any movement across the Red Sea or further south along the coastal plains.

Eritrea

• **Situation**

A late report indicated control operations were carried out against solitarious hoppers and groups of immature and mature adults on the northern coast of the Red Sea between Mehimet (1723N/3833E) and the Sudanese border from 26 December to 4 January, treating 700 ha. On 29 January, a 200ha immature settled swarm and hopper bands of all instars were seen in Wadi Gatmi (1752N/3830E) and nearby areas during a joint Sudan/Eritrea survey.

• **Forecast**

Locust numbers will increase and small hopper groups and bands will form on the northern coast between Mehimet and the Sudanese border. Fledging will occur and small swarms may form. Another generation of breeding could commence during the forecast period. Locust infestations are likely to extend further south along the coast towards Massawa.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

Isolated adults may appear in areas of recent rainfall on the northwest coast and breed on a small scale if rains occur.

Egypt

• **Situation**

In early January, high-density groups of mature adults continued to lay eggs in the Abraaq area in the Red Sea Hills west of Berenice (2359N/3524E). Numerous high-density hopper bands were present near Abraaq and on the Red Sea coast between Berenice and the Sudanese border. By the end of the month, fledging occurred and immature adults were forming groups. Control teams treated 10,792 ha in January.

• **Forecast**

Hopper bands, adult groups and small swarms will form on the Red Sea coast between Berenice and the Sudanese border. If additional rains fall and conditions remain favourable, a second generation of breeding could occur, causing locusts numbers to increase significantly. All efforts are required to control the infestations to prevent any movement across the Red Sea or further south along the coastal plains.

Saudi Arabia

• **Situation**

During January, hopper groups and bands of all instars continued to form on the Red Sea coastal plains mainly in the north between Jeddah (2130N/3910E) and Yenbo (2405N/3802E) and, to a lesser extent, on the central coast near Lith (2008N/4016E). A few mature adult groups were seen further south near Qunfidah (1909N/4107E). Groups of gregarious adults laid eggs early in the month near Lith while swarms laid eggs at the end of January on the north coast near Bader (2346N/3847E) and

Rabigh (2247N/3901E). Control operations treated 19,615 ha, including 6,480 ha by air, in January.

• **Forecast**

Hopper bands, adult groups and small swarms will form on the Red Sea coast between Qunfidah and Yenbo. If additional rains fall and conditions remain favourable, a second generation of breeding could occur, causing locusts numbers to increase significantly.

Yemen

• **Situation**

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

• **Forecast**

Low numbers of adults are likely to be present in parts of the winter breeding areas on the Red Sea and Gulf of Aden coast and will breed on a small scale in areas that receive rainfall.

Oman

• **Situation**

During January, isolated immature solitarious adults were present on the Batinah coast near Jamma (2333N/5733E). No locusts were seen elsewhere during surveys carried out in Dhahera, Dakhliya, and Sharqiya regions of the north.

• **Forecast**

Low numbers of adults are likely to persist on the Batinah coast and breed on a small-scale if rainfall occurs.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During January, no locusts were seen during surveys carried out in the western part of the Jaz Murian Basin near Ghale Ganj (2731N/5752E) and on the southeastern coast west of Chabahar (2517N/6036E).

• **Forecast**

Low numbers of adults are expected to appear in a few areas on the southeastern coastal plains and in the Jaz Murian Basin. Small-scale breeding will occur in areas that receive rainfall.

Pakistan

• **Situation**

No reports were received during January.

• Forecast

Low numbers of adults are expected to appear in a few areas on the coast and interior of Baluchistan. Small-scale breeding will occur in areas that receive rainfall.

India

• **Situation**

No locusts were seen during surveys carried out during January.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

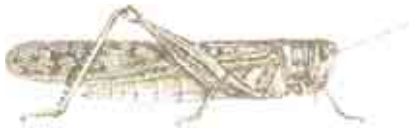
• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://www.devcocast.eu/user/images/dl/Form.do)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

SWAC website. The FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC) website (http://www.fao.org/ag/locusts/SWAC) is now available in French.

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **Sahel crisis.** Information Section
- **28th session of SWAC final report.** Publications Section – Reports

2013 events. The following activities are scheduled or planned:

- **CRC/SWAC.** Inter-regional Locust information officers workshop, Cairo, Egypt (22-25 April)
- **CLCPRO/EMPRES-RO.** Western Region Locust information officers workshop, Niamey, Niger (May)

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

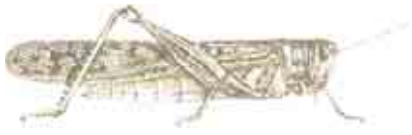
- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

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.

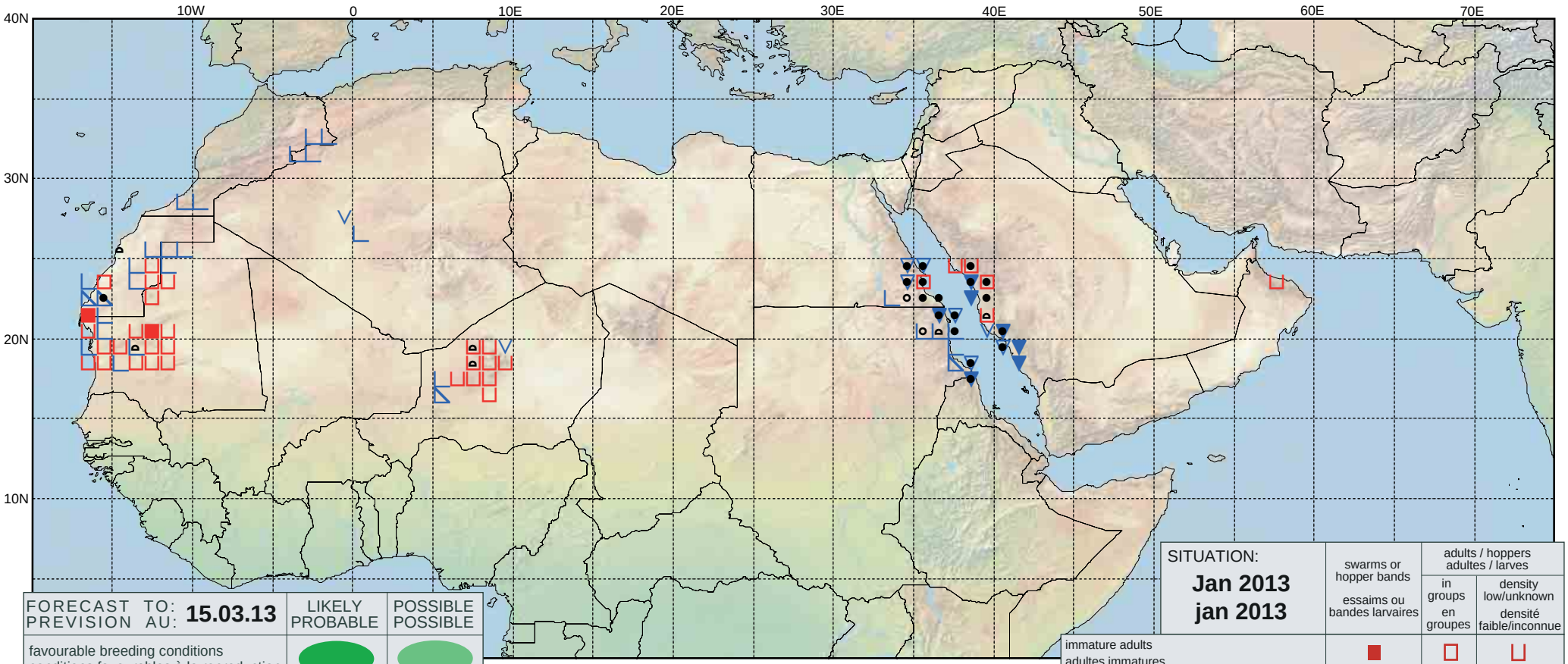
EASTERN

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



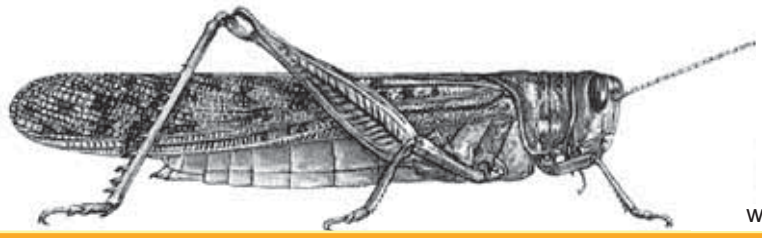
Desert Locust Summary
Criquet pèlerin - Situation résumée

412



FORECAST TO: / PREVISION AU: **15.03.13**	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 2013** / **jan 2013**	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)			



warning level: **THREAT**

DESERT LOCUST ALERT

FAO Emergency Centre for Locust Operations

(17 Feb 2013)

General Situation as of 17 February 2013

There have been numerous reports of immature Desert Locust swarms invading cropping areas in northern Sudan in the past few days. The swarms have originated from the winter breeding areas on the Red Sea coastal plains and subcoastal areas in northeast Sudan and southeast Egypt. The situation is potentially dangerous as more swarms are expected to form in the coming weeks that could move into parts of Sudan and Egypt. All efforts are required to control the infestations and protect winter crops.

At least six immature swarms and a number of immature adult groups were present on the Red Sea coastal plains of **Sudan** between Mohamed Qol (2054N/3709E) and the Egyptian border. Locals reported seeing the swarms flying high and crossing the border. At least one immature swarm and many immature adult groups were present in subcoastal areas on the western side of the Red Sea Hills in Wadi Diib. Several immature swarms moved to the west, reaching the interior of northern Sudan and the Nile Valley between Abu Hamed (1932N/3320E) and Dongola (1910N/3027E), including Merowe (1830N/3149E) and Ed Debba (1805N/3055E), on about 14 February, attacking winter crops and fruit orchards. Aerial and ground control operations were immediately launched and have treated at least five swarms so far.

On the southern coastal plains of the Red Sea in Sudan, four small immature and maturing swarms and groups of adults were reported and treated near the border of **Eritrea**. Control operations were also carried out in Eritrea recently. Breeding is in progress and late instar hopper bands and fledglings are present in both countries.

In southeast **Egypt**, ground control operations continue against immature adult groups and swarms on the coast and in subcoastal areas between the Sudan border and Marsa Alam (2504N/3454E). Aerial and ground control operations also continue on the Red Sea coast in **Saudi Arabia** against hopper bands and mature swarms north of Jeddah and, to a lesser extent, on the central coast near Lith (2008N/4016E).

More swarms are expected to form in northeast Sudan and southeast Egypt in the coming weeks. If no further rains fall and vegetation dries out, some of these swarms could move into the interior of both countries and also cross the Red Sea to the coast of Saudi Arabia. As ecological conditions remain favourable along the border of Eritrea and Sudan, breeding will continue, causing additional hopper bands and small swarms to form. All countries should remain on high alert and make every effort to find and treat all infestations.

FAO will continue to keep all countries informed of any significant developments. The most up-to-date information on the situation is also available on Twitter (www.twitter.com/faolocust) and Facebook (www.facebook.com/faolocust).

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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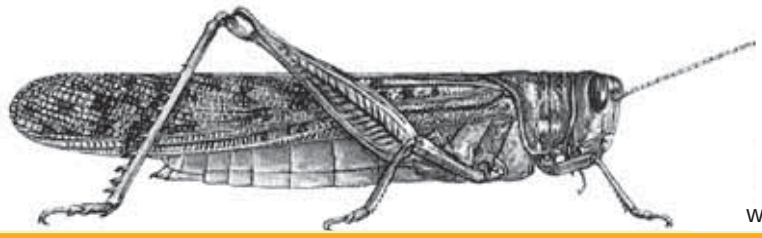

warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 413

(4 Mar 2013)

General Situation during February 2013
Forecast until mid-April 2013

The Desert Locust situation remained worrisome during February in the winter breeding areas along both sides of the Red Sea where locust infestations continued to increase. Adults formed groups and swarms in Egypt, Sudan, Eritrea and Saudi Arabia. Some of these moved into crops along the Nile River in northern Sudan, laid eggs and caused damage, while a limited number of groups and swarms moved north along the Egyptian coast where they could eventually threaten the Nile Delta. Substantial control operations were carried out by the three countries. A smaller, second generation of breeding is expected to occur along both sides of the Red Sea. Groups of adults are likely to move to the interior of Saudi Arabia where one generation of breeding can occur. Elsewhere, a few small swarms formed in the Western Sahara and moved into adjacent areas of northwest Mauritania.

Western Region. The locust situation remained generally calm in the region during February. Adult groups and a few small swarms formed in the southern part of **Western Sahara**. Some of these moved into adjacent areas of northwest **Mauritania**. Limited control operations were carried out in Morocco and Mauritania. Scattered mature adults were present in central **Algeria** and northeast **Morocco**. As temperatures warm up in March, low numbers of adults are likely to appear in Morocco south of the Atlas Mountains and in the northern and central Sahara in Algeria, and breed on a small scale in areas that receive rainfall. No significant developments are expected.

Central Region. Locust numbers continued to increase significantly during February from breeding along the Red Sea coastal plains in southeast **Egypt**, **Sudan**, **Eritrea**, and **Saudi Arabia** where hopper bands and swarms formed. Immature groups and swarms moved from northeast Sudan to the Nile Valley in northern Sudan, laying eggs, and causing damage to crops and date palms. Immature groups and a few small swarms moved north along the Red Sea coast of Egypt, nearly reaching Suez. Infestations declined in the second half of February due to control operations and migration. Elsewhere, only isolated adults were seen on the Red Sea coast in **Yemen**. There is a moderate risk that a few small groups and swarmlets may reach cropping areas in the Nile Valley and Delta of Egypt. A smaller second generation of breeding will occur in southeast Egypt, along the Sudan/Eritrea border and on the northern Red Sea coast in Saudi Arabia. Breeding will continue along the Nile in northern Sudan where a few more swarms may appear from the northeast. Scattered adults and small groups are likely to appear in the spring breeding areas of the interior of Saudi Arabia, and breed in places that receive rainfall.

Eastern Region. No locusts were reported in the region during February. Low numbers of adults are likely to appear in parts of Baluchistan in western **Pakistan** and southeast **Iran**, and breed on a small scale in areas that receive rainfall. No significant developments are likely.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Weather & Ecological Conditions in February 2013

Vegetation began drying out on the western side of the Red Sea during February but remained green along the coast of Saudi Arabia.

In the **Western Region**, very little rain fell in the region during February and low temperatures persisted in most areas, limiting Desert Locust migration and delaying maturation. In Mauritania, ecological conditions were generally unfavourable for breeding but there were small areas of green vegetation in Dakhlet Nouadhibou, Inchiri, Adrar and Tiris Zemmour. In Morocco, ecological conditions remained favourable for breeding in the southern part of the Western Sahara but were drying out further north as well as along the southern side of the Atlas Mountains in the Draa and Ziz-Ghris valleys. In Algeria, ecological conditions were favourable for breeding near Bechar, Adrar and Tamanrasset.

In the **Central Region**, light rain fell at times during February in some areas on both sides of the Red Sea. In Sudan, vegetation progressively dried out during the month in coastal and subcoastal areas of the northeast but ecological conditions remained favourable on the southern coast between Tokar and the Eritrean border. Conditions were also favourable in adjacent areas of Eritrea on the northern coast. In Egypt, vegetation started to dry out on the southern coastal plains of the Red Sea south of Shalatyn from the second week of February onwards but remained green near Berenice and Abraaq. Ecological conditions were not favourable for breeding in coastal and subcoastal areas north of Marsa Alam. In Saudi Arabia, ecological conditions remained favourable for breeding along the northern Red Sea coastal plains between Rabigh and Umm Lajj, and on the central coast between Lith and Qunfidah. In Yemen, light rain fell at times in a few places on the Red Sea coastal plains but mainly dry conditions persisted there as well as on the Gulf of Aden coastal plains. Light to moderate rain fell in northern Oman in early February but vegetation remained generally dry.

In the **Eastern Region**, light rain fell at times during February in parts of the spring breeding areas in southeastern Iran and, to a lesser extent, in western Pakistan. Consequently, ecological conditions are expected to be favourable for small-scale breeding along the southeast coast and in the Jaz Murian Basin of Iran, and in parts of the interior of Baluchistan in Pakistan.

Area Treated

During February, control operations treated more than 90,000 ha, compared to 58,000 ha in January.

Egypt	12,378 ha (February)
Eritrea	200 ha (February)
Mauritania	2,740 ha (February)
Morocco	2,291 ha (February)
Saudi Arabia	14,470 ha (February)
Sudan	60,979 ha (February)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

Seven small immature swarms, 180-600 ha in size at densities up to 16 adults/m^2, appeared in the northwest up to 90 km east of Nouadhibou (2056N/1702W) from adjacent areas in Western Sahara on 4-18 February. A few groups of immature *transiens* adults at densities up to 5,000 adults/ha were present in the same area. Ground teams treated 2,740 ha in February.

• **FORECAST**

Isolated adults may persist in parts of Dakhlet Nouadhibou. Small-scale breeding could occur in parts of Tiris-Zemmour if rain falls during the forecast period.

Mali

• **SITUATION**

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

• **FORECAST**

Low numbers of adults are likely to be present and will persist in a few areas of the Adrar des Iforas. No significant developments are likely.

Niger

• **SITUATION**

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

• **Forecast**

Low numbers of locusts are likely to be present and will persist in parts of the Air Mountains. No significant developments are likely.

Chad

• **Situation**

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

• **Forecast**

No significant developments are likely.

Senegal

• **Situation**

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

• **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 February, isolated mature solitarious adults were present in the central Sahara near In Salah (2712N/0229E). No locusts were seen near Djanet (2434N/0930E), Tamanrasset (2250N/0528E), Adrar (2753N/0017W), and between Beni Abbes (3011N/0214W) and Tindouf (2741N/0811W).

• **Forecast**

As temperatures warm up in March, an increasing number of adults are likely to appear in the northern and central Sahara and breed on a small scale if rainfall occurs.

Morocco

• **Situation**

During February, late instar hoppers, fledglings and groups were present in the Adrar Settouf area of southern Western Sahara near Ma'Tallah (2223N/1502W) and further north near the coast of Boujdour (2607N/1429W). Immature adults and groups at densities up to 8,000 adults/ha were seen along the coast near Boujdour and between Dakhla (2342N/1555W) and the Mauritanian border. Some of the adults were maturing. A few small immature swarms up to 300 ha in size at densities up to 100 adults/m^2 formed at mid-month near Ma'Tallah. At the end of the month, a small immature swarm was seen near Bir Anzarane (2353N/1431W) and near Ma'Tallah. Ground teams treated 2,291 ha during February. In northeast Morocco, isolated mature solitarious adults persisted near Figuig (3207N/0113W) and Bouarfa (3232N/0159W).

• **Forecast**

A limited number of adult groups may continue to form in the Adrar Settouf, slowly mature and lay eggs that could hatch and give rise to small hopper groups by the end of the forecast period. As temperatures warm up in March, an increasing number of adults are likely to appear along the southern side of the Atlas Mountains and breed on a small scale if rainfall occurs.

Libya

• **Situation**

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

• **Forecast**

Scattered adults are likely to be present in the southwest where they will breed on a small scale if rainfall occurs.

Tunisia

• **Situation**

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

• **Forecast**

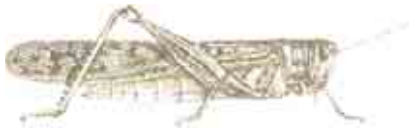
No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

The situation worsened in February as breeding continued in coastal and subcoastal areas of the northeast and on the southern coastal plains near the Eritrean border where hopper groups, bands, adult groups and swarms formed. Mature adult groups and swarms were seen from the 10th onwards. The infestations in the northeast were concentrated in Wadi Diib and on the coast between Mohamed Qol (2054N/3709E) and the Egyptian border; those in the south were between Adobana (1810N/3816E) and Karora (1745N/3820E) where more egg-laying occurred late in the month. A number of immature swarms moved from the northeast to crops along the Nile River, reaching Abu Hamed (1932N/3320E) on the 13th and Dongola (1910N/3027E) by the 23rd. Some of the swarms were maturing and laying eggs. Damage occurred to seasonal crops and date palms.



One swarm was seen as far south as Ed Damer (1734N/3358E). Control teams treated 60,979 ha, including 39,570 ha by air, in February.

• **Forecast**

Small groups and swarms are likely to move from the northeast towards the Nile River and the southern coastal plains of the Red Sea. Breeding will cause locust numbers to increase in both areas with hatching and the formation of hopper groups and bands in March. All efforts are required to monitor and control the infestations.

Eritrea

• **Situation**

During February, hopper bands of all instars were present on the northern coastal plains near the Sudanese border. Fledging occurred during the first week. There were indications of swarm activity on both sides of the border, and three immature and mature swarms were reported up to the 18th. A few swarms were seen coming from the border on the 22nd. No other locusts were present on the coastal plains except for isolated mature solitarious adults south of Mehimet (1723N/3833E).

• **Forecast**

Small groups and swarms will form on the northern coastal plains of the Red Sea, supplemented by similar populations from adjacent areas of Sudan. A second generation of breeding will occur near the border, giving rise to hopper groups and bands. All efforts are required to monitor and control the infestations.

Ethiopia

• **Situation**

No locusts were seen in the eastern region near Ayasha (1045N/4234E) and Dire Dawa (0935N/4150E) on 24-25 February.

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During February, breeding continued along the southern coast and subcoastal areas of the Red Sea from the Sudanese border to Berenice (2359N/3524E) where numerous hopper groups and bands formed. In the Nile Valley, hopper groups were seen at one place north of Aswan near Kom Ombo (2428N/3257E). Hopper infestations declined after the first week as immature adult groups formed and began maturing. As vegetation dried out, immature adult groups and a few small swarms moved north along the coast and the Red Sea Hills, reaching Marsa Alam (2504N/3454E) on the 8th, west of Hurghada (2717N/3347E) on the 16th, and Zafaranah (2906N/3239E) on the 26th. During the last week, a second generation of breeding started in the Abraaq area west of Shalatyn (2308N/3535E) where adult groups were laying eggs. Ground teams treated 12,378 ha in February.

• **Forecast**

There is a moderate risk that a few small groups and swarmlets may reach cropping areas in the Nile Valley and Delta in March. On the southern coast and subcoastal areas of the Red Sea, a limited second generation of breeding will occur in areas that remain favourable between Berenice and the Sudanese border where hatchlings are expected to form small groups and bands.

Saudi Arabia

• **Situation**

During the first half of February, breeding continued on the northern Red Sea coastal plains between Rabigh (2247N/3901E) and Bader (2346N/3847E) and, to a lesser extent, on the central coast near Lith (2008N/4016E) where adult groups laid eggs, and hopper groups and bands were present. Immature and mature adult groups and swarms were present on the northern coast while only adult groups were seen near Lith in the first week. During the second half of February, infestations declined in all areas due to control operations and as a few small mature adult groups and a swarm moved north towards Duba (2719N/3546E) on 23 February. Control operations treated 14,470 ha, including 1,516 ha by air, in February.

• **Forecast**

A limited second generation of breeding will occur in areas that remain favourable on the northern coast

between Rabigh and Umm Lajj where hatchlings are expected to form small groups and bands. Scattered adults and small adult groups, supplemented by a small groups and swarms from the western side of the Red Sea, are likely to appear in the spring breeding areas of the interior, mature and breed on a small scale in places that receive rainfall.

Yemen

• **SITUATION**

During February, isolated immature and mature solitarious adults were present at a few places along the Red Sea coast near Midi (1619N/4248E), Suq Abs (1600N/4312E), south of Hodeidah (1450N/4258E), and on the Gulf of Aden coast west of Aden (1250N/4503E).

• **FORECAST**

Low numbers of adults are likely to persist in a few places along the Red Sea coast and breed on a small scale if rainfall occurs.

Oman

• **SITUATION**

During February, no locusts were seen during surveys carried out in the interior of the north between Adam (2223N/5731E) and Buraimi (2415N/5547E), and of the extreme south near Maziuna (1750N/5239E) and the Yemeni border.

• **FORECAST**

Low numbers of adults may appear on the Batinah coast and breed on a small-scale if rainfall occurs.

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

• **FORECAST**

No significant developments are likely.

EASTERN REGION

Iran

• **SITUATION**

During February, no locusts were seen on the southeast coast near Chabahar (2517N/6036E) and near Ghale Ganj (2731N/5752E) in the western Jaz Murian Basin of the interior.

• **FORECAST**

Low numbers of adults are expected to appear in a few areas on the southeastern coastal plains and in the Jaz Murian Basin. Small-scale breeding will occur in areas that receive rainfall.

Pakistan

• **SITUATION**

No surveys were carried out and no locusts were reported during January and February.

• Forecast

Low numbers of adults are expected to appear in a few areas on the coast and interior of Baluchistan. Small-scale breeding will occur in areas that receive rainfall.

India

• **SITUATION**

No locusts were seen during surveys carried out during February.

• **FORECAST**

No significant developments are likely.

Afghanistan

• **SITUATION**

No reports received.

• **FORECAST**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://www.devcocast.eu/user/images/dl/Form.do)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

SWAC website. The FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC) website (http://www.fao.org/ag/locusts/SWAC) is now available in French.

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Desert Locust situation updates.** Archives Section – Briefs

2013 events. The following activities are scheduled or planned:

- **CRC/SWAC.** Inter-regional Locust information officers workshop, Cairo, Egypt (22-25 April)
- **CLCPRO/EMPRES-RO.** Western Region Locust information officers workshop, Niamey, Niger (May)

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

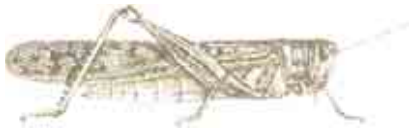
- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

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.

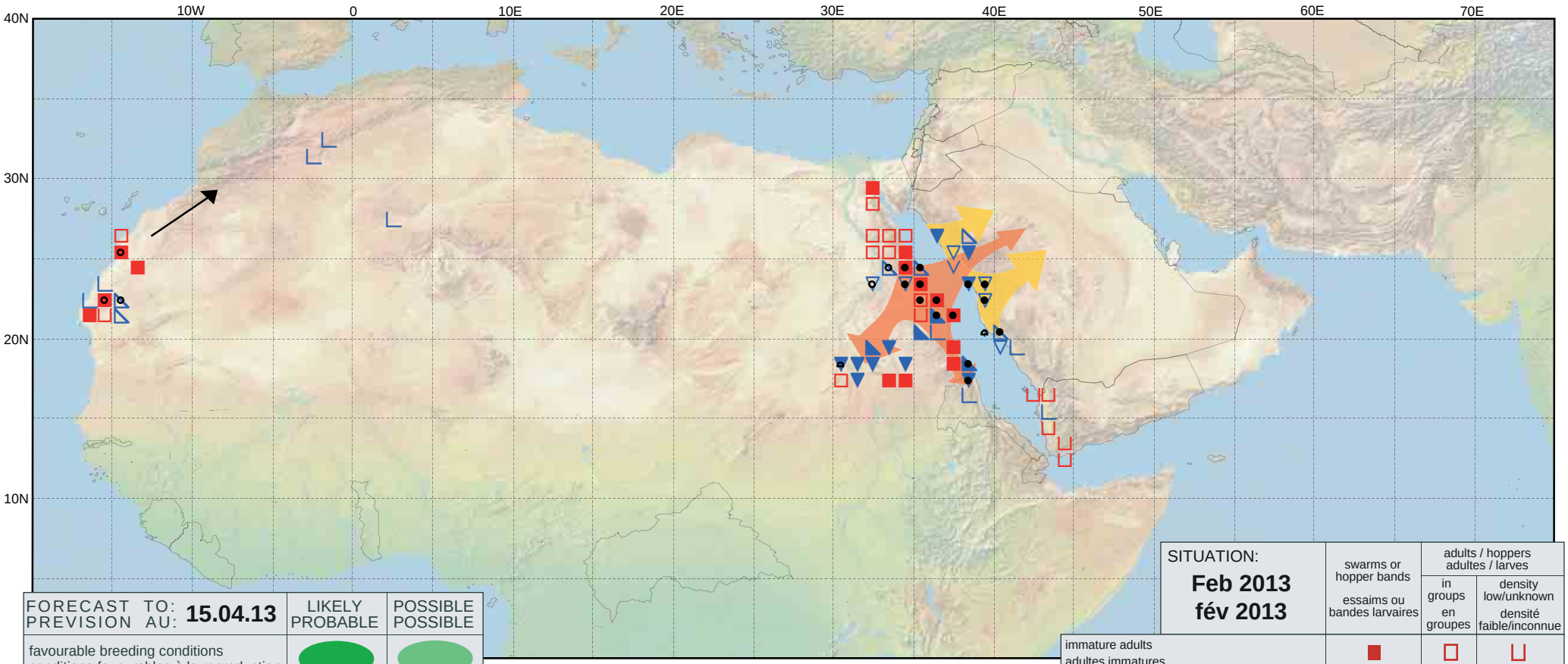
EASTERN

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



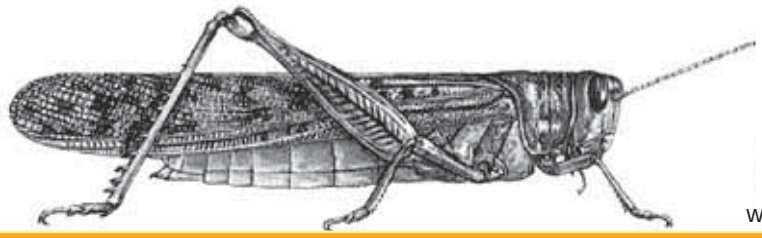
Desert Locust Summary
Criquet pèlerin - Situation résumée

413



FORECAST TO: / PREVISION AU: **15.04.13**	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: **Feb 2013 / fév 2013**	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	▲	△	Λ
egg laying or eggs pontes ou œufs	▼	▽	V
hoppers larves	●	○	◡
hoppers & adults (combined symbol example) larves et adultes (exemple symboles combinés)	◘	◙	⊎



warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 414**

(3 Apr 2013)

General Situation during March 2013
Forecast until mid-May 2013

The Desert Locust situation remained serious during March in the winter breeding areas along both sides of the Red Sea as control operations continued against hopper band and swarms. Locust numbers declined after mid-month due to control operations, dry vegetation and migration to the Nile Valley in Sudan and Egypt, and northwards to the Sinai Peninsula, Israel, Palestine, Jordan and Lebanon. Substantial egg laying, hatching and hopper band formation occurred near crops along a 1,000 km stretch of the Nile in northern Sudan. Swarms could form in May and threaten crops, and a second generation of breeding could take place before the summer. There is also a risk that breeding will occur in the interior of the Arabian Peninsula where good rains fell during March. In Northwest Africa, locust numbers increased in Algeria and Morocco where breeding will occur during the forecast period.

Western Region. The locust situation remained generally calm in the region during March. A few small swarms formed in **Western Sahara** where breeding had nearly ended. An increasing number of adults, including a few small groups and a swarmlet appeared in the spring breeding areas south of the Atlas Mountains in **Morocco** and **Algeria**, and started to lay eggs in the central Sahara of Algeria. Isolated adults were present in northwest **Mauritania** and southwest **Libya**. Limited control operations were undertaken in Morocco and Algeria. Small-scale breeding will cause locust numbers to increase further in Morocco and Algeria during the forecast period.

Central Region. As vegetation dried out along both sides of the Red Sea during March, adult groups and swarms formed, some of which moved north along the Red Sea in **Egypt**, reaching Cairo and continuing to the Sinai Peninsula, **Israel**, **Palestine**, **Jordan** and **Lebanon**. Egg laying was reported in Israel and Palestine. Swarms that reached the Nile Valley in northern **Sudan** in February and early March, matured and laid eggs that hatched, causing numerous small but dense hopper bands to form near crops. More hopper bands will form during April and swarms could form in May that would threaten crops and probably remain along the Nile to mature and lay eggs. Groups and swarms that moved north along the Red Sea coast in **Saudi Arabia** also laid eggs that hatched, causing hopper bands to form. Good rains in the interior of Saudi Arabia and **Yemen** may allow a generation of breeding to occur during the spring that could lead to swarms forming by June. Control operations were carried out in all affected countries.

Eastern Region. No locusts were reported in the region during March. Low numbers of adults are probably present in parts of Baluchistan in western **Pakistan** and southeast **Iran**, and will breed on a small scale in areas of recent rainfall. No significant developments are likely.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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No. 414

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in March 2013

Vegetation dried out in winter breeding areas along both sides of the Red Sea. Good rains fell in the spring breeding areas of the Arabian Peninsula and in the Horn of Africa during March.

In the **Western Region**, no significant rain fell during March but light showers occurred at times along the southern side of the Atlas Mountains in Morocco and Algeria. Consequently, breeding conditions were improving in parts of the Draa and Ziz-Ghris valleys in Morocco, and in adjacent areas of northwest Algeria near Bechar. Ecological conditions also became favourable in parts of the central Sahara in Algeria near Beni Abbes, Adrar, In Salah and Tamanrasset. Vegetation was drying out in western Algeria near Tindouf and in the Adrar Settouf region in the southern part of Western Sahara. Ecological conditions were unsuitable for breeding in southwest Libya except near irrigated agricultural areas. In West Africa, dry conditions prevailed in the northern Sahel from Mauritania to Chad.

In the **Central Region**, good rains fell in the interior of Arabia and the Horn of Africa during the second half of March. In Saudi Arabia, low to moderate rains fell in the spring breeding areas of the interior near Al Jawf, Buraydah, Wadi Dawasir, Wadi Najran and in the Empty Quarter, extending to the interior of Yemen from Marib and Shabwah to Thamud, Hadhramaut and the Oman border. Good rains also fell in northeast Oman, in eastern Ethiopia, and throughout northern Somalia. No significant rain fell along both sides of the Red Sea and, consequently, vegetation was drying out on the coastal plains.

In the **Eastern Region**, light rain fell at times during March in parts of the spring breeding areas in southeast Iran and western Pakistan. As a result, ecological conditions were favourable for small scale breeding in some coastal and interior areas of both countries.

Area Treated

During March, control operations treated nearly 67,000 ha, compared to 87,000 ha in February.

Algeria	2,910 ha (March)
Egypt	10,634 ha (March)
Israel	2,000 ha (estimated, March)
Morocco	290 ha (March)
Palestine	16 ha (March)
Saudi Arabia	10,939 ha (March)
Sudan	44,948 ha (March)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During March, the situation remained calm and only isolated immature solitarious adults were seen at a few places in the northwest to the east of Nouadhibou (2056N/1702W) along the border of Western Sahara.

• **FORECAST**

Isolated adults may persist in parts of Dakhlet Nouadhibou. Small-scale breeding could occur in parts of Tiris-Zemmour if rain falls during the forecast period.

Mali

• **SITUATION**

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

• **FORECAST**

Low numbers of adults are likely to be present and will persist in a few areas of the Adrar des Iforas. No significant developments are likely.

Niger

• **SITUATION**

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

• **FORECAST**

Low numbers of locusts are likely to be present and will persist in parts of the Air Mountains. No significant developments are likely.

Chad

• **SITUATION**

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

• **FORECAST**

No significant developments are likely.

Senegal

• **Situation**

No reports were received in March.

• **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 March, locust numbers increased in the central and western Sahara. On the 6th, an immature swarm fragment was seen near Beni Abbes (3011N/0214W) in Wadi Saoura. During the remainder of the month, groups of immature and mature solitarious and *transiens* adults were reported near Beni Abbes, Bechar (3135N/0217W), Adrar (2753N/0017W), and In Salah (2712N/0229E). Copulating and egg laying were seen after mid-month. Immature and mature solitarious adults were also present south of Ain Sefra (3245N/0035W) and between In Salah and Ghardaia (3225N/0337E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the central and western Sahara. Breeding may also extend to parts of the eastern Sahara. Hatching is likely to commence in early April and hoppers may form small groups that will fledge from mid-May onwards.

Morocco

• **Situation**

During the first week of March, three small immature swarms were seen in the northern part of the Western Sahara near Boujdour (2607N/1429W). Solitarious and *transiens* adults were maturing near Guelta Zemmur (2508N/1222W) and in the Adrar Settouf area of the south between Bir Anzarane (2353N/1431W) and Ma'Tallah (2223N/1502W). Small groups of fifth instar *transiens* hoppers were present near Aousserd (2233N/1419W). Ground teams treated 290 ha during March.

Immature and mature solitarious adults increased slightly in the Draa Valley south of the Atlas Mountains near Tan-tan (2826N/1106W), and in the northeast between Erfoud (3128N/0410W) and Figuig (3207N/0113W).

• **Forecast**

Small-scale breeding will cause locust numbers to increase along the southern side of the Atlas Mountains in the Draa and Ziz-Ghris valleys and in the northeast near Figuig. Hatching is likely to occur in April. Scattered adults may persist in parts of the Western Sahara.

Libya

• **Situation**

During March, low numbers of immature and mature solitarious adults were seen in the southwest near the Algerian border and northwest of Ghat (2459N/1011E). Some of the adults were seen laying eggs near irrigated agricultural areas.

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly in the southwest. Hatching is likely to occur in April.

Tunisia

• **Situation**

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

• **Forecast**

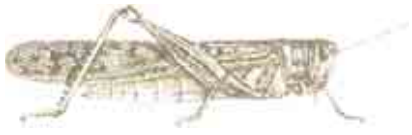
No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During March, locust infestations declined in coastal and subcoastal areas of the northeast due to control operations, migration and drying vegetation. A few immature swarms were seen on the coast near the Egyptian border during the first week while a few fledglings and immature adults were seen in Wadi Diib during the last week. Hopper groups, bands, adult groups and swarms continued to form on the southern coastal plains near the Eritrean border in early March. An immature and mature swarm moved to Tokar Delta (1827N/3741E) at mid-month where solitarious immature and mature adults were present. The situation deteriorated in the Northern and River Nile States where swarms matured and laid eggs near crops along a 1,000 stretch of the Nile between Wadi Halfa (2147N/3122E) and Ed Damer (1734N/3358E) and along about a 50 km stretch of the Atbara River. Hatching began during the second week and small, dense hopper bands formed in many areas, reaching third instar by the end of March. A few mature gregarious adults moved west of the Nile and were seen between Dongola (1910N/3027E) and Jebel Uweinat (2154N/2458E). Control teams treated 44,948 ha, including 36,152 ha by air, in March.



• **Forecast**

Locust numbers will decline on the southern coast of the Red Sea. Hatching will continue along the Nile in Northern and River Nile States during the first half of April, and hopper bands will form. Fledging is expected to commence after mid-month and new swarms could form by early May. It is likely that these swarms will remain in cropping areas, mature and be ready to lay eggs by late May. All efforts are required to monitor and control the infestations.

Eritrea

• **Situation**

On 7 March, a few swarms appeared on the northern Red Sea coastal plains and moved towards the escarpment near Afabet (1612N/3841E). Further details are awaited.

• **Forecast**

Locust numbers will decline on the northern coastal plains of the Red Sea as vegetation dries out. No significant developments are likely.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During March, locust numbers declined along the southern coast and subcoastal areas of the Red Sea from the Sudanese border to Berenice (2359N/3524E) due to control operations, drying vegetation and migration. A few late instar hopper bands and immature swarms were present in the first week and, thereafter, groups of immature adults remained. Several small immature groups and swarms moved north along the coast, reaching eastern Cairo on 2 March and then continuing to the northern coast of the Sinai Peninsula between Bir El Abd (3101N/3300E) and El Arish (3108N/3348E) where they were seen during most of the month. Other groups and small swarms are thought to have reached the interior of the Sinai where surveys were not possible. Immature groups also moved from the southern coast of the Red Sea west into the Nile Valley between Abu Simbel (2219N/3138E) and Sohag (2633N/3142E), and one group reached Farafra oasis (2710N/2818E) in the Western Desert. Control teams treated 10,634 ha during March.

• **Forecast**

Locust numbers will continue to decline on the southern coast of the Red Sea, in the northeast, and in the Sinai Peninsula. Small groups of adults are likely to mature along the Nile River south of Sohag and lay eggs near cropping areas. Hatching is likely to occur during April and small groups may form in some areas.

Israel

• **Situation**

On 4-6 March, isolated immature gregarious adults from the Sinai Peninsula appeared on the coastal plains from south of Tel Aviv (3204N/3446E) to north of Haifa (3248N/3459E). At least one small immature group arrived in the northern Negev Desert at Be'er Milka (3056N/3424E) on the 4th, and a small immature swarm crossed the nearby border at Nitzana (3053N/3425E) on the 5th. More immature groups appeared from the 10th onwards, dispersing across the northern Negev between Nitzana, Ze'elim (3112N/3432E), and Arad (3115N/3512E). From mid-month onwards, mainly mature adults were reported and laying eggs in the northern Negev. Ground and aerial control operations treated at least 2,000 ha during March.

• **Forecast**

Hatching and the formation of small hopper groups and bands are likely to occur during April from any adult infestations that are not detected or controlled in the northern Negev.

Palestine

• **Situation**

On 5 March, small groups of immature adults arrived in southern Gaza on farms near Khan Yunes (3121N/3418E). On the 27th, two small mature swarms appeared on the West Bank near Hebron

(3132N/3506E) and were seen copulating. Ground teams treated 16 ha.

• **Forecast**

Limited hatching may occur near Hebron during April, and hoppers may form small groups or bands.

Jordan

• **Situation**

On 10 March, low numbers of immature gregarious adults appeared in the Araba Valley north of Aqaba (2932N/3500E). A few small swarms were reported in the same area from 14 to 17 March. Low numbers of immature gregarious adults were seen on the edge of Amman (3157N/3554E) on the 16th. A very small immature swarm was seen about 40 km northeast of Aqaba on the 27th and ground teams treated 16 ha.

• **Forecast**

No significant developments are likely.

Lebanon

• **Situation**

On 16 March, low numbers of immature gregarious adults arrived in coastal areas, extending from Tyre (3316N/3512E) in the south to Tripoli (3426N/3549E) in the north, including Beirut. Locusts continued to be reported for several days in the Akar district northeast of Tripoli.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During March, a second generation of breeding occurred on the northern Red Sea coastal plains near Masturah (2309N/3851E) where egg laying, hatching and band formation took place mainly in Wadi Al Qahah. Breeding also continued to a lesser extent on the central coast near Lith (2008N/4016E) where late instar hopper groups and bands were present. Groups of adults were maturing in both areas. A few immature and mature groups and swarms moved north along the coast towards Umm Lajj (2501N/3716E) and Duba (2719N/3546E) and in the interior towards Khaybar (2542N/3917E) and laid eggs in early March. Hatching and band formation occurred near Umm Lajj. Immature adults appeared on the central coast near Qunfidah (1909N/4107E). Control operations treated 10,939 ha, including 1,500 ha by air, in March.

• **Forecast**

Hatching and hopper band formation will occur along the northern coast and in subcoastal areas between Umm Lajj, Khaybar and Tabuk from early April onwards, causing locust numbers to increase. Residual infestations are likely to remain near Masturah, Lith and Qunfidah. Groups of adults are likely to appear in the spring breeding areas of the interior and lay eggs in areas of recent rainfall. Hatching is likely to occur in early May, and hoppers may form small groups or bands.

Yemen

• **Situation**

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

• **Forecast**

Low to moderate numbers of adults may appear in the interior from Marib to Thamud and the Oman border, and breed on a small scale in areas of recent rainfall.

Oman

• **Situation**

During March, no locusts were seen during surveys carried out on the Musandam Peninsula, in the northern interior near Nizwa (2255N/5731E), on the central coast north of Duqm (1939N/5743E), and in the extreme south near Maziuna (1750N/5239E) and the Yemeni border.

• **Forecast**

Low numbers of adults may appear on the Batinah and Al Wusta coast where small-scale breeding may occur. Scattered adults may also appear and breed in recent areas of rainfall in Dhofar near the Yemeni border.

Bahrain, Iraq, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, Uganda and UAE

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No reports were received in March.

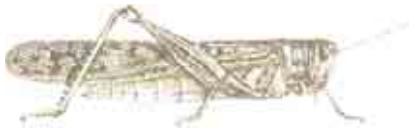
• **Forecast**

Low numbers of adults are expected to be present in a few areas on the southeastern coastal plains and in the Jaz Murian Basin where small-scale breeding may occur in areas of recent rainfall, causing locust numbers to increase slightly.

Pakistan

• **Situation**

No reports were received in March.



• Forecast

Low numbers of adults are expected to be present in a few areas on the coast and interior of Baluchistan where small-scale breeding may occur in areas of recent rainfall, causing locust numbers to increase slightly.

India

• **Situation**

No locusts were seen during surveys carried out during March.

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://www.devcocast.eu/user/images/dl/Form.do)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

SWAC website. The FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC) website (http://www.fao.org/ag/locusts/SWAC) is now available in French.

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **NE Egypt invasion.** Information section
- **Sudan threat.** Information section

2013 events. The following activities are scheduled or planned:

- **CRC/SWAC.** Inter-regional Locust information officers workshop, Cairo, Egypt (22-25 April)
- **CLCPRO/EMPRES-RO.** Western Region Locust information officers workshop, Niamey, Niger (May)

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

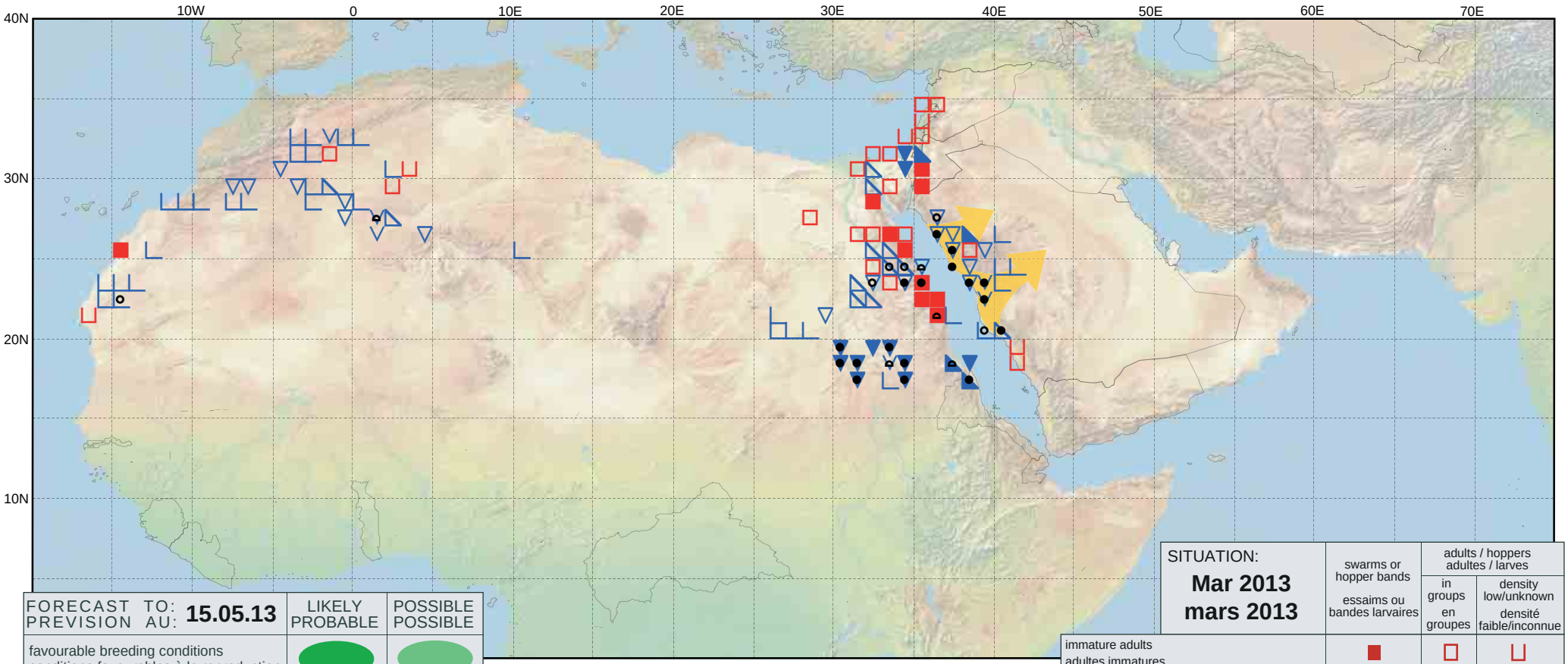
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

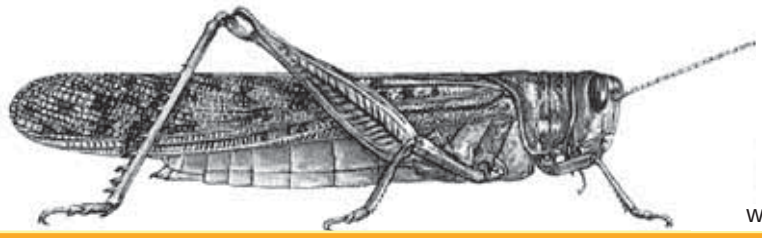
Desert Locust Summary
Criquet pèlerin - Situation résumée

414



FORECAST TO: / PREVISION AU: **15.05.13**	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: **Mar 2013 / mars 2013**	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)			



warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 415**

(3 May 2013)

General Situation during April 2013 Forecast until mid-June 2013

The Desert Locust situation remained serious during April in northern Sudan where hopper bands were present near crops along a 1,000 km stretch of the Nile River. Swarms could form in May and threaten crops, and a second generation of breeding could take place before the summer or, if early rains fall, adults could move to the summer breeding areas in Sudan. There is also concern in Saudi Arabia where new generation adults could move from the northwest to the interior of the Arabian Peninsula, including Yemen, and breed in areas of recent heavy rains. In Northwest Africa, breeding occurred south of the Atlas Mountains, causing locust numbers to increase and small hopper bands to form. As vegetation dries out, adults and perhaps a few groups and small swarms will move south towards the summer breeding areas in the northern Sahel where early rains have fallen so far in northern Niger.

Western Region. Locust numbers increased in Northwest Africa as a result of small-scale breeding south of the Atlas Mountains in **Morocco** and **Algeria**. Hatching started by mid-April and small groups and bands were forming in some areas by the end of the month. Control operations were carried out in Algeria. Breeding will continue in both countries, causing more hopper groups and bands to form in May. As vegetation dries out, an increasing number of adult groups and perhaps a few small swarms may form in June and move towards the northern Sahel, particularly the Air Mountains in northern **Niger** where good rains fell in late April. This could be supplemented by groups of adults and perhaps a few small swarms from Sudan. Elsewhere, low to moderate numbers of adults may start to appear in the summer breeding areas of **Mauritania**, **Mali** and **Chad** by the end of the forecast period, especially if early rainfall occurs.

Central Region. Hopper bands continued to form near cropping areas along the Nile River in northern **Sudan** during April. Groups and small swarms are expected to form in May and a second generation of breeding could occur in June along the Nile or adults may move to the summer breeding areas in Sudan if early rains fall. Locust numbers declined further in winter breeding areas along both sides of the Red Sea due to control operations and drying vegetation. However, breeding continued in northwest **Saudi Arabia** and there is a risk that the new generation of adults could move into the interior and breed in areas of recent rainfall on the edge of the Empty Quarter and in the interior of **Yemen**. A few hopper bands were present on the northern Red Sea coast in **Eritrea**. Small-scale breeding occurred near Lake Nasser in southern **Egypt**. Control operations continued in Sudan, Egypt, Saudi Arabia and Eritrea.

Eastern Region. Very few locusts were seen during a joint Iran/Pakistan survey in the spring breeding areas of southeast **Iran** during April. No locusts were seen in western **Pakistan**. Small-scale breeding may occur in areas of recent rainfall in both countries. By the end of the forecast period, low numbers of adults may start appearing in the summer breeding areas along both sides of the Indo-Pakistan border. No significant developments are likely.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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No. 415

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in April 2013

Good rains fell in the spring and summer breeding areas of the Arabian Peninsula where ecological conditions are likely to improve. Light rains fell in parts of the spring breeding areas in Northwest Africa where conditions are favourable for breeding.

In the **Western Region**, light rains fell at times during April in Northwest Africa and good rains fell in northern Niger. In Northwest Africa, light rain fell in western Algeria during the first decade, in eastern Algeria during the second decade and in northern-central Algeria and in central Libya during the last decade of the month. Consequently, ecological conditions will continue to improve and be favourable in the spring breeding areas south of the Atlas Mountains, primarily in the Draa and Ziz-Ghris valleys in Morocco and near irrigated and low-lying areas in central and northwestern parts of the Algerian Sahara. In the Sahel of West Africa, good rains fell during the last decade of April in the Air Mountains and Ténéré Desert of northern Niger, which should allow ecological conditions to improve for locust survival and breeding. Elsewhere, dry conditions prevailed.

In the **Central Region**, good rains fell in the interior of Saudi Arabia during the last week of April. Rainfall was heaviest on the western edge of the Empty Quarter and showers extended into the interior of Yemen. Consequently, ecological conditions are expected to become favourable for breeding in the coming weeks. Heavy rains also fell in northern Oman at the end of the month, causing flooding in some areas. Once floodwaters recede, ecological conditions are likely to become favourable in the northern regions of Dhahera, Dakhliya and Batinah. In the Horn of Africa, good rains fell on the plateau in northwest Somalia and in adjacent areas of eastern Ethiopia at times during the first half of the month. Vegetation continued to dry out along both sides of the Red Sea in the absence of rainfall. Unusual rains fell in northwest Sudan along the Chad and Libya border between Mellit in North Darfur and Jebel Uweinat. Nevertheless, dry and unfavourable conditions prevailed in northern Sudan except in irrigated cropping areas along the Nile River.

In the **Eastern Region**, good rains fell during the first decade of April in the spring breeding areas in southeast Iran and western Pakistan. Good rains fell again at the end of the month on the Baluchistan coast in Pakistan. Vegetation became green in large parts of the northern Jaz Murian Basin and Zaboli Valley in Iran and in the Turbat Valley, Pakistan. Consequently, ecological conditions were favourable for small scale breeding in these areas.

Area Treated

During April, control operations declined in April, treating 22,000 ha compared to 79,000 ha in March.

Algeria	4,664 ha (April)
Egypt	403 ha (April)
Eritrea	3,510 ha (March)
	1,060 ha (April)
Israel	5,168 ha (March, updated)
Morocco	781 ha (March, updated)
Saudi Arabia	13,712 ha (April)
Sudan	2,252 ha (April)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

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

• **FORECAST**

Low to moderate numbers of adults and perhaps a few groups may appear in the southeast at the end of the forecast period but breeding is unlikely unless early rainfall occurs.

Mali

• **SITUATION**

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

• **FORECAST**

Low to moderate numbers of adults and perhaps a few groups may appear from the north in the Adrar des Iforas at the end of the forecast period but breeding is unlikely unless early rainfall occurs.

Niger

• **Situation**

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

• **Forecast**

Low to moderate numbers of adults and perhaps a few groups are likely to appear from the north in the Air Mountains and early small-scale breeding may occur in areas of recent rainfall. There is a low risk that groups of adults and perhaps a few small swarms could arrive from the east in June.

Chad

• **Situation**

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

• **Forecast**

There is a low risk that groups of adults and perhaps a few small swarms could appear from northern Sudan and, unless early rains fall, continue towards the west.

Senegal

• **Situation**

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

• **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 April, an increasing number of adult groups copulated and laid eggs in the northwestern Sahara near the Moroccan border between Bechar (3135N/0217W) and Ain Sefra (3245N/0035W), southwest of Ain Sefra in W. El Rharbi (3150N/0100E), and close to irrigated areas in the central Sahara near Adrar (2753N/0017W), and In Salah (2712N/0229E). Hatching started during the second week in the central Sahara and followed shortly thereafter in other areas. By the end of the month, small bands of 1st and 2nd instar hoppers had formed near Bechar while groups of first to third instar hoppers formed near Adrar, and first instar groups were seen near In Salah. Solitarious adults were also present in all of these areas. No locusts were seen near Tindouf (2741N/0811W), Tamanrasset (2250N/0528E), Djanet (2434N/0930E) and Illizi (2630N/0825E). Ground teams treated 4,664 ha in April.

• **Forecast**

Small-scale breeding will continue along the southern side of the Atlas Mountains and in the northern and central parts of the Sahara. Groups of hoppers and small bands are likely to form that will fledge from late May onwards. As vegetation dries out, an increasing number of adult groups and perhaps a few small swarms may form and move towards the south.

Morocco

• **Situation**

During April, groups of adults laid eggs near Guelmim (2859N/1003W) and along the Algerian border in the Draa Valley south of Tata (2944N/0758W). From mid-month onwards, hatching occurred and small patches of mainly second instar hoppers had formed by the end of the month south of Guelmim and in the Draa Valley southwest of Zagora (3019N/0550W). Mature solitarious adults were scattered throughout the Draa Valley, the Ziz-Ghris Valley near Erfoud (3128N/0410W), and from Erfoud to Figuig (3207N/0113W).

In Western Sahara, scattered immature solitarious adults persisted at a few places in the south near Ma'Tallah (2223N/1502W).

• **Forecast**

Small-scale breeding will continue along the southern side of the Atlas Mountains in the Draa and Ziz-Ghris valleys and in the northeast near Figuig. Fledging is likely to commence by the end of May. As vegetation dries out, hoppers and adults may form small groups.

Libya

• **Situation**

No reports were received in April.

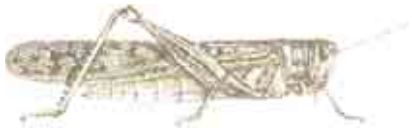
• **Forecast**

Low numbers of locusts may be present in the southwest from recent breeding. Small-scale breeding could continue during May, causing locust numbers to increase slightly. As vegetation dries out, a few small groups may form.

Tunisia

• **Situation**

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



• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During April, locust infestations declined on the southern coastal plains of the Red Sea due to control operations and drying vegetation. In the northeast, a few solitarious adults were seen in Wadi Diib near the Egyptian border in the first week. A mature swarm was reported along the Atbara River near Ed Damer (1734N/3358E) on 1 April. Hatching and band formation continued near cropping areas along the Nile Valley in Northern and River Nile States between Wadi Halfa (2147N/3122E) and Ed Damer. By end of the month, some hoppers had reached fifth instar. Ground teams treated 2,252 ha in April.

• **Forecast**

Hopper bands will continue to develop in cropping areas along the Nile River in Northern and River Nile States and fledge from early May onwards. Thereafter, small groups and swarms are likely to form and remain in cropping areas, mature and lay eggs in June or, if early rains fall, move to the summer breeding areas. There is a low risk that some adult groups or small swarms might move from the Nile Valley towards the west.

Eritrea

• **Situation**

A late report indicated that ground and aerial control operations were carried out against 3,510 ha of hopper bands and swarmlets during March on the northern Red Sea coastal plains between Sheib (1551N/3903E) and the Sudanese border at Karora (1745N/3820E). A few swarmlets that escaped control reached the highlands between Keren (1546N/3827E) and south of Asmara.

During April, small groups of second to fourth instar *transiens* hoppers and bands were present on the northern coastal plains near Mersa Gulbub (1633N/3908E). Ground teams treated 1,060 ha in April.

• **Forecast**

Locust numbers will decline on the northern coastal plains of the Red Sea as vegetation continues to dry out. No significant developments are likely.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During the first half of April, locust infestations continued to decline on the Red Sea coast in the southeast. A few small groups of fledglings, immature and mature solitarious and gregarious adults were present in the El Shazly and Abraaq areas west of Berenice (2359N/3524E). Some of the adults were copulating. No locusts were seen on the Red Sea coast between Shalatyn and the Sudanese border. Breeding occurred near crops on the western side of Lake Nasser where groups of first and second instar gregarious hoppers were present mainly after mid-month between Abu Simbel (2219N/3138E) and Tushka (2247N/3126E), and in the Garf Husein (2317N/3252E) area.

• **Forecast**

Locust numbers will decline on the southern coast of the Red Sea in the El Shazly and Abraaq areas. Small-scale breeding will continue in crops along the Lake Nasser shoreline where fledging will occur during May and small adult groups could form.

Israel

• **Situation**

Although egg-laying occurred in the northern Negev in late March, no hatching was reported and no locusts were seen after 2 April.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During the first half of April, adult groups continued to lay eggs in subcoastal areas of the northern Red

Sea, mainly to the northwest and northeast of Tabuk (2823N/3635E) and east of Khaybar (2542N/3917E). Eggs that were laid in March hatched and hopper bands formed between Khaybar and Tabuk, and on the extreme northern part of the coast near the Gulf of Aqaba. By the end of April, some hoppers had reached fifth instar. Breeding also continued on the northern Red Sea coast where late instar hopper groups, bands and fledglings were present near Umm Lajj (2501N/3716E) and Masturah (2309N/3851E). Control operations treated 13,712 ha, including 4,720 ha by air, in April.

• **Forecast**

Hopper bands in the Tabuk and Khaybar areas are likely to fledge from early May onwards and adults could form groups and small swarms that could move into areas of recent rainfall in the interior and lay eggs. Further hatching is expected near Tabuk and hoppers could form groups and small bands during May. Locust numbers will continue to decline on the Red Sea coastal plains.

Yemen

• **Situation**

During April, an isolated immature adult was seen on the central Red Sea coastal plains between Hodeidah (1450N/4258E) and Bayt Al Faqih (1430N/4317E). No locusts were seen elsewhere on the Red Sea coast and along the Gulf of Aden coastal plains. There were unconfirmed reports on 28-29 April of hoppers in the interior between Safer (1534N/4547E) and Al Abr (1608N/4714E), and adults near Al Hazm (1609N/4447E) and between Ataq (1435N/4649E) and Nisab (1430N/4629E).

• **Forecast**

Low to moderate numbers of adults and perhaps a few small groups could appear in the interior between Marib and Hadhramaut and breed in areas of recent rainfall.

Oman

• **Situation**

During April, no locusts were seen during surveys carried out on the Musandam Peninsula and in the northern interior between Nizwa (2255N/5731E) and Adam (2223N/5731E).

• **Forecast**

Low numbers of adults could appear in areas of recent rainfall in Dhahera and Dakhliya and eventually breed.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During April, low numbers of mature solitarious adults were seen on the southeast coast near Chabahar (2517N/6036E) on the 4th during a joint survey with Pakistan, India and Afghanistan. Some of the adults were copulating.

• **Forecast**

Locust numbers will decline on the southeast coast as vegetation dries out. No significant developments are likely.

Pakistan

• **Situation**

A late report indicated that no locusts were seen during surveys carried out in coastal and interior areas of Baluchistan from 18 March to 9 April. No locusts were seen during the remainder of the month.

• Forecast

Small-scale breeding may occur early in the forecast period in areas of recent rainfall in Baluchistan. Low numbers of adults may start to appear in Cholistan and Tharparkar at the end of the forecast period.

India

• **Situation**

No locusts were seen during surveys carried out during April.

• **Forecast**

Low numbers of adults may start to appear in Rajasthan at the end of the forecast period.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://www.devcocast.eu/user/images/dl/Form.do)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

SWAC website. The FAO Commission for Controlling the Desert Locust in South-West Asia (SWAC) website (http://www.fao.org/ag/locusts/SWAC) is now available in French.

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **NE Egypt invasion.** Information section
- **Sudan threat.** Information section
- **CRC/SWAC Inter-regional Locust Information Officers workshop final report.** Activities Section – Workshops and Seminars (Inter-regional)

CRC/SWAC Inter-regional Locust Information Officers workshop. The workshop presentation is available for viewing and downloading at Slideshare (http://www.slideshare.net/FAOLocust/1304-dli-ocairo).

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-a-preview

French: http://www.slideshare.net/FAOLocust/elocust3f-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-a-preview-arabic-version

2013 events. The following activities are scheduled or planned:

- **CLCPRO/EMPRES-RO.** Western Region Locust information officers workshop, Niamey, Niger (6-10 May)
- **CRC.** National training course on Desert Locust survey and control, Dubai, UAE (5-9 May)
- **CLCPRO.** Regional training workshop for national locust communication officers, Algiers, Algeria (19-23 May)
- **CLCPRO.** Expert meeting to update regional action plan for June to September, Agadir, Morocco (10-11 June)
- **CLCPRO.** 8th Executive Committee, Agadir, Morocco (12-14 June)
- **CLCPRO.** Environmental technical group meeting, Dakar, Senegal (24-28 June)

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.

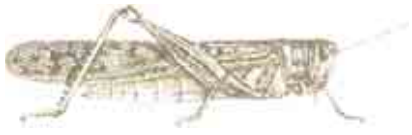
RED

- 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

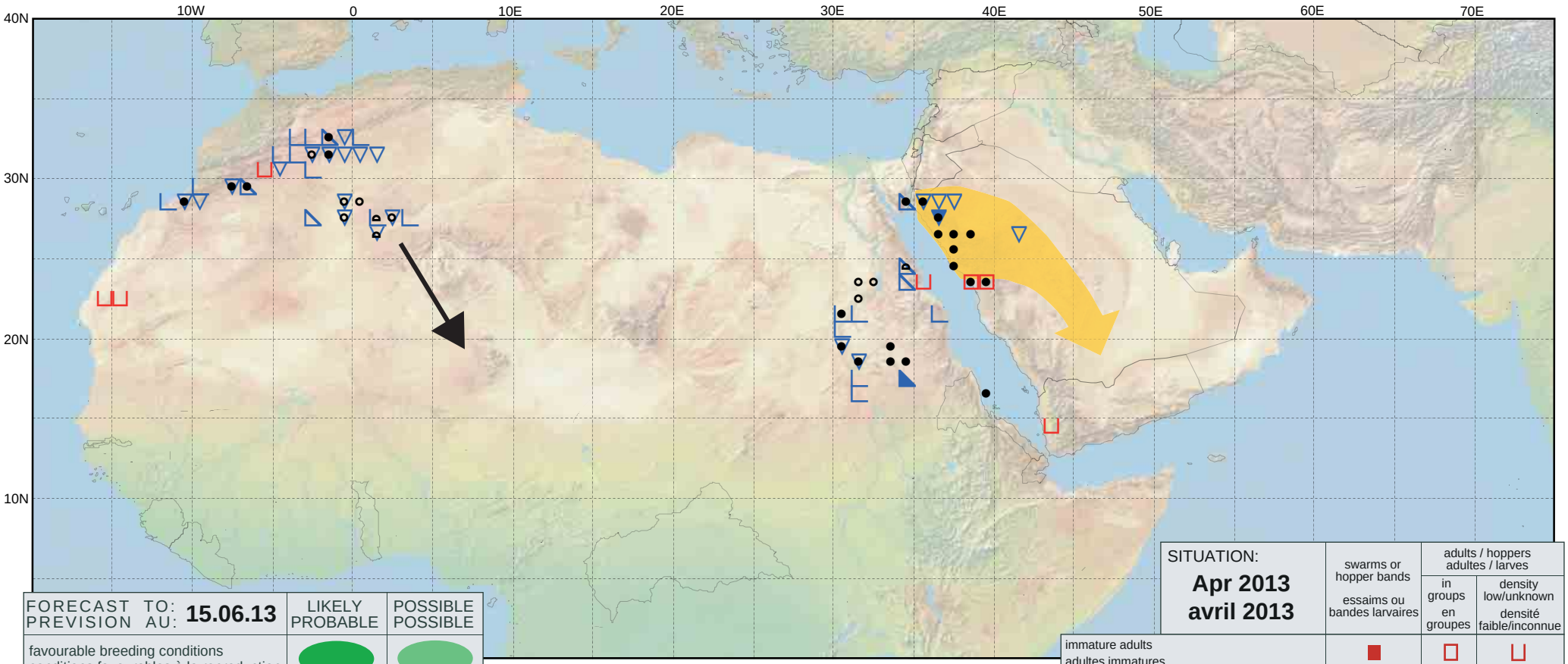
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

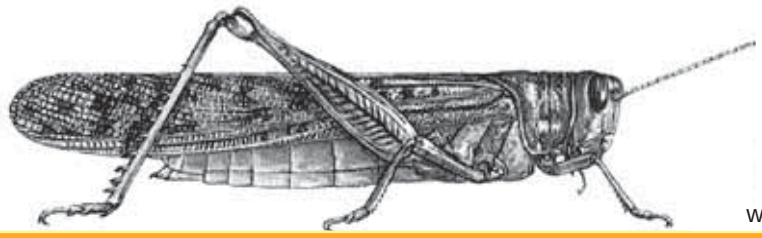
Desert Locust Summary
Criquet pèlerin - Situation résumée

415



FORECAST TO: / PREVISION AU: **15.06.13**	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: **Apr 2013 avril 2013**	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 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)			



warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 416**

(3 June 2013)

General Situation during May 2013 Forecast until mid-July 2013

The Desert Locust situation remained serious as a result of breeding in the northern part of the Central Region and in Northwest Africa during May. In both regions, control operations were carried out against hopper groups and bands. By the end of the month, adults were forming groups in many areas. During June, more groups, including perhaps a few small swarms, are expected to form and move from spring breeding areas in Northwest Africa to the summer breeding areas in the northern Sahel of West Africa, and from the Sinai and Arabian peninsulas to the summer breeding areas in central Sudan. A few adult groups may also appear in the interior of Yemen. Egg-laying will occur with the onset of the seasonal rains in the summer breeding areas. Insecurity in northern Mali and western Sudan as well as in other places is likely to restrict field operations in the summer breeding areas.

Western Region. Hopper groups and bands continued to form during May in the spring breeding areas south of the Atlas Mountains in **Morocco** and **Algeria** as well as in parts of southern and southwest **Libya**. By the end of the month, fledging commenced and immature adults formed a few small groups. Although control operations were carried out in the three countries, adult groups and perhaps a few small swarms are likely to form as vegetation dries out, and move to the summer breeding areas in the northern Sahel of **Mauritania**, **Mali**, **Niger** and **Chad** in June. In Niger, small-scale breeding occurred during May in the Air Mountains where fledging is expected after mid-June. There is a slight risk that a few adult groups may also appear in Chad or perhaps Niger from northern Sudan. Breeding will commence in the northern Sahel with the onset of the summer rains but access to some areas will be restricted due to prevailing insecurity.

Central Region. Groups of immature adults and a few small swarms formed during May from hopper groups and bands in northwest **Saudi Arabia**. Several mature adult groups moved to the interior and laid eggs near irrigated areas that should hatch by early June, causing hopper groups and perhaps a few small bands to form. Hopper groups and bands were present on both sides of the border in Sinai, **Egypt** and the Negev Desert in **Israel** where small groups of immature adults formed by the end of May. Locust breeding last occurred in Israel in 1961. Hopper groups were also present near Lake Nasser in Egypt. In northern **Sudan**, hopper bands and fledglings were reported in the Nile Valley near Egypt but declined during May. Aerial and ground control operations were in progress in Saudi Arabia and Israel, while ground control was carried out in Egypt and Sudan. During the forecast period, adult groups and perhaps a few small swarms are expected to move from the Sinai and Israel to the summer breeding areas in the interior of Sudan, supplemented by similar populations arriving from the Arabian Peninsula. Breeding will commence with the onset of the seasonal rains. There is a moderate risk of adult groups appearing in the interior of **Yemen** and breeding.

Eastern Region. Small-scale breeding occurred during May in the Jaz Murian Basin in southeast **Iran** where a few small groups may form in June. Ecological conditions remained favourable for breeding in Baluchistan, **Pakistan** but only scattered adults were present. Low numbers of adults will appear along the Indo-Pakistan border and breed on a small scale with the onset of the monsoon rains.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Twitter: twitter.com/faolocust

No. 416

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in May 2013

Good rains fell in the spring breeding areas of the Arabian Peninsula where ecological conditions were favourable. Conditions were also favourable in the spring breeding areas in Northwest Africa and Southwest Asia despite limited rainfall in May.

In the **Western Region**, light showers fell at times during May in some of the spring breeding areas in Northwest Africa, primarily in parts of southern and eastern Algeria, and in Libya. However, rainfall during the current spring season has been less than in previous years. Consequently, annual vegetation started to dry out in many places in early May but remained green south of the Atlas Mountains in Morocco, mainly in a few areas of the Draa and Ziz-Ghris valleys, and near irrigated agricultural areas in the Sahara of Algeria and Libya. In West Africa, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal northward movement but remained south of the summer breeding areas. Its position was generally close to the climatological mean. Nevertheless, showers fell at times in the Air Mountains of Niger where ecological conditions improved and became favourable for breeding in numerous wadis as a result of earlier rains in April. Vegetation also became green in a few pasture areas further south near Tanout. During the last two decades of May, light rain fell at times in southeast Mauritania, in Mali near Tombouctou and Gao, and in Chad, near Mao in the west and Abeche in the east.

In the **Central Region**, good rains fell over the Arabian Peninsula during the first decade of May. Rainfall was heaviest in the Empty Quarter from south of Riyadh, Saudi Arabia to Hazar, Yemen. Lighter showers fell in the interior of Yemen and in northern Oman. As a result, vegetation was becoming green in several wadis in the Hadhramaut and Shabwah regions in Yemen and in Sharqiya, Oman. Good rains fell over the southern Sinai Peninsula where small areas of green vegetation were present in some wadis. Good rains fell at times in the Eritrean highlands, eastern Ethiopia, Djibouti and adjacent areas of northern Somalia. Vegetation became green over large areas of the Somali plateau and adjacent areas of the Somali region in eastern Ethiopia. In northern Sudan, ecological conditions remained dry and unfavourable for breeding except in or near cultivated areas along the Nile Valley between the Atbara River and the Egyptian border. Good rains fell during the last decade in the summer breeding areas in West Darfur (Geneina), North Kordofan (El Obeid-Ed Dueim), and Khartoum but vegetation remained dry. At the end of the month, heavy showers fell in the southern highlands of Yemen, extending to the southern coastal plains of the Red Sea. Heavy rains also fell on the eastern coast of Oman near Duqm.

In the **Eastern Region**, ecological conditions remained favourable in parts of the spring breeding area in the Jaz Murian Basin in southeast Iran and in coastal and interior areas of western Pakistan. In the summer breeding area along both sides of the Indo-Pakistan border, pre-monsoon showers fell in parts of Rajasthan, India and in adjacent areas of Rahimyar Khan and Cholistan, Pakistan. As a result, ecological conditions may start to improve slightly for locust survival and breeding.

Area Treated

Algeria	6,864 ha (May)
Egypt	1,184 ha (May)
Israel	14,400 ha (2 March-2 April, updated)
	14,100 ha (15 April - 19 May)
Libya	765 ha (12-20 May)
Morocco	450 ha (April)
	1,932 ha (May)
Saudi Arabia	13,712 ha (April)
Sudan	1,415 ha (May)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

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

• **FORECAST**

Low to moderate numbers of adults and perhaps a few groups or small swarms are likely to appear in the south and breed once the seasonal rains commence.

Mali

• **Situation**

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

• **Forecast**

Low to moderate numbers of adults and perhaps a few groups or small swarms may appear from the north in the Adrar des Iforas, Tilemsi Valley and Tamesna, and breed once the seasonal rains commence.

Niger

• **Situation**

During May, small-scale breeding occurred in the Air Mountains to the east and south of Timia (1809N/0846E) where low numbers of first and second instar solitarious hoppers were present mixed with isolated mature solitarious adults. Isolated immature solitarious adults were seen in the northern Air near Iferouane (1905N/0824E).

• **Forecast**

Locust numbers will increase slightly in the Air Mountains as small-scale breeding continues. Fledging will commence in mid-June. Groups of adults and perhaps a few small swarms could arrive in the Air and Tamesna from the north and perhaps the east. A second generation of breeding will occur once the seasonal rains commence in Tamesna and the pasture areas between Tahoua and Tanout.

Chad

• **Situation**

No reports were received in May.

• **Forecast**

There is a low risk that groups of adults and perhaps a few small swarms could appear from northern Sudan or Libya. Small-scale breeding will occur in the centre and northeast once the seasonal rains commence.

Senegal

• **Situation**

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

• **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 May, third to fifth instar hopper groups and small bands continued to form in the northwestern Sahara near the Moroccan border between Bechar (3135N/0217W) and Ain Sefra (3245N/0035W), and near irrigated crops in the Adrar (2753N/0017W) area of the central Sahara as a result of breeding in April. By the end of May, fledging commenced and immature adults formed a few small groups near Adrar. Immature and mature solitarious adults were also present in all of these areas. No locusts were seen near Tindouf (2741N/0811W), Tamanrasset (2250N/0528E), Djanet (2434N/0930E) and Illizi (2630N/0825E). Ground teams treated 6,864 ha in May.

• **Forecast**

As vegetation dries out, an increasing number of adult groups and perhaps a few small swarms are likely to form and move south to the northern Sahel in West Africa.

Morocco

• **Situation**

During the first half of May, egg-laying continued south of the Atlas Mountains near Guelmim (2859N/1003W). An increasing number of small hopper groups and bands formed at densities of less than 20 hoppers/m^2 near Guelmim, in parts of the Draa Valley near the Algerian border southeast of Tata (2944N/0758W), and in the Ziz-Ghris Valley southwest of Erfoud (3128N/0410W). By mid-month, fledging had commenced. In the northeast, isolated mature adults persisted from east of Erfoud to Figuig (3207N/0113W). Control teams treated 1,932 ha in May.

• **Forecast**

As vegetation dries out, an increasing number of immature adult groups and perhaps a few small swarms are expected to form in breeding areas along the southern side of the Atlas Mountains near Guelmim and in the Draa and Ziz-Ghris valleys. Infestations will decline as adults move south to the northern Sahel in West Africa.

Libya

• **Situation**

During May, groups and small bands of second to fourth instar hoppers as well as fledglings formed in the southwest near Ghat (2459N/1011E) and in the south-central area near Marzuq (2555N/1355E) from undetected egg-laying and hatching in April.

The infestations were concentrated mainly near irrigated agricultural areas of Tahala (2526N/1022E), Majdol (2550N/1500E), Zawilah (2609N/1507E), and Tmassah (2623N/1547E). Ground teams treated 765 ha from 12 to 20 May.

• **Forecast**

Groups of immature adults and perhaps a few small swarms are likely to form in the southwest and centre from early June onwards, and then move to the northern Sahel in West Africa.

Tunisia

• **Situation**

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

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During May, late instar hopper bands and fledglings were present in cropping areas along the Nile Valley near Wadi Halfa (2147N/3122E) and the Egyptian border. Low densities of immature and mature solitarious and gregarious adults were also seen near Wadi Halfa and at a few places in the River Nile State near Abu Hamed (1932N/3320E). Locust infestations declined during the month. Ground teams treated 1,415 ha in May.

• **Forecast**

There remains a low to moderate risk that a few groups and perhaps small swarms may form in the Nile Valley from undetected infestations. Adult groups and perhaps a few small swarms from northern Sudan, Egypt and Saudi Arabia may appear in the summer breeding areas where they will disperse between Darfur and Kassala and breed with the onset of the seasonal rains.

Eritrea

• **Situation**

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

• **Forecast**

Low numbers of adults are likely to appear in the western lowlands and breed on a small scale with the onset of the seasonal rains.

Ethiopia

• **Situation**

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

• **Forecast**

Scattered adults may be present in areas of recent rainfall in parts of the Somali region.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

Low numbers of locusts may be present and breeding on a small scale in areas of recent rainfall on the plateau between Boroma and Erigavo.

Egypt

• **Situation**

During May, hoppers formed groups in the Sinai in the northeast between El Arish (3108N/3348E) and Jebel Al Halal, in the west along the Gulf of Suez coastal plains, and in the southern interior between St. Catherine (2833N/3358E) and Nuweiba (2902N/3440E) on the Gulf of Aqaba coast. Some areas could not be surveyed due to insecurity. Breeding also occurred in the Nile Valley near Qena (2609N/3243E) and along Lake Nasser between Garf Husein (2317N/3252E) and Tushka (2247N/3126E) where hopper groups were present. Fledging occurred in all areas during the last week of the month, and immature adults formed small medium-density groups in the Sinai. Ground teams treated 1,184 ha in May. Elsewhere, no locusts were seen on the Red Sea coast or subcoastal areas of El Shazly and Abraaq.

• **Forecast**

Groups of immature adults and a few small swarms will form in the Sinai, especially in the northeast along the Israeli border in early June. Thereafter, infestations are expected to decline as adults move south to the summer breeding areas in Sudan. A few adult groups may also form near Lake Nasser that will also move south.

Israel

• **Situation**

During May, numerous small hopper groups and bands formed in the northern Negev Desert between Nitzana (3053N/3425E) and Ze'elim (3112N/3432E)

where hatching had occurred in mid-April. By the end of May, hoppers were fledging and forming small groups of immature adults. Some of the groups were flying back and forth along the Sinai border. Ground and aerial control operations treated 14,100 ha from mid-April to mid-May.

• **Forecast**

The remaining hopper infestations in the northern Negev Desert will fledge by early June and form groups of immature adults and perhaps a few small swarms. Local movements of similar populations along the Sinai border will also occur. Cropping areas could be threatened prior to a general migration towards the southwest and the summer breeding areas in Sudan.

Saudi Arabia

• **Situation**

During May, breeding continued in the extreme north of the Red Sea coast near Al Bad (2830N/3500E) and in adjacent subcoastal areas near Tabuk (2823N/3635E) where hopper groups and bands were present. Fledging commenced at the beginning of May and immature adults formed groups and a few swarms between Tabuk and Khaybar (2542N/3917E). Several mature adult groups moved to irrigated areas in the interior between Hail (2731N/4141E) and Gassim (2621N/4358E) and laid eggs at mid-month. Ground and aerial control operations treated 17,003 ha in May.

• **Forecast**

Locust infestations will decline on the northern Red Sea coast and adjacent subcoastal areas due to drying vegetation, control operations and migration. Limited hatching may occur in the interior between Hail and Gassim by early June, causing hopper groups and perhaps a few small bands to form that will fledge by the end of the month, giving rise to small immature adult groups. Thereafter, locust numbers will decline as adults move towards summer breeding areas in Yemen and Sudan.

Yemen

• **Situation**

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

• **Forecast**

Small-scale breeding may be in progress in the interior between Marib and Hadhramaut. This could be supplemented by low to moderate numbers of adults and perhaps a few small groups appearing from the north.

Oman

• **Situation**

In May, no locusts were seen during surveys carried out on the Musandam Peninsula, in the northern interior between Ibri (2314N/5630E) and Adam (2223N/5731E), and in the southern interior northwest of Thumrait (1736N/5401E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During May, scattered mature solitarious adults laid eggs in the Jaz Murian Basin near Ghale Ganj (2731N/5752E) at mid-month. No locusts were seen during surveys on the southeast coast near Jask (2540N/5746E).

• **Forecast**

Small-scale hatching should occur at the beginning of June and low numbers of hoppers may be present in the western part of the Jaz Murian Basin. Fledging is expected to occur by the end of the month. As vegetation dries out, a few small groups may form.

Pakistan

• **Situation**

During May, scattered mature solitarious adults were present in the northern interior of the spring breeding area in Baluchistan near Nushki (2933N/6601E). No locusts were seen elsewhere during surveys conducted in the interior of Baluchistan.

• Forecast

Low numbers of adults will appear in Cholistan and Tharparkar, and breed on a small-scale once the monsoon rains commence.

India

• **Situation**

No locusts were seen during surveys carried out during May.

• **Forecast**

Low numbers of adults will appear in Rajasthan, and breed on a small-scale once the monsoon rains commence.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://www.devcocast.eu/user/images/dl/Form.do)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **NE Egypt invasion.** Information section
- **Sudan threat.** Information section
- **Iran/Pakistan Joint Survey report.** Publications Section – Reports

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-a-preview

French: http://www.slideshare.net/FAOLocust/elocust3f-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-a-preview-arabic-version

2013 events. The following activities are scheduled or planned:

- **CLCPRO.** Expert meeting to update regional action plan for June to September, Agadir, Morocco (10-11 June)
- **CLCPRO.** 8th Executive Committee, Agadir, Morocco (12-14 June)
- **CLCPRO.** Environmental technical group meeting, Dakar, Senegal (24-28 June)

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.

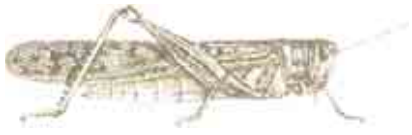
REGIONS

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



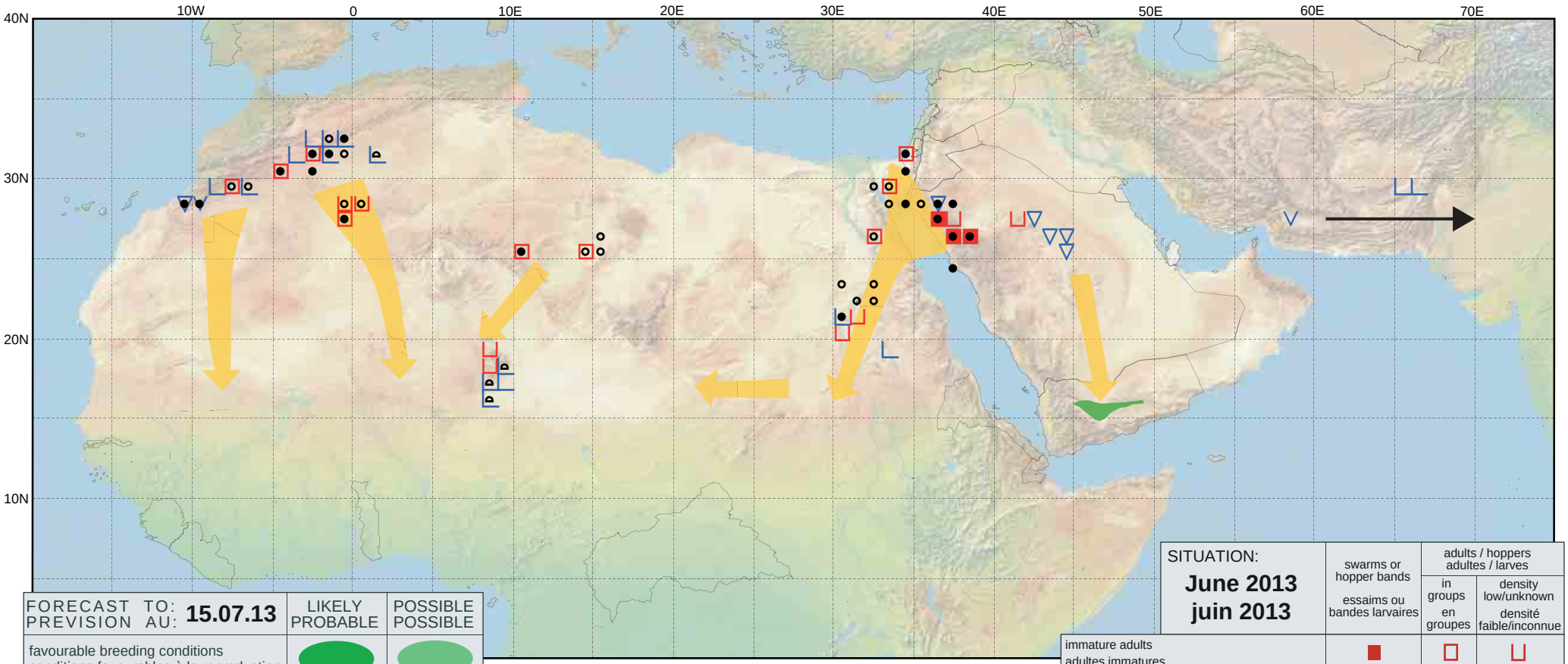
only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

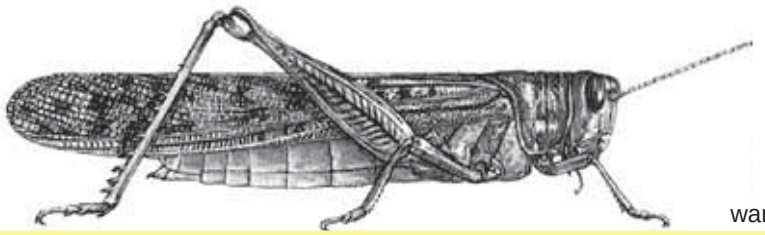
Desert Locust Summary
Criquet pèlerin - Situation résumée

416



FORECAST TO: / PREVISION AU: **15.07.13**	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: **June 2013 / juin 2013**	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)	◘	◙	⊎



warning level: **CAUTION**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 417**

(2 July 2013)

General Situation during June 2013
Forecast until mid-August 2013

The Desert Locust situation remained serious during June as adult groups and small swarms formed in the northern Central Region and moved to the summer breeding areas in Yemen. Control operations were carried out in Saudi Arabia and Egypt. Nevertheless, there remains a risk that adult groups and perhaps a few small swarms will also reach the summer breeding areas in Sudan in early July. Breeding will occur in Sudan and Yemen, causing locust numbers to increase during the forecast period. Hopper and adults continued to form small groups in the spring breeding areas of Northwest Africa where control operations were in progress. Groups of adults and perhaps a few small swarms are expected to move to the summer breeding areas in the Sahel of West Africa in early July and breed with the onset of the seasonal rains, causing locust numbers to increase in Mauritania, Mali, Niger and Chad. Summer surveys should commence in all areas.

Western Region. Hoppers and adults continued to form small groups during June in the spring breeding areas south of the Atlas Mountains in **Algeria** and **Morocco** as well as in south-central **Libya**. Control operations were in progress in the three countries. As vegetation continues to dry out, an increasing number of groups and perhaps a few small swarms are likely to form and move south to the summer breeding areas in the northern Sahel of **Mauritania**, **Mali**, **Niger** and **Chad** in July. So far, only local breeding has occurred in the Air Mountains of Niger and scattered adults appeared on the Tamesna Plains in June. Once the seasonal rains commence in the Sahel, breeding will cause locust numbers to increase in southern Mauritania, northern Mali and Niger, and in northeast and central Chad.

Central Region. Groups of immature adults continued to form during June in the Sinai, northwest **Saudi Arabia**, and most likely in western **Israel**. The groups as well as several small swarms moved south through Israel, **Jordan** and Saudi Arabia to the interior of **Yemen**. A few groups appeared on the central Red Sea coast in Saudi Arabia, flying towards **Sudan**. Groups and small swarms were also seen in the Western Desert in **Egypt**. Control operations continued in Saudi Arabia and Egypt but could not be undertaken in Yemen due to insecurity and beekeepers. During the forecast period, there is a risk that a few more groups and perhaps small swarms may move from the interior of Saudi Arabia to Yemen and Sudan. Similarly, a few small groups may also move from Egypt to Sudan. Consequently, initial locust numbers will be higher than normal in the vast summer breeding areas of Sudan where at least one generation of breeding will occur, causing locust numbers to increase further. Breeding is also expected to occur in the interior of Yemen where hopper bands are likely to form.

Eastern Region. Small-scale breeding continued during June in the Jaz Murian Basin in southeast **Iran** where low numbers of hoppers were present. Unusually good rains fell in the summer breeding areas on both sides of the Indo-Pakistan border. Consequently, ecological conditions will become favourable and small-scale breeding will cause locust numbers to increase in **Pakistan** and **India**.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Weather & Ecological Conditions in June 2013

Unusually good rains fell in the summer breeding areas along the Indo-Pakistan border. Seasonal rains started in a few places on the southern part of the summer breeding areas in the Sahel of West Africa and Sudan. Vegetation dried out in the spring breeding areas in Northwest Africa.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal northwards movement over the Sahel in West Africa, reaching 16-19N over Mali, Niger and Chad, which is further north than usual. Consequently, light rains fell at times in a few places on the southern edge of the summer breeding area. In Mauritania, light rain fell in the southeast to the south of Timbedra but vegetation remained dry. In Mali, ecological conditions remained dry in the northeast although light rains fell in the southern Tamesna on the border of Niger south of Gao. In Niger, light rain fell near Tahoua. Vegetation remained green in parts of the Air Mountains but was dry and unfavourable for breeding on the Tamesna Plains. Vegetation was becoming green further south in the pasture areas. In Chad, light rains fell in parts of Lac, Kanem, Ouaddai and southern Biltine but vegetation remained dry. In Northwest Africa, no significant rain fell and annual vegetation was drying out as temperatures increased in the spring breeding areas. In Morocco, green vegetation persisted in a few places south of the Atlas Mountains near Guelmim, in the Draa and Ziz-Ghris valleys and in the northeast near Figuig. In Algeria, annual vegetation had become dry. In Libya, ecological conditions became unfavourable for breeding in the Marzuq and Ghat areas.

In the **Central Region**, the ITCZ was well north of 15N in Sudan by the end of June, which is further north than usual. Consequently, seasonal rains commenced in parts of the summer breeding areas of Darfur, Kordofan, and White Nile states. Light rain also fell in a few places of the western lowlands in Eritrea. Nevertheless, vegetation remained dry and unfavourable for breeding in both countries. In Egypt, vegetation was drying out in all areas except near irrigated crops. In Yemen, green vegetation and favourable breeding conditions were present in the main wadis of Shabwah and Hadhramaut in the interior summer breeding areas. Light rain fell in some places. Good rains fell in the interior of northern Oman and vegetation was green.

In the **Eastern Region**, light rains fell in the spring breeding areas of western Pakistan in early June. Abnormal pre-monsoon rains fell in the summer breeding areas along both sides of the Indo-Pakistan border. This was supplemented by above-average rains (26%) associated with the arrival of the monsoon on 16 June along the Indo-Pakistan border. Consequently, vegetation was becoming green in parts of Barmer district near the Indo-Pakistan border and in a few places of Jodhpur district in India.

Area Treated

Algeria	2,592 ha (June)
Egypt	1,230 ha (June)
Iran	510 ha (June)
Libya	1,990 ha (1-23 June)
Morocco	3,227 ha (June)
Saudi Arabia	23,990 ha (1-24 June)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

No reports were received in June.

• **FORECAST**

Low to moderate numbers of adults and perhaps a few groups or small swarms are likely to appear in the south and breed once the seasonal rains commence.

Mali

• **SITUATION**

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

• **FORECAST**

Low to moderate numbers of adults and perhaps a few groups or small swarms may appear from the north in the Adrar des Iforas, Tilemsi Valley and Tamesna, and breed with the onset of the seasonal rains.

Niger

• **Situation**

During June, isolated hoppers mixed with isolated immature and mature solitarious adults persisted in the Air Mountains southeast of Timia (1809N/0846E). Scattered immature and mature solitarious adults appeared on the Tamesna Plains between In Abangharit (1754N/0559E) and Tassara (1650N/0550E) at mid-month.

• **Forecast**

Locust numbers are expected to increase in Tamesna and the pasture areas between Tahoua and Tanout as breeding occurs with the onset of the seasonal rains. Groups of adults and perhaps a few small swarms could arrive in these areas from the north in July.

Chad

• **Situation**

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

• **Forecast**

There is a low risk that groups of adults and perhaps a few small swarms could appear in the centre and northeast in early July. Thereafter, small-scale breeding will occur with the onset of the seasonal rains, causing locust numbers to increase.

Senegal

• **Situation**

No reports were received in June.

• **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 June, small groups of immature adults continued to form in the northwestern Sahara near the Moroccan border between Bechar (3135N/0217W) and Ain Sefra (3245N/0035W), and near irrigated crops in the Adrar (2753N/0017W) area of the central Sahara. As the month progressed, there was a decline in the number of infestations. No locusts were seen near Tamanrasset (2250N/0528E), Djanet (2434N/0930E) and Illizi (2630N/0825E). Ground teams treated 2,592 ha in June.

• **Forecast**

As vegetation dries out, adult groups and perhaps a few small swarms that were not detected or controlled are likely to move south to the northern Sahel in West Africa.

Morocco

• **Situation**

During June, small hopper groups and bands continued to form south of the Atlas Mountains near Guelmim (2859N/1003W) but densities declined to about 5-8 hoppers/m^2. Fledging occurred by mid-month and immature adults formed groups at densities up to 9,000 adults/ha. Groups of immature and mature solitarious and *transiens* adults formed along the Algerian border in the Ziz-Ghris Valley southwest of Erfoud (3128N/0410W) and between Erfoud and Figuig (3207N/0113W). Ground teams treated 3,227 ha in June.

• **Forecast**

As vegetation dries out, immature adult groups and perhaps a few small swarms that were not detected or controlled are expected to move south to the northern Sahel in West Africa.

Libya

• **Situation**

During June, hoppers of all instars, fledglings, and immature and mature adults continued to form small groups in the south-central area between Marzuq (2555N/1355E) and Sabha (2704N/1425E). Ground control teams treated 1,990 from 1 to 23 June. No locusts were seen elsewhere.

• **Forecast**

A limited number of immature adult groups and perhaps a few small swarms will form from any infestations that were not detected or could not be treated and move to the northern Sahel in West Africa in early July.

Tunisia

• **Situation**

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

• **Forecast**

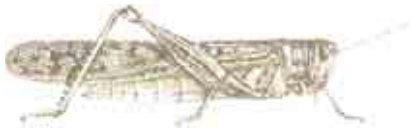
No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During June, locust numbers continued to decline in the Nile Valley and only scattered mature



solitarious adults persisted in irrigated schemes north of Abu Hamed (1932N/3320E) and near Ed Damer (1734N/3358E) and the Atbara River. Scattered mature solitarious adults appeared in the summer breeding areas northwest of Khartoum in irrigated crops along Wadi Muqqadam.

• **Forecast**

There remains a low to moderate risk that a few groups and perhaps small swarms may appear in early July in the summer breeding areas between Chad and Eritrea. Breeding will cause locust numbers to increase in Darfur, Northern Kordofan, White Nile, Khartoum and Kassala states.

Eritrea

• **Situation**

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

• **Forecast**

Low numbers of adults are likely to appear in the western lowlands and breed on a small scale in areas of recent rainfall, causing locust numbers to increase.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

No reports were received in June.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No locusts were seen during surveys carried out in June on the plateau and escarpment between Boroma (0956N/4313E), Hargeisa (0931N/4402E) and Berbera (1028N/4502E), and along the northwest coast between Berbera and Djibouti.

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During June, an increasing number of immature gregarious adult groups formed in the northern Sinai near El Arish (3108N/3348E) and in southern Sinai between Abu Zenima (2903N/3306E) and Sharm Esh Sheikh (2752N/3413E). Groups of immature and mature solitarious and *transiens* adults formed along the western side of Lake Nasser between Garf Husein (2317N/3252E) and Abu Simbel (2219N/3138E), and in the Western Desert near Farafra (2710N/2818E), Dakhla (2530N/2900E), Kharga (2525N/3034E) and Baris (2448N/3035E). Ground teams treated 1,230 ha in June.

• **Forecast**

Locust numbers will decline in all areas as adults move south to the summer breeding areas in Sudan. Isolated adults may persist in crops near Lake Nasser.

Israel

• **Situation**

In early June, small groups of immature adults moved south in the Negev Desert to Mitzpe Ramon (3036N/3448E), Eilat (2933N/3457E), and the Arava Valley near Jordan.

• **Forecast**

Locust numbers will decline in all areas as adults move south to the summer breeding areas in Sudan.

Jordan

• **Situation**

A few immature adult groups and small swarms reportedly moved from Israel to Saudi Arabia in the extreme southwest of the country in early June. No further details are available.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

In early June, breeding ended in the extreme north of the Red Sea coast and in adjacent subcoastal areas near Tabuk (2823N/3635E) where immature adult groups formed and moved south, together with immature groups and a few small swarms from Israel and Jordan, through the Asir Mountains and appearing near Mecca (2125N/3949E), Bisha (2000N/4236E) and Abha (1813N/4230E), flying towards Najran (1729N74408E) in the south. A few groups appeared on the central Red Sea coast between Lith (2008N/4016E) and Qunfidah (1909N/4107E) where they were seen flying out to sea towards Sudan on the 5th. In the interior, hatching occurred near Gassim (2621N/4358E) where early instar hopper groups and bands were present. Control teams treated 23,990 ha on 1-24 June of which 18,660 ha were by air.

• **Forecast**

Locust numbers will decline in all areas as adults move to the summer breeding areas in Yemen and Sudan.

Yemen

• **Situation**

In early June, scattered immature and mature solitarious adults were present in the interior between Marib (1527N/4519E), Nisab (1430N/4629E) and Shabwah (1522N/4700E), and on the plateau between Sayun (1559N/4844E) and Thamud (1717N/4955E). On the 13th, an immature swarm was reported in the Saadah Governorate coming from Saudi Arabia. This was followed by reports of immature and mature swarms near the border in Wadi Ketaf (1704N/4412E) and Al Buqa (1720N/4436E), and further south in the interior near Al Hazm (1609N/4447E) and Bayhan (1452N/4545E). On the 20th, there were reports of immature swarms in Lahj Governorate west of Al Baydha (1405N/4542E). Control operations were not possible due to insecurity and beekeepers.

• **Forecast**

Small groups and swarms will disperse in the summer breeding areas of the interior and breed in areas of recent rainfall, causing locust numbers to increase and small hopper groups and bands to form.

Oman

• **Situation**

No locusts were seen during surveys carried out in June near the border of Yemen and Maziuna (1750N/5239E) and in the northern interior between Nizwa (2255N/5731E) and Adam (2223N/5731E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During June, low numbers of medium-density solitarious hoppers were present in the Jaz Murian Basin near Ghale Ganj (2731N/5752E) from egg-laying in mid-May. Control teams treated 510 ha in June. No locusts were seen during surveys on the southeast coast near Jask (2540N/5746E) and Chabahar (2517N/6036E).

• **Forecast**

Locust numbers will decline in the Jaz Murian Basin and no significant developments are likely.

Pakistan

• **Situation**

During June, isolated solitarious adults were maturing in the spring breeding areas of Baluchistan near Pasni (2515N/6328E). Low numbers of mature solitarious adults appeared at the end of the month in the summer breeding areas on the Indo-Pakistan border southeast of Rahimyar Khan (2822N/7020E).

• Forecast

Small-scale breeding will cause locust numbers to increase in Cholistan and Tharparkar.

India

• **Situation**

During June, isolated mature solitarious adults were seen at two places between Bikaner (2801N/7322E) and the border of Pakistan.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Rajasthan and Gujarat.

Afghanistan

• **Situation**

No reports received.

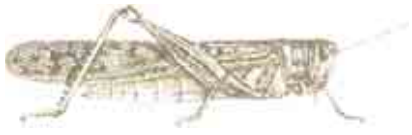
• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://www.devcocast.eu/user/images/dl/Form.do)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Desert Locust situation updates.** Archives Section – Briefs
- **NE Egypt invasion.** Information section
- **Sudan threat.** Information section

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-a-preview

French: http://www.slideshare.net/FAOLocust/elocust3f-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-a-preview-arabic-version

2013 events. The following activities are scheduled or planned:

- **CRC.** 8th sub-regional training course on Desert Locust control operations, 8-12 September, Oman.

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

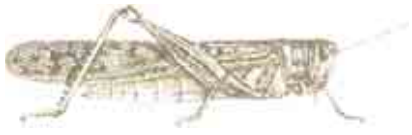
- locust-affected countries in West and North-West Africa: Algeria, Chad, Libya, Mali, Mauritania, Morocco, Niger, Senegal, Tunisia; during plagues only: Burkino Faso, Cape Verde, Gambia, Guinea and Guinea-Bissau.

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.

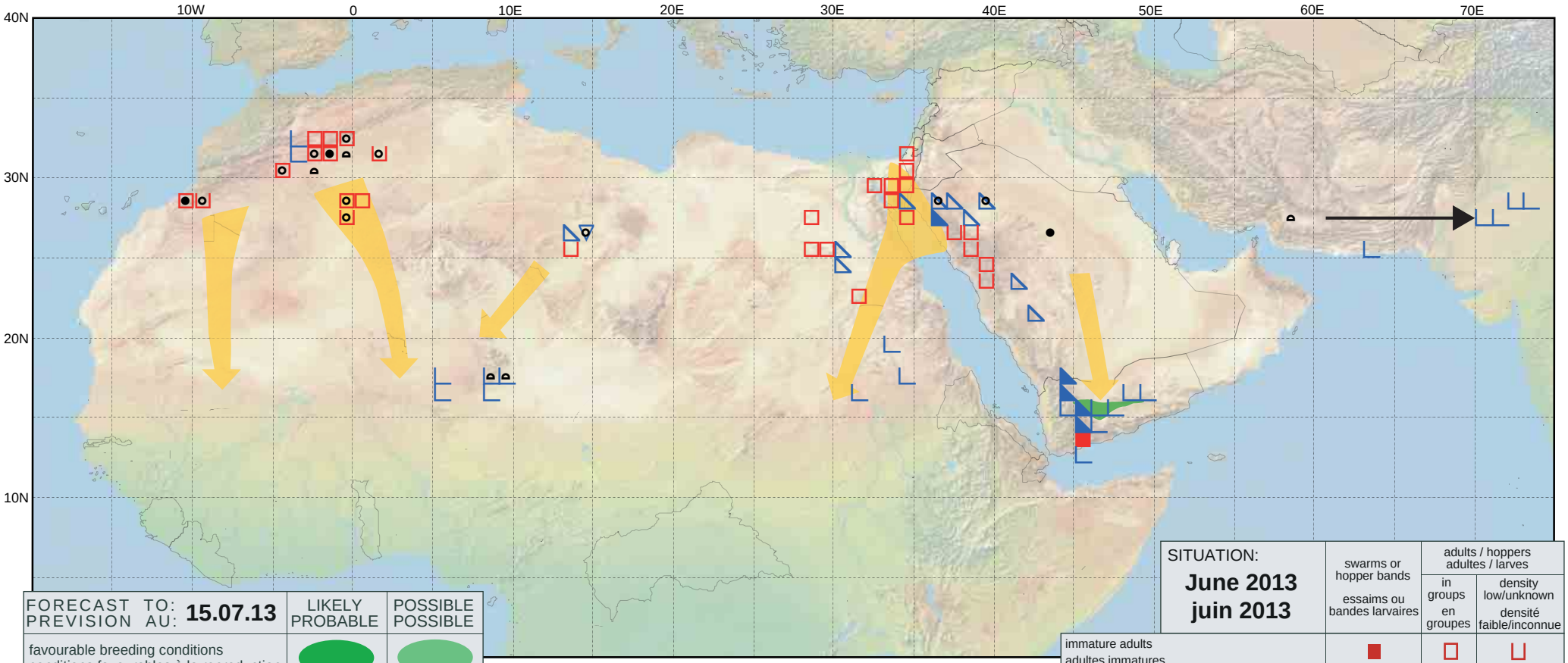
EASTERN

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



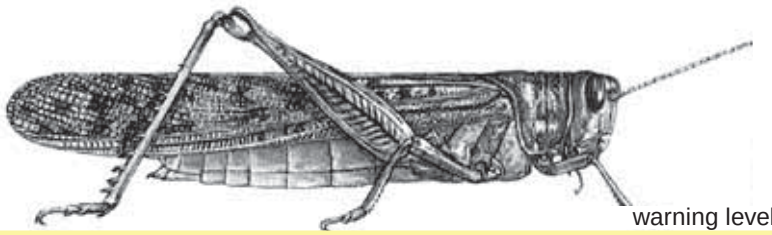
Desert Locust Summary
Criquet pèlerin - Situation résumée

417



FORECAST TO: / PREVISION AU: **15.07.13**	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: **June 2013 / juin 2013**	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)			



warning level: **CAUTION** (Yemen)

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 418**

(2 Aug 2013)

General Situation during July 2013 Forecast until mid-September 2013

The Desert Locust situation improved during July as locust infestations declined in the northern part of the Central Region and in the spring breeding areas of Northwest Africa. Nevertheless, the situation remained serious in the interior of Yemen where breeding occurred, causing locust numbers to increase. Control operations were not possible due to insecurity. Low numbers of solitarious adults appeared in the summer breeding areas of the Sahel in West Africa and Sudan, and along both sides of the Indo-Pakistan border. During the forecast period, small-scale breeding will cause locust numbers to increase in all of these areas.

Western Region. The locust situation remained calm in the Region during July. Locust numbers declined in the spring breeding areas of **Morocco** and **Algeria** due to hot, dry conditions and earlier control operations. On the other hand, solitarious adults appeared in the summer breeding areas of the northern Sahel in **Mauritania**, **Chad**, and probably in **Mali** and **Niger** as well but this could not be confirmed in the absence of surveys. Local breeding continued in the southeastern Air Mountains in northern Niger. During the forecast period, small-scale breeding will occur in the summer breeding areas of Mauritania, Mali, Niger and Chad, causing locust numbers to increase.

Central Region. The situation remained calm in the Region during July except in **Yemen** where one swarm reached Wadi Hadhramaut in the eastern part of the summer breeding area in the interior. Breeding during June and July caused locust numbers to increase in Yemen, and solitarious and *transiens* hoppers and adults were present. Control operations were not possible due to insecurity. Locust infestations declined in the spring breeding areas of **Saudi Arabia** where only a few adult groups were reported. Scattered adults persisted in the Nile Valley in northern **Sudan** and low numbers of solitarious adults appeared in parts of the summer breeding area but vegetation was slow to become green due to intermittent rains. In northern **Somalia**, there was an unconfirmed report of hoppers. No locusts were reported elsewhere in the Region. During the forecast period, locust numbers will increase in the summer breeding areas, mainly in Yemen and, to a lesser extent, in Sudan and western **Eritrea**. In Yemen, there is a risk that hopper and adult groups will form and perhaps a few small hopper bands and adult swarms.

Eastern Region. Low numbers of solitarious adults appeared in the summer breeding areas along both sides of the Indo-Pakistan border during July. As ecological conditions improved due to good monsoon rains, small-scale breeding will occur in **India** and **Pakistan** during the forecast period and cause locust numbers to increase slightly.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Twitter: twitter.com/faolocust

Weather & Ecological Conditions in July 2013

Breeding conditions continued to improve in the Sahel of West Africa but remained dry in Sudan. Conditions were favourable for breeding in the interior of Yemen and along both sides of the Indo-Pakistan border.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal northwards movement over the Sahel in West Africa in July, but its position was slightly further south than normal. In Mauritania, the ITCZ moved north steadily, causing good rains to occur and allowing vegetation to become green in the southeast and in northeast Trarza. In Mali and Niger, good rains fell in the north during the first decade as the ITCZ was further north than normal, and breeding conditions were improving. Good rains fell throughout the month in pasture areas of central Niger. In Chad, the ITCZ was located further south than normal. Consequently, rainfall did not reach beyond 15N, and vegetation was becoming green in the northeast up to Kalait but remained mainly dry in the west.

In the **Central Region**, the position of the ITCZ was further south than normal over Sudan during July. Consequently, rainfall remained south of 1430N (Hamrat Esh Sheikh and Umm Saiyala, North Kordofan), interrupting seasonal rains in the summer breeding areas after an early start in June, and slowing down the development of green vegetation. Light rains fell at times in parts of the summer breeding areas in the interior of Yemen, which should allow ecological conditions to continue to be favourable for breeding. Good rains also fell on the Red Sea coast of Yemen in early June. Mainly dry conditions prevailed elsewhere in the Region.

In the **Eastern Region**, monsoon rains continued to fall in the summer breeding areas along both sides of the Indo-Pakistan border during July. Above average rains occurred in eastern Rajasthan and Gujarat in India while average rains fell in western Rajasthan. Good rains also fell in adjacent areas of Pakistan in Cholistan and Tharparkar deserts. Consequently, ecological conditions were favourable for breeding in both countries.

Area Treated

Algeria	15 ha (July)
Morocco	796 ha (July)
Saudi Arabia	760 ha (July)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During the last decade of June, no locusts were seen in the northwest.

During July, scattered solitarious adults were maturing in the southeast between Aioun El Atrous (1639N/0936W) and the Mali border, and in Trarza northeast of Aguilal Faye (1827N/1444W). No locusts were seen elsewhere in the south or in the northwest.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase in the south and southeast.

Mali

• **SITUATION**

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

• **FORECAST**

Small-scale breeding will cause locust numbers to increase in the Adrar des Iforas, Tilemsi Valley and Tamesna.

Niger

• **SITUATION**

During the first week of July, isolated solitarious hoppers and adults continued to be present mixed with a few late instar hopper groups, copulating adults and hatchlings in the Air Mountains southeast of Timia (1809N/0846E). No surveys were carried out in the Tamesna.

• **FORECAST**

Small-scale breeding will cause locust numbers to increase in Tamesna and in the pasture areas between Tahoua and Tanout. Small infestations may persist in the Air Mountains.

Chad

• **Situation**

During July, isolated mature solitarious adults were present in Kanem near Nokou (1435N/1446E) and Salal (1448N/1712E), in Batha north of Djedaa (1331N/1834E), and in the northeast near Kalait (1550N/2054E) and north of Fada (1714N/2132E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Kanem, Batha, Biltine and the northeast.

Senegal

• **Situation**

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

• **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 July, small groups of late instar solitarious hoppers and immature adults were present near irrigated crops in the Adrar (2753N/0017W) area of the central Sahara. Ground teams treated 15 ha in July. No locusts were seen elsewhere near Bechar (3135N/0217W), Illizi (2630N/0825E), and Tamanrasset (2250N/0528E).

• **Forecast**

Small-scale breeding may cause locust numbers to increase in the extreme south along the borders of Mali and Niger.

Morocco

• **Situation**

During the first two decades of July, small groups of fifth instar hoppers, fledglings and immature adults at densities up to 6,500 adults/ha persisted at several places south of the Atlas Mountains near Guelmim (2859N/1003W). Ground teams treated 796 ha in July.

• **Forecast**

Locust numbers will continue to decline near Guelmim. No significant developments are likely.

Libya

• **Situation**

No reports were received during July.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

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

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During July, scattered immature and mature solitarious adults persisted in a few irrigated schemes in the Nile Valley near Merowe (1830N/3149E) and Abu Hamed (1932N/3320E), and along the Atbara River. Small-scale breeding occurred southeast of Selima Oasis (2122N/2119E) in the Libyan Desert near Egypt. In the summer breeding areas, mature solitarious adults were seen northwest of Khartoum in Wadi Muqaddam and near Eritrea between Kassala (1527N/3623E) and Derudeb (1731N/3607E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Darfur, Northern Kordofan, White Nile, Khartoum and Kassala states.

Eritrea

• **Situation**

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

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the western lowlands.

Ethiopia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

In late July, there was an unconfirmed report of hopper infestations on the plateau east of Hargeisa (0931N/4402E) in the Odweyne (0923N/4503E) area.

• **Forecast**

Scattered hoppers and adults may be present in parts of the plateau between Hargeisa and Burao where breeding may have occurred in areas of previous rainfall.

Egypt

• **Situation**

In July, no locusts were seen during surveys carried out on the Red Sea coast near Abu Ramad (2224N/3624E) and in the Allaqi area near Lake Nasser.

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

In early July, groups of mature gregarious adults were copulating near several irrigated farms in Wadi Dawasir (2028N/4747E) on the western edge of the Empty Quarter. Control teams treated 760 ha. No locusts were seen further north near Gassim (2621N/4358E).

• **Forecast**

Small-scale breeding may occur in Wadi Dawasir and a few hopper groups could form in cultivated areas during August.

Yemen

• **Situation**

In early July, a maturing swarm of about 1 km^2 in size was seen in the Wadi Hadhramaut area of the interior near Wadi Huraidha (1535N/4811E) on the 3rd. Thereafter, scattered immature and mature adults were present in a few places on the plateau to the northeast near Thamud (1717N/4955E) and Remah (1727N/5034E). Small-scale breeding occurred south of Thamud where hoppers of all instars were present. On the western edge of the interior desert, solitarious and *transiens* hoppers of all instars were present at densities up to 15 hoppers/m^2 from undetected breeding in June that continued into July between the Saudi Arabian border and Ataq (1435N/4649E). Solitarious and *transiens* adults were maturing at densities up to 2,000 adults/ha in these areas. Hopper densities were highest near Marib (1527N/4519E) while adult densities were greatest between Bayhan (1452N/4545E) and Ataq. Control operations could not be conducted due to insecurity.

• **Forecast**

Locust numbers will continue to increase in Al Jawf, Marib, Shabwah and Hadhramaut, including the Thamud plateau, where small groups of hoppers and adults and perhaps a few bands and swarms are likely to form.

Oman

• **Situation**

In July, no locusts were seen during surveys carried out in the northern interior near Adam (2223N/5731E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

During July, no locusts were seen along the coast near Bushehr (2854N/5050E), Jask (2540N/5746E) and Chabahar (2517N/6036E).

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During July, more locusts appeared in Cholistan where isolated mature solitarious adults were seen at 31 places, mainly southeast of Rahimyar Khan (2822N/7020E) along the Indian border. A few isolated mature adults were seen west of Karachi near Uthal (2548N/6637E). No locusts were seen in the Tharparkar Desert.

• Forecast

Small-scale breeding will cause locust numbers to increase in Cholistan and Tharparkar, and to a lesser extent in the Uthal area.

India

• **Situation**

During July, scattered immature and mature solitarious adults were present in a few places of Rajasthan near the Pakistan border west of Bikaner (2801N/7322E) and southwest of Sam (2649N/7030E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Rajasthan and Gujarat.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

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.

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- **CLCPRO.** Pesticide Stock Management System regional workshop, 5-21 September, Agadir (Morocco)
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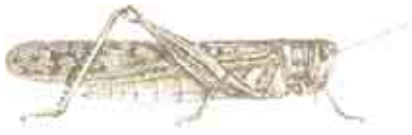


No. 418

DESERT LOCUST BULLETIN

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

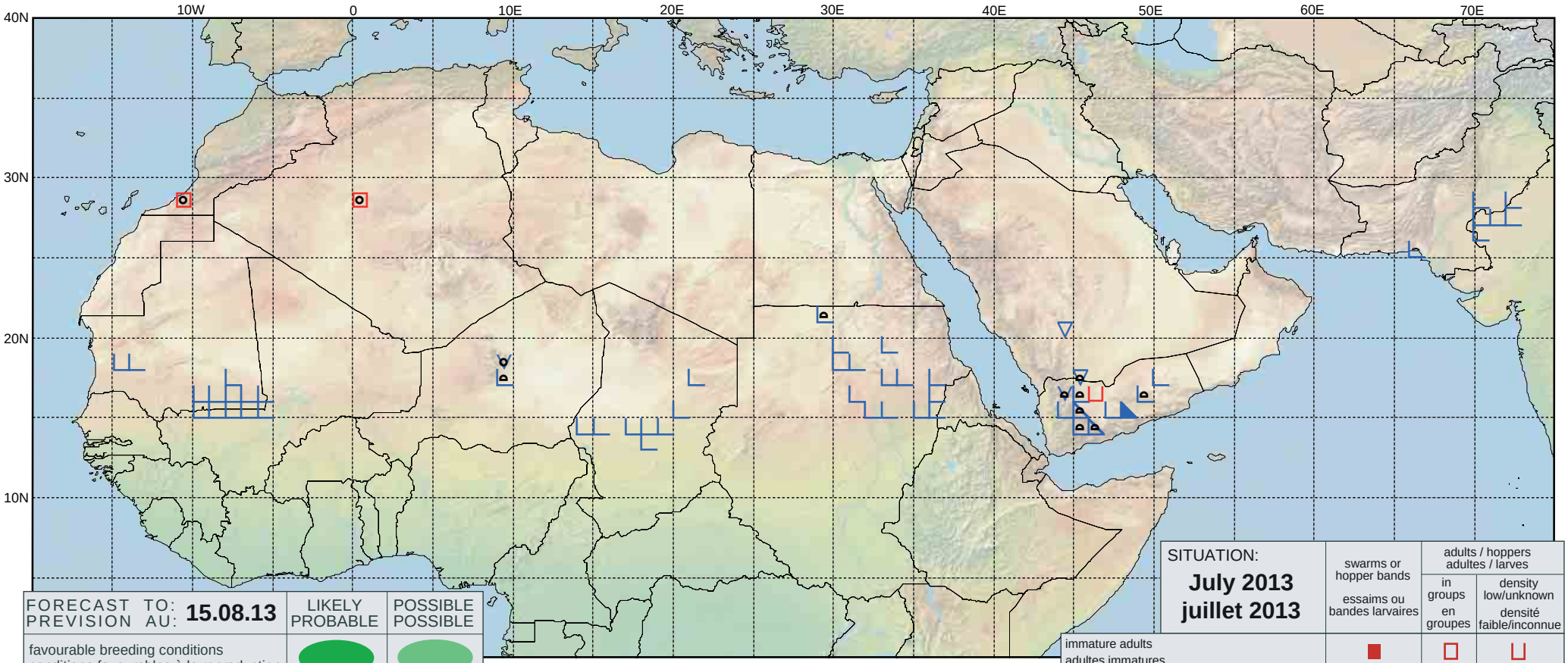
only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

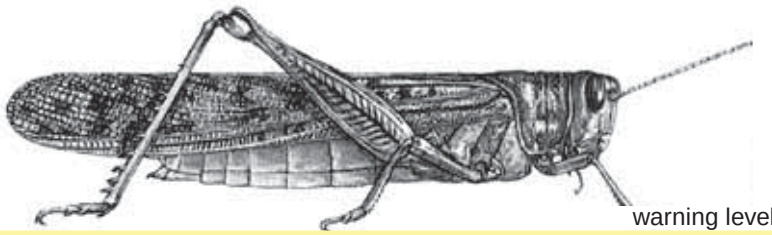
Desert Locust Summary
Criquet pèlerin - Situation résumée

418



FORECAST TO: / PREVISION AU: **15.08.13**	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: **July 2013 / juillet 2013**	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 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)	◘	◙	⊟



warning level: **CAUTION** (Yemen)

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 419**

(3 Sep 2013)

General Situation during August 2013 Forecast until mid-October 2013

The Desert Locust situation remained generally calm during August except in Yemen where hopper and adult groups and at least one swarm were reported in the interior. Although breeding conditions remain favourable for the formation of small hopper bands and swarms in Yemen, survey and control operations are not possible due to insecurity. So far, very little breeding has been detected in the summer breeding areas of the Sahel from Mauritania to western Eritrea, and along both sides of the Indo-Pakistan border. Nevertheless, small-scale breeding is expected throughout these areas due to unusually good rains in August. Consequently, locust numbers will increase during the forecast period and, once vegetation starts to dry out, small groups may form. Therefore, regular surveys should be carried out in all countries to monitor the situation closely.

Western Region. The locust situation remained calm in the Region during August. Despite above average rainfall further north than usual in the Sahel, locust numbers remained low in the summer breeding areas of **Mauritania**, **Niger** and **Chad** except in the Air Mountains of Niger where control operations were carried out against groups of hoppers and adults from earlier breeding. The situation is less clear in northern **Mali** where surveys could not be conducted due to persistent insecurity. During the forecast period, small-scale breeding will cause locust numbers to increase and, once vegetation starts to dry out, locusts could concentrate and perhaps form small groups. In Northwest Africa, limited control operations were carried out against adults that were present near cropping areas in the central Sahara of **Algeria**.

Central Region. The situation remained generally calm in the Region during August. Only low numbers of solitarious adults were reported in the northern and eastern parts of the summer breeding areas in **Sudan**. Unusually good rains that fell during August will allow small-scale breeding to occur in September. Consequently, locust numbers are expected to increase and once vegetation starts to dry out, locusts could concentrate and form small groups in October. A similar situation is expected in the western lowlands of **Eritrea** but surveys have not been undertaken there so far. In **Yemen**, hopper and adult groups and at least one small swarm were reported in the interior as a result of local breeding. The situation is worrisome because breeding is continuing and small hopper bands and swarms are expected to form but survey and control operations are not possible due to insecurity and beekeepers. In **Saudi Arabia**, local breeding was underway on the central Red Sea coast that will cause locust numbers to increase slightly during the forecast period.

Eastern Region. The situation remained calm during August. Despite good monsoon rains, only low numbers of solitarious adults were present in a few places of the summer breeding areas along both sides of the Indo-Pakistan border. During the forecast period, small-scale breeding will cause locust numbers to increase slightly in **India** and **Pakistan**.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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E-mail: eclo@fao.org
Internet: www.fao.org/ag/locusts
Facebook: www.facebook.com/faolocust
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Weather & Ecological Conditions in August 2013

The ITCZ was unusually far north during August, causing good rains to fall throughout the summer breeding areas in the Sahel of West Africa and Sudan. Good rains also fell in Yemen and along both sides of the Indo-Pakistan border. Unusually heavy rains fell in central Sudan, southeast Iran, and western Pakistan.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) advanced significantly northward over the Sahel in West Africa during August. It was about 1 degree above its climatological mean position, causing rain to fall further north than usual in the summer breeding areas in Mauritania, Mali, Niger and Chad. Rainfall reached as far north as the Ouarane in Mauritania, Tessalit in northern Mali, north of Arlit in Niger, and Fada in northeast Chad. Good rains also fell in northwest Mauritania between Dakhlet Nouadhibou and southern Tiris Zemmour. Light rains fell in southern Algeria between Tamanrasset and the Malian border, in the Ténéré Desert of Niger, and southwest of Tibesti on the Chad/Niger border. Heavy rains and flooding occurred at the end of the month in Bamako, Mali. Less rain fell in northern Tamesna of Mali and adjacent areas of Niger. Ecological conditions were favourable for breeding in Mauritania (Aguilal Faye – Tidjikja - Oualata), Mali (Adrar des Iforas, southern Tamesna), Niger (southeast Air, southern Tamesna, central pasture areas), and Chad (central and northeast), and were improving in southern Algeria along the borders of Mali and Niger. In Northwest Africa, breeding conditions remained favourable near irrigated agricultural schemes in the central Sahara near Adrar, Algeria.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) advanced significantly northward over northern Sudan in the first decade of August, some 3 degrees higher than its position in late July, and nearly reached Wadi Halfa. It was 2.5 degrees above its climatological mean position and was the highest in the last five years. Consequently, southerly winds persisted throughout the entire decade and heavy rain fell across central Sudan, causing widespread flooding and destruction in many areas including Khartoum. Light rain fell as far north as Abu Hamed and Wadi Diib. Although the ITCZ retreated southwards during the second decade, it remained higher than normal and good rains continued in the summer breeding areas of Sudan and western Eritrea. Vegetation was becoming green throughout North Darfur and Kordofan, Wadi Milk and Muqaddam, between the Nile River, Kassala and Derudeb, and in the western lowlands of Eritrea. In Yemen, good rains fell in the summer breeding areas of the interior, extending to southern Oman. Vegetation was becoming green in several wadis in Shabwah, Hadhramaut, Minwakh and Hazar areas. Good rains also fell on the Red Sea coast and parts of the southern coast in Yemen as well as in a few places of southern, central and northern Oman, on the plateau and escarpment in northwest Somalia, and in adjacent areas of eastern Ethiopia.

In the **Eastern Region**, good rains associated with the monsoon continued to fall in the summer breeding areas along both sides of the Indo-Pakistan border during the first two decades of August. Above average rains continued for the second month in a row in Rajasthan, India. Good rains also fell in adjacent areas of Pakistan in Cholistan and Tharparkar deserts. Even though rains did not fall in the last decade, ecological conditions remained favourable for breeding in both countries. In southeast Iran and western Pakistan, unusually heavy rains fell during the first decade of August.

Area Treated

Algeria	10 ha (August)
Niger	695 ha (August)
Yemen	120 ha (August)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During August, there was an increase in isolated mature solitarious adults reported in the southeast, centre and southwest of the country. Low numbers of first to third instar hoppers were present between Aioun El Atrous (1639N/0936W) and Nema (1636N/0715W), and between Moudjeria (1752N/1219W) and Aguilal Faye (1827N/1444W) as a result of egg-laying in July.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the south and centre. As vegetation dries out, some locusts could concentrate and perhaps form small groups while others will move towards the west and northwest.

Mali

• **Situation**

During August, no locusts were seen by surveys carried out in central and western areas between Nioro (1512N/0935W) and Hombori (1516N/0140W).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the Adrar des Iforas, Tilemsi Valley and Tamesna. By the end of the forecast period, locusts could concentrate and perhaps form small groups as vegetation dries out.

Niger

• **Situation**

During August, solitarious hoppers and adults mixed with a few late instar hopper groups persisted in the Air Mountains southeast of Timia (1809N/0846E). By mid-month, some of the immature adults formed a few groups at densities up to 2,500 adults/ha. During the second half of the month, isolated mature solitarious adults appeared in the Tamesna near Tassara (1650N/0550E) and in the west near Filingué (1421N/0319E). No locusts were seen in central Tamesna near In Abangharit (1754N/0559E) or in the southern Air Mountains. Ground teams treated 695 ha during August.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Tamesna and in the pasture areas between Tahoua and Tanout, and perhaps near Filingué. Small infestations may persist in the southeast Air. By the end of the forecast period, locusts could concentrate and perhaps form small groups as vegetation dries out.

Chad

• **Situation**

During August, isolated immature and mature solitarious adults were present in the centre and northeast between Salal (1448N/1712E) and Fada (1714N/2132E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the northern parts of Kanem and Batha, in Biltine and in the northeast.

Senegal

• **Situation**

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

• **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 August, immature adults persisted near irrigated crops in the Adrar (2753N/0017W) area of the central Sahara, and ground teams treated 10 ha. No locusts were seen in the northwest near Bechar (3135N/0217W) or in the south between Tamanrasset (2250N/0528E), In Guezzam (1937N/0552E) and the Niger border.

• **Forecast**

Small-scale breeding may cause locust numbers to increase in the extreme south along the borders of Mali and Niger. Low numbers of locusts are likely to persist in the Adrar area.

Morocco

• **Situation**

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

• **Forecast**

No significant developments are likely.

Libya

• **Situation**

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

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No reports were received during August.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During August, the situation remained calm and only scattered mature solitarious adults were present in the eastern part of the summer breeding area between Kassala (1527N/3623E) and Sinkat (1855N/3648E). A few immature and mature solitarious adults persisted in the Nile Valley near Ed Damer (1734N/3358E), Abu Hamed (1932N/3320E), Merowe (1830N/3149E) and Dongola (1910N/3027E). Small-scale breeding continued in the Libyan Desert near Egypt to the southeast of Selima Oasis (2122N/2119E). No locusts were seen in White Nile and North Kordofan states.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in North Darfur, North Kordofan, White Nile, Khartoum and Kassala states. By the end of the forecast period, locusts could concentrate and form small groups as vegetation dries out.

Eritrea

• **Situation**

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

• **Forecast**

Small-scale breeding is likely to be in progress and will continue, causing locust numbers to increase in the western lowlands north of Teseney. Surveys are recommended.

Ethiopia

• **Situation**

During August, no locusts were seen during a survey in the Tigray region of the northwest near Akwi (1350N/3653E) and the Sudanese border.

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

During August, no locusts were seen during a survey on the plateau and escarpment between Hargeisa (0931N/4402E), Berbera (1028N/4502E) and Burao (0931N/4533E).

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During August, no locusts were seen during surveys carried out on the Red Sea coast between Shalatyn (2308N/3535E) and Halaib (2213N/3638E), and near Lake Nasser in the Allaqi area, Tushka (2247N/3126E), and Aswan (2405N/3256E).

• **Forecast**

No significant developments are likely.

Saudi Arabia

• **Situation**

During August, low numbers of mature solitarious adults were present and breeding on the central Red Sea coast near Lith (2008N/4016E). No locusts were seen in the Asir Mountains near Abha (1813N/4230E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase slightly on the central Red Sea coastal plains near Lith.

Yemen

• **Situation**

No surveys were carried out during August. Nevertheless, there were reports of late instar hopper and mature gregarious adult groups near the Saudi Arabian border southeast of Al Buqa (1720N/4436E) where breeding occurred after immature swarms arrived in mid-June and matured. Control was undertaken on a few farms and 120 ha were treated. On the 22nd, a very small mature swarm was seen copulating on the western edge of Wadi Hadhramaut in the Al Wahad (1548N/4752E) area. Numerous hoppers and adults, including copulating adults, were reported between Ataq (1435N/4649E) and Bayhan (1452N/4545E).

• **Forecast**

Locust numbers will continue to increase in Al Jawf, Marib, Shabwah and Hadhramaut, including the Thamud plateau, where small groups of hoppers and adults and a few bands and swarms are likely to form.

Oman

• **Situation**

During August, an individual immature solitarious adult was seen on the Batinah coast at Al Faleij

(2334N/5800E). No locusts were present in the northern interior near Adam (2223N/5731E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen along the southeast coast near Jask (2540N/5746E) during the first half of August.

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During the first two decades of August, no surveys were carried out. During the last decade, isolated mature solitarious adults were seen in the Cholistan Desert where they persisted along the Indian border southeast of Rahimyar Khan (2822N/7020E). Low numbers of mature adults were also present west of Karachi near Uthal (2548N/6637E). No locusts were seen in the Tharparkar Desert.

• Forecast

Small-scale breeding will cause locust numbers to increase in Cholistan and Uthal, and to a lesser extent in Tharparkar.

India

• **Situation**

During August, isolated solitarious adults persisted in Rajasthan where they were maturing along the Pakistan border west of Bikaner (2801N/7322E) and west of Jaisalmer (2652N/7055E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Rajasthan and Gujarat.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

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- **CLCPRO.** Health and Environmental Standards regional workshop, 2-6 September, Dakar (Senegal)
- **CRC.** 8th sub-regional training course on Desert Locust control operations, 8-12 September, Oman
- **CLCPRO.** Regional training on monitoring/evaluation system of Desert Locust activities, 16-20 September, Niamey (Niger)
- **SWAC.** Desert Locust Contingency Planning regional workshop, 13-15 October, Tehran (Iran)

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

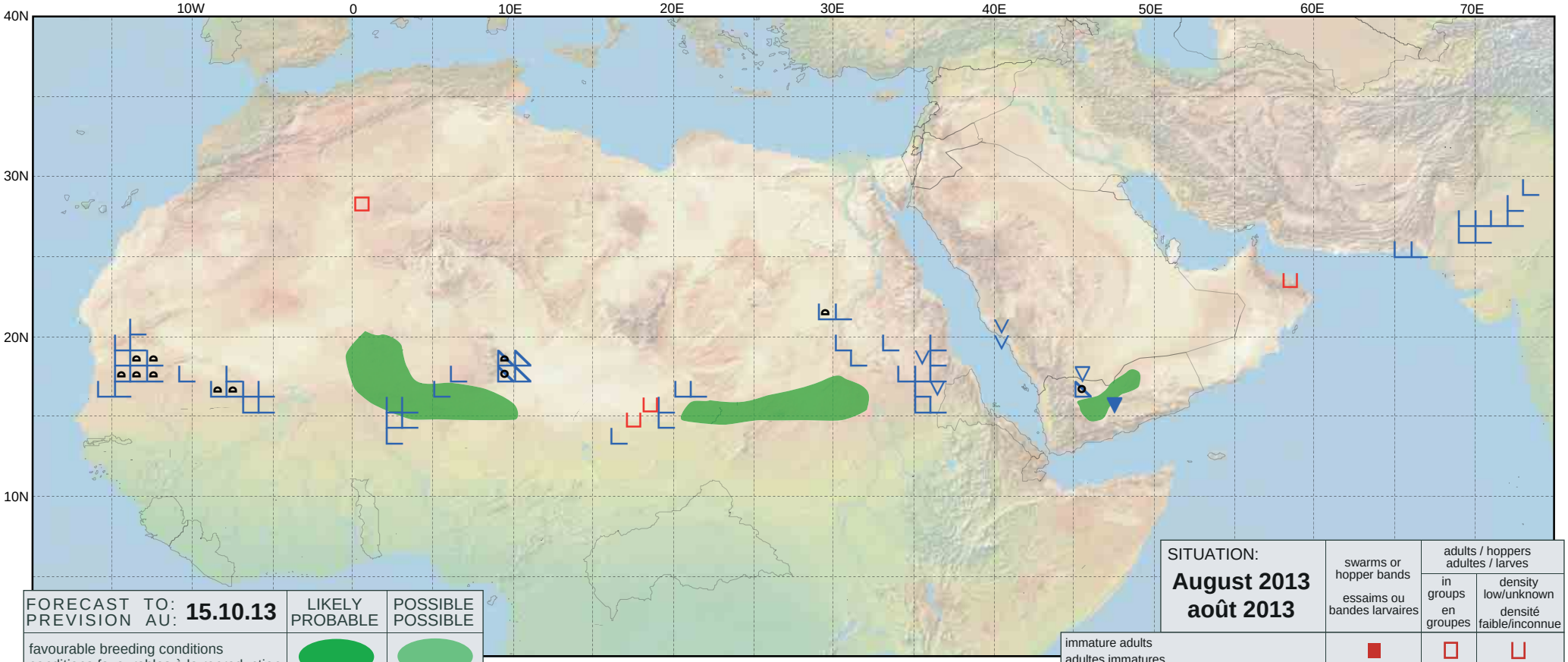
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

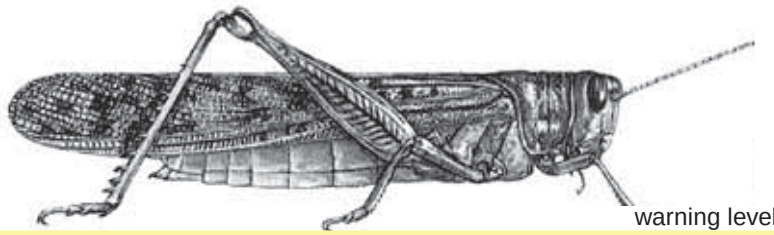
Desert Locust Summary
Criquet pèlerin - Situation résumée

419



FORECAST TO: / PREVISION AU: **15.10.13**	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: **August 2013 août 2013**	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 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)	◘	◙	⊟



warning level: **CAUTION** (Yemen)

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 420**

(3 Oct 2013)

General Situation during September 2013 Forecast until mid-November 2013

The Desert Locust situation remained worrisome in Yemen where hopper and adult groups, bands and swarms formed in the interior during September. Only limited control operations could be carried out due to insecurity and beekeeping. Small swarms will form during the forecast period in these areas and move to the Red Sea and Gulf of Aden coasts where adults have already arrived and laid eggs that hatched and hoppers formed groups and bands. Early breeding has also occurred on the central Red Sea coast in Saudi Arabia. Continued breeding caused locust numbers to increase in the northern Sahel between Mauritania and Chad. Small groups could form in some areas as vegetation dries out. A further increase is expected in western Mauritania where breeding will continue during the forecast period.

Western Region. The locust situation continued to remain calm during September. Nevertheless, good rains and small-scale breeding caused locust numbers to increase slightly in **Mauritania**, **Niger** and **Chad**. The situation in northern **Mali** is likely to be similar but this could not be confirmed due to insecurity and a lack of surveys. In Mauritania, locust adults shifted from the south and southeast to the west and northwest where breeding will occur during the forecast period, causing locust numbers to increase and a few small groups could form. Scattered adults may appear in the **Western Sahara**. Breeding will continue in October but decline thereafter in northern Mali, Niger and Chad, and locusts will concentrate and could form a few very small groups as vegetation dries out.

Central Region. The situation remained calm during September except in **Yemen**. Continued breeding led to the formation of hopper and adult groups, bands and swarms in the interior of Yemen. Some of the adults moved to the winter breeding areas along the Red Sea and Gulf of Aden coastal plains and laid eggs that hatched and hoppers formed small groups and bands. Small-scale breeding also caused groups and a few small hopper bands to form on the central Red Sea coastal plains in **Saudi Arabia**. Low numbers of adults persisted in the summer breeding areas of **Sudan**, mainly between the Nile River and the Red Sea Hills. During the forecast period, a few groups could form in the interior of Sudan and move to the Red Sea coast where small-scale breeding will commence with the onset of the rains. In Yemen, small swarms will form in the interior and move to the Red Sea and Gulf of Aden coast where breeding will continue and hopper groups and bands are expected to form. Breeding will also continue on central Red Sea coast in Saudi Arabia.

Eastern Region. The situation remained calm during September. Low numbers of solitarious adults persisted in a few places of the summer breeding areas along both sides of the Indo-Pakistan border. As the monsoon rains have ended, no significant developments are likely during the forecast period.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Twitter: twitter.com/faolocust

No. 420

DESERT LOCUST BULLETIN

Weather & Ecological Conditions in September 2013

Good rains fell in early September in the Sahel of West Africa and Sudan but declined thereafter as the ITCZ began its southward retreat. Good rains also fell in the winter breeding areas in Yemen. The monsoon ended in South-West Asia.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) began its southerly decline over the Sahel in West Africa in September. During the first decade, it remained 1 degree above its climatological mean position over Mauritania, Mali, and Niger for the fourth consecutive decade, resulting in above average rains. There was a sharp equatorward movement of the ITCZ at mid-month in the Sahel except over the Tamesna Plains on both sides of the Mali-Niger border. Good rains fell in southern and western Mauritania, southern Tamesna in eastern Mali, in Tamesna, Air Mountains and central areas of Niger, and in central and northeast Chad (south of Kalait). Consequently, ecological conditions remained unusually favourable over large parts of the summer breeding areas. Good rains also fell in northwest Mauritania, extending to the Western Sahara where ecological conditions will improve for breeding. Lights rains fell in western Algeria and parts of the Hoggar Mountains.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) commenced its seasonal southward movement over Sudan during September. Consequently, light to moderate rains fell from Darfur to Kassala south of Mellit, Hamrat Esh Sheikh, Abu Uruq, and Derudeb. Ecological conditions remained favourable for breeding in these areas as well as in the western lowlands of Eritrea. In the winter breeding areas, good rains fell along the Red Sea coastal plains between Lith, Saudi Arabia to Mocha, Yemen. Although very little rain fell in the interior of Yemen, conditions remained favourable for breeding in runoff areas. Light to moderate rains fell in eastern Ethiopia, extending to adjacent areas of the plateau in northwest Somalia in early September.

In the **Eastern Region**, very little rain fell during September in the summer breeding areas along both sides of the Indo-Pakistan border as the monsoon ended.

Area Treated

Yemen	5,000 ha (September)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **Situation**

During September, locust numbers increased in the western part of the country from hatching and as more adults arrived from the south and southeast. Scattered immature and mature solitarious adults were present between Rkiz (1658N/1514W), Tasiast (2034N/1531W), Atar (2032N/1308W), Tidjikja (1833N/1126W) and Magta Lahjar (1730N/1305W). Adults laid eggs throughout this area and low numbers of solitarious hoppers of all instars were present.
In the southeast, locust numbers declined and only scattered immature and mature solitarious adults were seen between Aioun El Atrous (1639N/0936W) and Nema (1636N/0715W).

• **Forecast**

Locust numbers will increase in the west, northwest, and centre as breeding continues and locusts arrive from the south and southeast. There is a low to moderate risk that small groups could form in some places.

Mali

• **Situation**

During September, no locusts were seen by surveys carried out in central and western areas between Kayes (1426N/1128W) and Hombori (1516N/0140W).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the Adrar des Iforas, Tilemsi Valley and Tamesna. As vegetation dries out, locusts could concentrate and perhaps form a few small groups.

Niger

• **Situation**

During September, scattered immature and mature solitarious adults that were present in the southeastern Air Mountains in August spread to other parts of the Air, reaching north of Iferouane (1905N/0824E). Similar populations were also present

in the Tamesna between Tassara (1650N/0550E) and Arlit (1843N/0721E), south of Agadez (1658N/0759E), near Tanout (1458N/0852E), and southwest of Termit Massif (1600N/1120E). Small-scale breeding was underway in all of these areas and a few small hopper groups formed south of Agadez. Scattered mature solitarious adults were seen in the southwest near Filingué (1421N/0319E).

• **Forecast**

Small-scale breeding will cause locust numbers to increase in Tamesna and in the pasture areas between Tahoua and Tanout, parts of the Air, and perhaps near Filingué. As vegetation dries out, locusts could concentrate and perhaps form a few small groups.

Chad

• **Situation**

During September, isolated immature and mature solitarious adults persisted in the centre and northeast between Salal (1448N/1712E), Kalait (1550N/2054E) and Fada (1714N/2132E). Small-scale breeding occurred to the southeast of Salal and near Fada where isolated solitarious hoppers were present.

• **Forecast**

Small-scale breeding will cause locust numbers to increase in the northern parts of Kanem and Batha, in Biltine and in the northeast. As vegetation dries out, locusts could concentrate and perhaps form a few small groups.

Senegal

• **Situation**

No reports were received during September.

• **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 September, no locusts were seen in the south near Tamanrasset (2250N/0528E) and on the border of Mali near Bir Bou Mokhtar (2119N/0057E).

• **Forecast**

Small-scale breeding may cause locust numbers to increase slightly in the south near Tamanrasset and the border of Mali and Niger. Low numbers of locusts are likely to persist in the Adrar area.

Morocco

• **Situation**

No reports were received during September.

• **Forecast**

Low numbers of solitarious adults are likely to appear in southern areas of the Western Sahara and breed on a small-scale if rainfall occurs.

Libya

• **Situation**

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

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

No reports were received during September.

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During September, low numbers of immature and mature solitarious adults persisted in the summer breeding areas northwest and east of Khartoum, in the Northern Region between Dongola (1910N/3027E), Wadi Halfa (2147N/3122E), Selima Oasis (2122N/2119E), in the River Nile near Abu Hamed (1932N/3320E) and Berber (1801N/3400E), and on the western side of the Red Sea Hills between Kassala (1527N/3623E) and Sinkat (1855N/3648E). Small-scale breeding occurred in the Kassala and Red Sea states.

In the winter breeding areas of the northeast, mature adults appeared in Wadi Oko near Tomala (2002N/3551E) and laid eggs that hatched and solitarious hoppers were present.

• **Forecast**

As vegetation dries out, locusts may form small groups between the Nile and the Red Sea Hills, and move to the Red Sea coastal plains and subcoastal areas, and lay eggs with the onset of the rains.

Eritrea

• **Situation**

During September, no locusts were seen on the Red Sea coastal plains between Massawa

(1537N/3928E) and the Sudanese border, and in the western lowlands near Teseney (1506N/3639E).

• **Forecast**

Small-scale breeding is likely to be in progress in the western lowlands north of Teseney, causing locust numbers to increase. Surveys are recommended.

Ethiopia

• **Situation**

During September, scattered mature solitarious adults were seen at a few places in the Afar Region.

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

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

• **Forecast**

No significant developments are likely.

Egypt

• **Situation**

During September, no locusts were seen during surveys carried out on the Red Sea coast between Shalatyn (2308N/3535E) and Halaib (2213N/3638E), and near Marsa Alam (2504N/3454E); along both sides of Lake Nasser in the Allaqi area and near Abu Simbel (2219N/3138E), Tushka (2247N/3126E), and Aswan (2405N/3256E); and, in the Sh. Oweinat (2219N/2845E) area.

• **Forecast**

Low numbers of adults may start to appear on the Red Sea coast south of Shalatyn by the end of the forecast period.

Saudi Arabia

• **Situation**

During September, local breeding occurred on the central Red Sea coastal plains in one area southeast of Qunfidah (1909N/4107E) where low numbers of late instar solitarious hoppers and immature adults were present. Some of the hoppers and adults were forming small groups, and a few small hopper bands were reported.

• **Forecast**

Small-scale breeding will cause locust numbers to increase on the central Red Sea coastal plains in areas of recent rainfall near Lith, Qunfidah and Jizan. A few adult groups could form.

Yemen

• **Situation**

During September, surveys confirmed that breeding has caused small groups of hoppers and adults, hopper bands and a few small swarms to form in the western part of the interior from north of Al Hazm (1609N/4447E) to Marib (1527N/4519E), in Shabwah near Bayhan (1452N/4545E), west of Al Abr (1608N/4714E), in Wadi Hadhramaut, and on the plateau between Hadhramaut and Thamud (1717N/4955E). About 200 small hopper bands, at densities up to 300 hoppers/m^2, were reported between Sayun (1559N/4844E) and Thamud.

In the winter breeding areas, hatching occurred on the Tihama coastal plains of the Red Sea and hoppers formed small groups and bands in the north near Suq Abs (1600N/4312E) while hoppers mixed with immature solitarious adults were present on the central coast. There was an unconfirmed report of a small mature swarm near Suq Abs arriving from the interior on the 6th. Immature and mature solitarious adults appeared on the Gulf of Aden coastal plains between Am Rija (1302N/4434E) and Ahwar (1333N/4644E) and Bir Ali (1401N/4820E) where small-scale breeding was in progress. Ground teams treated 5,000 ha in September

• **Forecast**

Locust numbers will decline in the interior as breeding ends and small groups and swarms form that will move to the Red Sea and Gulf of Aden coastal plains. Breeding will occur along the coast, causing locust numbers to increase and groups and small bands to form.

Oman

• **Situation**

During September, an individual mature solitarious adult was seen on the Batinah coast at Al Musanaah (2332N/5737E). No locusts were present on the Musandam Peninsula, and in the northern interior between Ibri (2314N/5630E) and Nizwa (2255N/5731E), and southeast of Adam (2223N/5731E).

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen along the southeast coast near Jask (2540N/5746E) during September.

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

During September, isolated mature solitarious adults persisted in the Cholistan Desert along the Indian border southeast of Rahimyar Khan (2822N/7020E). No locusts were seen in the Khairpur and Tharparkar Deserts.

• **Forecast**

Locust numbers will decline in the summer breeding areas of Cholistan and Tharparkar. No significant developments are likely.

India

• **Situation**

During September, isolated mature solitarious adults persisted in Rajasthan at a few places along the Pakistan border west of Bikaner (2801N/7322E) where egg-laying was seen, and west of Jaisalmer (2652N/7055E). Isolated immature and mature adults were also seen northwest and north of Bikaner.

• **Forecast**

Although limited breeding may occur, locust numbers will decline in Rajasthan and Gujarat as vegetation dries out. No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://

www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:
- **Current threats.** Information section

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-apreviewenglishversion

French: http://www.slideshare.net/FAOLocust/elocust3-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-apreview-arabicversion

Greenness maps. Dynamic maps of green vegetation evolution every decade can now be downloaded from Columbia University's IRI (USA) website: http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

2013 events. The following activities are scheduled or planned:
- **SWAC.** Desert Locust Contingency Planning regional workshop, 13-15 October, Tehran (Iran)
- **EMPRES/WR.** 12th Liaison Officer meeting, 8-12 December, Algiers (Algeria)
- **EMPRES/WR.** 9th Steering Committee meeting, 13 December, Algiers (Algeria)

Glossary of terms

The following special terms are used in the Desert Locust Bulletin when reporting locusts:

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- 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

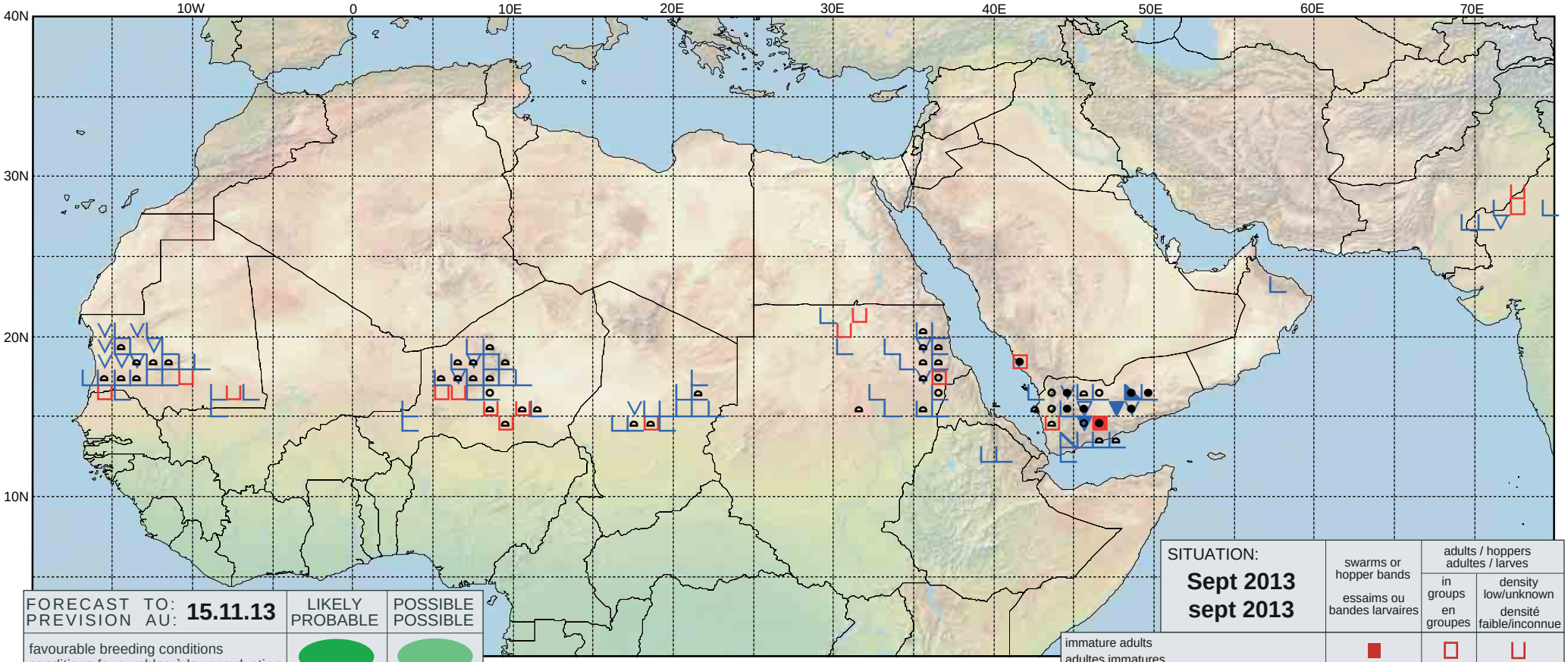
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

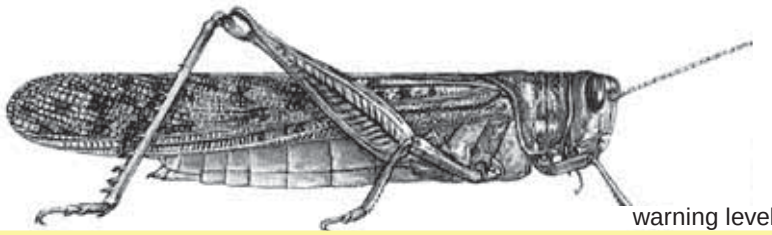
Desert Locust Summary
Criquet pèlerin - Situation résumée

420



FORECAST TO: / PREVISION AU: **15.11.13**	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: **Sept 2013 sept 2013**	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 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)	◘	◙	⊎



warning level: **CAUTION** (Yemen)

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations **No. 421**

(4 Nov 2013)

General Situation during October 2013 Forecast until mid-December 2013

Locust numbers increased and small hopper bands formed in several countries during October. The situation remained the most serious in Yemen as swarms formed in the interior where control operations were not possible, moved to the Red Sea and Gulf of Aden coastal plains, and laid eggs that hatched and hoppers formed groups and small bands. Some infestations extended to adjacent areas of Saudi Arabia. An outbreak developed in Mauritania where hopper and adult groups and small bands formed in the west and northwest. Locusts were concentrating in Niger and formed groups and bands in the interior of Sudan. Control operations were undertaken in all of the affected countries. During the forecast period, locusts will concentrate and could form a few small groups in northern Mali, Niger and Chad as vegetation dries out. Locust numbers will increase further in west and northwest Mauritania and in the winter breeding areas along both sides of the Red Sea where hopper groups and bands are likely to form. A few small swarmlets may form in Yemen and Mauritania.

Western Region. An outbreak developed within an area of about 120,000 km^2 in west and northwest **Mauritania** where adults arrived from summer breeding areas in the south, concentrated, matured, and formed groups. Good rains allowed egg laying to continue from September. Hatching occurred during October and hoppers formed small groups and bands. Ground teams treated nearly 3,000 ha. As breeding continues, locust numbers are expected to increase further, leading to the formation of groups, bands and perhaps a few small swarmlets. There is a high possibility that infestations may extend into southern parts of **Western Sahara**. In **Niger**, small-scale breeding continued mainly on the Tamesna Plains and, by the end of October, adults were concentrating and becoming *transiens* as vegetation started to dry out. In **Chad**, small-scale breeding caused an increase in adult numbers and a few small groups could form as vegetation dries out in November.

Central Region. Locust populations shifted from the summer to the winter breeding areas during October. The situation deteriorated further in **Yemen** as swarms formed in the interior and moved to the coastal plains of the Red Sea and Gulf of Aden and laid eggs in areas where hopper groups and bands had already formed from September breeding. Only limited control operations could be carried out. In **Saudi Arabia**, hopper and adult groups were treated in the interior along the Yemen border, and small-scale breeding occurred on the central Red Sea coast. In late October, adult groups arrived on the southern coastal plains near Jizan from Yemen. In **Sudan**, there may be early signs that an outbreak is developing in the summer breeding areas of the interior where hopper and adult groups and a few hopper bands formed. Adult groups moved to the northeast where breeding was already in progress and to the Red Sea coast. Good rains fell in late October in northeast Sudan and southeast **Egypt**. Locust numbers will continue to increase along both sides of the Red Sea with hatching in November that will lead to the formation of groups and small hopper bands. A few small swarmlets could form in Yemen in December. Elsewhere, local breeding occurred in eastern **Ethiopia** where good rains fell, and isolated adults were present in northern **Oman**.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Eastern Region. The situation remained calm during October. Locust numbers continued to decline as vegetation dried out in the summer breeding areas along both sides of the Indo-Pakistan border. No significant developments are likely during the forecast period.

Weather & Ecological Conditions in October 2013

Summer rains ended in the Sahel of West Africa and Sudan. Good rains fell in western Mauritania, along the Red Sea coast and in the Horn of Africa. Ecological conditions remained favourable for breeding in Mauritania and Yemen and were improving in the winter breeding areas of Sudan and Egypt.

In the **Western Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its southerly retreat over the Sahel in West Africa during October and was well south of the summer breeding area by mid-month. Consequently, only light showers fell in the extreme south of Mauritania and in Lac and southern Kanem provinces of western Chad. Light rain also fell during the second decade in western Mauritania and central areas of Western Sahara. Ecological conditions remained favourable for breeding in west and northwest Mauritania and in the Tamesna and Air Mountains in northern Niger. Vegetation was drying out in Chad and, at the end of the month, started to dry out in a few places of Tamesna in Niger. In Northwest Africa, ecological conditions were favourable for breeding in southern Algeria to the west of Tamanrasset and near irrigated perimeters in the Adrar area of the central Sahara.

In the **Central Region**, the Inter-Tropical Convergence Zone (ITCZ) continued its seasonal southward movement over Sudan during October and was well south of the summer breeding area. Nevertheless, light showers fell in West Kordofan, North Kordofan (south of El Obeid), and near Kassala. Vegetation remained green north of Khartoum in the Baiyuda Desert and between the Nile and Atbara rivers. Vegetation dried out in the summer breeding areas in the interior of Yemen. In the winter breeding areas, good rains fell during the first decade along the Red Sea coastal plains from Qunfidah, Saudi Arabia to Bab El Mandeb in Yemen, extending to the western parts of the Gulf of Aden coast. Rains also fell in the Asir Mountains near Mecca. During the last decade of October, good rains fell in northeast Sudan (Wadi Oko/Diib and the Red Sea coast) and in adjacent coastal and subcoastal areas of southeast Egypt south of Shalatyn. Consequently, ecological conditions remained favourable for breeding on the eastern side of the Red Sea and were improving on the western side. In the Horn of Africa, good rains that fell in eastern Ethiopia and northern Somalia, primarily during the first decade of October, should allow breeding conditions to improve.

In the **Eastern Region**, very little rain fell during October in the summer breeding areas along both sides of the Indo-Pakistan border. Light rain fell in parts of Barmer district in India during the first decade of the month.

Area Treated

Mauritania	2,990 ha (1-28 October)
Niger	110 ha (October)
Saudi Arabia	210 ha (October)
Sudan	240 ha (October)
Yemen	1,400 ha (27 Sep – 8 Oct)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During October, an outbreak developed in the west and northwest where locust numbers increased and concentrated due to the arrival of adults from the summer breeding areas in the south, and from breeding that continued since September. Solitarious and *transiens* adults at densities up to 40,000 adults/ha formed groups, matured and laid eggs within an area of about 400 km by 300 km between Nouakchott (1809N/1558W), Tidjikja (1833N/1126W), Atar (2032N/1308W) and Tasiast (2034N/1531W). Hatching occurred and hoppers formed small groups and bands at densities up to 200 hoppers/m^2. Ground teams treated 2,990 ha from 1 to 28 October.

• **Forecast**

Locust numbers will increase further in Inchiri, Trarza, Adrar, western Tagant west, and northern Brakna as breeding continues, more hatching occurs, and locusts concentrate to form groups, small bands, and perhaps a few small swarmlets.

Mali

• **Situation**

During October, no locusts were seen by surveys carried out in western and central areas between Nioro (1512N/0935W) and Mopti (1430N/0415W).

• **Forecast**

Small-scale breeding will come to an end as conditions become unfavourable in the Adrar des Iforas, Tilemsi Valley and Tamesna. Low numbers of locusts are expected to persist and could concentrate and form a few small groups in areas that remain green.

Niger

• **Situation**

During October, small-scale breeding occurred mainly near Arlit (1843N/0721E) and In Abangharit (1754N/0559E) where scattered solitarious hoppers of all instars were present. Fledging from earlier breeding occurred after mid-month. Scattered immature and mature solitarious adults persisted in these areas as well as in the northern Air Mountains and on the Tamesna Plains between Arlit, Agadez (1658N/0759E), In Gall (1651N/0701E) and In Abangharit. By the end of the month, some adults were concentrating and becoming *transiens* in Tamesna. Elsewhere, isolated adults were seen on the western edge of the Ténéré Desert and local breeding occurred in the southeast where isolated third instar hoppers and immature adults were seen northeast of Diffa (1318N/1236E). Ground teams treated 110 ha of hoppers in Tamesna during October.

• **Forecast**

Small-scale breeding will come to an end as conditions become unfavourable in the Air Mountains and the Tamesna Plains. Low numbers of locusts are expected to persist and could concentrate and form a few small groups in areas that remain green.

Chad

• **Situation**

During October, an increasing number of immature and mature solitarious adults were seen at densities up to 1,200 adults/ha, mainly in the northeast between Arada (1501N/2040E) and Fada (1714N/2132E), in parts of Batha province, and in the west between Lake Chad and Nokou (1435N/1446E) in Kanem and Lac provinces. Late instar hoppers were present early in the month near Fada and later in the month in Lac.

• **Forecast**

Small-scale breeding will end as conditions become unfavourable in the centre and northeast. Low numbers of locusts are expected to persist and could concentrate and form a few small groups in areas that remain green.

Senegal

• **Situation**

On 30 September, an individual solitarious adult was reported in Dakar (1442N/1728W). No reports were received during October.

• **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 October, no locusts were seen in the southern Sahara west of Tamanrasset (2250N/0528E) and in the central Sahara near crops south of Adrar (2753N/0017W).

• **Forecast**

Low numbers of solitarious adults may appear in areas of green vegetation near Tamanrasset and in irrigated areas near Adrar, and breed on a small scale.

Morocco

• **Situation**

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

• **Forecast**

Low to moderate numbers of solitarious adults and perhaps a few small groups are likely to appear in southern areas of the Western Sahara. Small-scale breeding will occur in areas that receive rainfall and could cause small groups to form.

Libya

• **Situation**

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

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

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

• **Forecast**

No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During October, solitarious adults continued to mature in the summer breeding areas in North Kordofan, the Baiyuda Desert northwest of Khartoum, the Nile Valley near Merowe and north of Dongola (1910N/3027E), and east of the Nile between Khartoum, Atbara (1742N/3400E), Kassala (1527N/3623E) and the Red Sea Hills. As vegetation dried out, a few second to fourth instar hopper bands formed along the Atbara River and near Derudeb (1731N/3607E), hopper groups formed near Kassala, and adult groups formed northeast of Khartoum. Control teams treated 215 ha. Locust numbers were declining as adults moved to the winter breeding areas in the northeast and on the Red Sea coast.

In the winter breeding areas, adult groups laid eggs in Wadi Oko/Diib in the northeast and in the Tokar Delta (1827N/3741E) on the coast. Scattered immature and mature solitarious adults were also present in both areas. Late instar hoppers from September laying formed a few small groups in W. Oko near Tomala (2002N/3551E) where control teams treated 25 ha.

• **Forecast**

Locust numbers will continue to decline in the summer breeding areas in the interior where a few adult groups and perhaps small swarmlets may form and move into cropping areas along the Nile or continue to the Red Sea coast. In the winter breeding areas, small-scale breeding will cause locusts to increase in the northeast and along the Red Sea coast. Hatching in Wadi Oko/Diib and Tokar will commence in early November and small hopper groups may form that will start to fledge in early December.

Eritrea

• **Situation**

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

• **Forecast**

Low numbers of solitarious adults are expected to appear on the Red Sea coast between Massawa and Karora. Small-scale breeding in areas of runoff and rainfall will cause locust numbers to increase, especially near Sheib and Mehimet. Regular surveys are recommended.

Ethiopia

• **Situation**

During October, local breeding occurred north of Dire Dawa where a few third and fourth instar solitarious hoppers mixed with scattered mature solitarious adults were present at mid-month.

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No reports were received during October.

• **Forecast**

Low numbers of adults may appear on the northwest coastal plains and breed on a small scale in areas of recent rainfall. There is a low risk that a few small groups or swarmlets may arrive from Yemen in November.

Egypt

• **Situation**

During October, no locusts were seen during surveys carried out on the Red Sea coast between Berenice (2359N/3524E) and Halaib (2213N/3638E), along both sides of Lake Nasser in the Allaqi area and near Abu Simbel (2219N/3138E), Tushka (2247N/3126E), and Aswan (2405N/3256E); and, in the northwest near Siwa (2912N/2531E) and Salum (3131N/2509E).

• **Forecast**

Adults and perhaps a few small groups are expected to appear along the Red Sea coast in the southeast. Small-scale breeding will cause locust numbers to increase between Berenice and Halaib where hatching will occur and hoppers may form small groups.

Saudi Arabia

• **Situation**

During October, scattered immature and mature adults were present on the central Red Sea coastal plains near Lith (2008N/4016E) and Qunfidah (1909N/4107E). Small-scale breeding was in progress near Lith where solitarious and *transiens* hoppers of all instars were seen. Early in the month, groups of very small late instar hoppers and mature adults were present in the interior about 100 km east of Najran (1729N/4408E) near farms on the edge of the Empty Quarter and the Yemen border. At the end of the month, local breeding was reported on the southern coast near Jizan (1656N/4233E) and the Yemen border. On the 27th, adult groups were seen arriving near Jizan from Yemen. No locusts were seen on the northern coast between Rabigh (2247N/3901E) and Bader (2346N/3847E). Control teams treated 210 ha.

• **Forecast**

Locust numbers will continue to increase along the Red Sea coastal plains from small-scale breeding in areas of recent rainfall, mainly between Jizan and Lith. Hoppers and adults may form small groups.

Yemen

• **Situation**

In the summer breeding area of the interior, only limited control operations were carried out in early October on farms near Marib (1527N/4519E) and in Shabwah province. On the 9th, several immature swarms were seen in Wadi Hadhramaut near Shebam (1553N/4838E), Tarim (1603N/4859E) and Wadi Henen (1551N/4814E). The swarms probably came from wadis in the plateau area to the north where locals reported infestations in September. Control was not possible due to insecurity and beekeeping. On the 22nd, an immature swarm was reported in the highlands north of Sana'a.

In the winter breeding areas, control operations continued in early October on the northern Red Sea coast against groups of hoppers and adults and small hopper bands, treating 1,400 ha from 27 September to 8 October. By the end of the month, there were reports of adult groups and at least four small swarms laying eggs between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E), and hatching and fledging were in progress. Scattered adults were present on the central coast east of Hodeidah (1450N/4258E). On the Gulf of Aden coast, hoppers and adults were reported east of Zinjibar (1306N/4523E) in early October. An immature swarm and hoppers were seen west of Aden near Am Rija (1302N/4434E) on the 29th.

• **Forecast**

Locust numbers will increase as breeding continues along the Red Sea and Gulf of Aden coastal plains. Hatching will occur from early November onwards, and groups, small bands and perhaps a limited number of small swarms will form.

Oman

• **Situation**

During October, isolated immature solitarious adults were seen in the northern interior in crops to the southwest of Nizwa (2255N/5731E). No locusts were seen in Sharqiya and in the south near Maziuna (1750N/5239E) and the Yemen border.

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No reports were received during October.

• **Forecast**

No significant developments are likely.

Pakistan

• **Situation**

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

• **Forecast**

Locust numbers will decline in the summer breeding areas of Cholistan and Tharparkar. No significant developments are likely.

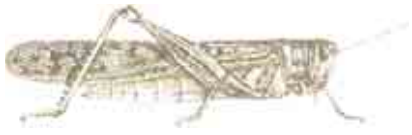
India

• **Situation**

During October, scattered immature solitarious adults persisted in Rajasthan along the Pakistan border west of Bikaner (2801N/7322E) as well as north of Bikaner, while mature adults persisted west of Jaisalmer (2652N/7055E). Fledglings were reported at three places and laying at one location.

• **Forecast**

Locust numbers will continue to decline in Rajasthan as vegetation dries out. No significant developments are likely.



Afghanistan

• **SITUATION**

No reports received.

• **FORECAST**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Current threats.** Information section

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-apreviewenglishversion

French: http://www.slideshare.net/FAOLocust/elocust3-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-apreview-arabicversion

Greenness maps. Dynamic maps of green vegetation evolution every decade can now be downloaded from Columbia University's IRI (USA) website: http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

CRC website. The FAO Commission for Controlling the Desert Locust in the Central Region (CRC) has launched an updated website: http://crc-empres.org

2013-14 events. The following activities are scheduled or planned:

- **CRC.** 4th Regional Training Course on Desert Locust Aerial Survey and Control Operations, 17-21 November, Jeddah (Saudi Arabia)
- **EMPRES/WR.** 12th Liaison Officer meeting, 1-4 December, Algiers (Algeria)
- **EMPRES/WR.** 9th Steering Committee meeting, 5 December, Algiers (Algeria)

- **DLCC.** Desert Locust Control Financing System meeting, 11-13 March, FAO Rome

Jean Roy. It is with deep regret that we announce the death of Jean Roy on 3 November. Mr. Roy, a French national, was the locust expert who established and managed a regional anti-locust service in western Africa from 1952 onwards. He became Team Leader of the Operational Research Aerial Unit of the United Nations Special Fund (later UNDP) Desert Locust Project (1961-64) and then Senior Officer of the FAO Locusts, Other Migratory Pests and Emergency Operations Group (from 1975 until his retirement on 31 December 1979). He continued to do a lot of consultancies after his retirement. We would like to express our sincere condolences to his family and government.

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.

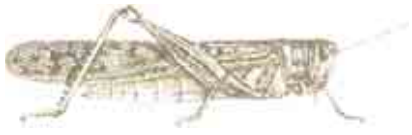
WARNING LEVELS

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

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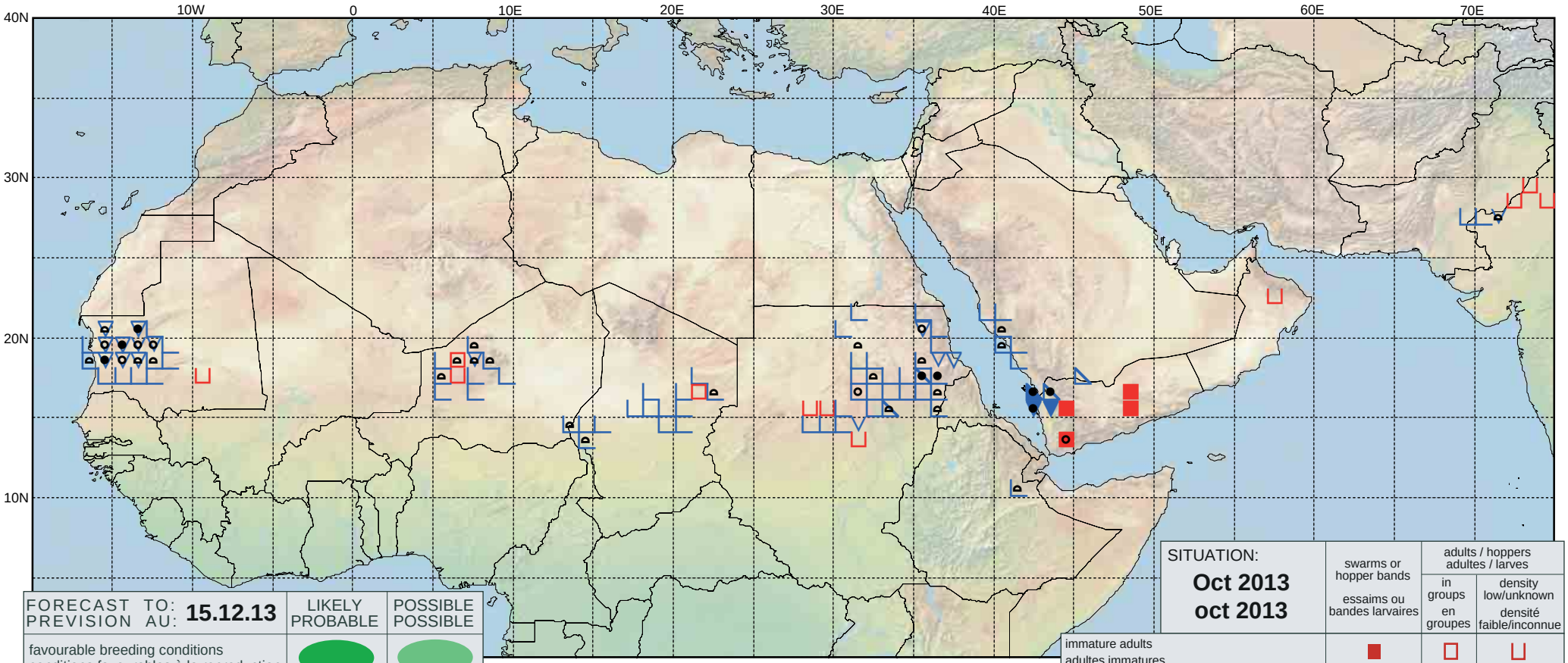
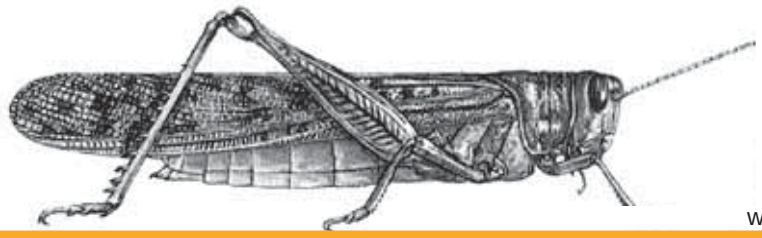


FORECAST TO: / PREVISION AU: **15.12.13**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Oct 2013 oct 2013**	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)			



warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 422

(3 Dec 2013)

General Situation during November 2013 Forecast until mid-January 2014

The Desert Locust situation worsened during November along the Red Sea coast and in northwest Mauritania. Locusts continued to gregarize and form hopper bands and groups of hoppers and adults in Mauritania, Yemen, and Sudan as well as in Eritrea where an outbreak developed unexpectedly. A few swarms formed in Sudan and Yemen. Control operations intensified in all countries. Nevertheless, a second generation of breeding will cause locust infestations to increase further in December and January. More hopper bands and small swarms are likely to form along both sides of the Red Sea and, to a lesser extent, in northwest Mauritania. All efforts are required to reduce locust numbers and the potential threat to crops in the affected countries.

Western Region. An outbreak continued in northwest **Mauritania** where ground control operations intensified and treated some 32,000 ha of hopper groups and bands and an increasing number of adult groups. A second generation of breeding will commence in December with egg-laying, hatching and band formation. Consequently, locust numbers will increase further and infestations could expand and extend into adjacent areas of **Western Sahara**, northern Mauritania and southern **Morocco**. Locust numbers declined in the summer breeding areas of the northern Sahel in **Mali**, **Niger** and **Chad** where no significant developments are expected during the forecast period. Limited control operations were carried out against hopper groups and adults in irrigated cropping areas of central **Algeria**.

Central Region. The situation worsened in the winter breeding areas along both sides of the Red Sea, particularly in **Yemen** and **Eritrea**, in November. Ground teams treated more than 9,000 ha of hopper groups, bands, and an increasing number of adult groups that formed on the northern Red Sea coast in Yemen. An outbreak unexpectedly developed on the central Red Sea coast in Eritrea from undetected breeding. Ground control operations treated more than 10,000 ha of hopper groups and bands. Breeding increased on the Red Sea coast in **Saudi Arabia** where limited control operations were carried out against hopper and adult groups. In **Sudan**, ground and aerial control operations treated nearly 21,000 ha of hopper bands and groups of hoppers and adults that persisted in the summer breeding areas of the interior. A few swarms formed in Sudan and Yemen. Breeding was underway on the Red Sea coast and in subcoastal areas of Sudan where locusts were concentrating and gregarizing. A second generation of breeding started in Yemen and Saudi Arabia, and is expected to occur in Eritrea during January. This will cause locust numbers to increase further and, unless controlled, hopper bands and swarms will form that will threaten the Region. Elsewhere, local breeding occurred in eastern **Ethiopia** and a tropical cyclone brought heavy rain to winter breeding areas in northwest **Somalia**.

Eastern Region. The situation remained calm during November. Isolated adults were present in Rajasthan, **India**. Good rains fell in spring breeding areas along the coast of southeast **Iran** and southwest **Pakistan** where low numbers of adults may appear by the end of the forecast period.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Weather & Ecological Conditions in November 2013

Ecological conditions remained favourable for breeding in the winter breeding areas along both sides of the Red Sea except for Egypt, and in northwest Mauritania.

In the **Western Region**, light to moderate showers fell in early November in west and northwest Mauritania, extending into Western Sahara and southern Morocco. Light showers fell again in both areas during the last decade. Consequently, ecological conditions remained favourable for breeding in northwest Mauritania and had improved in parts of Western Sahara from September rains. No significant rain fell in the northern Sahel of West Africa. Ecological conditions remained dry except in parts of the Adrar des Iforas in northern Mali and in the Air Mountains of Niger where limited areas of green vegetation were present. Very little rain fell in Northwest Africa and breeding conditions were only favourable in parts of southern Algeria and near irrigated cropping areas in the central Sahara of Algeria.

In the **Central Region**, good rains fell in the winter breeding areas along both sides of the Red Sea during November. In Saudi Arabia, moderate rains fell on the northern coastal plains during the first decade and on the central and southern coast during the second decade while light rain fell at other times during the month along parts of the coast. In Yemen, heavy rains fell in the highlands during the last decade, some of which may have runoff onto the Red Sea coastal plains. In Eritrea, good rains fell near Massawa during the last two decades. No significant rain fell along the coast in Sudan and Egypt. Ecological conditions were favourable for breeding along the Red Sea coast of Saudi Arabia, Yemen and Eritrea and on the Gulf of Aden coast west of Aden in Yemen. Conditions improved in Tokar Delta and along Wadi Oko in northeast Sudan from earlier rains but mainly dry conditions prevailed in adjacent areas of southeast Egypt. In the Horn of Africa, good rains fell in eastern Ethiopia early in the month. In northern Somalia, heavy rains of up to 75-300 mm associated with Tropical Cyclone 03A fell on the coast, escarpment and plateau on 11-12 November, causing flooding and damage. Consequently, ecological conditions will improve in the winter breeding areas on the northwest coast. In Oman, light to heavy showers, up to 100 mm, fell early in the third week of the month in coastal and interior areas of the north. In the summer breeding areas, vegetation continued to dry out in the interior of Sudan except near cultivated areas in the Nile Valley.

In the **Eastern Region**, good rains fell during the last decade of November in spring breeding areas along the coast of southeast Iran and southwest Pakistan. Nevertheless, ecological conditions remained dry and unfavourable for breeding in the Region.

Area Treated

During November, control operations intensified nearly 74,000 ha were treated compared to about 5,000 ha in October.

Algeria	40 ha (November)
Eritrea	10,040 ha (1-21 November)
Mauritania	32,355 ha (November)
Saudi Arabia	466 ha (November)
Sudan	740 ha (October revised)
	20,709 ha (November)
Yemen	9,000 ha (1-15 Nov)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During November, hopper bands formed near Akjoujt (1945N/1421W) and southwest of Bennichab (1932N/1512W) while hopper groups were present elsewhere in the northwest north of 1830N and west of 13W. Hopper densities were up to 300 hoppers/m^2. Fledging was underway and, as the month progressed, immature adult groups increased, some of which became mature after mid-month. By the end of the month, most of the hoppers had reached fifth instar and adult densities were up to 30,000 adults/ha. Control operations intensified during November and ground teams treated 32,355 ha. No locusts were seen between Atar (2032N/1308W) and Zouerate (2244N/1221W).

• **Forecast**

Groups of adults will continue to mature in the northwest and a second generation of breeding will commence in December with egg-laying and hatching, causing hoppers to form numerous groups and small bands. Some adults and groups may move northwards during periods of warm southerly winds, reaching parts of Tiris-Zemmour where breeding may occur in areas that receive rainfall.

Mali

• **Situation**

During November, no locusts were seen by surveys carried out in the west near Kayes (1426N/1128W) and in central areas between Nara (1510N/0717W) and Mopti (1430N/0415W).

• **Forecast**

Low numbers of locusts are likely to persist in parts of the Adrar des Iforas.

Niger

• **Situation**

During November, locust numbers declined and only isolated immature and mature solitarious adults mixed with a few fourth instar hoppers persisted in the Tamesna between In Abangharit (1754N/0559E) and Tassara (1650N/0550E). Isolated immature solitarious adults from local breeding were slowly maturing in the southeast near Ngourti (1519N/1312E) and the Chad border.

• **Forecast**

Low numbers of locusts are expected to persist in parts of the Air Mountains and perhaps the Tamesna.

Chad

• **Situation**

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

• **Forecast**

Low numbers of locusts are likely to be present and may persist in parts of the northeast.

Senegal

• **Situation**

No reports were received during November.

• **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 November, second to fourth instar hopper groups and scattered immature solitarious adults were present in irrigated cropping areas in the central Sahara near Adrar (2753N/0017W). Ground teams treated 40 ha. No locusts were seen during surveys carried out southeast of Beni Abbes (3011N/0214W), between Adrar and In Salah (2712N/0229E), and south and west of Tamanrasset (2250N/0528E).

• **Forecast**

Small-scale breeding may continue in irrigated areas near Adrar where small groups could form. Low numbers of adults may appear near Tindouf during periods of warm southerly winds.

Morocco

• **Situation**

During November, isolated immature solitarious adults were seen at a few places in the Adrar Settouf region of Western Sahara near Bir Gandouz (2136N/1628W), Tichla (2137N/1453W) and the Mauritanian border. No locusts were seen further north between Bir Anzarane (2353N/1431W) and Oum Dreyga (2406N/1316W).

• **Forecast**

An increasing number of adults and small groups are likely to appear in southern areas of the Western Sahara. Small-scale breeding will occur in areas that receive rainfall and could cause small groups to form.

Libya

• **Situation**

No reports were received during November.

• **Forecast**

No significant developments are likely.

Tunisia

• **Situation**

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

• **Forecast**

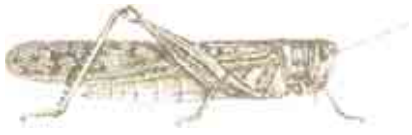
No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During November, hopper groups and band continued to form in the summer breeding areas



northwest of Khartoum (1533N/3235E) in Wadi Muqaddam, along the Atbara River, and near Derudeb (1731N/3607E) where fledging occurred and immature and mature adults formed groups. A few small immature and mature swarms were present southwest of Derudeb while solitarious immature and mature adults were seen in the Nile Valley between Merowe (1830N/3149E) and Berber (1801N/3400E). Control operations treated 20,819 ha of which 2,600 ha were by air. In the winter breeding areas, breeding occurred in the northeast along W. Oko near Tomala (2002N/3551E) and on the Red Sea coast in the Tokar Delta (1827N/3741E) where solitairous adults were laying eggs and solitairous hoppers were present. A few hopper bands were also present near Tomala while a few immature and mature adult groups were reported in Tokar. Ground teams treated 140 ha. At the end of the month, scattered immature and mature solitarious adults appeared on the coastal plains between Tokar and the Eritrean border.

• **Forecast**

Locust numbers will continue to decline in the summer breeding areas in the interior where a few adult groups and perhaps small swarmlets may form and move into cropping areas along the Nile or continue to the Red Sea coast. In the winter breeding areas, small-scale breeding will cause locusts to increase in the northeast and along the Red Sea coast. Hatching in Wadi Oko/Diib and Tokar will increase and small hopper and adult groups may form.

Eritrea

• **Situation**

During November, locust numbers suddenly increased on the central Red Sea coast between Shelshela (1553N/3906E), Wekiro (1548N/3918E) and Emberemi (1541N/3925E) from undetected egg-laying during the last week of October. Groups of *transiens* adults were first seen copulating north of Wekiro on the 1st. Hatching occurred during the first three weeks of the month and *transiens* and gregarious hoppers formed small first to fourth instar groups and bands by the 21st near Shelshela and Emberemi. Ground teams treated 10,040 ha on 1-21 November. Infestations were also reported further north near Afabet (1612N/3841E). In early November, there were unconfirmed reports of locusts on the northern coast near Sudan.

• **Forecast**

Hoppers will fledge from the second week of December onwards, causing an increasing number of adult groups and perhaps a few small swarms to form near Shelshela and Emberemi. Locust numbers are also expected to increase on the coast between Shelshela and the Sudanese border from breeding in areas of recent rain and runoff. Intensive survey and control efforts are required.

Ethiopia

• **Situation**

During November, small-scale breeding continued in the eastern region where low densities of third to fifth instar solitarious hoppers, fledglings, immature and mature solitarious adults and a few mature adult groups were present north of Dire Dawa (0935N/4150E). Ground teams treated 4 ha of hopper groups.

• **Forecast**

Small-scale breeding is expected to continue in areas of recent rainfall near Dire Dawa and Jijiga.

Djibouti

• **Situation**

No reports were received during November.

• **Forecast**

No significant developments are likely.

Somalia

• **Situation**

No reports were received during November.

• **Forecast**

Low numbers of adults may appear on the northwest coastal plains and breed in areas of recent rainfall.

Egypt

• **Situation**

During November, isolated immature solitarious adults were present near Tushka (2247N/3126E). No locusts were seen during surveys carried out on the Red Sea coast and subcoastal areas between Berenice (2359N/3524E) and the Sudan border, along both sides of Lake Nasser in the Allaqi and Garf Husein (2317N/3252E) areas and near Abu Simbel (2219N/3138E), northeast of Aswan (2405N/3256E), and in the northwest near Siwa (2912N/2531E) and Salum (3131N/2509E).

• **Forecast**

Adults and perhaps a few small groups are expected to appear along the Red Sea coast in the southeast. Small-scale breeding will cause locust numbers to increase between Berenice and Halaib

where hatching will occur and hoppers may form small groups.

Saudi Arabia

• **Situation**

During November, breeding increased on the central Red Sea coastal plains between Lith (2008N/4016E) and Qunfidah (1909N/4107E) and on the southern plains between Jizan (1656N/4233E) and the Yemen border. More infestations were present on the central coast where adult groups were laying eggs. In both areas, hoppers of all instars formed small groups and mature adult groups were present. Ground teams treated 466 ha. Scattered immature and mature solitarious adults were present on the northern coast near Yenbo (2405N/3802E) and in the Asir Mountains near Abha (1813N/4230E).

• **Forecast**

Locust numbers will continue to increase along the Red Sea coastal plains as second generation hatching occurs between Lith and Qunfidah in December and breeding continues in areas of recent rainfall between Jizan and Yenbo. Hoppers and adults are likely to form groups and perhaps small bands and swarms.

Yemen

• **Situation**

During November, hoppers continued to form groups and small bands on the northern coast of the Red Sea between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E). Most of the hoppers had fledging by mid-month, and immature and mature adults were forming groups. An immature swarm was seen on the 23rd. A second generation of egg-laying commenced during the second week. Ground teams treated about 9,000 ha during the first half of November. Small-scale breeding caused locust numbers to increase on the central Red Sea coast and on the Gulf of Aden coast where solitarious hoppers and adults were present between Bajil (1458N/4314E) and Zabid (1410N/4318E), and west of Aden (1250N/4503E). Hatching continued northwest of Aden and hoppers formed early instar groups and a few small bands near Am Rija (1302N/4434E).

• **Forecast**

First generation groups and swarms will form on the northern Tihama during December, mature and lay eggs from late December onwards. Early second generation hatching and band formation will commence in the beginning of December and increase in January. New groups and swarms could form after mid-January. Locust numbers will also increase on the Gulf of Aden coast west of Aden where adults will form groups in December and a second generation of egg-laying could occur in January.

Oman

• **Situation**

No locusts were seen during surveys carried out in the northern interior near Adam (2223N/5731E) and on the Batinah coast near Jamma (2333N/5733E) in November.

• **Forecast**

Low numbers of adults may appear in areas of recent rainfall in Dhahera, Dakhiliya and Sharqiya. No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen during surveys carried out on the southeastern coastal plains between Jask (2540N/5746E) and Chabahar (2517N/6036E) in November.

• **Forecast**

Low numbers of adults may appear in areas of recent rainfall along the southeast coast at the end of the forecast period.

Pakistan

• **Situation**

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

• **Forecast**

Low numbers of adults may appear in areas of recent rainfall along the Baluchistan coast at the end of the forecast period.

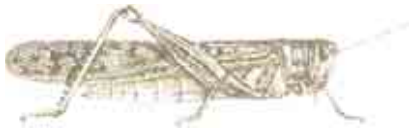
India

• **Situation**

During November, isolated immature solitarious adults persisted in Rajasthan along the Pakistan border northwest of Bikaner (2801N/7322E) and mature solitarious adults were seen at one place northwest of Jaisalmer (2652N/7055E).

• **Forecast**

Locust numbers will continue to decline in Rajasthan as vegetation dries out. No significant developments are likely.



Afghanistan

• **SITUATION**

No reports received.

• **FORECAST**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Current threats.** Information section
- **Yemen outbreak.** Archives – Outbreaks 2013 section

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-apreviewenglishversion

French: http://www.slideshare.net/FAOLocust/elocust3-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-apreview-arabicversion

Greenness maps. Dynamic maps of green vegetation evolution every decade can now be downloaded from Columbia University's IRI (USA) website: http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

2013-14 events. The following activities are scheduled or planned:

- **EMPRES/WR.** 12th Liaison Officer meeting, 1-4 December, Algiers (Algeria)
- **EMPRES/WR.** 9th Steering Committee meeting, 5 December, Algiers (Algeria)
- **DLCC.** Desert Locust Control Financing System meeting, 11-13 March, FAO Rome

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

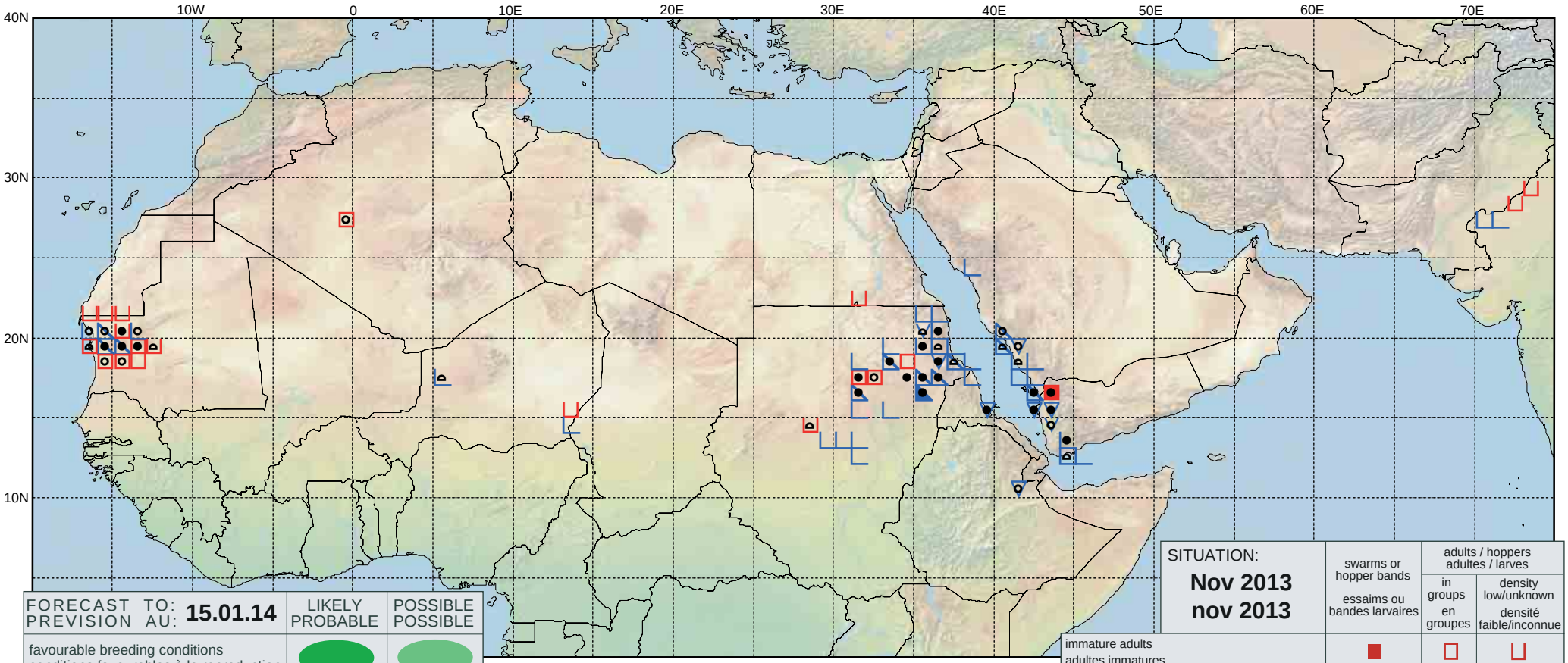
- locust-affected countries along the Red Sea: Djibouti, Egypt, Eritrea, Ethiopia, Oman, Saudi Arabia, Somalia, Sudan, Yemen; during plagues only: Bahrain, Iraq, Israel, Jordan, Kenya, Kuwait, Qatar, Syria, Tanzania, Turkey, UAE and Uganda.

EASTERN

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

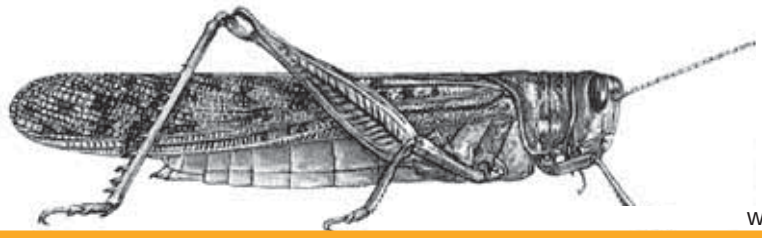
Desert Locust Summary
Criquet pèlerin - Situation résumée

422



FORECAST TO: / PREVISION AU: **15.01.14**	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 2013** **nov 2013**	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 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)	◘	◙	⊟



warning level: **THREAT**

DESERT LOCUST BULLETIN

FAO Emergency Centre for Locust Operations

No. 423

(3 Jan 2014)

General Situation during December 2013 Forecast until mid-February 2014

The Desert Locust situation remained critical along both sides of the Red Sea in December. Hopper and adult groups, hopper bands, and swarms formed in Yemen, Saudi Arabia and Eritrea. Smaller infestations were present in Sudan. Control operations were carried out in all countries. As ecological conditions remain favourable, a second generation of breeding will cause locust numbers to increase further and more bands and swarms are expected to form. The outbreak in northwest Mauritania has nearly come to an end as a result of intensive control efforts. Nevertheless, small-scale breeding is likely to occur in those areas that remain favourable in the coming months. A number of locust reports in northern Somalia are in the process of being confirmed. Heavy rains associated with a cyclone fell over much of the territory in November.

Western Region. Ground control operations continued during December against hopper groups, bands, and adult groups in northwest **Mauritania**, treating nearly 15,000 ha. This caused locust infestations to decline by the end of the month. Nevertheless, another generation of breeding is likely to occur but on a small and limited scale in those areas that remain favourable. Breeding may also occur in north and northeast Mauritania where good rains fell at mid-month. Low numbers of solitarious adults were maturing in parts of **Western Sahara** where small-scale breeding is expected during the forecast period. In **Niger**, hopper groups and adults were present in the Ténéré Desert while isolated solitarious adults persisted in parts of the summer breeding areas. No locusts were reported elsewhere in the Region.

Central Region. Locust infestations continued to increase during December along the Red Sea coastal plains in **Yemen**, **Saudi Arabia** and **Eritrea** where a second generation of breeding was underway, causing numerous groups of hoppers and adults as well as hopper bands to form. Swarms formed in Yemen and Saudi Arabia. One swarm reportedly crossed the border from Eritrea to **Sudan** while others moved from Yemen to Saudi Arabia. Control operations treated some 80,000 ha in the four countries, including aerial operations in Saudi Arabia, Eritrea and Sudan. As ecological conditions remain favourable, second generation breeding will continue, causing more hopper bands and swarms to form during the forecast period. Elsewhere, there were numerous reports of locust infestations in northern **Somalia** that could not be confirmed yet. Nevertheless, groups of adults and perhaps a small swarm are thought to have laid eggs on the northeast coast.

Eastern Region. No locusts were reported and the situation remained calm during December.

The FAO Desert Locust Bulletin is issued every month by the Desert Locust Information Service, AGP Division (Rome, Italy). It is supplemented by Alerts and Updates during periods of increased Desert Locust activity. All products are distributed by e-mail and are available on the Internet.
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Twitter: twitter.com/faolocust

Weather & Ecological Conditions in December 2013

Ecological conditions remained favourable for breeding in northwest Mauritania and in the winter breeding areas along both sides of the Red Sea except for Egypt. Conditions improved in Western Sahara and northern Somalia.

In the **Western Region**, good rains fell in parts of Northwest Africa mainly during the first half of December. In Mauritania, light to moderate rains fell in the north and northeast (Tiris-Zemmour) at mid-month that should give rise to favourable breeding conditions. Ecological conditions remained favourable in the northwest but annual vegetation started to dry out after mid-month in some places. Light rain fell at times during the first two decades in central areas of Western Sahara, and in southwest Libya. Ecological conditions were favourable for breeding in parts of the Adrar Settouf region in Western Sahara. In Algeria, light rain fell at times in parts of the western and central Sahara. Green vegetation was present near Tindouf, Bechar and Illizi. Dry conditions prevailed in the northern Sahel of West Africa.

In the **Central Region**, good rains fell along parts of the coastal plains on both sides of the Red Sea in December that will allow ecological conditions to remain favourable for breeding. In Eritrea, breeding conditions remained favourable along the Red Sea coast from Tio to Karora in areas of recent rainfall and runoff. In Sudan, moderate rains fell on the Red Sea coast from Tokar Delta to the Eritrean border at times during the second half of December, and conditions were favourable for breeding. In Yemen, light to moderate rain fell on the northern coast of the Red Sea near Abs and on the Gulf of Aden coastal plains at mid-month. Moderate rains fell again in the last week of the month on the Gulf of Aden coast. In Saudi Arabia, moderate rains fell in most of the breeding areas on the central and southern coastal plains of the Red Sea. Consequently, ecological conditions remained favourable for breeding from Lith, Saudi Arabia to Al Zuhrah, Yemen but were starting to dry out on the central Tihama of Yemen. Dry conditions prevailed in southeast Egypt and in adjacent areas of northeast Sudan. In Oman, light rains fell at times on the central coast between Duqm and Marmul but dry conditions prevailed. In northern Somalia, ecological conditions were favourable for breeding on the northwest coast and in parts of the escarpment and plateau where heavy rains fell in November from Tropical Cyclone 03A.

In the **Eastern Region**, light rains fell during the last decade of December in parts of the spring breeding areas in the interior of southeast Iran and western Pakistan.

Area Treated

During December, control operations treated nearly 93,000 ha compared to about 86,000 ha in November.

Eritrea	16,200 ha (Nov, revised)
	38,000 ha (December)
Mauritania	14,483 ha (December)
Saudi Arabia	10,990 ha (December)
Sudan	5,894 ha (December)
Yemen	15,989 ha (Nov, revised)
	24,099 ha (December)

Desert Locust Situation and Forecast

(see also the summary on page 1)

WESTERN REGION

Mauritania

• **SITUATION**

During December, ground control operations continued against late instar hopper groups and bands at densities of more than 70 hoppers/m^2 and groups of mainly immature adults at densities up to 38,000 adults/ha in the northwest near Akjoujt (1945N/1421W), Tasiast (2034N/1531W), and southwest of Bennichab (1932N/1512W). Similar infestations were reported in the *Parc National du Banc d'Arguin* where chemical control was not possible. After mid-month, nearly all of the hoppers had fledged, and infestations and control operations were declining. Ground teams treated 14,483 ha during December. Further north, scattered immature and mature solitarious adults were present near Zouerate (2244N/1221W).

• **FORECAST**

Residual adult populations in the northwest will mature and another generation of breeding, albeit on a smaller scale than previous breeding, is likely to occur in those areas that remain favourable. Small-

scale breeding may also occur near Zouerate and there remains a risk that adults may move further to north and northeast Tiris-Zemmour during periods of warm southerly winds and breed in areas of recent rainfall.

Mali

• **Situation**

During December, no locusts were seen by surveys carried out in the west near Kayes (1426N/1128W) and in central areas between Nara (1510N/0717W) and Gao (1616N/0003W).

• **Forecast**

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

Niger

• **Situation**

During December, isolated mature solitarious adults persisted in the Tamesna between Arlit (1843N/0721E) and Tassara (1650N/0550E), while mature solitarious and *transiens* adults were seen south of Agadez (1658N/0759E) in the Tadress area. No locusts were seen south of Tassara. A few solitarious hoppers and immature adults were reported between Arlit and the Tazerzait Plateau. Locust numbers increased after mid-month in the Ténéré Desert where groups of mainly second and third instar hoppers at densities of up to 8 hoppers/m^2 and maturing solitarious and *transiens* adults at densities up to 1,000 adults/ha were present northwest of Fachi (1806N/1134E).

• **Forecast**

Scattered adults are likely to move from the Ténéré to the southeastern Air Mountains where they will persist during the forecast period.

Chad

• **Situation**

No surveys were carried out and no locusts were reported 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, Guinea Bissau, Liberia, Nigeria, Sierra Leone and Togo

• **Forecast**

No significant developments are likely.

Algeria

• **Situation**

During December, no locusts were seen during surveys carried out near Adrar (2753N/0017W) and west of Tamanrasset (2250N/0528E).

• **Forecast**

Scattered adults may be present and breeding on a small scale in irrigated areas near Adrar. Low numbers of adults may appear near Tindouf and Illizi where small-scale breeding may occur once temperatures increase after January.

Morocco

• **Situation**

During December, isolated immature solitarious adults were seen at a few places in the Adrar Settouf region of Western Sahara near Ma'Tallah (2223N/1502W) and Aousserd (2233N/1419W) while mature adults were present in the north near Smara (2644N/1140W). No locusts were seen south of the Atlas Mountains near Guelmim (2859N/1003W).

• **Forecast**

Adults and a few small groups may appear in southern areas of the Western Sahara. Small-scale breeding will occur in areas that receive rainfall.

Libya

• **Situation**

No locusts were reported during December.

• **Forecast**

Low numbers of adults are likely to appear in the southwest near Ghat and breed on a small scale if rainfall occurs.

Tunisia

• **Situation**

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

• **Forecast**

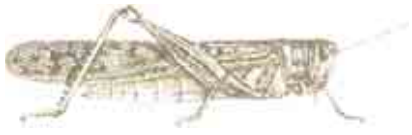
No significant developments are likely.

CENTRAL REGION

Sudan

• **Situation**

During December, groups of immature and mature adults persisted in the summer breeding areas of the interior near the Nile Valley southwest of Atbara and southeast of Abu Hamed. Similar infestations mixed with solitarious hoppers were also present on



the western side of the Red Sea Hills north of Haiya. Control operations treated 2,240 ha of which 800 ha were by air. No further control was carried out after 17 December.

In the winter breeding areas, more hopper bands formed in the northeast along W. Oko near Tomala (2002N/3551E) and scattered adults were present. In the Tokar Delta (1827N/3741E), solitarious hoppers of all instars formed groups and groups of adults were present and maturing. Local breeding also occurred further south along the Eritrean border near Karora (1745N/3820E) where solitarious hoppers and adults were present. The adults were maturing and forming groups. Limited egg laying was seen in both areas. On the 23rd, a medium density immature swarm reportedly crossed the border from Eritrea. Control operations treated 3,654 ha of which 2,600 were by air.

• **Forecast**

A second generation of breeding will cause locust numbers to increase in the Tokar Delta and on the southern coastal plains. Further breeding may also occur in Wadi Oko. Hatching will occur during January and small hopper groups and perhaps a few bands may form.

Eritrea

• **Situation**

During December, small late instar hopper groups continued to form on the central Red Sea coastal plains, mainly in crops between Wekiro (1548N/3918E) and Mersa Cuba. Fledging occurred and immature adults formed small groups. Early instar hopper bands were present south of Massawa (1537N/3928E) to Mersa Fatma (1454N/4018E) and on the northern coast near Karora (1745N/3820E) and the Sudanese border. By the end of the month, groups of adults were maturing and laying eggs in several areas. Control operations treated 44,160 ha of which 7,400 ha were by air from 23 November to 22 December.

• **Forecast**

Hoppers will continue to form groups and small bands on the Red Sea coast between Tio and Karora that could lead to the formation of adult groups and a few small swarms. Another generation of breeding will cause locust numbers to increase further with egg-laying and hatching during January.

Ethiopia

• **Situation**

During December, isolated immature solitarious adults were seen at two places near Ayasha (1045N/4234E) and the border of northern Somalia. No locusts were seen near Dire Dawa (0935N/4150E) and Jijiga (0922N/4250E).

• **Forecast**

No significant developments are likely.

Djibouti

• **Situation**

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

• **Forecast**

Scattered adults may be present and could breed on the coastal plains east of Djibouti town.

Somalia

• **Situation**

During the first week of December, there were unconfirmed reports of hopper bands on the northwest coast near Gerisa (1036N/4325E) but subsequent surveys only found isolated mature solitarious adults nearby. Scattered late instar solitarious hoppers, fledglings, and immature adults were present on the escarpment northeast of Burao (0931N/4533E), including one hectare of scattered late instar gregarious hoppers. Locals reported locusts on the coast near Las Koreh (1110N/4812E) at Ceel Xasan (1117N/4847E) on 1 December. There were also unconfirmed reports of at least two mature swarms moving southwest towards the Golis Mountains during the first week. Television footage showed groups of solitarious and *transiens* adults copulating, and egg-laying was reported by locals. More unconfirmed reports were received at the end of the month from the northwest coast.

• **Forecast**

Breeding is likely to be in progress in some coastal, escarpment and plateau areas as far east as Las Koreh. If so, locust numbers will increase, and hopper and adults may form small groups.

Egypt

• **Situation**

During December, no locusts were seen during surveys carried out on the Red Sea coast and subcoastal areas between Berenice (2359N/3524E) and the Sudan border, along both sides of Lake Nasser in the Allaqi and Garf Husein (2317N/3252E) areas, and in the northwest near Siwa (2912N/2531E) and Salum (3131N/2509E).

• **Forecast**

Adults and perhaps a few small groups may appear along the Red Sea coast south of Shalatyn and breed on a small scale if rainfall occurs.

Saudi Arabia

• **Situation**

During December, a second generation of breeding continued on the central Red Sea coastal plains between Lith (2008N/4016E) and Qunfidah (1909N/4107E) and on the southern plains near Jizan (1656N/4233E) where groups of mature adults and swarms formed and laid eggs, and hoppers formed groups and bands of all instars. Some of the infestations extended into the Asir Mountains near Al Baha (2001N/4129E) and Abha (1813N/4230E). Swarms were reported coming from adjacent coastal areas of Yemen, and a few crossed the Asir Mountains, reaching the Najran (1729N/4408E) area. Aerial and ground control operations treated 10,990 ha during December.

• **Forecast**

Locust numbers will increase further along the Red Sea coastal plains as second-generation hatching and band formation continues between Lith and Qunfidah and near Jizan. New groups and small swarms of immature adults are likely to form from early January onwards.

Yemen

• **Situation**

During the first half of December, several hundred late instar hopper groups and bands continued to be present on the northern coast of the Red Sea between Al Zuhrah (1541N/4300E) and Midi (1619N/4248E) and, to a lesser extent, on the central coast near Hodeidah (1450N/4258E). As hoppers fledged, there was an increasing number of immature adult groups and at least a dozen swarms formed and matured during the remainder of the month. Some of the swarms moved north to the Saudi Arabia border and the foothills west of Sada'a (1656N/4345E). Egg-laying occurred on the northern coast during the second week by several mature adult groups and on the 22nd by a mature swarm. Ground teams treated 24,099 ha during December. On the Gulf of Aden coast, a few third to fifth instar hopper groups and bands as well as scattered immature and mature solitarious adults persisted during the first week near Am Rija (1302N/4434E). An immature swarm was seen on the 5th in the nearby foothills. Field operations were limited due to insecurity and beekeeping.

• **Forecast**

First-generation adult groups and swarms will continue to form on the northern Tihama during January, mature and lay eggs. Locust numbers will increase as second-generation hatching and band formation occur from early January onwards. New groups and swarms are likely to form in February. Locust numbers will also increase on the Gulf of Aden coast west of Aden where a second generation of breeding will take place, giving rise to hopper groups and bands.

Oman

• **Situation**

No locusts were seen during surveys carried out in December in the northern interior southwest of Ibri (2314N/5630E), between Adam (2223N/5731E) and Ibra (2243N/5831E), on the Batinah coast near Jamma (2333N/5733E), and on the Musandam Peninsula.

• **Forecast**

No significant developments are likely.

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

• **Forecast**

No significant developments are likely.

EASTERN REGION

Iran

• **Situation**

No locusts were seen during surveys carried out on the southeastern coastal plains near Jask (2540N/5746E) and Chabahar (2517N/6036E) in December.

• **Forecast**

Low numbers of adults may appear in areas of recent rainfall along the southeast coast at the end of the forecast period.

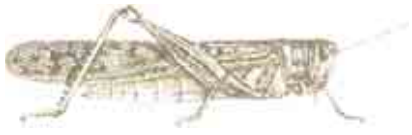
Pakistan

• **Situation**

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

• **Forecast**

Low numbers of adults may appear in areas of recent rainfall along the Baluchistan coast at the end of the forecast period.



India

• **Situation**

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

• **Forecast**

No significant developments are likely.

Afghanistan

• **Situation**

No reports received.

• **Forecast**

No significant developments are likely.

Announcements

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.

Locust reporting. During calm (green) periods, countries should report at least once/month and send RAMSES data with a brief interpretation. During caution (yellow), threat (orange) and danger (red) periods, often associated with locust outbreaks, upsurges and plagues, RAMSES output files with a brief interpretation should be sent at least twice/week within 48 hours of the latest 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.

Locust tools and resources. FAO has developed a number of tools that National locust information officers and other interested individuals can use for Desert Locust early warning and management:

- **MODIS.** Vegetation imagery every 16 days (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/.Regional/.MODIS/index.html)
- **MODIS.** Daily rainfall imagery in real time (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **RFE.** Rainfall estimates every day, decade and month (http://iridl.ldeo.columbia.edu/maproom/.Food_Security/.Locusts/index.html)
- **Greenness maps.** Dynamic maps of green vegetation evolution every decade (http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html)
- **FAODLIS Google site.** A platform for sharing problems, solutions, tips and files for eLocust2, eLocust2Mapper, RAMSES and remote sensing (https://sites.google.com/site/faodlis)
- **FAOLOCUST Twitter.** The very latest updates are posted on Twitter (http://www.twitter.com/faolocust)
- **FAOLocust Facebook.** A social means of information exchange using Facebook (http://www.facebook.com/faolocust)
- **Slideshare.** Locust presentations and photos available for viewing and download (http://www.slideshare.net/faolocust)
- **eLERT.** A dynamic and interactive online database of resources for locust emergencies (http://sites.google.com/site/elertsite)

New information on Locust Watch. Recent additions to the web site (www.fao.org/ag/locusts) are:

- **Current threats.** Information section
- **Yemen outbreak.** Archives – Outbreaks 2013 section

eLocust3. A demonstration version is available for viewing and downloading at Slideshare in:

English: http://www.slideshare.net/FAOLocust/elocust3-apreviewenglishversion

French: http://www.slideshare.net/FAOLocust/elocust3-a-preview-french-version

Arabic: http://www.slideshare.net/FAOLocust/elocust3-apreview-arabicversion

Greenness maps. Dynamic maps of green vegetation evolution every decade can now be downloaded from Columbia University's IRI (USA) website: http://iridl.ldeo.columbia.edu/maproom/Food_Security/Locusts/Regional/greenness.html

2014 events. The following activities are scheduled or planned:

- **DLCC.** Desert Locust Control Financing System meeting, FAO Rome (11-13 March)

- **CLCPRO/EMPRES-RO.** Western Region Locust information officers workshop, Agadir, Morocco (24-28 March)
- **CRC/SWAC.** Inter-regional Locust information officers workshop, Cairo, Egypt (6-10 April)

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

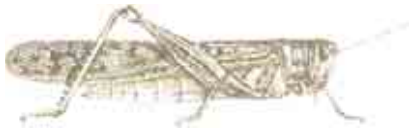
- Caution. Potential threat to crops. Increased vigilance is required; control operations may be needed.

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

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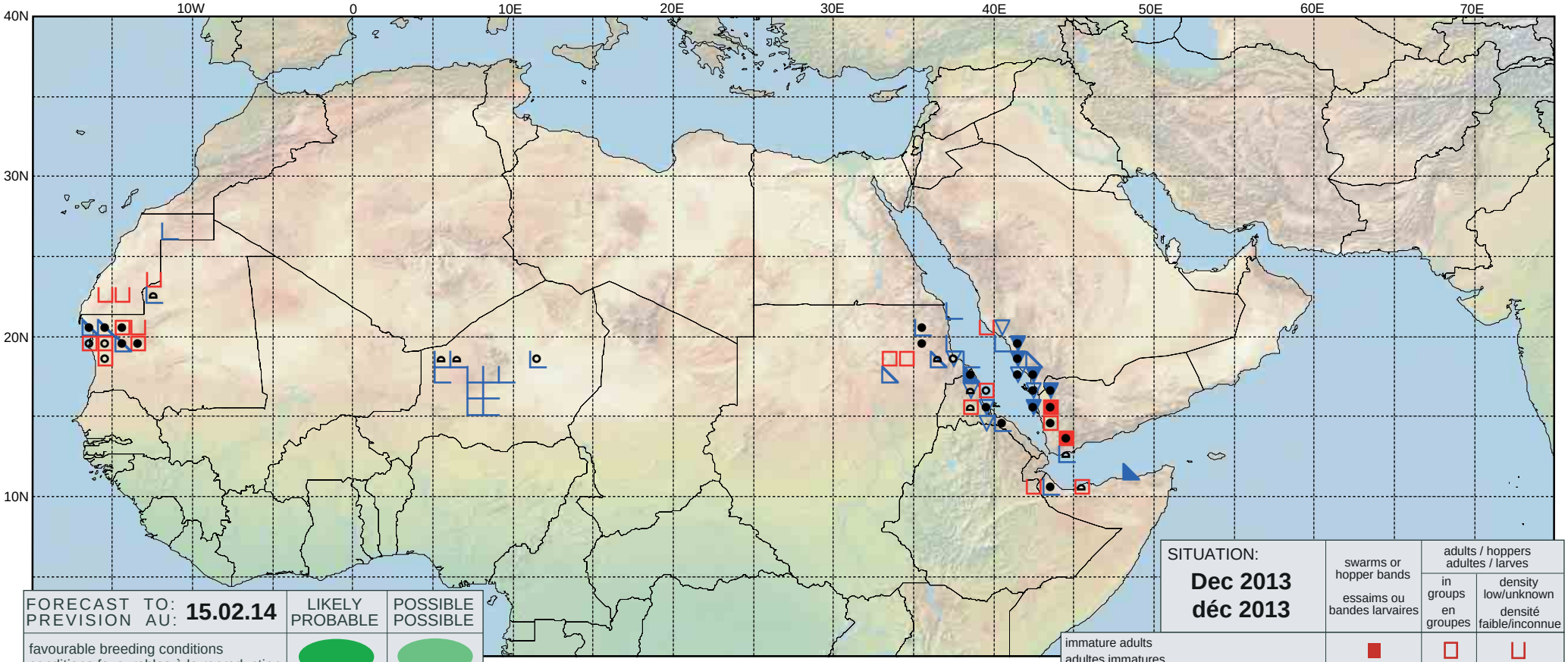

FORECAST TO: / PREVISION AU: **15.02.14**	LIKELY / PROBABLE	POSSIBLE / POSSIBLE
favourable breeding conditions conditions favourables à la reproduction		
major swarm(s) essaim(s) important(s)		
minor swarm(s) essaim(s) limité(s)		
non swarming adults adultes non essaimant		

SITUATION: **Dec 2013 déc 2013**	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 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)	◘	◙	⊟